New Frontiers in Regional Science: Asian Perspectives 32

Akira Kiminami *Editor*

Entrepreneurship and Innovation in Japanese Agriculture

Springer

New Frontiers in Regional Science: Asian Perspectives

Volume 32

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ISSN 2199-5974 ISSN 2199-5982 (electronic)
New Frontiers in Regional Science: Asian Perspectives
ISBN 978-981-13-8054-9 ISBN 978-981-13-8055-6 (eBook)
https://doi.org/10.1007/978-981-13-8055-6

This Springer imprint is published by the registered company Springer Nature Singapore Pte Ltd.
The registered company address is: 152 Beach Road, #21-01/04 Gateway East, Singapore 189721, Singapore

Preface

The decline of competitiveness and sustainability of agricultural sector as an industry in Japan is seriously concerned due to its weakening managerial resources such as the aging labor force and decreasing farmland, and Japanese agricultural policies have been concentrated in the accumulation of farmlands and the securing of agricultural labor forces so far. However, from the perspectives of industrial and regional development, policies focusing on creating innovation which is the driving force of economic development is recognized as more effective. On the other hand, there have been some new movements related to the innovation and entrepreneurship observed today in various regions in Japan.

Despite innovation and entrepreneurship being essential for the development of the Japanese agricultural sector today, studies in this field have hardly been sufficient. In addition, the studies concerning the measures to develop entrepreneurial human resources and organizations in order to implement innovation hardly exist. Based on the awareness of the abovementioned problem, the Farm Management Society of Japan chose the issues on innovation and entrepreneurship, including human resource development, as the main topics of the annual conferences in 2015 and 2016. This book consists of 11 chapters based on the papers presented for these conferences and the related papers.

Chapter 1 presents an overview of the studies on entrepreneurship and human resource development in the Japanese farm business from theoretical and empirical perspectives.

Chapter 2 analyzes multi-sectoral farm business development from the viewpoint of management development focusing on entrepreneurship.

Chapter 3 investigates business and manager development in agricultural corporations by a case study on a large-scale vegetable farming.

Chapter 4 clarifies the growth stages of farm business from the viewpoint of venture capital and the problems for developing entrepreneur.

Chapter 5 studies the cases of the human resource development program for the rural innovation in Japan from the experience in the EU.

Chapter 6 presents an overview of the issues of innovation in a Japanese farm business based on the innovation and entrepreneurship theories.
Chapter 7 offers a case study on the innovation by young generations in a farm household and suggests a way to rebuild Japanese agriculture.
Chapter 8 investigates the various types of innovation by female entrepreneurs in Japanese agriculture.
Chapter 9 clarifies the role of open innovation and platform in agriculture by comparative analysis of the cases in Japan and EU.
Chapter 10 considers the problems of technical innovations in farm business and regional innovation systems.
Chapter 11 discusses the modernizing farm business management by comparative analysis of Japanese and Californian rice farming.

Each chapter provides significant findings from the studies on the entrepreneurship in Japanese agriculture with various aspects including successful new movements such as agricultural clusters, agriculture-commerce-industry collaboration, networking, franchising, corporate farming, and utilizing limited regional resources. Then, it clarifies the interrelationship among innovation, entrepreneurship, and human resource development and suggests effective policies to promote the Japanese agricultural sector and rural areas. Therefore, it contributes to the progress not only of farm management science but also of regional science and its related fields. In this context, this book is the first monograph to analyze comprehensively the issues regarding innovation, entrepreneurship, and human resource development in the Japanese agricultural sector.

I would like to express my gratitude to all of the contributors who participated in this project. The Farm Management Society of Japan and local organizers of the annual conferences at Hokkaido University and Kyoto University gave us great opportunity for developing our studies. Finally, I am grateful to Lily Kiminami who provided valuable support and advice to launch this project.

Tokyo, Japan Akira Kiminami

Contents

Chapter 1
Issues on Entrepreneurship and Human Resource Development in Japanese Farm Business

Akira Kiminami

Abstract This chapter presents brief views of the situation of the studies on entrepreneurship and human resource development in Japanese farm business from theoretical and empirical perspectives. Then, it clarifies the characteristics of the entreprenurship and human resource development in farm business based on the comparative analysis with SME of manufacturing. Finally it shows the research issues on this topic.

Keywords Entrepreneurship · Human resource development · Farm business management

1.1 Introduction

The driving force in industrial development is innovation, and this requires entrepreneurship, which is the attitude, imagination, and ability to implement such innovation. Innovation and entrepreneurship are essential in the sustainable development of agriculture as well, where improved productivity and enhanced competitiveness are achieved through innovation. Innovation is also recognized as playing a significant role in creating employment and improving income. In the agricultural industry in Japan as well, new movements in entrepreneurship and innovation are beginning to be observed. Typical examples of such movements are agricultural clusters, the sixth industry initiative, agriculture-commerce-industry collaboration, networking, franchising, corporate entry, and expansion as a growth industry. Research into these new movements is emerging, but the focus tends to be on the phenomena and form, with an emphasis on understanding the practical activities of good business manager, without sufficient analysis of the functions and the mechanism.

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A. Kiminami (ed.), *Entrepreneurship and Innovation in Japanese Agriculture*,
New Frontiers in Regional Science: Asian Perspectives 32,
https://doi.org/10.1007/978-981-13-8055-6_1

Entrepreneurship has often been discussed in farm management, but the discussion on its essence and significance has hardly been sufficient. In addition, research concerning the measures to develop entrepreneurial human resources and organizations in order to implement innovation hardly exists at present.

Therefore, innovation and entrepreneurship is one of the areas that will benefit from extensive debate at the Farm Management Society of Japan at present. However, the content that should be discussed in this area is wide-ranging. Accordingly, this paper studies issues concerning entrepreneurship in farming in modern Japan from various angles. First, the current situation of entrepreneurship in farm management is assessed and analyzed, and the issues in human resource development are identified. Based on this, issues in developing entrepreneurial individuals and organizations that are able to create innovation with leadership are identified. Schumpeter (1934) considered innovation in five new areas of (1) goods, (2) methods of production, (3) sales channels, (4) sources for the supply of raw materials and half-finished goods, and (5) organization. Efforts to develop unprecedented and excellent human resources can be viewed as forming a new organization and therefore relate to the area of innovation. Furthermore, it is not limited to business management, but it produces new business manager in society, and thus it also affects social performance. Therefore, the significance of this symposium addressing human resource development is in its addressing two areas of entrepreneurial human resources to achieve innovation and the new method of developing such human resources.

Furthermore, having considered these issues and by analyzing cases where innovation is being achieved through entrepreneurship, we attempt to establish a theory of entrepreneurship and innovation in farming and to propose policies toward achieving innovation.

Looking at the trend in research into entrepreneurship in farming abroad, research activities have intensified in developed countries especially in the United Kingdom, the Netherlands, Sweden, and Finland. In addition, the recognition of the significance of entrepreneurship is not limited to farm management in developed countries and corporate farm management. As represented by Kahan (2012), the role of entrepreneurship has grown in providing direction for small farmers in developing countries as well.

By contrast, in the area of proximal science, research into entrepreneurship is rapidly advancing both in theory and in practice (Kiminami and Kiminami 2017). Research is being accumulated especially in the area of regional science. These trends seem to share a common understanding of the significance of innovation and entrepreneurship in the development of not just agriculture, but also the regional economy.

Therefore, this paper intends to present the trends and achievements of entrepreneurship research, and to identify research issues based on farm management research in Japan and abroad, as well as the research situation in the industry as a whole.

1.2 Trends of Research on Entrepreneurship

One of the difficulties in the research on entrepreneurship lies in the difficulty in assessing entrepreneurship. Entrepreneurship is multifaceted, and the process leading to innovation needs to be clarified, which makes understanding entrepreneurship itself difficult.

That is why an approach is often taken where start-ups, which are relatively easy to understand, are interpreted as a result of entrepreneurship. While there are various start-up definitions on the one hand, not all start-ups are achieving innovation. For example, start-ups in the United States have an active and spectacular image, but according to Shane (2010), many start-ups in the United States relate to the existing business of the company's manager, and thus there are no new business ideas and little external funding but only self-employment and no innovation. Therefore, a start-up is valid as one of the indicators regarding entrepreneurship, but it has limitations in capturing entrepreneurship on its own.

Thus, another approach is to use various indicators that are thought to relate to entrepreneurship, not limited to start-ups, to capture entrepreneurship. These include the Global Entrepreneurship Monitor (GEM) (Global Entrepreneurship Research Association 2017) and the OECD-Eurostat Entrepreneurship Indicators Programme (OECD 2015) at the international level and, in Japan, the "Start-up Survey," "Start-up Panel Survey," and "Survey of Start-ups and Entrepreneurial Mind" ("Survey of Entrepreneurial Mind" prior to 2013) by Japan Finance Corporation Research Institute (2014).

GEM conducts large-scale surveys in 70 countries around the world and has an understanding of the total early-stage entrepreneurial activity, or TEA, which represents attitudes, activity, and aspiration in entrepreneurial activities and the level of entrepreneurial activities. A business which is new to an individual may not be new in society, and therefore "start-ups = entrepreneurship" does not always hold, but it still provides important information. GEM's analytical framework is shown in Fig. 1.1, which reveals its assumption of a mutual relationship with many factors surrounding entrepreneurship, as well as a relationship with innovation and other achievements. For example, the number of start-ups in Japan is said to be low, which suggests that the realization of entrepreneurship is greatly influenced by the external environment and that it inspires measures to foster entrepreneurship. However, according to Takahashi et al. (2013), the level of entrepreneurial activities is low in Japan, but it is parallel to Europe and the United States if the attitude indicator is controlled. This is strongly observed in entrepreneurial activities in business opportunities with strong growth orientation. It suggests that working on the entrepreneurial attitude could be an extremely effective method in stimulating entrepreneurial activities in Japan. In addition, the ratio of those totally divorced from start-ups is overwhelmingly high, and the high probability is pointed out that those totally divorced from start-ups exert a negative influence on entrepreneurial activities as a whole. Such analytical frameworks are thought to be applicable in the research of entrepreneurship in farm management as well.

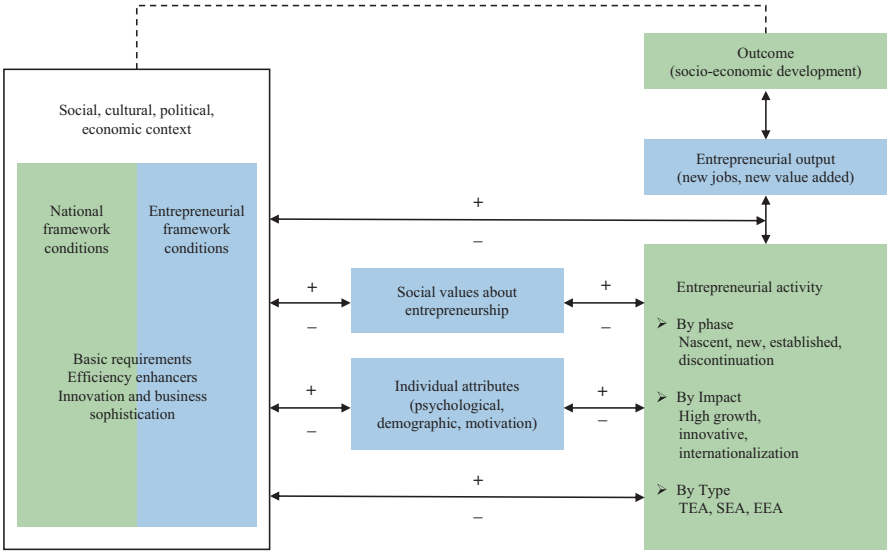

Fig. 1.1 The GEM conceptual framework. (Source: Global Entrepreneurship Research Association (2017))

1.3 Research on Farm Business Management and Entrepreneurship

The Farm Management Society of Japan has dealt with the issues relating to this theme a few times in the past. However, innovation and entrepreneurship were not discussed squarely on any of the occasions. These are not covered as an independent item in the outlook of research by the Farm Management Society of Japan (2012), but they are merely touched upon in the assessment of the theory of business manager competence.

In terms of entrepreneurial activities in farming, Takahashi (2014) has pointed out the importance of the systematic organization of existing research and theories, case analysis, and factual farm management research based on the former. Recent research into the relationship between farm management and innovation include the research by Inamoto and Tsuya (2011). It categorized the relationship in terms of the subject of the innovation, scope, and economies of scale and then carried out analysis based on cases, but it failed to construct a new analytical framework or theory.

In Japan, there are no statistics or extensive surveys on entrepreneurship in agriculture, and the understanding of current situations through interviews and surveys by individual researchers is essential.

In terms of start-ups, there are no comprehensive statistics or surveys. The new entrants in the "New Farmer Survey" (Ministry of Agriculture, Forestry and Fisheries of Japan) are thought to be relatively similar in the sense that these people start business in a different industry. New entrants are defined as "the management who uniquely procured land or funding (excluding cases where farmland belonging

to the parent was acquired as an inheritance or gift) during the year up to the survey date, and newly started farm management," but they are people newly employed in agriculture, rather than entrepreneurs. With respect to the entrance of companies in agriculture, there are surveys by the Ministry of Agriculture, Forestry and Fisheries of Japan and Japan Finance Corporation, but the information contained is limited to the number of entrants, size of area, and management issues, with an emphasis on farmland issues if any. In terms of start-ups in agricultural communities, there is the "entrepreneurial activities by women in agricultural communities fact finding survey" by the Ministry of Agriculture, Forestry and Fisheries of Japan, but this is limited to activities that are mostly managed by women. If the scope is expanded to include business diversification, the Agriculture and Forestry Census includes information on the agricultural production business (processing of agricultural products, direct sales of agricultural products to consumers, farm rental, farm experience, tourism farm, farmhouse stay, farm restaurant, export). However, the information does not facilitate an understanding of the achievement of innovation or the current situation of entrepreneurship.

With respect to the diversification of business, the "Agriculture and Forestry Census" and the "Agricultural Corporation White Paper" provide a picture of farm management initiatives in businesses other than agricultural production. However, it should be noted that the effect, aim, and strategy of business diversification related to the corporatization of management (Kiminami 2006) and business diversification alone do not provide a measure of entrepreneurship.

As noted above, information to understand the current situation of entrepreneurship in agriculture is scarce. However, the important knowledge obtained from existing research regarding start-ups in the whole industry is that the start-up business itself, the size of business, and whether self-employed, does not matter in understanding entrepreneurship, but rather, whether it has the core technology and an established revenue model is important.

In fact, research on a farm manager's management ability is relatively abundant, producing research results that clarify the relationship between manager elements and management achievement and the relationship between different manager elements (Goto et al. 2009). However, the relationship between manager elements and innovation is hardly verified; therefore, it is often unclear whether the management achievements are a result of innovation.

Outside Japan, the amount of research on entrepreneurship in agriculture and related areas has rapidly increased since around 2000 (Lans et al. 2013). Entrepreneurship is not just a necessary element in the development of farm management but is also becoming more valued in terms of its role in agricultural community development, employment, and regional development. Conscious of the delay in research in the area of agriculture, compared to all industries, more research is being conducted in Northern Europe, the United Kingdom, etc. (Ketelaar-de Lauwere et al. 2002, McElwee 2006, De Wolf et al. 2007, Alsos et al. 2011), and there is also some survey research that aims to improve the practical skills of entrepreneurship (De Wolf and Schoorlemmer 2007, Mikko and Jarkko 2008). As a whole, business diversification tends to be viewed as innovation;

therefore, it is characteristic that much research discusses manager's awareness and attributes in relation to business diversification (Carter 1998; Clark 2009; Vik and McElwee 2011).

In terms of the direction of empirical research, the multifaceted approach as seen in GEM earlier, as well as research into management ability, where the concept of entrepreneurial orientation (EO) (Lumpkin and Dess 1996) and method of empirical analysis is applied in farm management (Grandea et al. 2011), is expected to develop. The accumulation of approaches in the analysis of detailed fact-finding surveys in farm management from the perspective of management growth is also considered valid (Oda et al. 2013, 2014).

1.4 Human Resource Development in Farm Business

Even if innovation is achieved by an entrepreneur, continuous achievement of innovation is necessary for the sustained growth of business, which requires an appropriate management strategy (Shindo 2015; Saitoh 2012). One method is the internalization of the strategic intention of the individual entrepreneur. As a result, growth after the departure of the entrepreneur from the organization is said to be possible. Another method is the construction of a mechanism to create innovation. It is the accumulation of entrepreneurial personnel, venture capitalists, and supporters to create innovation, which is also known as the "innovation ecosystem." Either way, the key is human resources, i.e., it is necessary to secure or nurture entrepreneurial people.

In other words, a farm manager is required to exert his or her own entrepreneurship, as well as nurturing and producing next-generation farm managers who have entrepreneurship. However, when issues of human resources in agriculture in Japan were discussed, the concern was the lack of agricultural laborers and successors, and thus emphasis was placed on new farmers. Similarly, in research on human resource development, research from the perspective of human resource management theory in general management theory is scarce. More recently, research on agricultural corporations has been conducted based on human resource management theory (Kiminami et al. 2011; Kiminami and Kiminami 2012; Nanseki et al. 2014). It is becoming clear that agricultural corporations share many aspects of human resource management with general companies, but research on the relationship between human resource development and entrepreneurship is severely lacking.

Kiminami (2013) analyzed the results of the survey questionnaire which targeted the manager of agricultural corporations, etc. ("agricultural corporations") ("Employment and human resource development in agricultural corporations questionnaire," carried out by the National Chamber of Agriculture in November 2012, 504 respondents), with the aim of understanding the current status of employment and human resource development in agriculture. This survey does not focus on the development of entrepreneurial people, but it is designed in a way such that the survey results can be compared to similar surveys on human

Table 1.1 Shortfall in human resources

		(Unit: %)
	Agricultural corporations	Small to mid-sized companies
Persons who are able to carry out the most difficult work	64.1	54.7
Persons who can make their subordinate work while doing instructions and advice	54.3	50.2
Persons who can handle work by themselves	52.5	34.6
Person who can handle work by the rough instructions of their seniors	36.6	15.7
Person who can handle work by the detailed instructions of their seniors	36.7	13.4

Source: Based on the result of Kiminami (2013)
Notes: The numbers show the ratios of answer "Shortfall"
No respondent is excluded from the calculation
"Small to mid-sized companies" are companies of machinery and metal manufacturing

development issues in small- to midsized manufacturing companies (Japan Institute for Labour Policy and Training 2012).

Table 1.1 shows the excess and deficiency by ability of a person. "Shortfall in human resources" could mean various situations, depending on the ability of human resources that are in shortage. Both agricultural corporations and small- to midsized companies reported the trend of the higher the ability required, the shorter the supply. Both reported that "Persons who are able to carry out the most difficult work" are in the shortest supply, and 64.1% of agricultural corporations reported a shortage. However, agricultural corporations tend to have a larger shortage of human resources in general compared to small- to midsized companies. It is characteristic that over 30% reported a shortage of human resources that require less independence, which were not lacking at small- to midsized companies. This may be the reason why the issue of nurturing managers in agriculture, and nurturing entrepreneurial management, is obscured.

Table 1.2 shows the levels where human resource manuals can be compiled. The higher the ability required for human resources, the more difficult it is to compile manuals for both agricultural corporations and small- to midsized companies, and it is almost impossible at the most difficult level of work. However, manual compilation was no more difficult for agricultural corporations than small- to midsized companies. Manual compilation was relatively easier at agricultural corporations at the lower level of work.

Table 1.3 shows the target at which managers focus their efforts on human resource development and capability development. The results show that "the management themselves" is slightly lower in agricultural corporations, but the focus of human resource development and capability development is on the development of managers, and the ratio is higher than small- to midsized companies.

Table 1.2 Levels where human resource manuals can be compiled

		(Unit: %)
	Agricultural corporations	Small to mid-sized companies
In all levels	2.3	5.9
The level for making the subordinate work while doing instructions and advice	15.8	11.7
The level for handling work by oneself	49.3	42.6
The level for handling work by the rough instructions of the seniors	79.2	67.2
The level for handling work by the detailed instructions of the seniors	89.5	73.4
It is impossible to compile manuals in any levels.	10.5	26.6

Source: Based on the result of Kiminami (2013)
Note: The numbers show the ratios of respondents

Table 1.3 Target of human resource development and capability development (multiple answers)

		(Unit: %)
	Agricultural corporations	Small to mid-sized companies
Managers themselves	31.0	37.2
Persons who can manage the whole company	45.0	32.7
Persons who can play as a leader or supervisor of workplace	65.3	56.1
Person who can promote business expansion and customer reclamation	22.4	16.3
Person in charge of office work such as general affairs	19.2	11.8
There is no special efforts.	8.4	16.5

Source: Based on the result of Kiminami (2013)

1.5 Research Issues

The following perspectives are thought to be required in entrepreneurship research into farm management:

- Review of entrepreneurship itself
- Analysis with a focus on managers and organization
- Analysis of factors in new business, start-up and business diversification, and environment
- Relationship with innovation
- Method and issues in nurturing managers
- Characteristics in human resource development in agricultural corporations

While the issues are diverse, the similarities are high with general companies, especially small- to midsized companies, which show that they face similar issues. Some

point out that the cause of insufficient innovation in small- to midsized companies is insufficient entrepreneurship. Therefore, much of the research and accumulation of practices for general industry and business are of use for reference. Therefore, this symposium takes a stance of clarifying the characteristics of farm management based on common theories in general industry and business.

Based on this, this symposium plans to discuss the following issues regarding innovation, entrepreneurship, and human resource development in agriculture. Generally speaking, innovation can be grouped into two types: that based on revolutionary new knowledge and that resulting from the improvement of existing knowledge.

In the case of agriculture, innovation from the field tends to be inventive, based on improved old technology, whereas revolutionary innovation relies on knowledge transfer from public research institutes. However, more agri-businesses are launched through commercial collaboration, and there are cases where uniquely developed new technologies are introduced. Therefore, the type of innovation that is required for entrepreneurship in the agricultural sector should be organized first of all, in order to identify the roles required by public research institutions for the development and dissemination of new technologies.

Then, in terms of entrepreneurship, the impact it brings to the qualitative transfer of management development and the relationship between entrepreneurs and the local community will be discussed. Unlike the simple expansion of business scale, what kind of innovation will bring discontinuous management development that involves organizational changes, such as from a family business to corporate management? In addition, how can entrepreneurs turn the relationship with local stakeholders as the organization's external environment into elements to promote innovation? These issues should be discussed from the perspectives of researchers and practitioners.

Finally, with respect to human resource development, uncertainty cannot be avoided when dealing with something new, such as innovation; thus, the ability to control the uncertainty, in other words, the ability of risk management, is important. On the other hand, the attitude to take on the challenge of risks is also required for entrepreneurs in order to secure high returns; thus, measures to nurture the ability and attitude to deal with such risks are an important issue to discuss in human resource development.

This book includes three chapters of case studies on these research issues. Chapter 2 is the study from the perspective of farm management researchers involved in the research on agricultural companies, based on the significance of entrepreneurship in farming in modern Japan. It will clarify a farm manager's awareness and ability regarding innovation, the current situation of human resource education, and the relationship between society and culture in order to identify the issues faced by Japanese agriculture today.

Chapter 3 is the study from the perspective of agricultural corporation managers, based on their own farm management development, the relationship with entrepreneurship and current initiatives to nurture new entrepreneurial management, and clarifies issues in entrepreneurship and human resource development in agriculture.

Chapter 4 is the study from the perspective of venture capitalists involved in agricultural business, based on the current situation of innovation and entrepreneurship in industries in general, and clarifies issues in nurturing organizations and managers that combine the characteristics of innovation and entrepreneurship in agriculture with leadership.

Chapter 5 is the study from the comparative perspective with European cases.

The business scale of target cases increases from Chapter 2 to Chapter 5, and the issues are identified at each stage. In addition, each case does not simply expand the business scale, but discontinuous expansion of business scale and the creation of revolutionary business areas and business organizations are implemented. Furthermore, the reporters are a farm management researcher, a farm manager, and a venture capitalist, all of whom are in different positions and they each add their observations from their unique perspectives. As noted above, despite variations in analysis targets and perspectives, it is hoped through the entire report that the significance of the management environment that surrounds entrepreneurship may be identified along with commonalities in the issues of entrepreneurship and human resource development in agriculture. It is thought that some commonalities may be found in management in small-scale businesses, as well as in local agricultural management but not individual management.

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Chapter 2
Analysis of Entrepreneurship and Multisectoral Farm Business Development

Noriaki Kawasaki

Abstract Recently, in Japan, farming entities demonstrating a dramatic breakthrough in their development are emerging. Such entities often extend business activities beyond farming as such to other entrepreneurial endeavors, including distribution (i.e., collecting and marketing) of agricultural products, transportation service, food processing, and mail order and Internet sales. The emergence of these entrepreneurial endeavors has led to this study to examine how agricultural entrepreneurship can be materialized. More specifically, this chapter aims first to propose a theoretical framework to analyze the agricultural entrepreneurship, then using case studies, to elucidate the process of entrepreneurial business development and characterize essential features of agricultural entrepreneurship. Until recently, research on farm business development in Japan has tended to center on the managerial ability of farm executives (owners or managers), yet paid scant attention to entrepreneurship. While entrepreneurship with innovation as its central element has been considered the primary engine of economic development, it has distinct meanings for a diverse range of researchers, namely, innovation, establishment of a market, and creation and management of a business, and hence has resulted in varying approaches to investigate it. In Japan, private financing, consulting services, and human resource providers are way less developed than most European countries and some in the Americas, and farm managers attempting to embark on entrepreneurial activities are faced with many challenges and need to figure out alternatives, such as networking with partners with similar interests. To address the problem stated above, this chapter proposes that agricultural entrepreneurship can be organized with four elements including (1) competence of farm managers, (2) organizational capability of farm entities, (3) supporting policy measures and institutional frameworks and government, and (4) networking with partners or collaborators. This theoretical framework is applied to analyze two Japanese and one Dutch farm entrepreneurial entities and has elicited the following conclusions. First, it can be argued that for sustainable business development, individual farm managers should be

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A. Kiminami (ed.), *Entrepreneurship and Innovation in Japanese Agriculture*,
New Frontiers in Regional Science: Asian Perspectives 32,
https://doi.org/10.1007/978-981-13-8055-6_2

armed with entrepreneurial competence combined with mindset to understand the nature of farming. Second, the organizational capability to capture business opportunities is critical for materializing entrepreneurial development in a farm business. Third, supportive institutional and cultural backdrops as enabling environments for entrepreneurship are essential. Fourth, networking and cooperation with partners or collaborators are vital to enhance and consolidate advantages in business.

Keywords Constructive and synergetic relationship · Governance and management · Innovative farmers

2.1 Introduction

This chapter focuses on the entrepreneurship in agricultural enterprises and analyze from the viewpoint of management development. In general, entrepreneurship is recognized as "entrepreneurial spirit" and "innovative skill", but in this chapter, "entrepreneurship" is used as a concept encompassing both. The entrepreneur will not only manage the organization of an enterprise and its efficiency but also create new business and innovation. As shown in Fig. 2.1, the entrepreneurship found in the boundary where agricultural enterprises move toward leap and development toward corporate management is clarified. In the analysis, it is examined in particular what is the relationship between business development and managerial skills, organizational capabilities, institutions surrounding the enterprises, and the environment.

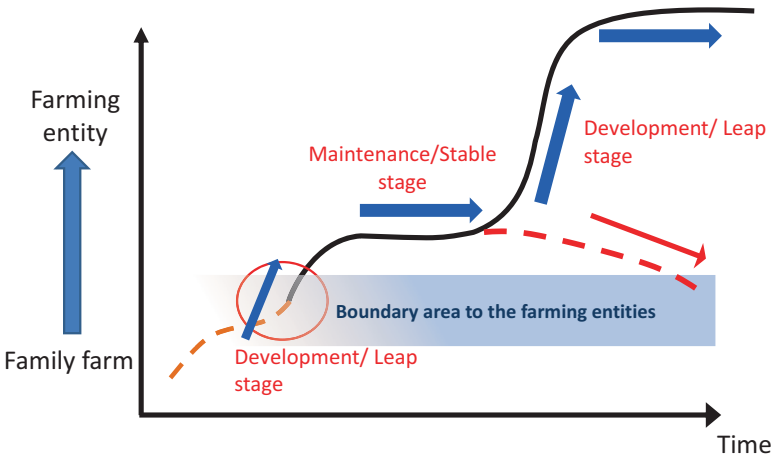

Fig. 2.1 Development stage of agricultural management

The outlined features of agricultural enterprises dealt with in this chapter are pointed out by Oda et al. (2013)[1]. In the study, six elements are pointed out as (1) separation of management and governance, (2) quantitatively stable sales, (3) securing creditworthiness that can respond to sudden fund demand, (4) securing the company form such as full-time employment and development of various regulations, (5) annual production, processing, and selling, and (6) the stable quantity of agricultural products and processed goods, etc.

These outline features can also be achieved by gradually expanding the scale of stable production and sales of established agricultural products and services to a certain extent. However, in this chapter, while accurately grasping the opportunities to make the leap "management leap" with the stable production technology and sales path established within the management as the management basis, incorporate it into the existing stable business foundation by utilizing the opportunity The dynamics that develops into enterprise agricultural management is regarded as 'entrepreneurship'.

In this chapter, the object is the development process in three agricultural enterprises: two enterprises in the Kinki region (middle region in Japan) and one enterprise in the Netherlands. Today, agricultural enterprises that make a rapid leap in Japan are emerging, and while these agricultural enterprises use agriculture as the main axis of management, they collect/ship, transport, process, and consult. Specifically, in this chapter, the enterprises that are cultivating a wide variety of vegetables and securing stable sales are being focused.

Many researches, such as Goto et al. (2009), etc. have been discussed with management qualities and management abilities. However, it is thought that the dynamics that will achieve the rapid leap seen today does not belong only to management skills but it is the dynamics to capture as the ability of the agricultural management as a whole and the crossover effect with the external environment. Nonetheless, the researches on the entrepreneurship theory in agriculture are extremely limited. Various theoretical achievements and problems are the premise of discussion, including the specialty of agriculture and commonality with other industries. So, now it is necessary to clarify the case and start the case analysis.

Therefore, in the next section, we will outline the entrepreneurship theory, especially theoretical framework based on the knowledge of agricultural sociology in Europe. Following the discussion of the theoretical framework, the research method is explained. Then, we will capture and visualize whether it has developed into a corporate management (Sect. 2.3). In the discussion in Sect. 2.4, we analyze how the case management faces the "opportunity to leap forward" as an element of management development and consider the role of entrepreneurship in agricultural rural

[1] "Agricultural enterprises" discussed in this document is defined as a generic concept that are practically and soundly responsible for agriculture in Japan. Specifically, there are various Agricultural enterprises with various management forms such as traditional family farms, enterprise agricultural management entity considered to be advanced. The enterprise management discussed here refers to a corporate agricultural management.

areas. In the last section (Sect. 2.5), it is discussed the direction of the entrepreneurship research in future agricultural business science.

2.2 Entrepreneurship in Agriculture

In considering the entrepreneurship, this chapter assumes the recognition that it will not develop into agricultural enterprises only with the unique ability and personality owned by management. Until now, as an element of agricultural management studies, scale theory by expansion of cultivation area, agricultural distribution theory such as change of sales method, and agricultural technology theory such as cultivation of good quality have been developed. Among them, it has been pointed out that the management skill and organizational capabilities are important factors. In this chapter, it is not a necessary and sufficient condition of entrepreneurship which showed the dynamics to develop to an agricultural enterprise, and the management including officers and employees is referred to as its elements. In addition to understanding with the concept of 'entrepreneurship', it is believed that the support system, history, network, region, etc. to capture and utilize leap opportunities play an important role.

Now, the existing research on entrepreneurship is reviewed after Schumpeter (1934). After describing that Schumpeter gains the founder's profit by changing the way of combining production factors by entrepreneurs and that it is the driving force of economic development, we have been working on improving and coordinating activities to raise the "destructive innovation" and its subsequent value. In the meaning of "gradual innovation" to do, the essence of entrepreneur has been meaningful. Since then, Chandler (1962) gave an important meaning to the improvement of "organizational capabilities" in addition to the meaning of "innovators" themselves. Among them, research has been conducted from diverse perspectives, such as focusing on risk-taking of management, emphasizing the development process of the market, and focusing on launching and managing new businesses.

On the other hand, research on entrepreneurship in agriculture is limited. The reason for this is that in the agricultural field, in general, the number of new farmers is limited, the market is under complex regulations, the family is the main worker of labor, and management and governance are not separated. (Alsos et al. 2011). Among them, in Europe and the United States, research on demographics data of individuals such as gender, life story of entrepreneurs in agriculture (Camarero et al. 2009), research on organizational capabilities such as personnel training, and personnel recruitment supporting entrepreneurs (Akgun et al. 2010) have been carried out. In addition, some researchers analyzed the pluri-activity (Alsos and Carter 2006) to maintain and improve household income by multifaceted management development of farmers, and the network and culture of the region based on the local society and tradition which greatly influence entrepreneurs (OECD 2015) have also been advanced.

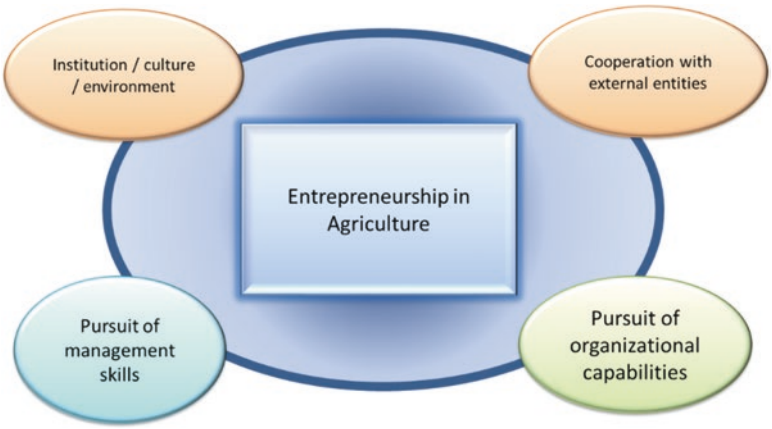

Fig. 2.2 Analysis Framework on Entrepreneurs

The entrepreneurships captured by these existing researches are summarized into three perspectives: "abilities of individual manager", "capabilities of organization", and "institution, culture, and environment surrounding management". However, in these existing studies, the necessity of collaboration with external entities is stated, but no mention is made about the impediments of collaboration and the way of cooperation. In addition, when targeting agricultural enterprises in Japan, since human resources, consultants, and financial markets surrounding agriculture are immature, it is important to find out how to cooperate with external entities and how to discover them.

Based on the above, in this chapter, as shown in Fig. 2.2, management skills, organizational capabilities and environments surrounding the management are pursued to achieve the outline features. In addition, it is analyzed that it is a factor that enables entrepreneurship in agriculture, by collaborating with outside entities that enable these and creating relationships.

2.3 Multisectoral Farm Business Development in Japan

2.3.1 Farming Entities Are Emerging

Recently, in Japan, farming entities demonstrating a dramatic breakthrough in their development are emerging. Such entities often extend business activities beyond farming as such to other entrepreneurial endeavors, including distribution (i.e., collecting and marketing) of agricultural products, transportation service, food processing, and mail-order and Internet sales. The emergence of these entrepreneurial endeavors has led to this study to examine how agricultural entrepreneurship can be materialized. More specifically, this chapter aims first to propose a theoretical

framework to analyze the agricultural entrepreneurship, then using case studies, to elucidate the process of entrepreneurial business development and characterize essential features of agricultural entrepreneurship.

Until recently, research on farm business development in Japan has tended to center on the managerial ability of farm executives (owners or managers), yet paid scant attention to entrepreneurship. While entrepreneurship with innovation as its central element has been considered the primary engine of economic development, it has distinct meanings for a diverse range of researchers, namely, innovation, establishment of a market, and creation and management of a business, and hence has resulted in varying approaches to investigate it. In Europe, for instance, researchers have articulated agricultural entrepreneurship with competence of farm managers, organizational capability, policy measures and institutional frameworks, and government. In Japan, where private financing, consulting services, and human resource providers are way less developed than most European countries and some in the Americas, farm managers attempting to embark on entrepreneurial activities are faced with many challenges and need to figure out alternatives, such as networking with partners with similar interests. Despite the dearth in research on entrepreneurship, therefore, researches on farm management should delve into agricultural entrepreneurship to better support rising entrepreneurial farm entities.

2.3.2 Rokuji-sangyo-ka and Japan's Agricultural Cooperatives (JA)

Rokuji-sangyo-ka means, if translated literally, sixth or hexadic industry or industrialization. It also means fusion or synthesis of primary or first, secondary, and tertiary industrial sectors. 1 + 2 + 3 makes or 1 × 2 × 3 makes 6. That's why six.

First, it is introduced about some of backgrounds against which *rokuji-sangyo-ka* has emerged in Japan's farm and food sectors. One of many dire problems facing Japanese farm and rural sector is decline in income and rural economy. As consumer demands have diversified, retail sectors are eager to respond to them by developing new products and, as a result, increase influence and control over upstream side of the value change, that is, primary sector, resulting in lowered prices of products. While the downstream sector may gain more added values, the most critical problem is that primary sector producers, such as farmers, tend to be left out from such benefits. Global competition can exaggerate the pressure to lower product prices. Aging and depopulated rural communities just lose economic vitality.

In response to the situation, *Rokuji-sangyo-ka* movement intends to help primary sector producers, or farmers, increase their income by integrating pluri-sectorial business activities. By doing so, farmers are expected to be able to market their products, control prices, gain profits from added values that would belong to downstream players, increase income, and contribute to revive local economy. *Rokuji-sangyo-ka* business can be instigated in different ways. But one of the most

straightforward examples is an initiative of a farmer who wishes to do processing of his or her products by his/her own and market and sell it directly to consumers. With this business model, the farmer could gain more from added values. Or another pattern is an initiative to start up a joint venture with players of other sectors such as processing and retail.

From my past research, there are diverse patterns of *Rokuji-sangyo-ka* business development. This one, showing an ideal typical pattern of some farmers, demonstrates that *Rokuji-sangyo-ka* can be done by outsourcing processing. The next one is a more comprehensive pattern in which a farmer incorporates processing and direct sales to retailers of consumers. As the business goes well and sales increase, oftentimes, more ingredients are needed. So, some farmers doing processing and marketing would build a network of collaborating growers who supply ingredients. The last pattern demonstrates a more complex business endeavor that incorporates more service-sector-oriented business combining vineyard with restaurant, café, or wedding service.

In the agri-food value chain in Japan, Japan Agricultural Cooperatives, JA for short, have been playing vital roles in connecting products of predominantly small-scale farmers to the downstream sectors; but JA is now faced with the same problem of lowered product prices.

2.4 Outline of Case Examples and Dynamics in the Development Stage

In this chapter, as case studies of the dynamics of management development by three agricultural enterprises, we will find how entrepreneurs get opportunities for leaping, create organizations necessary for commercialization, and cooperate with external entities. In doing so, we also consider the systems, culture, and environment surrounding each management entity. The case study was conducted from April 2015 by visiting KOTO-Kyoto Co., Ltd. (Kyoto City, Kyoto Prefecture), HANKYU-Sennan Green Farm (Sennan City, Osaka Prefecture), and Green Farm IMAI (Netherlands). In each survey target area, we asked about management situation and management development stage.

2.4.1 Case 1: KOTO-Kyoto Corporation

2.4.1.1 Management Overview

Mr. Toshiyuki Yamada, who is the representative director, retired from the apparel company he had worked in before in 1995 and succeeded to his farming. The managerial content at the time was a monogram management of *KUJO-Negi* (traditional green onion in Japan), but with the aim of sales of 100 million yen, he reviewed the

cultivation system and promoted work efficiency. In the second year, there was a prospect of establishing Annual Cultivation[2] by *KUJO-Negi* single production, but expansion of sales by *KUJO-Negi* single crop is limited by shipment only to the wholesale market. Therefore, in 2000, he began working on cut products, aiming at commercialization of surplus items and direct sales to restaurants and food companies. With this being highly popular from consumers to the Kyoto vegetable brand, this cut products gradually expanded the sales destination mainly in the ra-men shops in the Kanto region.

After that, in order to improve the efficiency of cut processing, he completed the factory and opened a 2004 fowl farm in order to produce poultry feces necessary for *KUJO-Negi* production. However, in the same year, due to the influence of the bird flu problem in Kyoto Prefecture that caused the movement limitation took place. So, he needed to rebuild business management centered on processing of *KUJO-Negi* rather than expansion. He organized "Kotonegiki-kai" in 2009 with 24 regional farmers. Members of this association include not only agricultural producers in Kyoto city but also agricultural producers of neighboring municipalities. Therefore, it is possible to disperse the time of planting and harvesting, and it is possible to respond to various factors that change the harvest volume. In addition, unification of fertilizer and agricultural chemicals to be sprayed and standardization of work procedures have also been taken as measures against the fluctuation factors.

In this way, it is seen from this case that he organized "Kotonegiki-kai" to build close relationships of trust with regional producers and established business management, and it is a source of the leap of the corporation. Also, in order to achieve steady growth in sales of 1 billion yen as his next target, he is setting up a new factory and starting work on processed products such as sauce and oil other than cutting.

2.4.1.2 Entrepreneurship to Support Leap

The entrepreneurship that supports the leap that is extracted from case 1 is represented as shown in Table 2.1. As Mr. Yamada's superior managerial ability, which is the first element of entrepreneurship accompanying business development, the following five points can be pointed out. The first is "early efforts on processed agricultural products and research and development for production of processed products". The second is "establishment of vegetable cut factory and contract with new farmers". The third is "further development of management base". The fourth is "the center responsible for conservation of regional agriculture and agricultural resources", and the fifth is "shift from market shipment to direct sale".

Next, the following six points can be pointed out as being the second element of organizational capability. The first is "nurturing department manager of production

[2] In fruit farms, it is generally difficult to annihilate, but in order to prolong the harvesting period, they combine several items, tackle new cultivation methods, manage management and networks in areas with different natural conditions.

Table 2.1 Entrepreneurship extracted from case 1

Pursuit of management skills	Pursuit of organizational capabilities	Institution, culture, and environment	Cooperation with external entities
Rapid efforts on processed agricultural products and R & D for production of processed products	Fostering department managers of production department, processing department, sales department	Consistent support from consumers to the Kyoto vegetable brand and support system for agricultural cooperatives and administration	Formation of group among local farmers
Establishment of vegetable cutting factory and contract with new farmers	Respecting traditional items and thorough production control	Received numerous awards on Sixth Industrialization	Formation of network with farmers in other areas
Further development of management base inherited from parent generation	Training farm successors who will be responsible for the next generation in their farms and contract farmers	It is responsible for local agricultural production and takes over agricultural resources to the next generation	Collaboration with agricultural management with similar management view
Center responsible for conservation of regional agriculture and agricultural resources	Our factory also gets JGAP along with the field		
Shift from market shipment to direct sale	Inheritance and transmission within the organization of production technology and know-how		
	Employment and training of employees who shape various ideas		

Source: Interview by the author in April 2015

department, processing department, sales department"; the second is "respect for traditional items and thorough production management"; the third is "succession of farmers responsible for the next generation in their farms and contract farmers"; the fourth is "acquire JGAP at its own factory along with the field"; the fifth is "procurement and know-how within the organization in the organization"; and the sixth is "employees who form various ideas of employment and training of staff". Especially, we have created an organization that takes various ideas together, with employees who have been working together in the development of management together as the responsible person of each organization within the company.

The following three points can be pointed out about the third element, the institution surrounding the management entity and the cultural environment. The first is, "consistent support from consumers for the Kyoto vegetable brand and support

system for agricultural cooperatives and administrative agencies"; the second is "received numerous awards on the sixth industrialization (2013 agriculture and food industry innovation grand prize, 2014 Kyoto Creator grand prize, etc.)"; and the third is "responsible for agricultural production of the region, and takes over agricultural resources to the next generation". There is no doubt that Mr. Yamada's own managerial skills and entrepreneurs are elements of significant leap in this case, but there is no doubt that tradition and culture surrounding are also necessary to mention the influence of various systems such as environment and agricultural policy. In particular, administrative efforts to improve and maintain brand value and the role of agricultural cooperatives cannot be overlooked. While the multisectoral farm business project is being promoted by the Japanese government, it has got numerous awards as a success example and has been taken up in many media.

2.4.2 Case2: HANKYU-Sennan Green Farm Corporation

2.4.2.1 Management Overview

In order to sell agricultural products, JAS organic certification was acquired at Hankyu Department Store, a plan to launch agricultural venture was formulated, and Hankyu Sennan Green Farm was established as a group company in September 2003, and then production started from 2004 there. In entering, it attempted to enter the area near the department, but because it was difficult to gain local understanding of local farmers as it entered agriculture from other industries, the current base owned by Osaka prefecture was settled. The current management areas are Sennan Farm in Osaka (2 ha) and Uda Farm in Nara Prefecture (3 ha and 500m altitude).

After establishment, farming was started with three people, mainly Mr. Kazuo Oshima who was dispatched from the Hankyu Department Store Food Sales while receiving financial assistance from the head office. Although only Mr. Oshima remains among the first members, Mr. Shimada who joined the company as part-time employee 1 year after farming is currently supporting the management as a director.

Initially, the total amount of crop produced was sold to the Hankyu Group, but after 2 or 3 years of establishment, it began selling elsewhere. The current sales amount is 750 million yen, but half of them are sold to Hankyu Group. Regarding other sales, contract sales are the main focus, and main sales destinations are convenience stores, trading companies, restaurants, etc. Current main products are baby leaf, lettuce, etc. The contract amount is decided half a year earlier.

Regarding picking and shipping businesses which are pillars of management in addition to the production department, he operates collection shipping facilities from the consciousness that screening and packaging are a big burden for farmers. This pickup site selects and stores agricultural products of cooperating farmers as well as the company itself by installing the air conditioner in the container, so that it can function as a refrigerator. This directly managed base exists in three places,

Sennan City, Kaizuka City, and Uda City. All centers are located in the suburbs of metropolitan areas, as freshness is important because it is produced mainly from soft vegetables; it is the result of promoting the base sticking to the suburbs. In addition, he has consignment bases at two locations, Moriyama City (Shiga Prefecture) and Yosano City (Kyoto Prefecture), and he has established a collaborative framework capable of producing locality relays. By setting up such a pickup place, it is possible to reduce the loss generated during distribution.

As of 2015, 50 people work as employees, of which 10 full-time employees and 40 part-time jobs are included. All employees are promoted from part-time jobs, and all employees start from part-time jobs at the recruitment stage. The recruitment activities here are conducted independently of the headquarters. Even after being promoted to an employee, the class is finely set, and the basic salary is fluctuating according to the class.

In this way, at Hankyu Sennan Green Farm, under the provision of funds from parent company, he achieved high stability of cultivation technology in trial and error, and gradually expanded the sales channel. While expanding sales channels, he felt the necessity of annual supply of leafy vegetables (especially in the summer), deepened the relationship of cooperation with farmers in high cold areas, established annual supply system, and established production and shipping standards. Then, he increased the sales amount dramatically (about 100 million yen in fiscal 2009, about 200 million yen in 2010, about 3.5 billion yen in 2011, about 500 million yen in 2012).

2.4.2.2 Entrepreneurship to Support Leap

The entrepreneurship that supports the leap that is extracted from the above cases is represented as shown in Table 2.2. As Mr. Oshima's excellent managerial capability which is the first element of entrepreneurship accompanying management development, the following four points can be pointed out. The first is, "strong commitment to the quality and taste of agricultural products to produce", the second is "further development of management foundation supported by parent company", the third is "central to the conservation of regional agriculture and agricultural production resources", and the fourth is "expanding sales channels in-house from the shipment centering on group companies". Particularly, with the aim of further developing the management infrastructure which was initially invested with support from the parent company, he advanced the standardization of cultivation technology and the establishment of a production center relay system in the suburbs to secure summer leafy vegetables. It can be said that it has become a place for leap to find new business opportunities and to construct current management.

Next, the following two points can be pointed out as the second element of organizational capability. The first is "employment and training of executives and employees and support for farming", and the second is "manualized production technology and succession and transmission of production know-how within

Table 2.2 Entrepreneurship extracted from case 2

Pursuit of management skills	Pursuit of organizational capabilities	Institution, culture, and environment	Cooperation with external entities
Strong commitment to quality and taste of agricultural products to produce	Employment and training of officers and employees and support for farming	Presence of a certain number of customers seeking organic farm products	Collaboration with an entity that draws out the strengths of agricultural products to produce
Further development of business foundation supported by parent company	Manualization of production technology and inheritance/ transmission of production know-how within organization	Deregulation of enterprises over entry of agriculture	Collaboration with agricultural management with similar management view
Center responsible for conservation of regional agriculture and agricultural production resources		Ability and technology possessed by spin-off entrepreneurs	Formation of wide area farmer network from Hokkaido to Shikoku
Shift from group company focus to expansion of sales channel in-house			

Source: Interview by the author in May 2015

organization". He repeatedly explain at the in-house study meeting to improve the cultivation technology of organic cultivation. The fact that a reliable succession system of technology and know-how has been established has become the background to support the leap.

The following three points can be pointed out about the third element, the institution surrounding the management entity and the cultural environment. The first is "existence of a certain number of customers seeking organic agricultural products", the second is "various deregulations concerning entry of enterprises into agriculture", and the third is "ability and technology possessed by spin-off entrepreneurs". There is no doubt that Mr. Oshima's managerial skills are elements of significant leap in this case as well. However, in this case, it is also necessary to pay attention to the effects of various deregulations relating to entering agriculture enterprises and changes in agricultural policies. In particular, it is considered that the source of the leap in this case is that both managerial skills owned by Mr. Oshima who has a career as a sales employee and a farmer's spirit based on the characteristics of agriculture are compatible.

Finally, the following three points can be pointed out regarding cooperation with the external entity which is the fourth element. The first is, "collaboration with an entity that draws out the strengths of agricultural products to be produced", the second is "collaboration with agricultural management with a similar management

view", and the third is, "Japan's agriculture formation of a network of people". Even in this case, as it was based on organic cultivation in addition to being a company entrance case, there were many cases that he was envied from local farmers and received criticism of management policy. Regarding the cultivation method of organic cultivation in which the harvest volume is not stable, he set a number of antennas and purchase information on improvement to stabilize the harvest volume and make the officers and employees confident. By doing so, employees proceeded to purchase information on new cultivation techniques and deepen their relationship with other organic cultivation agricultural enterprises.

2.4.3 Case 3: Green Farm IMAI

2.4.3.1 Management Overview

Mr. Hiroyuki Imai, the representative director, is a farmer working on tomato cultivation in Hadano City, Kanagawa Prefecture. In the high school days, he was fascinated by the high technology of the cultivation of tomatoes in the Netherlands he visited during agricultural training and frequent repeated visits to the Netherlands after the high school graduation. He had been trying to develop management to produce the same quality by adding the Netherlands skill to the characteristics of Japanese varieties.

In business operation in the Netherlands, he launched a company called "A + G van den Bosch" co-financed by the agricultural management entity of the training destination in 2011 and owns five large-scale facilities (total 5 ha). Mr. Imai is mainly using one of the buildings, producing and selling tomatoes. In addition to conducting electricity sales business and tomato production, he utilizes heat and electricity supplied by cogeneration, reducing initial investment due to construction of the facility by environmental control in the house using hot spring heat. In the case of the Netherlands, the carbon dioxide pipeline used for facilities and horticulture by the government and irrigation and drainage canals were improved, and the existence of many entrepreneurs in the surroundings also greatly affected the success of business operations in the Netherlands. Cultivated tomatoes are often used in Japanese restaurants and exported to Japanese restaurants in Russia and the Middle East as well as within the EU.

In addition, Green Farm IMAI is working on importing and selling agricultural production materials to Japan in cooperation with trading companies and also has been working on consulting business that simultaneously provides cultivation technology and production know-how that he has cultivated up to now, and it is planned to be independent as a new business division.

2.4.3.2 Entrepreneurship to Support Leap

The entrepreneurship that supports leaps extracted from case 3 is represented in Table 2.3. As Mr. Imai's excellent managerial capability which is the first element of entrepreneurship accompanying management development, the following four points can be pointed out. The first is, "the foresight that focuses on high agricultural technology in the Netherlands", the second is "challenge mindset overseas business development", the third is "fusion of agricultural technology between the Netherlands and Japan", and the fourth is "Japan consulting to domestic and foreign agricultural enterprises". In particular, he combines Japan's fine cultivation management technology with Dutch production technology, exporting agricultural products to various countries around the world. In addition, advancing the consulting business that provides built-up production management technology to other agricultural enterprises as a package can be said to have made a leap for the construction of the current management.

Next, the following two points can be pointed out as the second element of organizational capability. The first is "reliable information transmission within management and inheritance of cultivation technology" and the second is "securing excellent migrant workers from overseas (especially Eastern Europe)". In order to possess multiple houses of 5 ha scale, he will promote information sharing about the cultivation situation and harvesting situation, promote nurturing and securing migrant workers from abroad, and ensure technology and know-how.

The following three points can be pointed out about the third element, the institution surrounding the management entity and the cultural environment. The first is,

Table 2.3 Entrepreneurship extracted from case 3

Pursuit of management skills	Pursuit of organizational capabilities	Institution, culture, and environment	Cooperation with external entities
A foresight that focuses on the high agricultural technology in the Netherlands	Transmission and inheritance of reliable information and cultivation technology within management	Dutch culture with information sharing place regardless of industry	International collaboration of industry, government, and academia
The challenge of business development overseas	Securing excellent migrant workers from overseas	Development of diverse production base by the government	Cooperative management with local producers who agree with the management philosophy
Fusion of agricultural technology between the Netherlands and Japan		Improvement of labor environment for immigrants	Export of production materials in collaboration with trading companies
Consulting for domestic and foreign agricultural management			

Source: Interview by the author in August 2015 and 2017

"a place of sharing information regardless of industry", and the second is "improvement of production base by the government", and the third is "improvement of labor environment for immigrants". There is no doubt that Mr. Imai's management skills and the four Dutch people who jointly manage the system to support Mr. Imai are important factors in this case. However, the culture and environment peculiar to the Netherlands in particular has a major influence on entrepreneurship in agriculture. For example, immigration has become an important labor force.

Finally, the following three points can be pointed out regarding cooperation with the external entity which is the fourth element. The first is, "international collaboration of industry, government and academia", and the second is "joint management with local producers who agree with the management philosophy", and the third is "export of production materials in collaboration with trading companies". In this case, there were many opinions regarding the management and cultivation policy, but with the support from the residents and the government, business management in the Netherlands is indispensable. Originally, there were plans to sell tomatoes produced in the Netherlands to Japan, but Mr. Imai collaborated with a trading company to increase Japan's agricultural skills by introducing various production techniques, know-how, and production materials.

2.5 Findings: Entrepreneurship in Management Development

Many of the agricultural enterprises that expanded the sales amount today as well as the three cases mentioned as examples in the previous section are triggered to tackle the collection and shipping, processing, and transportation. As a result, it has made a leap and has developed business. These agricultural enterprises will increase their sales by buying agricultural products from local farmers. By increasing such sales value to stabilize the financial base of management, it is possible to easily expand the company farm and develop processing business.

Although it is easy to imagine that the opportunities to make such leaps of management differ depending on natural conditions, life history of entrepreneurs, development process of management, as common points extracted from case analysis, the characteristics of agriculture, the following points can be pointed out. First, it is compatibility between the entrepreneurial qualities and farmers' spirit. Although each case has undergone management development with business other than farming, at the present stage, agriculture is also based on management, and the fact that agricultural production is carried out leads to trust from the region and consumers in terms of aspects.

Second, it is precisely to grasp and exploit opportunities that will make a leap forward. In order to switch opportunities to leap a chance opportunity accidentally happening while bearing a certain risk, entrepreneurship as an organization is thought that training of human resources is necessary.

Third, it is the importance of institutions, culture, and environment surrounding management to raise funds and expand production base. In each case, they effectively utilize the policies and institutions that the government and JA do and effectively procure funds and human resources to support drastic management development. Also, in each case, the environment where the existence of entrepreneur creates the next entrepreneur is being arranged.

Finally, in order to demonstrate the above three cases more effectively, collaboration with external entities that bring out the strengths and advantages of own management is being done. In particular, it can be pointed out that it is building networks among entities with common management philosophy and problems, and enhancing mutual brand power.

2.6 Conclusion

In this chapter, in order to analyze the entrepreneurship in agriculture, not only the capabilities and qualities of individual managers but also the environment/condition were influenced. As a result, in addition to superior managerial skills, we also have the ability to draw management skills and ideas, make effective use of institutions surrounding our own management, culture, and the environment, and collaborate with external entities that draw out the strengths of the management. It was analyzed that the four elements are combined and the agricultural management body has developed dramatically. Moreover, in order to compromise the impeding factors occurring between these four elements, it was made clear that they are trying to adjust inter-organization conflicts.

Based on the case studies in this chapter, given the current situation of agricultural management based on family management and the characteristics of agriculture receiving certain restrictions from agricultural production resources within the region, there are two roles that management plays in the region. First, it is a role of a “supporter” to support farmers in the area in various situations. It serves not only as a stable distributor of necessary agricultural products and as a source of management information but also as a source of funds. It also requires functions as a hub and hub for farmer networks within the region.

Second, it is a role of a “mediator” to coordinate and mediate various conflicts that local communities and other entities have. It is responsible for coordinating conflicts between local producers and for coordinating shortage and unused resources in the region

Based on this chapter, the future issues of the entrepreneurship theory in agricultural management studies are as follows: (1) change of the position of agriculture inside the management at the time of management development, (2) diversification and complication of business such as tertiary industrialization, (3) grasp management resources supporting the profit structure of agricultural management, etc. are considered necessary for deepening research.

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Chapter 3
Business and Manager Development in Agricultural Corporations: A Case Study from Japan

Takashi Sakaue, Yosuke Chomei, and Teruaki Nanseki

Abstract This chapter discusses business and manager development in agricultural corporations. First, the current situation of business development and innovation in large-scale vegetable farming is clarified. Then, the methods for human resource development are analyzed. As a result of this analysis, with regard to market adaptation and business development, it is pointed out that agricultural corporations have followed a business development process associated with market adaptation, consisting of a reaction to apparent demand, discovery of latent demand, and new demand creation. In addition, for business development, it is important for agricultural corporations to make continuous efforts to create customer satisfaction through the use of an "innovation triangle," which is composed of production, process, and mind innovation. Then, the relations between manager development methods and management of risk and information are considered. Specifically, we describe a promotion framework according to job titles: from farm worker to process manager, production manager, farm manager, and eventually business manager. Moreover, we outline a risk management process that shows each individual's role while experiencing a variety of information management tools. However, as employees are promoted, it becomes increasingly difficult for them to realize their full potential by simply learning the rules and procedures of their work. In becoming a candidate for positions like production manager, farm or department manager, or even general business manager, it is highlighted that, based on the employee's determination and self-awareness, agricultural corporations can only provide different opportunities to accumulate various experiences and a good learning environment for the employee. In the future, we expect to conduct more case study analyses to obtain a basic knowledge to formulate a theory on business and manager development methods in agricultural corporations.

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A. Kiminami (ed.), *Entrepreneurship and Innovation in Japanese Agriculture*,
New Frontiers in Regional Science: Asian Perspectives 32,
https://doi.org/10.1007/978-981-13-8055-6_3

Keywords Manager development · Agricultural corporation

3.1 Introduction

The environment surrounding the agricultural sector in Japan is undergoing great change. The role of managers is to discover business opportunities amidst this rapid change in the business environment, as well as to promote further business development. However, problems do arise in practice, and there would be no sustainable development without the designed solutions to these problems. In this process, both gradual improvement and rapid reform (innovation) are essential. The managers that form the driving force behind the latter in particular are thought to be the entrepreneurs "burning with enthusiasm for creating new work, and with attitude for boldly challenging themselves with high risk" (translated from Digital Daijisen; http://dictionary.goo.ne.jp/jn/).

This chapter discusses business and manager development in agricultural corporations. As is well known, Schumpeter considered innovation as a novel combination of various production elements and thought that such business activity could lead to economic growth. In other words, the driving force behind the development of both economy and business activity is innovation, which is propelled by entrepreneurs (Inamoto and Tsuya 2011). Kubo (2005) indicates that the part of the phenomenon whereby entrepreneurs produce greater value than anticipated by acquiring and combining both internal and external resources may be considered as innovation. Moreover, entrepreneurship can be regarded as the behavior and process whereby entrepreneurs find opportunities under uncertainty and, while taking risks, achieve innovation and/or make use of the opportunities to pursue the rent obtained accordingly (i.e., costs, forecast in advance, deemed necessary for acquiring and combining resources).

In recent years, there have been also discussions focused on "new agricultural business management," involving "corporate business," "corporate agricultural business," and "agricultural corporate enterprises (agribusinesses)." Yagi (2000) indicates the following seven points as the characteristics of the "new agricultural business," which differ from previous patterns such as self-management: (1) management that actively promotes expanded scales and scopes of projects; (2) active planning and effective use of external supply of management resources in the processes of expanding project scales and scopes; (3) a trend toward incorporation such as limited companies; (4) implementation of "strategic management"; (5) a market-orienting ambition; (6) socialization of management through the provision of finances and services according to societal needs, as well as rational project activities; and (7) managers' role constituting an important core of business.

Uchiyama (2011) comments on the difficulty in discussing "new agricultural business" in terms of classical business organization, as it becomes complicated to judge elements such as labor and property by external standards. Inamoto and Tsuya (2011) detail the importance of novel ideas on innovation process and

management—namely, the importance of ambitions centered on value-based thinking and of long-term strategic frameworks of "value creation and value acquisition" rather than the short-term ones. The authors indicate that while in other industries this will often stem from the differences in previously accumulated, technical aspects specific to an enterprise (e.g., core competencies, human factors), in agriculture, differences in natural conditions such as soil and climate will also often be crucial. Oizumi (2001) suggests that, in order to get constant growth for a business, it is important whether managers constantly move toward innovation—i.e., whether individual managers are aiming to be innovators. Moreover, according to the author, entrepreneurs are not necessarily directly tied to management forces of business growth and innovative manager behavior, detailing the need for concrete business objectives and actions to achieve them. Concerning the corporatization of agricultural businesses, Ishizaki (2001) addresses the characteristics of small and medium enterprises. The author indicates that it is necessary to build some competitiveness in order for these smaller businesses to survive and that the direction toward this relies on expanded scale and venture projects.

Furthermore, Takahashi (2014) considers entrepreneurial activities in Japanese agriculture: in addition to indicating that the "actors" in the sector's reform would be "entrepreneurs" capable of implementing it through economic activity, the importance of "constructing a culture" able to produce "entrepreneurs" and farming communities is highlighted. Oda et al. (2013) propose "agribusiness" to generally indicate the various agricultural business management entities which run Japanese farming activities and point out the role of leading farms carrying out advanced, pioneering agriculture in the region. Additionally, they indicate their expectations for the development of human resources to handle next-generation agriculture.

In terms of business size, agricultural corporation management in Japan corresponds to small and medium companies in other domestic industries and to agricultural business in other major developed countries; accordingly, human resource development has become a significant issue.

Nanseki et al. (2014) focus on information management and, while referencing systems for agricultural human resource development in other major developed countries, provide basic knowledge for sketching out appropriate corresponding systems for next-generation agriculture in Japan. Specifically, they combine situational and statistical analysis, and comprehensively illustrate the relationship between the trends in human resource development and frameworks for such development and skill improvement in utilizing ICT.

As previously noted, there has been much research about innovation and entrepreneurship in the Japanese agriculture. However, there are essentially limited studies discussing the development of agricultural human resources, including manager development, in connection with the management of risk and information in agricultural business, which has developed markedly.

Accordingly, based on research about human resource development, risk management, and information management in agricultural business (Nanseki 2011; Nanseki et al. 2014; Sakaue 2013; Sakaue and Nanseki 2013; Sakaue and Nanseki 2014a, b), this chapter presents a study that also includes ideas and experiences

from managers. The paper's lead author became engaged in agriculture as the successor to a family business, which over 20 years has progressed from an individual business to an incorporated one, overseeing business growth by several tens of times in terms of cultivated area, number of employees, and sales; he is also involved in agricultural business research as a part-time doctoral student.

This paper focuses on the agricultural production corporation Sakaue Co., Ltd., starting from details on the state of its business development and innovation. Next, the paper describes human resource development frameworks for bringing about innovation. Specifically, Sect. 3.2 outlines the company and its business development. The paper also introduces thoughts and ideas on innovation acquired through practical experience of the managers and then comments on the attitudes and abilities necessary for innovation, in connection with agricultural business development. Section 3.3 focuses on risk perspectives, information, and human resource management and discusses frameworks for developing human resources, from worker to manager, to further promote innovation. Finally, Sect. 3.4 summarizes the paper and highlights the future issues. Note that "business growth and development" is sometimes divided into growth of quantitative factors and development of qualitative factors; however, this paper uses the term "business development" to include both. The paper will henceforth be written from the perspective of the lead author.

3.2 Business Development, Market Adaptation, and the Innovation Triangle

3.2.1 Overview of the Development Process

Figure 3.1 outlines the process through which the business developed. The bar chart shows sales, while the line graph shows the number of employees. The numbers on the horizontal axis (95–1 through 14–20) refer to the last two digits of a year and the company's fiscal term number, respectively. Note that the sales for 2008–2014 are low due to a change in fiscal terms (Jan–Jun). The arrows below the graphs indicate thoughts and ideas, obtained through managerial experience alongside the development of the business, which are related to innovation.

Sakaue Co., Ltd. is an agricultural production corporation located in Shibushi, in the Kagoshima prefecture. In the 1960s, it was a combination of businesses run mainly by the owning family, producing sweet potatoes, tobacco, silk, and so forth. In the 1970s, green pimento pepper cultivation and beef cattle production were introduced, while in the 1980s lawn grass was produced and sold; the enterprise chose goods to fit the needs of the era and developed from a family-run farm to agricultural production corporation.

In 1992, the current representative director (this paper's lead author; 24 years old at the time) joined the business, getting engaged in agriculture with his family. He developed the business while also progressively changing the organizational structure: in 1995, the enterprise was incorporated as "Sakaue Shibaen Ltd.," became an

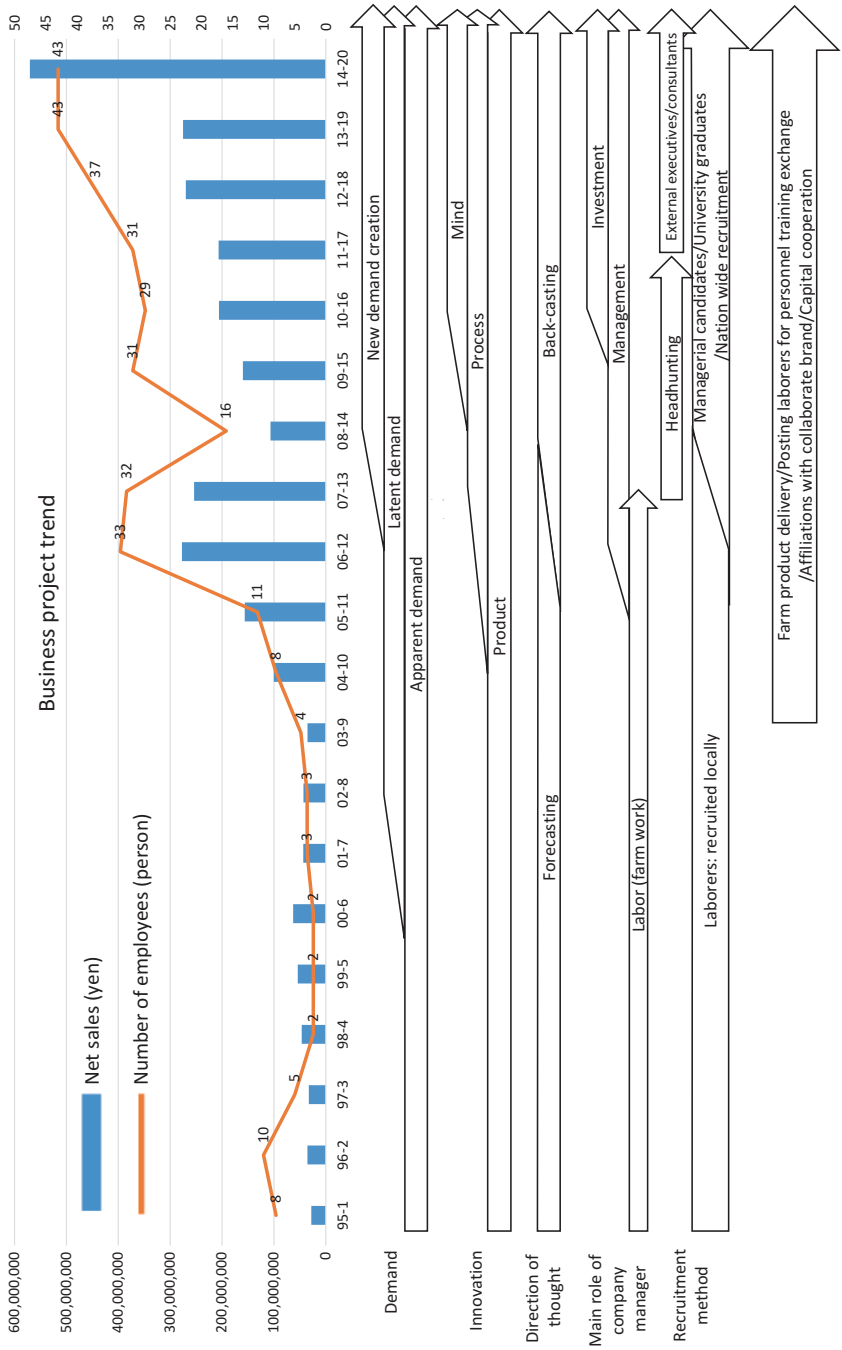

Fig. 3.1 Business development processes

agricultural production corporation in 2004, changed its trade name to "Sakaue Co., Ltd." in 2010, and so forth.

In addition to its three existing projects—contracted crop farming, livestock feed, and IT-based agricultural management—the corporation is utilizing accumulated wisdom and research results, actively furthering cooperation with companies in other fields, and is also aiming at a nationwide expansion through, for instance, joint-venture farm development and IT administration services for small and medium enterprises.

In addition to seeking to provide products and services exceeding customer expectations by always "strictly adhering to promises on quality, quantity, and time" and ceaselessly honing its capacity for planning and product quality, the company's mission is to use agricultural means to solve modern societal issues such as the increase in abandoned farming land, low food self-sufficiency rates, and the aged agricultural workers (Sakaue 2013, 2015).

The following figures summarize the general condition of the business. The company was founded in 1995; at present there are five directors and one auditor; the capital is around 52 million yen (with 48 million yen of capital reserves). There are 42 employees, and sales amount to 570 million yen (fiscal term 20; June 2014). Its main projects are contract farming, forage crops, and IT-based agricultural management; other projects include dispatching agricultural workers (for specific postings) and selling alcoholic goods. For contract farming and forage crops, the company uses 2 ha of its own farming land and 100 ha of leased land (as of June 2015) to grow crops such as kale, cabbage, potato, green pimento pepper, and dent corn; the total planted land reaches around 150 ha.

3.2.2 Market Adaptation and Business Development

Based on Sakaue and Nanseki (2014b), this section discusses the following cases of market adaptation and business development: reacting to apparent demand, discovery of latent demand, and new demand creation.

3.2.2.1 Reacting to Apparent Demand

The enterprise pursued apparent demand around 1992, when it was dealing primarily with the production and sale of lawn grass; this period encompassed the peak of the economic bubble era and the period edging toward its burst. After the bubble economy collapse, the demand for lawn grass declined each year; to strengthen business activity and secure stable employment, Sakaue Shibaen Ltd. was established in 1995. However, even having reinforced the business activity, the contracted deals would have often ended at price-cut negotiations. After the era in which it was taken for granted that "if you make it, you can sell it," the company came to experience circumstances in which even having reduced prices and increased quality,

products could not be sold. Convinced that business would cease at such a rate, the company planned to produce aokubi radish for the market. A decade of data was collected and analyzed, resulting in predictions of high prices for the following year; accordingly, large areas were planted with the crop. When it came to the shipping period, however, the price suddenly dropped sharply, and pursuing apparent demand ended up in huge losses.

3.2.2.2 Discovering Latent Demand

Having experienced the sluggish demand for lawn grass and the vast losses from marketing aokubi radish, the company began developing its business focused on "not losing a single yen, rather than making any profit." In 1996, it started contract farming of radish used to make the Oden sold in convenience stores. The experience taught here was about how to react to hidden demand other than what is written in contract agreements, highlighting the importance of offering additional, complementary "service" value. As an example of latent demand discovery, the following paragraph illustrates the actions related to shipping the contractual volumes stipulated per 1 week unit.

On the side of the food-processing factories, since effective operation of facilities and personnel is prioritized, it is important to have a year-round, secure supply of raw agricultural materials, regardless of weather conditions. Nonetheless, on the producer's side, since fields cannot be accessed on rainy days, harvests are undertaken on fine weather days. Thus, there will be shortage of raw materials in processing factories on rainy days and excess on fair days following rain. If a factory owner forces the arrangements with the producer too strongly, the latter might be unable to produce as required, causing shortages in raw materials. Thus at the time, they could not exert strong pressure on the producer. Efforts were made to control shipping in order to match the raw material stocks in the factory, even in spite of bad weather. As a result of seeing the difficulties faced by its business partner, thinking up, and implementing what could be done on the producer side, the enterprise increased its planted area every year and came to serve 17% of all branches of nationwide convenience stores.

3.2.2.3 Demand Creation

Having shifted to contract farming, the company identified the aspect leading to no losses but also to no profits (e.g., price setting), and searched for an exit strategy. The strategy was to raise sales while cutting expenses. Raising the rate of quality production was thought to be important to raise sales; for this, improving soil was crucial. This led to the idea that investing in cow manure compost, without reliance on chemical fertilizers, would have been best. The company tried deliveries of compost from livestock farmers, but as this did not turn out as expected, it then tried to produce green manure internally.

At first, the fields planted with crotalaria (rattle pods), a legume which offers roundworm control and nitrogen fixing, were plowed. However, since this crop often suffers injury by continuous cropping, the company began experimenting a variety of green manure crops, including Poaceae grass pastures. Several years later, a livestock farmer who had seen the experimental fields of sorghum asked if it was possible to share the crop while explaining the various issues with livestock farming conditions which he was facing. It became clear that there were many apparent issues, such as troubles in planting forage crops, the difficulty in securing fields for cultivating pasture, the lack of labor even with secured fields, changes in grass production machinery, and the complexity in processing compost.

From these circumstances, it was thought that several issues could have been solved at the same time if Sakaue Co., Ltd. was to produce cattle feed on a large scale, supplying many livestock farmers, whose compost in turn would have been returned to Sakaue fields. Business models involving nationwide contractors and the total mixed ration (TMR) centers, universities, research bodies, and outstanding livestock farmers were researched. Moreover, questionnaire surveys of around 100 neighboring livestock farmers were undertaken and analyzed to understand their needs and finally complete the current model of crop-livestock cooperation. In terms of timescale, the business of silaging dent corn and selling it to livestock farmers was studied in 2003, and the business itself started in 2006 (registered trademark 5089491, Sairoll).

The points highlighted by the above examples of adaptation to the market can be summarized as follows. Responding to currently visible, apparent demand is not so difficult: it is good enough to simply supply enough to fill shortages, and since the products and services are also visible, it requires merely learning from previous experiences. Thus, since responding to this demand is comparatively easy, there are accordingly few barriers to entry, making it difficult to secure profits.

Latent demand which has not emerged must be discovered independently, and only those who make the discovery are able to swiftly respond to such demand and gain some “pioneer profits.”

Creating new demand is complex, as it requires provision of future products and services which presently do not exist. However, a business able to create new demand is quite limited, and thus once it succeeds, it tends to be easy to acquire great pioneer profits.

3.2.3 Innovation Triangle and Business Development

In order to move from a family-run business to a corporation and consequently achieve great growth, broadly three types of innovation are needed. Specifically, the creation of customer satisfaction requires product, process, and mind innovation—namely, the “innovation triangle.” “Product innovation” is changing products or services, and “process innovation” is reviewing procedures and methods, while

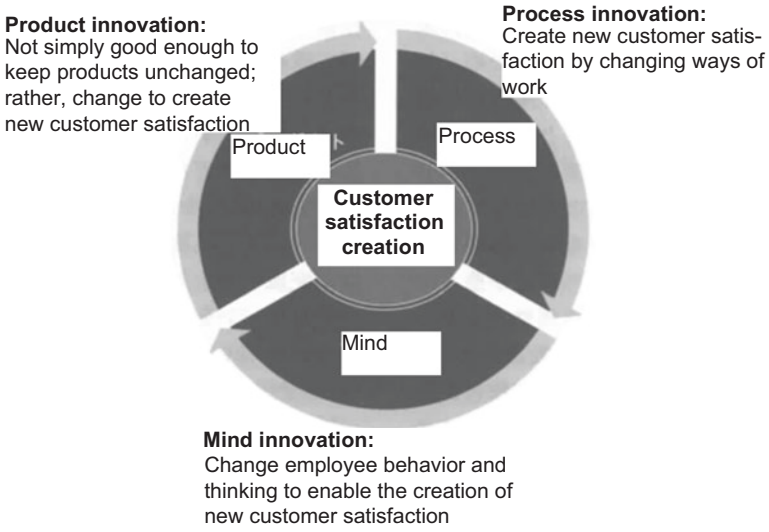

Fig. 3.2 Innovation triangle. (Source: JMA website http://www.jmac.co.jp/consul_scene/interview/200903/01.php)

"mind innovation" is changing the awareness and behaviors of people creating these elements. Figure 3.2 illustrates the "innovation triangle" of Japan management association (JMA).

3.2.3.1 Product Innovation

In agriculture, product innovation is being able to respond with precision to various risks and problems external to management, such as changes in climate, to ensure stable production of crops and stable supply of competitive products to buyers. In this way, it is thus possible to overcome a variety of issues such as securing buyers and financing or enabling the running of business of a certain scale. For Sakaue Co., Ltd., it takes around a decade to establish a business approach run solely on contractual farming.

3.2.3.2 Process Innovation

When a company develops from a family-oriented business handled only by the manager and his/her family, into an employment-oriented corporate business run alongside others, the manager faces a great shift in the way of thinking. In such a context, an infrastructure for sharing information becomes necessary. Sakaue Co., Ltd. established a method for agricultural process management by turning agriculture into a set of processes and moving operations information to databases. This is

the construction of infrastructure aimed to support employees and executives, to cope with the operational risks (Sakaue and Nanseki 2014a).

The initial trigger can be traced back to when the main project was production and sale of lawn grass, after becoming engaged in agriculture. Vegetable production requires a process from planting to harvesting for each crop, many of which are single-year crops. However, lawn grass is a perennial crop: once it has been planted, it only needs maintenance, with harvest being possible 1 year later. Lawn grass maintenance implied little process, with comparatively few restrictions. By creating a process chart for maintenance, the foundations of process management had been built at the stage of the initial engagement with agriculture. Then, when vegetable production was expanded, the same process approach, as with lawn grass, was followed. This can produce operations management structures which tend to become complicated and messy. At present, Sakaue Co., Ltd. divides farming processes into 118 categories and combines them to run its operations.

Note that even after operations have been organized into processes, as the company projects grow in scale, the amount of information to consider becomes large: multiples of numbers of personnel, fields, productions, and processes. Accordingly, the management processes used by construction managers in civil engineering offices were analyzed. Generally, the national or regional government decides a budget, which will then be distributed within a given region, and then construction projects for each area will be determined within the distributed budget. The process will have several stages: design creation for the construction projects, construction workers hired through a bidding process, construction taking place, inspection undertaken upon completion, and process end. Here, national and regional government staff execute and watch over multiple construction projects simultaneously. As the staff cannot be stationed on site, the management relies on design plans, process charts, construction completion reports, and so forth.

If we consider applying this process to agriculture, it could result in an infrastructure for coping precisely with the various risks that accompany agricultural production and thus achieve stable production, by creating plans enabling effective running of operations, undertaking progressive management through process charts, and performing checks through reports. Sakaue Co., Ltd. built a system which enables real-time understanding, from records to plans of its operations. This is an information management infrastructure for risk management, centered on an agricultural process support system (Sakaue and Nanseki 2014a).

3.2.3.3 Mind Innovation

Once competitive crops and goods production has been established as a business, and an infrastructure put in place for its continued implementation, the next stage requires personnel capable of handling most of this series of processes. However, the majority of personnel at most agricultural sites excel in their skills for agriculture, but the number of workers with sufficient management skills is limited. Previously, Sakaue Co., Ltd. tried an approach whereby members of the company

highly skilled in agriculture were targeted and gradually assigned to high-level tasks, in order to make them shift to management roles later. However, the company realized the difficulty of posting the right personnel in the right places, as suitability to agricultural work (physical labor) would not necessarily correspond to suitability to management work (mental labor). It also became clear that, regardless of the manager's intentions, if the employees themselves have neither the will, interest, nor strong enough desire, training would become difficult. Thus, a switch in human resource development methods was formulated, for instance, by having consultations with company members to understand their wants and reviewing the recruitment methods according to the specific tasks.

Specifically, it is important to understand the individual traits of each company member, and to sufficiently see, as an organization, which position they would be best assigned within the group. Efforts were also made to codify the business management philosophy and create business guidance documents, to clearly show company members the intended business direction, and to share its principles. Since these ideas will not be absorbed by company members by creating such items alone, presentations of the guidelines are held and attended by all employees. Maintenance of various types of rules—employee welfare, working regulations, stipulations on pay—and support toward independent work are also important for continued improvement of the drive and motivation of company members.

As the business increases in scale, it is important to have leaders with the sense of responsibility, as well as to increase the proportion of employees possessing a certain degree of autonomy. In some sense, this might be important also to raise employee satisfaction levels, taken from the standpoint of "company members are also customers."

It is important for innovation in agriculture that both continued and gradual improvement in product and process are present, as well as a rapid progress based on creative and innovative knowledge, as well as technical aspects. In this respect, managers must be able to change their ideas and ways of thinking according to the stage of development of the business, to progress to future stages.

In this sense, one large hurdle is whether product innovation can be achieved and business can be formed accordingly.

The second hurdle is whether or not process innovation can be achieved and an infrastructure for continued production and management can be built. Generally, in the initial stages of development, either in agriculture or in management tasks, things often will be best done by managers (skilled experts) themselves, who will tend not to rely on others (company members). Moreover, it is difficult to transfer tasks if the business is not making enough profits to cover any drop in operational efficiency which may result from relying on other company members.

The third hurdle is whether or not mind innovation manifests and company members who work independently are able to build an environment in which they can sufficiently display their abilities, and whereby responsibilities and authority can be conferred. In other words, it is whether or not the spirit, will, awareness, and thinking of company employees can be directed in the same way as those of the managers.

Considering the development processes at Sakaue Co., Ltd., the estimated sales from product innovation—the founding of one business project—are around 30 million yen. As for process innovation—setting up infrastructure—the figures are around 100 million yen. Finally, mind innovation is required to reach even higher levels.

3.3 Innovation and Human Resource Development

3.3.1 Management of Personnel, Information, and Risk

The objective of corporate business is to create profit from transactional relationships with customers and to work toward maximizing long-term profits through growth (Kiminami 2001). In order to achieve this, it is necessary to aim at a continued creation of customer satisfaction through innovation. This requires improvement in the quality of the value output by the business, moving from apparent demand toward latent demand and then to the creation of new demand—which may be also brought about through innovation.

In order to generate innovation, one must change the future—and changing the future requires management of the risk arising from uncertainty. If you cannot manage risk, it is difficult to successfully address new challenges. In risk management, in order to achieve a balance between making profit and taking risks (i.e., manager's risk appetite), it becomes crucial to gather and analyze information both internal and external to the farm. Thus, information management is essential for risk management. In this respect, the development and management of personnel possessing the ability to pursue risk and information management are important (Nanseki 2011).

3.3.2 Human Resource Development Framework

3.3.2.1 Human Resource Development Policy

Sakaue Co., Ltd. works with "the trinity of recruitment, training, and business principles in practice," as advocated by the Japanese Association of Small Business Entrepreneurs. People in line with the company's direction are hired through "recruitment" activities; they are "trained" in company thinking and presented the company's intended course through its "business principles."

Specifically, the employment system focuses mainly on new university graduates and plans the following career advancement path. In the first year after being hired, new company recruits gather experience as workers, primarily through on-site farming tasks. Starting from the second year, they become responsible for a single process as process managers. Here, employees are made responsible not only for work

tasks but also for progressive management of processes and learn the basics of management through having to consider both pre- and post-process developments. From the third year, depending on their prior achievements, employees may be offered the opportunity to become production managers, with a wide variety of duties ranging from compiling budgets to managing fields as well as workers involved in their assigned production. Negotiations with buyers are also a responsibility of production managers, with consequently a great influence on profits. Then, building on their achievements as production managers, employees may advance further and become farm managers. Farm managers not only watch over the whole variety of production, but are involved in all matters relating to the farm, including rents, complaints and claims, and external negotiations.

The foundation of manager training is learning by accumulating a variety of experiences, but the major, crucial prerequisite is the strong will and effort of the employees themselves. Manager training methods vary greatly depending on what scale of business is to be managed; Sakaue Co., Ltd. supposes a scale of over 300 million yen. Accordingly, the mentality for facing the challenges of risk and the readiness to shoulder all business responsibilities are important.

3.3.2.2 Human Resource Development, Risk, and Information Management

As already noted, there is a close relationship between risk and information management in Sakaue Co., Ltd.'s human resource development. Table 3.1 shows this link; specifically, it is a version of Table 1 in "The relationships between risk and personnel management, and information management" by Sakaue and Nanseki (2014a), with the addition of details for the corresponding job titles.

(i) Work Manual

The "Work Manual" is an instructional document that uses images and text to describe task procedures, maintenance, and operation methods for each type of machinery, operation procedures, and so forth. The possibility to visualize the processes behind the tasks assigned to workers in this way enables to further develop human resources and support workers (Sakaue and Nanseki 2013). The impetus behind the creation of this manual was the following issue: by giving detailed explanations each time new recruits entered the company, there would have been a drop in the productivity of the experienced workers providing the explanations, and the efficiency of the training would have dropped accordingly.

(ii) Thought Manual

The "Thought Manual" is a document that outlines the ideas and procedures of work, points on the cultivation of each good, and so forth. Visualizing the processes behind the tasks of process managers in this manner enables to further develop human resources and support process managers (Sakaue and Nanseki 2013). The impetus behind the creation of this manual was to realize that while the Work

Table 3.1 The relationships between approaches to risk and information management and personnel development

Worker	Process manager	Production manager	Farm manager	General manager	Executive manager		Content of information	Management		Purpose	Specific details
								Risk	Personnel		
△	△	○	◎	◎	◎	Strategic management	Business guidance documents	△	◎	Making aware all company members	Shows intended direction for company's progress, including business ideology, vision, policy, objectives, and so forth.
		○	◎	◎	◎		Budget sheets	◎	△	Future direction for the whole company project	Company-wide calculations of figures for sales, raw production costs, general management fees, etc. per month, per item, for each project year, as estimated by each manager.
		△	◎	◎	◎		Project investigation chart	◎	○	Simulating new production	Tests of crop schedules, materials, manpower (required labor), and budgets for production under investigation.
		◎	○	○	○		Manager budget sheets	○	○	Understanding income and expenditure of each division	Figures of sales, raw production costs, general management fees, etc. per month, per item, for each project year, as estimated by each manager.
		○	○	○	◎		Financial performance information	◎	○	Accurate accounting	System for entering and making calculations with daily accounts.
		◎	◎	◎	◎		Forecast accounting information	◎	○	Assessing profits if business maintains status quo	Simulation of forecasted profits for the fiscal year for each project, through a combination of figures planned for each project year and actual performance from past months.
	△	◎	○	○	○	Tactical management	Actual harvest result sheets	◎	○	Actual results and future forecasts for harvests	Actual and simulated harvest results for each product and field cultivation time.
	△	◎	◎	○	○		Work schedule	◎	○	Understanding work load	Required worker numbers (of 40) set per product (11 items), process (118), and period (52 weeks; 365 days).

	△	◎	◎	○	○		Field schedule	○	○	Field rotation	Produce (11 items) and cultivation periods (12 months) set for each field (of 360).
	◎	◎	○	○			Prevention simulation	◎	○	Preventing diseases and pests	Preemptive simulation of forecast outbreaks of disease and pest damage, costs, types and times of applicable chemicals.
○	○	○	○	○	○	Work implementation	Daily reports	○	△	Current income and expenditures for the day	Daily BS and PL reports for the company head, covering from the start of the project year until present.
○	○	○	○	○	○		Work charts	○	○	Process management	Features production, fields, processes, schedules, etc. to allow all employees to know each day's work schedule at a glance.
△	○	○	○	○	○		To-do lists	○	◎	Problem management	Lists of problems and solutions encountered each day.
○	○	○	○	○	○		Farming process information	◎	◎	Farm production management	System for recording info on, for example, production, fields, processes, timing, people, images, chemicals in use, etc.
△	○	○	○	○	○		Thought Manual	○	◎	Points for managing farming	Detailed ideas and procedures regarding work progress and cultivation points for each product.
○	○	○	○	○	○		Work Manual	○	◎	Clarifying and furthering understanding of methods	Uses images and text to explain operation methods and procedures, as well as maintenance methods for each type of machinery.
○	○	○	○	○	○		Daily bulletin	△	◎	Consideration of new recruits	Reports by company members in their first year to their superiors about the details of each day's tasks and related comments.

Key: ◎ very strongly related; ○ strongly related; △ related
Source: Modified from Sakaue and Nanseki (2014a)

Manual may convey work procedures, this would not necessarily enable management of production as a whole. The document was produced from an awareness of the issue of how to best generate understanding of the fundamental methods of thinking core to each work task, to quickly accumulate successes, and to then enable the formulation of creative ideas. Both the Work Manual and the Thought Manual are documents that manage information by "visualizing" work procedures and thought regarding work overall (Sakaue and Nanseki 2014a).

(iii) Farm Process Information and Work Schedule

The "Farm Process Information (Farm Process Support System)" is an information management database system for the entire farm that precisely records each day's variety of farm work, by also including daily farm operation, as well as planning schedules and forecasts. Its main functions and contents encompass its bulletin board, work task entry, reports of work task entry data, related calculations, and output from these calculations. The system enables to develop human resources and offers strategic management support to production managers (Sakaue and Nanseki 2014a).

The "Work Schedule" is a table for understanding the workload required per time period. It allows simulating the volumes and periods of future work from the past results. If work seems to accumulate, it is possible to make arrangements to equalize the total volume of labor, for example, through time period adjustments (Sakaue and Nanseki 2014a).

As company members perform each day's farm work, accounts of the work are recorded in a database in real time, and it is possible to output items such as work tables required for operation of the farm, in a prefixed format; executives, farm leaders, and managers are always able to obtain the latest information. Further, if differences from forecasts arise, the work schedule is used to produce new schedules while considering the circumstances for each crop. To take the example of potato cropping, when undertaking field preparation procedures in the order of fertilization, tilling, ridging, and planting, the progress of each task is not necessarily constant. Indeed, a variety of operational risks on the farm, including problems with machinery, workers becoming unwell, sudden changes in climate, and other sudden incidents may arise. In such situations, by having leaders and their workers share details of the progress of the overall work in real time, it becomes possible to discuss points on the work and be prepared to respond flexibly to change. Since this is something frequently undertaken among the experienced company members and our recruits, it represents the opportunity to relay the key aspects and ideas of the work while greatly contributing to human resource development (Sakaue and Nanseki 2014a).

(iv) Field Schedule

The "field schedule" was created with the aim of efficiently carrying out field crop rotation; it consists of a visualization of future forecasts and past records of crops (5 items) and cultivation periods (12 months) for each field (approximately 400 plots). This allows the promotion of human resource development and strategic management support to farm leaders.

The tool may be used for making multifaceted judgments of factors such as, for instance, the system for crop rotation planting, selection of fields and their surface area determination in contractual terms, whether block rotation geared for efficiency can be implemented, how future cropping systems will materialize, and how to face continuous cropping damage, threadworm damage, and other diseases and pest damages (by insects and animals).

The field schedule enables to reduce the risk of competition between work tasks when work and shipping periods accumulate and overlap, as well as the risk of lost confidence and trust generated from being unable to ship goods during delivery periods. Further, if the farm were to have fields scattered in dozens of locations and sought to carry out contracts on small plots of leased land, there would be an increased risk that, without establishing precise block rotation production, efficiency would drop, making the farm unable to cultivate crops within the contractually agreed units; there would also be an increased risk of continuous cropping damage, whereby the state of field soils deteriorates due to the farm prioritizing short-term efficiency. Accordingly, going from the stage of creating a "project investigation chart," the right cultivation areas and periods are simulated through the field schedule, and calculations are made using past cultivation results from the Farm Process Support System. Then, this information is all combined to reduce the varied risks assumed at the planning stage (Sakaue and Nanseki 2014a).

(v) Financial Performance Information

"Financial Performance Information" is information managed using the TKC Corporation's Financial Accounting FX2 software. This system daily updates with the latest information profit and loss statements, balance sheets, and cash flow statements from the start of the term up to the present date. This enables to understand ever-changing financial circumstances. Further, when at a scale whereby costs other than direct costs can be absorbed into general administrative expenses, it becomes possible to assign general manager posts specializing in managerial skills, which would promote human resource development and strategic management support to department and executive manager candidates.

As shown above, Sakaue Co., Ltd. has in practice built a career advancement framework, linked to information management and consisting of several steps: worker, process manager, production manager, farm manager, and general manager. This framework equips all company members with the workers required and many members with the skills required for process managers.

However, becoming a production manager is difficult for company members who are not highly suited and skilled, and even further troubles are often faced in developing human resources for farm, general, and executive manager roles. At present, of the 45 farm workers, there are around 30 process managers, 6 production managers, 1 farm manager, and 1 general manager. Since there exists much specific information and knowledge, both internal and external to the company, the current framework for production activities works to a certain extent. However, while there is also knowledge and advice available for reference regarding leadership behavior, this differs completely from the thinking and behaviors in production activities, making it more difficult to obtain skills in this domain.

Thus, the development of leader levels (those filling positions from production manager upward and their stand-ins) is mostly powered by various types of meetings. They will sometimes be conducted individually, sometimes in groups; however, for matters involving strong personal traits (e.g., treatment, opinions), they will be conducted individually. The biggest objective of holding group meetings is to share information on risk. From this approach, a trend whereby company members grow in proportion to the amount of time they spend together with executives emerges.

Previously, time for individual interviews to train up production managers would have been allotted. However, since this would require at least 1 h per person, several times a week, with the increasing number of company members, it would become difficult for the executives to cope with time. Moreover, from the executive's side, when providing individual guidance, the same things end up being discussed each time.

In order to solve these negative aspects of individual guidance, the group meeting method was introduced. In this respect, the company became aware of the effectiveness of seminar meetings held in universities and indeed drew upon this concept. Currently, an hour-long "morning meeting" every day at 06:00 am is held as part of work duties. It has only been in place for 4 months thus far, but the attendance of company members is growing at a faster rate. Even with issues concerning specific production, if a discussion is held about the core truth, then it may be applied also to other types of production. The idea is that by increasing the opportunities to share such experiences, there will be an improvement in the speed at which company members develop. Some company members feel it a considerable emotional strain, since this involves coming to work early in the morning, but it seems that the higher they rise up the ranks, the faster their growth becomes proportional to their strong will and awareness regarding their desire to become a leader.

3.4 Conclusion

In Sect. 3.2, we provided an overview of the agricultural production corporation Sakaue Co., Ltd. Then, we detailed its business development process linked to market adaptation—namely reacting to apparent demand, discovery of latent demand, and new demand creation. We also highlighted the importance of making continuous efforts to create customer satisfaction, revolving around an innovation triangle composed of product, process, and mind innovation.

In Sect. 3.3, we first described the relationship between risk management, information management, and the management of personnel and human resource development. Then, we considered Sakaue Co., Ltd.'s human resource development framework in connection with risk and information management. Specifically, we outlined a framework for career advancement while experiencing, through a variety of information management tools, the management of risks according to the position in the company: farm worker, process manager, production manager, farm manager,

and executive business manager. However, as employees are promoted, it becomes difficult to make them reach their full potential by merely learning work procedures and methods. It has become clear that when it comes to production, farm, or general managers, and even executive manager candidates, skills can be mastered only through the accumulation of many experiences, that is, by giving them opportunities and creating environments for acquiring a variety of experiences and practices, based on their own strong will and awareness.

In land agriculture, there are many things that can be experienced only once a year, and thus the number of times managers and workers are able to build up experiences is limited. Moreover, because local industry factors are significant, developing projects to a large scale is not only linked to profit maximization. Accordingly, it is difficult to adopt methods from other industries, whereby large organizations develop human resources at a large scale and select executives among a large number of company members. For this reason, as also shown in the results of Japanese nationwide survey questionnaires, the development of human resources is an important management issue in many agricultural corporations, which have themselves been increasing in number in recent years (Nanseki et al. 2014). In some agricultural corporations, various efforts are being made, such as the creation of work manuals and the participation in training seminars; the methods and ideas on human resource development highlighted in this paper aim to be of some help in addressing these issues.

This chapter mainly details the results from the analysis of cases of large-scale crop farming. In the future, we will investigate whether the approaches toward the business targeted in this paper may also be applied to other productions, in order to accumulate case study analyses featuring broader ranges of productions. This will presumably enable us to acquire the basic knowledge for constructing theories on progressing from a family-run agricultural business into a corporation and on an important management issue in this process—namely, the development of human resources.

Acknowledgments This chapter is based our previous publication (Sakaue et al. 2016) and research results supported by JSPS KAKENHI grant number JP19H00960 and JP16K07901. The English translation was supported by Dr. Li Dongpo (Kyushu University) and Cactus Communications Co.

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Chapter 4
Farm Business from the Perspective of Venture Investment

Shigeki Saitoh

Abstract Agriculture historically started as small farming or family-based farming systems in many countries. In Japan, agricultural products go to the market through the JA (Japan Agricultural Cooperatives) distribution system that is not efficiently functionalized as a marketing mechanism. However, if we see agriculture as a general business from the perspective of venture capital investment, a farm business needs to be an efficient business system. Especially, it needs (1) profitability by way of technology or brand value through the creation of price competitive differentiation factor; and (2) scalability through business expansion. In addition to these two points, economic synergy effects through collaboration with neighbor businesses, such as (1) new energy business, (2) food processing business, (3) meat processing business, and (4) life science business are important. Farm businesses must develop a business system that satisfies economic rationality to justify investments. Regarding the human resources issue, farm business people tend to mix up the issue of developing the operation manager of the farm and plant, and developing strategic professional CEOs. To develop strategic professional CEOs as an important human resource in agriculture, it is vital that training takes place in areas such as management strategy, business model formation, marketing strategy, management accounting, system agriculture, technology strategy, sales strategy, brand strategy, and alliance strategy. Introducing CEOs from other industrial fields, such as ICT, retail, and life science are an efficient way to promote human resources.

Keywords Venture investment · CEO · Human resource

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A. Kiminami (ed.), *Entrepreneurship and Innovation in Japanese Agriculture*,
New Frontiers in Regional Science: Asian Perspectives 32,
https://doi.org/10.1007/978-981-13-8055-6_4

4.1 Introduction

This chapter describes the situation and challenges of farm business from the viewpoint of venture capital based on the framework of the innovation ecosystem (Saitoh 2012, 2014). Initially, when I schemed this symposium, my first thought was the following: In spite of so many farmers with strong business mind appearing everywhere in Japan, why is Japanese agriculture still shrinking in gross output? Agriculture is the field where farm business is developing. If the field is getting smaller, farm business activities will be restricted. Under such condition, farm business cannot show the original power for shifting from shrinking to growing. In order to shift the trend, what business power do we need? And how can we draw a strategic scenario?

As we call the driving force of getting industry up as innovation, we can expect innovation to increase the demand for agricultural products and create a new market. On the other hand, as the concept of innovation gets popular and broad dissemination, this concept has multiple meanings today. So, first of all, we will consider the theoretical side of innovation.

4.2 Agribusiness at Various Stages of Venture Business Growth

First, I would like to show how venture capital views the stages of business development (Fig. 4.1). This is not limited to the agribusiness. The term innovation is translated to mean "technological renovation" in Japanese. As a consequence, innovation

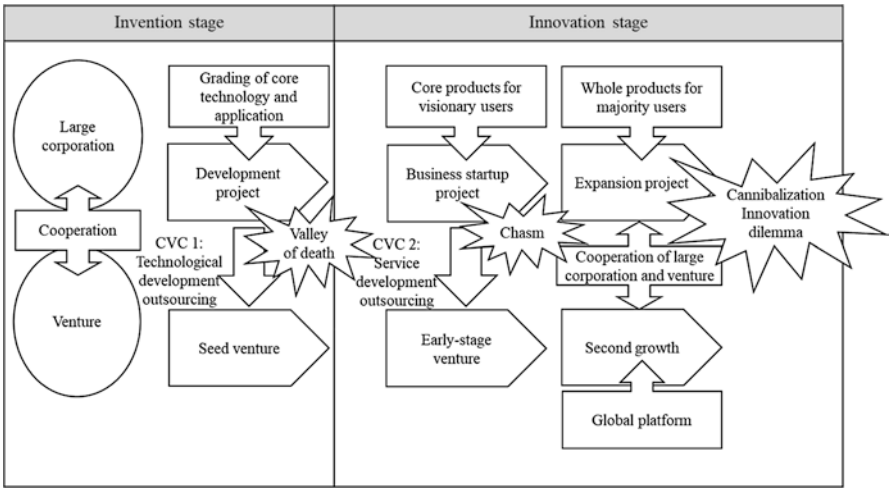

Fig 4.1 Stages of business development. *Note:* See Moore (1991) for details on Chasm

tends to be equated with the product R&D. Fundamentally speaking, however, the act of creating a product or service by using a certain technology constitutes the "development" stage, which is one of the various stages of innovation. The completion of the development stage of a technology product and its transition to the product launch stage, following the clear establishment of its product specifications, is often referred to as crossing the Valley of Death. In major corporations, these projects are called development projects. Seed venture is the term used by venture capitalists when a product is in this stage.

When we consider how this stage relates to agriculture, where a business simply grows lettuce and tomatoes, the products are already determined: they are lettuce and tomatoes. However, if we are growing lettuce at a plant factory, the lettuce that is raised in a plant factory is differentiated from ordinary lettuce that is grown in a field. We can transition to the stage of actually selling the lettuce only after we can establish a business model for factory-grown lettuce that can be sold at a price that generates a profit. In the world of venture capital, the completion of a product concept and its launch as a commercial product signify the entry into the innovation stage. The initial stage of spreading a new concept with new technology to the world is called the market-in stage of the innovation process. Consumers who purchase a new concept product before others do are called early adopters and have a sharper sensitivity to products than ordinary consumers. They are thought to account for approximately 15% of all consumers. In agriculture, lettuce grown in plant factories is first sold to those consumers during the market-in stage. These consumers will go out of their way to try lettuce grown with new technology even if the lettuce costs a little more than ordinary lettuce. Companies can then design distribution channels, pricing, and marketing strategies that ensure a certain level of profit. In the world of venture capital, this stage is called the business start-up or early stage.

4.3 Case Studies of Agribusiness Models that Are Profitable

In the previous example, plant factories themselves could be the products being sold, rather than lettuce produced by those factories. One way or the other, the developers have to prove that lettuce that is grown in a plant factory is superior to lettuce grown in a field and that it generates profit. Otherwise, lettuce growers and agricultural corporations would not buy either. There is really no difference whether you are selling a plant factory system or lettuce grown in a plant factory.

The challenge of the agribusiness is that traditionally agricultural products, be they lettuce or tomatoes, have been sold to a single buyer called Nokyo, or Japan Agricultural Cooperatives. Since farmers have been able to depend on Nokyo, they have grown the same crops that their ancestors have grown regardless of the profit margins the crops generate. As a result, the profit margins of lettuce and tomatoes that are grown in open fields have been held at a structurally low level. This implies that a pricing mechanism is not working properly for basic agricultural products. To begin to operate a farm as a business in an environment inundated with low-price,

high-quality, field-grown products, growers must choose products that generate a large amount of profit, enjoy strong consumer demand, and have a high sales volume.

At this point, I would like to take a look at an example of computerized agriculture in the Netherlands. The country has adopted computerized agriculture by relying on power generation systems and carbon dioxide volume controls. A company named Priva is one of the most prominent suppliers of such systems. Before computerized agriculture became prevalent in the Netherlands, small farmers growing crops in open fields using traditional methods was the norm, much the same way crops are grown in Japan. Anywhere in the world, the structure of agriculture is such that systematic agriculture grows out of family farms in localized areas. In the Netherlands, tomato sales have grown because they offer high profit margins when grown with Priva's systems and enjoy strong demand because of their use in many different processed goods. Furthermore, an environment that permitted high profit margins has evolved over many years as suppliers merged or were eliminated so that their total number decreased during the period when computerized tomato growing began to become prevalent. Simply transferring this concept to Japan would not guarantee success. There are questions that need to be asked about the size of the profit margins from the tomatoes that are grown in open fields, potential strategies that Kagome, which is a major consumer of tomatoes, will adopt, and whether a sufficiently profitable business can be achieved after making capital investment in horticultural automation.

Korea adopted the concept of Dutch computerized agriculture ahead of Japan approximately 15 years ago and has focused on growing bell peppers. There is now a domestic manufacturer of the Dutch horticultural systems within Korea, and a secondary market for such systems has developed. Koreans have targeted the Japanese market for their bell peppers. Japan imports large volumes of bell peppers from Korea. Approximately half the bell peppers consumed in Japan are grown in Korea. In Japan, no careful examination is performed of business profitability and what is called the "proof of concept" in the venture capital field before moving into commercialization, even when there are excellent farming techniques that make systematic farming possible. Instead, systems are often introduced that rely on subsidies from the national or local government. What is important, however, is whether a business system is sustainable on its own. Is a crop produced by computerized farming differentiated and can it generate adequate profit even when public subsidies are cut off? Is demand large enough to allow sales to grow at a sound pace? What are the reasons that consumers will buy higher-priced vegetables? Will the cost of investment in facilities be offset by drastic cost reductions in conventional distribution? These are the questions that need to be answered with strong business logic to ensure financial benefits (Fig. 4.2).

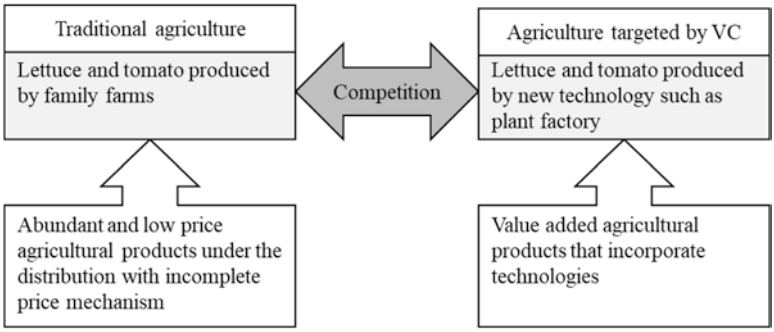

Fig 4.2 Relationship between agriculture targeted by VC and traditional agriculture

Table 4.1 Key points of business to invest

1. Profitability
=) Technology
=) Brand
* Arithmetical business model < Geometrical business model
2. Business development under arithmetical business model
=) Franchising type business
*Aim between arithmetical business and geometrical business by earning royalty income by selling own agricultural know-how
3. Scalability
=)Development of the large-scale agriculture
Overseas expansion as full-scale business

4.4 Business of High-Margin Products

It is not easy to find a mechanism for a system-based business that is profitable in agriculture. Let us now examine what approaches we can take to construct a profitable business. When venture capitalists analyze or evaluate a business, they focus on two key elements as determinants of the business' future profitability. One is whether the business has high profit margins, and the second is whether the business is scalable or has the potential for expansion (Table 4.1). As for profit margins, it is not possible to avoid having to handle an agricultural product that has been grown in the past by family farms and distributed through the agricultural cooperatives and thus has low profit margins and which also has downside risks from inclement weather. When planning to build a business that generates high profit margins, there are only two viable options: to produce a product with high added value by using technology or to produce a product that has high brand prestige.

4.4.1 High-Margin Products Created with Technology to Add High Value

Antiaging functional vegetables that have the effect of preventing aging provide an example of a product with high added value that was created with technology. A fund that my company manages invests in Kajitsudo in Kumamoto prefecture. Kajitsudo is an agricultural corporation that organically grows microgreens on a large scale using a horticultural method that quantitatively controls moisture, nutrients, and soil components, based on bioengineering analyses. The company also owns germination technology, which enables the production of crops that contain large quantities of antiaging nutrients. This is accomplished by growing the crops in an environment in which they are crossed with fermentation microorganisms. Using this technology, the company produces soybeans that contain ten times more isoflavone than ordinary soybeans. These soybeans are used to make soybean salads that help prevent osteoporosis among elderly women.

A technology-driven, high-margin product is born if you can sell these soybeans at twice the unit price of conventional soybeans and generate three times their profit margins. However, for this to happen, there needs to be proof and widespread recognition of the fact that soybeans with ten times more isoflavone than conventional soybeans are effective at preventing osteoporosis.

In addition, it has to win the approval of consumer leaders, who are early adopters willing to pay extra money for the benefit, before the product can be built as a brand. If the enhanced soybeans can generate only 10–20% higher profit margins than conventional soybeans in spite of the fanfare of the product claim, the antiaging effect is serving as nothing more than an advertising gimmick. You are not creating a high added value product.

4.4.2 High-Margin Products with Strong Brand Power

Improving profit margins with brand power, which is the other option, can be likened to Italian and French fashion brands. It means growing apples and peaches that generate high margins because of their brand power, which is due to their exceptional sweetness or rarity. Amao strawberries and Fuji apples in Japan are said to be tasty, but they have not reached a level where they can be called high-margin brands. They are only at a level where their product brands are well known.

If, however, you can sell Fuji apples in China as an auspicious fruit because they remind people of the color of China's national flag, and at several times the price in Japan, Fuji can be said to be a product that boosts profit margins with its brand power. Watermelons grown in Tottori and sold in Middle Eastern markets at tens of thousands of yen per unit are an example of the successful creation of a brand product. If you can increase their sales volume, they become a product worth investing in.

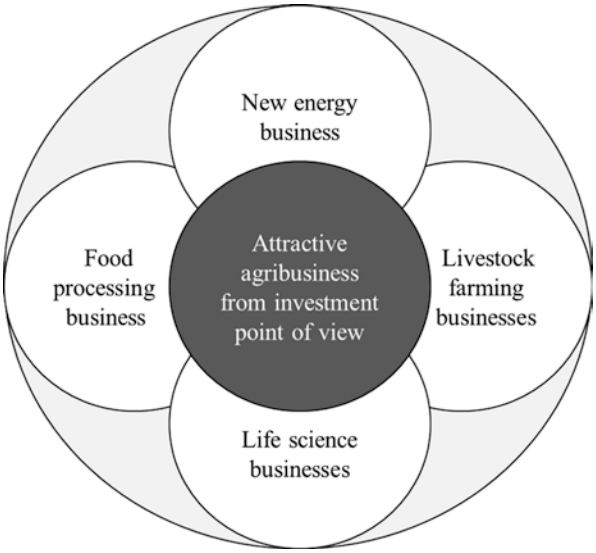

Fig. 4.3 Pursuit of profitability with adjacent businesses in agricultural ventures

4.5 Pursuing Profit in Conjunction with Adjacent Businesses

Agribusinesses generally do not generate high profit margins. In the next step, potential strategies to combine agricultural operations with related adjacent businesses are discussed as a way to boost their economic viability, raise their productivity and profit margins, and turn them into undertakings worthy of investment by venture capitalists (Fig. 4.3).

4.5.1 New Energy Business

At the beginning of this paper, we discussed the case of computerized agriculture in the Netherlands. Dutch system-driven agriculture has achieved overall economic efficiency by building solar power generation, which improves the cost efficiency of energy used to operate the system. It is also possible to combine power generation with a biofuel-driven energy system so as to use the crop waste from systematized farming as an additional energy source. This results in a system-wide operating cost that is below what it would cost to grow crops with purchased power. As these examples illustrate, total cost efficiency can be an important consideration to offset the energy cost of operating a computerized agriculture system.

4.5.2 Food-Processing Business

Next, we will look into increasing the profitability of agribusinesses by combining them with food-processing businesses. Food-processing businesses produce processed goods from agricultural crops and are thus closely tied to agribusinesses. Foods are best eaten fresh and raw. But, in terms of sales increases and efficiency, foods that can be processed increase the demand for the food crops and are key to business growth. The reason that Dutch computerized agriculture was able to increase tomato production is that there is a very strong demand for canned whole tomatoes that are used both at home and by restaurants.

Likewise, soybean-producing regions of Japan have processors that produce the highest quality tofu, yuba, and soy milk. Furthermore, there are processors who make potato chips in potato-producing regions and processors that make chocolate-coated nuts in macadamia nut-producing regions. Such alliances between processors and producing regions result in excellent cost performance. Looking at this from the opposite angle, processing corporations that are already well established and have a significant purchase size have very strong needs to vertically integrate their production or contract with farms.

4.5.3 Livestock Farming Businesses

Livestock farming operations, such as cattle, hog, and chicken farming operations, tend to be regarded as stand-alone operations. However, combining such operations with agricultural production can be instrumental in improving economic efficiency. Cattle eat 14 times their weight before it is shipped out as beef. The largest cost component of raising livestock is the feed cost. Japan is said to be a major importing country of agricultural products. Statistics show that the major component of these agricultural imports is feed for livestock that is imported by trading firms from the United States and Australia. However, livestock can be raised on grains, such as rice, barley, and corn, as well as grapes and other fruits. It is possible to achieve substantial cost savings by raising livestock and growing crops next to each other. Livestock farming and agriculture can be an attractive combination to boost profitability.

4.5.4 Life Science Businesses

In the section on the “High-margin products created with technology to add high value,” the production of special soybeans having ten times as much isoflavone as conventionally grown soybeans was discussed. There is no economy of scale here, but the profitability of the soybeans can rise if they can be sold at a high price, that is, if consumers recognize the high added value of the beans. The verdict is still out

on the merits of genetic engineering. It may thus be difficult to gauge its impact on business. However, it appears that the Bill and Melinda Gates Foundation, run by Bill Gates, has been funding research on genetically engineered crops that grow well in barren African soil and making contributions to starving people of Africa. As the foundation's work illustrates, genetic engineering does not have entirely negative connotations. Life sciences are believed to have immense potential that surpasses that of ICT technology in the agribusiness.

4.6 Direction of Growth for Businesses that Is Not Possible to Design High Value-Added Products

When it is not possible to design a product that generates high profit margins as shown in the preceding sections, the next best strategy would be to consider ways to scale products that have ordinary profit margins. This is akin to the strategy taken by Gyukaku and Ippudo in the restaurant business. Instead of running only one ordinary barbecue or ramen restaurant, these companies built themselves into restaurant chains. Japanese farmers have aligned themselves with their prefectural agricultural cooperatives by creating brand names that are unique to the cooperatives. For this reason, the farmers have not been able to supply products on a national scale across regional boundaries under one brand. When the scale of their operations is increased, various merits can be enjoyed.

One characteristic of the agribusiness is that there is not much technology involvement, which makes it difficult to increase profits exponentially once a product that offers added value reaches a certain scale. Since the size per store does not fundamentally change, profits can grow only arithmetically. Nevertheless, an increase in scale leads to the sharing of head office administrative costs and advertisement/promotion costs. The scale then begins to carry some significance. By opening a farm in a wide-open area, substantial cost efficiency improvements can be achieved with respect to farm operations, shipping logistics, and worker recruitment during harvest seasons. Farming in Hokkaido, Kyushu, and Okinawa, as well as that in Yamanashi as an example of farming in the suburbs of metropolitan areas, is profitable because of the economy of scale achieved by centrally growing a single crop in an area. To cite an example that can be easily understood, it is the same economy of scale that can be seen among the cluster of electronic shops in Akihabara.

Farming under a franchise is a business system under which systems and expertise are offered to franchisees in exchange for royalty fees, while the responsibility of running a business entity is assumed by individual franchisees, much the same way franchises are used in the restaurant industry. A franchise offers significant benefits, including financing power, speed of business expansion, ease of management, and quality control. However, it is not easy to convert conventional family-style farming to systematic organized farming regardless of whether the farms are directly managed or under a franchise. This is because a good deal of work is required to convert management expertise into product marketing.

4.7 Scalability of Overseas Expansion

The pursuit of scalability within Japan would mainly take the form of expansion through direct ownership or a franchise system as mentioned earlier. When considering an overseas expansion, huge differences exist between the scale of Japanese land and the expansiveness of land in Europe, the Americas, and other parts of Asia. Producible crops also vary greatly from one climate to another. This means that appropriate foreign partner countries for large-scale farming suitable for expanding Japan's agriculture also vary with crops.

Overseas expansion has not yet materialized because most farms are small family farms and farmers lack international perspectives. The problem is compounded by the lack of qualified workers. Conceptually, the overseas expansion of agricultural production should be essentially the same as Japan's electronics industry having moved their production facilities to Asia and other foreign countries to expand their production bases. In reality, however, not much overseas expansion has taken place in agriculture.

One unfortunate example is found in sesame seed production. Only about 2–3% of total sesame seed production occurs within Japan. Under the guidance of Japanese people, sesame seeds are produced in Myanmar and imported to Japan. However, no business strategies have been adopted to computerize the operation to make it a Japanese capital-infused business. There are also other ideas, such as an alliance between a Japanese operator of chicken farms that raise chicken with pesticide-free feed and the Thailand-based CP Group, an international company that sells chicken meat mainly in Asia. There has also been a discussion of growing kabocha, daikon, and soba, which are Japanese crops, in countries in the southern hemisphere, including Australia, New Zealand, and Tasmania, where the seasons are the opposite of Japan. Under this scheme, the crops are grown in foreign countries during their off seasons in Japan and distributed to not only Japan, but also other countries in Asia.

Such strategies for business expansions that take advantage of systematic scaling are conceivable, but few companies actually plan and implement such strategies. Although some major food-processing companies have plans to form vertically integrated capital-intensive farming operations that include overseas operations in an effort to attain scale, no noteworthy instance of such plans actually having been implemented can be found, due to the inadequacy of their knowledge about agricultural operations. Looking ahead, the realization of successfully managed overseas agricultural operations that originate in Japan and supply products to Japan and other markets should guide future developments in Japan's agriculture. Overseas undertakings should thus continue to be watched carefully.

4.8 Developing Entrepreneurs

As has been seen, we must consider how many entrepreneurial owners can be created to enable agriculture businesses to progress from small-scale family farms to a stage where venture capitalists see them as investment targets. When it comes to

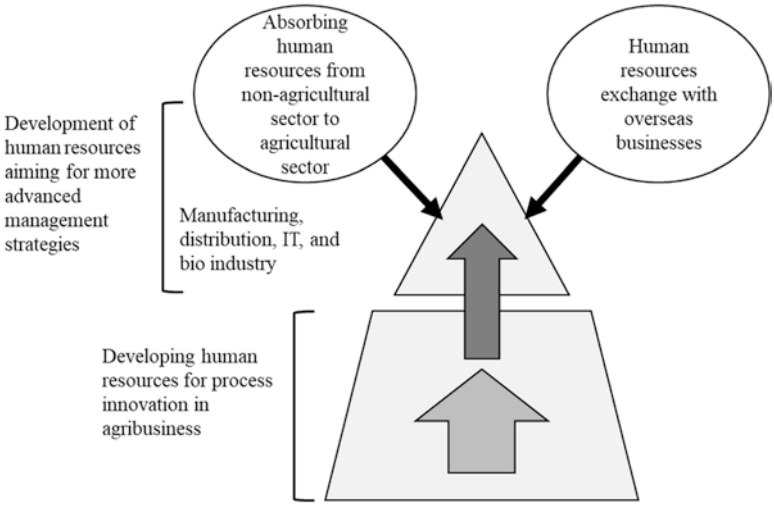

Fig. 4.4 Development of human resource with entrepreneurship

such human resource issues, training managers to have the ability to manage agriculture businesses as corporate operations may seem interchangeable with training owners to create an agribusiness system that ensures strong profit margins and scalability, but they are vastly different. Strategies and policies about human resources that can realize process-related innovation have to be discussed separately from the strategies and policies to draft and realize business-related innovation (Fig. 4.4).

In this respect, managers who gain a solid understanding of agriculture operations and lead process-based innovation will have to develop an awareness of the following management areas: management strategies, business models, marketing strategies, managerial accounting, computerized agriculture, technological strategies (or ICI and life sciences), marketing strategies, brand strategies, and alliance strategies, all of which are reminiscent of business school disciplines. Their awareness has to be heightened to incorporate all of these components so as to create sophisticated management strategies. Toward that goal, workers who have refined their managerial skills in other industries, such as the information system, biotechnology, and distribution industries, should be absorbed in large numbers into the agriculture industry. Nurturing workers to give them the competence to survive cross-industry competition will be key to increasing the number of entrepreneurs in the agriculture business. Collaboration with other industries and with foreign corporations will raise the quality of the agribusiness and increase the number of owners who have entrepreneurial skills. By so doing, the agriculture industry will achieve unwavering growth as an industry.

The fact that discussions were held at this symposium of the Farm Management Society of Japan about the needs of the farm business to develop into an innovative field is highly significant, as participants' awareness was heightened and issues were thoroughly examined. In the years ahead, it is hoped that new business models

of agriculture that can spearhead innovation on a global scale will be created in Japan and spread to the rest of the world, based on the cyclical loop of these discussions and implementations. The venture capital industry also hopes to blaze a trail in this field of agriculture and foods.

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Chapter 5
Human Resources Development for Agriculture in Japan from the Perspective of European Experience

Sotaro Inoue and Yurie Koshiba

Abstract We studied some cases of HRD programs related to fostering entrepreneurs for the rural innovation in Japan with the consideration of lessons from the experience of LEADER in the EU. Compared to the case of the EU, the role of local governments is rather substantial in Japan. Therefore, the endogenous development model of LEADER cannot directly apply, and the targeted human resources to foster may be different. However, the fiscal situation of local public entities has been becoming tighter than before in Japan, and the shrinkage of their roles may not be avoidable. Therefore, the organizational innovation of the whole region has become more desired. Savor Japan is a new project introduced in 2017. It certifies the areas trying to attract foreign tourists by utilizing the value of local foods and local primary industry. The destination management/marketing organization (DMO) is established in the certified area as the core organization of the project implementation, and it is organized by various area-oriented businesses. This execution style is partly similar to LEADER, in which a LAG is the center of project activities. Several vocational training courses related to agriculture have been offering capacity-building curriculums for regional leaders because the participants of those courses grow and come to need more advanced information. Consecutive vocational education for farm business executives and the local public entity staff responsible for the planning and management of a rural development project is considered useful because they may form the core human resources for the regional development.

Keywords Rural innovation · Vocational training program · Local government · University · NPO

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A. Kiminami (ed.), *Entrepreneurship and Innovation in Japanese Agriculture*,
New Frontiers in Regional Science: Asian Perspectives 32,
https://doi.org/10.1007/978-981-13-8055-6_5

5.1 Introduction: Human Resources for the Rural Innovation

In rural areas of Japan, local governments, and often agricultural cooperatives, have been at an important position for the development of the regional economy. This situation, however, has been forced to change gradually, and the strengthening of the partnerships among actors across different industrial sectors has become recognized more important along with the continuing relative decline of the economic status of agriculture. In other words, the substantial change of relationships among various organizations in rural areas has become more desired. We consider such change of relations as the rural innovation. This concept is based on an analogy of the organizational innovation within a commercial company. In this chapter, we study various educational programs in Japan that are aiming at the cultivation of human resources to lead the rural innovation as an entrepreneur.

Human resources related to agriculture and/or rural development can be grouped into three categories: players, leaders, and coordinators. Players are supposed to concentrate on their own business, while leaders do not only work for their own business but simultaneously influence and lead others to their shared goals. Coordinators build and support partnerships among related actors so that they can work more effectively. Nanseki et al. (2014) studied human resources development (HRD) systems in the agricultural sector both in Japan and foreign countries comprehensively. They mainly focused on the education and training programs for the players and drew lessons; however, those of the leaders were not scrutinized so much.

The Organisation for Economic Co-operation and Development (OECD) (2006) proposed the concept of the new rural paradigm (NRP) describing the relative shrinkage of agriculture and discussed a variety of rural development policies in developed countries. Among the argued policies, we consider the LEADER[1] program of the Common Agricultural Policy (CAP) of the European Union (EU) as most relevant to the rural innovation that is our major concern. The reason is that, as its name suggests, projects under LEADER emphasized the partnerships among actors and established new local organizations; namely, LEADER has an important aspect of organizational innovation in the project-implemented region. The study on the human resources that bear this aspect of LEADER projects is considered to be important.

In this chapter, we study various cases of HRD programs related to the rural innovation. First, the outline of LEADER and the results of a case study in Hessen State, Germany, are presented. The findings are referred when we subsequently present the results of our research on the cases in Japan[2].

[1] LEADER stands for liaison entre actions de développement de l'économie rurale.

[2] This chapter is mostly based on a study done in PRIMAFF. The findings are partly available in PRIMAFF (2014).

5.2 LEADER and the Rural Innovation[3]

5.2.1 Outline of LEADER

EU has been implementing LEADER since 1991 as one of the rural promotion policies of CAP: LEADER I (1991–1993), LEADER II (1994–1999), LEADER+ (2000–2006), LEADER Axis (2007–2013), and LEADER/CLLD (2014–2020). The area covered by the projects under LEADER has expanded, and the allocated budget increased through this long period of the implementation of LEADER. The actual system of LEADER has been changing to allow member countries to be able to modify their policies more flexibly according to their socioeconomic condition and policy orientation. It is noteworthy that the LEADER methodology has been more widely adopted in the regional development policy of EU. LEADER methodology is used for the development of coastal and urban areas under the policy of community-led local development (CLLD) since 2014. It has become a universal approach for the regional development of EU countries.

LEADER has employed a unique bottom-up approach. Effectively a project under LEADER is implemented by a local action group (LAG). LAG is established for the project in the region, and it can be various legal forms: nonprofit organization (NPO), private company, and an association of local public entities. In order to form LAG, local people are considered to create new relationships with other actors in the region. With this bottom-up approach, local people are expected to more proactively participate in the regional development project in collaboration with other actors. Therefore LAG is able to form a critical mass that is necessary to sustainable regional development. As mentioned earlier, the establishment of LAG itself can be regarded as organizational innovation for the regional economy. Project proposals for LEADER are assessed to be certified by EU based on its competitiveness. This process is important to maintain the effectiveness and transparency of LEADER projects.

LAG usually employs expert staff called regional manager or rural animator who works for multifarious services including the planning, management, and evaluation of the project. The performance of LAG is mostly determined by their activities. Therefore, their ability is important to the success of LEADER project.

The stakeholders of the project and the employed regional managers need to understand the effects of the LEADER methodology. With the proper influence of the regional managers, the stakeholders are expected to be motivated to cooperate and broaden their perspective regarding the effects of their activities on the economy of the region and strengthen the recognition of the identity of the region.

The sharing of know-how among LAGs is regarded meaningful for this purpose. In Germany, the conferences of LAGs are established at the state level. They provided the staff of LAG with plenty opportunities for education and training. Moreover, EU and the federal government collected and spread relevant information.

[3] This section is based on Iida (2014).

This multilevel network of organizations related to LEADER ensured the transmission of know-how and contributed to the success of LEADER programs. The knowledge on the methodological innovation for rural development has been spread by this network.

5.2.2 A Case of LAG in Hessen State, Germany

There are three types of LAGs in Hessen State: LAGs of the endogenous type, LAGs of the natural/national park type, and LAGs of the subsidy-oriented type. LAGs of the endogenous type are considered to most effectively apply the LEADER methodology. These LAGs can be sustainable and can continue even without the budget of LEADER from EU. LAGs of the natural/national park type are also considered to be sustainable. They have utilized the famous scenic landscape in the state; moreover, the local people have the strong sentiment of belonging to the region. In contrast, LAGs of the subsidy-oriented type were established in response to the shrinkage of the budget of local public entities. They lacked the sustainable basis for development activity. The LAGs of this type have effectively halted when their LEADER project terminates. Besides, the executives of LAGs are often the heads of municipalities, and they sometimes may not be seriously interested in the bottom-up approach of LEADER because the planning of new project was outsourced to external consultants.

In the Fulda Südwest association that is one of the subsidy-oriented-type LAGs, regional managers undertook various services: the cooperation and coordination with stakeholders, the preparation for the application of a new project, the collection and provision of information regarding subsidy programs other than LEADER, the various management issues of LAG, and the facilitation of the interaction with other regions. They also have to continue to improve their skills for the regional management as well as the formulation, implementation, and evaluation of a regional promotion strategy plan. These various functions of regional managers suggest the fact that the education and recruitment of regional managers should be the keys of successful LEADER projects.

In fact, graduate-level professional education may be necessary to be a regional manager. For example, the regional manager of the Fulda Südwest association was a graduate of the graduate course of sustainable regional development in Germany. The course consisted of subjects such as natural science and ecology planning, social science and law, and regional development. The synthetic curriculums combining natural and social sciences are regarded necessary to cultivate human resources for regional development. In addition, Hessen State's conference organized by 25 regional forums (20 LAGs and 5 rural associations certified by the state) provided the regional managers in the state with opportunities to share their knowledge and information. The conference also organized training courses for them. These opportunities are important for regional managers to improve their skills of regional development.

There are, however, some challenges remained. In general, the employment conditions of regional managers are unstable in spite of their important roles. They are usually employed by LAG with a fixed-term contract shorter than several years, and it usually terminates when the project finishes. There are some reasons that they can still continue this occupation. Since LAG has often complemented the functions of local governments, the social demand for LEADER projects certainly exists. Therefore, human resources who have worked as a regional manager may relatively easily find their new post at another LAG continuously. In addition, relatively low-living costs in Germany are also one of the reasons that regional managers can continue working for this unstable occupation. In Germany, the social welfare system is well-developed; particularly, unemployment allowance is generous as compared to the case of Japan, and medical and education expenses are also well supported by the society.

The following findings seem to be important to the study of the HRD programs of rural leaders in Japan: (1) the endogenous bottom-up approach of LEADER has been more widely adopted in EU, (2) LAG is the important base of the activity and employment of high-level human resources, and (3) the difference between the social welfare system of Germany and that of Japan should be taken into consideration.

5.3 HRD Programs for Rural Innovation in Japan

5.3.1 Preceding Study

In fact, studies on HRD programs of entrepreneurs for the rural innovation in Japan are rare. Only Nishi et al. (2014) scrutinized primary and continuous vocational education and training for farmers, employees of farm enterprises, and extension workers. It was found that continuous vocational training courses targeting working adults and graduate students often include contents such as “fostering human resources to be core personnel and/or leaders of regions” or “fostering innovators.” Such advanced contents may be adequate only for students with enough career. Nishi et al. (2014) studied four cases of HRD programs including the Japan Institute of Agricultural Management, Saga Prefectural Agricultural College, and Tokyo University of Agriculture. It concluded that proper arrangements of curriculums are important in order to correspond to the level of students’ knowledge and experience; therefore, the exchange of educational resources and information among the related educational institutions should be more enhanced.

5.3.2 HRD Programs by Central Government Ministries[4]

HRD programs related to the rural innovation by central government ministries can be grouped into three: (1) policies to utilize external human resources as supporter or advisor, (2) policies to nurture local human resources to become players of farm business, and (3) policies to establish regional bases of HRD mostly by local universities.

The first-type policies are typically the sending of external human resources to the regions to develop. The policy of Community-Reactivating Cooperator Squad by the Ministry of Internal Affairs and Communications (MIC) is one of the examples of this type. It has become a relatively large program among those in this category. The number of dispatched members under this program has rapidly increased and reached 3978 in 2016. About 60% of them continued to live in the dispatched region after their contract period terminates then. This policy has become influential to the regional development in Japan. The policy of Community Supporter/Advisor by MIC is another example. This policy is to promote the cooperative activities of external human resources as a supporter or advisor. In fact, however, these policies do not focus on agriculture, in particular.

The second-type policies are to improve the competitiveness of human resources in rural areas. The following two are representative policies: the HRD for Agriculture, Commerce and Industry Partnership of the Ministry of Economy, Trade and Industry (METI) and the HRD for New Business Creation of the Ministry of Agriculture, Forestry and Fisheries (MAFF). Both are to promote the collaboration between agriculture and other industries as well as the diversification of farm business to the processing and/or marketing of their produce. They are focusing on the vitalization of the collaboration among individual businesses; however, they are not targeting the nurturing of the leaders of the region who set up a large-scale cooperation covering the whole region. Actually, MAFF has offered another program for fostering human resources for the creation of rural businesses, which has a curriculum regarding regional management.

The third-type policies are to support the formulation of regional bases for HRD. An important policy of this type is the Formulation of Core for the HRD for the Regional Revitalization Program of the Ministry of Education, Culture, Sports, Science and Technology (MEXT). The policies of this type are important HRD policies relevant to the rural development in the long run; however, they are not focusing on rural areas.

In EU the effectiveness of the bottom-up approach of LEADER is widely recognized, and a lot of regional development projects have been practiced by using that methodology. In Japan, it may be meaningful if central government ministries can share the image of leaders for rural development so that their HRD programs can be implemented in a more coordinated manner.

[4] This section is based on Tabata (2014).

5.3.3 HRD Programs by Universities or Graduate Schools[5]

Koshiba (2014) scrutinized six HRD courses by universities or graduate schools in Japan. They have been conducted by the following institutions: Iwate University, Shizuoka University, the FIDEA Research Institute Corporation, Kochi University, Ehime University, and Kanazawa University. They can be roughly grouped into two types. The first type is the programs to foster the practitioners of farm businesses in order to enhance the industrial competitiveness of agriculture. The second type is area-oriented courses to foster regional leaders.

In general, HRD programs have been expanding their education scope from the management of farm business to the rural development. For example, the Agri-frontier School of Iwate University has come to offer the classes for the leaders of rural development.

HRD programs for regional leaders, the second type, include the Regional Management Skills Learning Course of Ehime University and the Noto Satoyama Satoumi Meister Training Program of Kanazawa University. Both used the Strategic Funds for the Promotion of Science and Technology of MEXT, and they were required to continue their courses after the termination of the budgetary support from the fund. So far they have been carried out continuously. The Noto Satoyama Satoumi Meister Training Program is now run by the budget from Kanazawa University and the local public entity. The local residents are well aware of the declining regional economy and understand the necessity of the regional unity. This shared understanding is considered to have contributed to the appreciable performance of the project.

The experience of LEADER shows that the nurturing process of regional leaders should include a wide range of curriculums and take a certain period of time. Considering these lessons, related educational institutions in Japan are desired to establish the system of collaboration including the following-up of the graduates. Furthermore, it is important that many universities established community study-related faculties recently (Iwasaki 2016). Ehime University, for example, is one of them. It has moved the former HRD program under the faculty of agriculture to the new faculty for community study named the Faculty of Collaborative Regional Innovation. Such new faculties are expected to create more systematic education programs to nurture rural leaders.

5.3.4 HRD Program by Local Government: The Case of Tome City

Tome City in Miyagi Prefecture implemented an original HRD program with its own budget; however, there are not so many HRD programs by local governments.

[5] This section is based on Koshiba (2014).

The city has been proactively promoting the 6th industrialization[6] and implementing various original support programs since 2007. Among them, the business-chance support program has assisted small-scale businesses mostly the processing of farm products and farmer restaurant. In the city, there were 13 farmers who formulated the integrated business plan and certified by the 6th industrialization law in 2013. This number was the largest in Tohoku region then. The city started an original capacity-building program for farmers. The major reason is that there was no higher education institution in the city and long-distance schooling to neighboring big cities was actually difficult for busy farmers. The program, Tome agri-business entrepreneur training course, was carried out from 2013 to 2015. The objective of the program was to increase the number of farm businesses that practice the 6th industrialization. The city expected that its whole economy would be revitalized by the increase in the number of such farmers.

The budget of the course was 1,400,000 yen per year in 2013. Thirty-four farmers from about 900 certified farmers younger than 40 years old in the city participated. The program was basically designed to educate the participants about the business management, not the production techniques. The actual goal was the acquiring of the ability to formulate a practical business plan. In the course, real practices of the 6th industrialization existing in the neighbor area were used as the models to follow. Because this is an original project of the city, it had some merits. The curriculums were flexibly designed according to their specific needs, and the use of the models with geographical conditions similar to the participants is considered to provide meaningful lessons. They are important merits for municipality institutions to implement an original HRD program.

The classes were held once a week at night from June to September. The period was determined to avoid the busy season of the cultivation of rice, the most important product of the region. During the 3 years of implementation, 60 participants graduated the course. They are mostly farmers or the staff of farm companies, and some are from the food-related sector or the financial sector. The graduates were keeping the relationships after the course terminated. The interactions among them are expected to have positive effects on their aspiration and business mind.

If there are not enough educational resources in the region, the collaboration with external institutions is necessary. In the case of Tome City, a professor of Tohoku University supported the course in formulating actual curriculums and recruiting lecturers. The professor became the president of the course.

The course was suspended after 3 years of implementation because most of the wishing farmers in the city have participated in the course. Since the course ended, the city has been providing the graduates with continuous support for their business start-up. The subjects of the supports are firstly the development of products and markets. In addition, the city has been assisting selected farmers in starting a new business and converting their farm into a corporation. Until now five graduates have received the support. The city has been also supporting the graduates in continuing the study of business management. It provides half of the tuition of the Regional

[6] As to the 6th industrialization policy of Japan, refer to KREI, PRIMAFF, and IAED (2014).

Innovation Producer School that is being implemented by the Graduate School of Economics and Management of Tohoku University.

In general, the effects of HRD programs are difficult to detect in a short run. Therefore, continuous supports need to follow the programs. In this situation, it may be difficult for municipalities to carry out their original HRD programs because of the recent tighter fiscal conditions of local public entities. The case of Tome City is noteworthy because it has meticulously been supporting farmers continuously; however, the nurturing of rural leaders is considered to still remain for the next step.

5.3.5 HRD Program by NPO: The Case of Groundwork Mishima

This section introduces the case of HRD program by the Groundwork Mishima (GW Mishima) and the career fostering of its staff.

GW Mishima carried out a vocational training program by using the project budgets of the Cabinet Office: Community Employment Creation Program (2010–2011) and Reconstruction Assist-Type Community Employment Creation Program (2012). Their program offered two courses: the internship course and the groundwork incubation. The former one was a supporting program to strengthen the capacity of NPO staff as well as to start up new businesses. It consisted of (1) an introductory course, the partner course, and (2) an advanced course, the expert course. In the expert course, higher-level and more specific curriculums were included. The latter one, the groundwork incubation, was a community employment creation program. In this program, the competitions were held to evaluate the proposals and NPOs and social enterprises to support were selected.

The total number of the graduates of the internship course reached 2684. In addition, the groundwork incubation course supported the 161 start-ups of NPO and other social enterprises. The third-party evaluation report[7] appreciated the performance of the program based on the results of the survey on the graduates and the calculation of the social rate of return on investment. The following issues were regarded as important in the report: (1) the nationwide coverage of the graduates, (2) the support of the creation of social enterprises in various fields, and (3) the creation of employment. In addition, the provision of other supporting services and the standardization of their quality are also important. GW Mishima has accumulated the expertise and know-how of intermediate services. It contributed to their good performance. The graduates and the new enterprises have formulated a community of NPO and related people. It means that the social capital has been fostered through the implementation of this HRD program.

[7] "The abridgment of the third-party evaluation report on the social effects of the community employment creation program by Groundwork Mishima" http://www.gwmishima.jp/modules/information/index.php?lid=623&cid=56

On the other hand, the capacity building of the staff is a challenge particularly for a small NPO like GW Mishima. In fact, there is no particular program to improve the ability of its staff to be a leader. The education of staff has had to be done by the on-the-job training. For this purpose, the authority of the current leader has been gradually delegated to the staff. The delegated staff are required to understand their position and roles and to collaborate effectively with concerned persons inside and outside of the organization, while they need to have basic business skills such as document preparation, personnel management, and accounting.

The young staff of GW Mishima often resign in a relatively short period. Their unstable employment condition is considered to be one of the important reasons for their resignation. Their situation seems to be more difficult as compared to the case of regional managers working for LAG of the LEADER program of EU because of the generally weaker support from the social welfare system of Japan. Since supplying enough opportunity of capacity building to the staff is not easy for a small NPO, it may be preferable to have a certain experience as an employee of a private company before they start to work as an NPO staff.

5.4 Summary and Conclusion

In this chapter, we studied some cases of HRD program related to the fostering of entrepreneurs for the rural innovation in Japan with the consideration regarding the lessons from the experience of LEADER in EU. As compared to the case of EU, the role of local governments is rather substantial in Japan. Therefore, it is considered that the endogenous development model of LEADER cannot directly apply and the targeted human resources to foster may be different.

However, the fiscal situation of local public entities has been becoming tighter than before in Japan, and the shrinkage of their roles may not be avoidable. Therefore the organizational innovation of the whole region has become more desired. MAFF of Japan has started the Savor Japan project in 2017. The project is to certify the areas trying to attract foreign tourists by utilizing the value of local foods and local primary industry. The destination management/marketing organization (DMO) is established in the certified area as the core organization of the project implementation. DMO is organized by various area-oriented businesses. This execution style is partly similar to LEADER, where LAG is the center of project activities. In the era of NRP (OECD 2006), the entrepreneurs who bear the organizational innovation in the rural region are considered to lead the formulation of the new social networks consisting of the actors from the diverse industrial sectors. Savor Japan project may be regarded to reflect the phenomenon that is described as NRP.

We found that several vocational training courses related to agriculture have been offering the capacity-building curriculums as the participants of those courses grow to the regional leaders and come to need more advanced information. The consecutive vocational education for farm business executives and the local public entity staff responsible for the planning and management of a rural development project is

considered to be effective because they may be core human resources for the regional development. The university faculties related to community studies, most of which have been established recently, can effectively work in harmony with existing consecutive education programs for working adults in the field of rural development.

We have found that a variety of institutions are now implementing HRD programs related to the rural innovation; in order to improve these programs, as similarly stressed by Nishi et al. (2014), the exchange of the experience and the lessons learned from the past challenges should be enhanced, and the experience of the LEADER programs in EU should be more deeply used as a reference.

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Chapter 6
Issues on Innovation in Japanese Farm Business

Kiyoshi Saito

Abstract This chapter treats agricultural entrepreneurship and innovation in Japan. The key question is, in spite of so many farmers with strong business mind have been appearing everywhere in Japan, why Japanese agriculture has still been shrinking? As we call the driving force of getting industry up as innovation, we expect it to create a new market. But the concept of innovation has multiple meaning today, and we have to consider the concept theoretically. In this chapter, we define innovation as activities of producing new business ideas or behaviors for developing new business value. Innovation works in business field. And we treat business not only private business but also community business and social business. We understand the essence of business as creating new value and improving social welfare. To discuss entrepreneurship and innovation, I take up three studies of innovation research. The first is disruptive innovation theory by Clayton M. Christensen, the second is P. F. Drucker's innovation and entrepreneurship theory, and the last is diffusion of innovation theory by E. M. Rogers. Through discussing the three studies, we search for a key point of treating innovation and entrepreneurship. And we proceed to the next discussion using Anita McGahan's industrial model which divides all industry into four patterns. Showing statistical data, we search the pattern for Japanese agriculture. And in the last discussion, we consider the value process of farm products. What players get involved in this value – generating process? If there are so many kinds of players there, they exchange the business ideas and actions, that will be a source of generating innovation. And ideas and actions are intangible assets. We can say intangible assets have an advantage over tangible assets to generate innovation.

Keywords Type of innovation · Industrial progress model · Value chain of farm products · Intangible assets

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A. Kiminami (ed.), *Entrepreneurship and Innovation in Japanese Agriculture*,
New Frontiers in Regional Science: Asian Perspectives 32,
https://doi.org/10.1007/978-981-13-8055-6_6

6.1 Introduction

This chapter describes chairperson's keynote of the symposium titled "Agricultural Entrepreneurship and Innovation" in 2016. Initially, when I schemed this symposium, my first thought was the following: In spite of so many farmers with strong business mind have been appearing everywhere in Japan, why Japanese agriculture has still been shrinking in gross output? Agriculture is the field where farm business is developing. If the field is getting smaller, farm business activities will be restricted. Under such condition, farm business cannot show the original power for shifting from shrinking to growing. In order to shift the trend, what business power do we need? And how can we draw a strategic scenario?

As we call the driving force of getting industry up as innovation, we can expect innovation to enlarge demand for agricultural products and create a new market. On the other hand, as the concept of innovation gets popular and broad dissemination, this concept has multiple meanings today. So first of all, we will consider a theoretical side of innovation.

6.2 Concept and Types of Innovation

6.2.1 Concept of Innovation

In this chapter, we define innovation as activities of producing new ideas or behaviors for developing new business value to create a new market. Innovation acts on business field, and the field is not limited to private business. Nowadays, the business field is expanding to take in community business and social business that include broad and profound contents. In the field many social entrepreneurs have appeared in all over the world, and they try to work to improve their society by the power of social innovation. Now business field is expanding, and various businesses have appeared there. In this chapter, we treat the essence of business as the two factors: "creating new value" and "improving social welfare."

6.2.2 Review of Innovation and Entrepreneurship Research

We can say entrepreneurship research is the most remarkable field among the business schools in the world. And entrepreneurship research can be classified into so many sub-researches. Every research is associated with just one purpose, that is, developing innovation. I will take up three typical innovation and entrepreneurship researches for building a framework of the discussion.

1. Disruptive innovation by Clayton M. Christensen

Clayton M. Christensen of Harvard Business School develops the concept of disruptive innovation. That seems the most remarkable concept in the business studies. Kusunoki comments on the concept (Kusunoki 2013) as follows: the concept of innovation apts to be misunderstood. So many business persons confuse innovation with technical improvement. But technical improvement aims to acquire competitive advantage in the existing market. That is not innovation. The essence of innovation is discontinuity. Innovation does not continue as technical improvement. For this reason, innovation has power to replace the old market to new one. In this context, disruptive innovation is the innovation in original meaning.

Christensen divides innovation into two types: sustaining and disruptive. Sustaining innovation: the concept of sustaining innovation is close to improvement of existing products or service. It does not have power to create new value and a new market. Christensen explains it as follows: "a sustaining innovation targets demanding, high-end customers with better performance than what was previously available. Some sustaining innovations are the incremental year-by-year improvements that all good companies grind out. Other sustaining innovations are breakthrough, leapfrog-beyond-the-competition products. It doesn't matter how technologically difficult the innovation is, however" (Christensen 1997). Christensen finds a problem of sustaining innovation. Improvements to a new technology are easy at first but become more difficult to achieve over time.

Disruptive innovation: the concept of disruptive innovation is extremely opposite to sustaining innovation. Disruptive innovation creates new value and a new market. It eventually replaces an existing market. Christensen explains the birth of this concept in this way (Christensen et al. 2015): "Initially, the theory of disruptive innovation was simply a statement about correlation. Empirical findings showed that incumbents outperformed entrants in a sustaining innovation context but underperformed in a disruptive innovation context." Christensen reaches the conclusion disruption which describes a process whereby a smaller company with fewer resources is able to successfully challenge established incumbent business.

Christensen describes disruptive innovation as missiles launched at your business. "And all along we've prescribed a single response to ensure that when the dust settles, you will still have a viable business: Develop a disruption of your own before it's too late to reap the rewards of participation in new, high-growth markets" (Wessel and Christensen 2012).

Christensen shows there are five barriers disruptive innovation will face: (1) the momentum barrier (customers are used to the status quo), (2) the tech-implementation barrier (which could be overcome using existing technology), (3) the ecosystem barrier (which would require a change in the business environment to overcome), (4) the new-technology barrier (the technology needed to change the competitive landscape does not yet exist), and (5) the business model barrier (the disrupter would have to adopt your cost structure).

Christensen points out large companies become bureaucratic. Innovation within them is often difficult as a result. For that reason even small company drives large company away from the market. If we accept this assumption that small companies have an advantage to develop innovation, we also know almost of all small companies will not develop innovation. Then how can we develop innovation? To this question, Christensen answers disruptive innovation theory does not dictate what managers should do. Instead it helps them make a strategic choice between taking a sustaining path and taking a disruptive one. Kusunoki comments the question as follows: the question of how to generate innovation is quite unreasonable. Innovation is not a result whether you can do it or not. On the contrary, that is a result whether you can get an inspiration or not. And in most cases, inspiration does not come, and almost all inspiration will not bear fruits (Kusunoki 2013).

When we face up to this opinion, we are lost to accept it. We may feel that developing innovation seems like a kind of gambling in this context. But does developing innovation depend on our fate? Is business a work for searching good fortunes? Theodore Levitt advocates innovators are not inventors. Levitt remarks destructive behaviors to the existing market have sometimes fatal effects on the company. In extreme case, they crush company before acquiring benefits from the innovation (Levitt 1974). We can name it innovation risk. If innovations have big power to replace existing market to a new one, innovations also contain a huge risk to collapse the company. That seems natural in high benefit-high risk as correspondence principle.

2. Systematic innovation by P. F. Drucker

P. F. Drucker defines innovation in demand terms as changing the value and consumer satisfaction. And he pursues the essence of innovation to create future business value and a new market. This is common to Christensen's opinion. However Drucker shows quite opposite way on developing innovation and entrepreneurship. Drucker shows his opinion in this way: "Whereas much of today's discussion treats entrepreneurship as something slightly mysterious, whether gift, talent, inspiration, or 'flash of genius', this book represents innovation and entrepreneurship as purposeful tasks that can be organized – are in need of being organized – and as systematic work. It treats innovation and entrepreneurship, in fact, as part of the executive's job" (Drucker 1985).

Innovation should be organized, systematic, rational work. That is Drucker's belief. He advocates opportunities for innovation require more than mere luck or intuition. They demand the enterprise search for innovation, be organized for it, and be managed so as to exploit it. Drucker understands innovation as the duty of entrepreneurs. So they have to learn to practice systematic innovation. Drucker remarks systematic innovation consists in the purposeful and organized search for changes, and in the systematic analysis of the opportunities, such changes might offer economic or social innovation.

Drucker also advocates entrepreneurship is the skill to acquire for ordinary business person. "Everyone who can face up to decision making can learn to be an entrepreneur and to behave entrepreneurially. Entrepreneurship is behavior rather

than personality trait. And its foundation lies in concept and theory rather than in intuition." And "successful entrepreneurs do not wait until 'the Muse kisses them' and give them 'a bright idea', they go to work." That seems to be realistic and practical.

Some business person supports Drucker's opinion. Craig Wynett of Procter & Gamble shows his business belief as follows: "Today's most sought –after business talent is the ability to originate. But the perception of the creative process is still based on self-limiting assumptions about eureka lightbulbs flashing over the head of some inspired genius rather than the well-managed diligence of ordinary people. At P&G we think of creativity not as a mysterious gift of the talented few but as the everyday task of making nonobvious connections- bringing together things that don't normally go together" (Wynett 2002).

"Make it the Norm" is the key phrase of Wynett. "What we've done to encourage innovation is make it ordinary. By that I mean we don't separate it from the rest of our business." And "For innovation to be reliable, it needs to be addressed systematically, like any business issue in which you define the problem and then solve it: What do we want to accomplish, and how? What resources will we need? Who will be on the team? How do we motivate and reward them? And how will we measure success?"

Drucker remarks we cannot yet develop a theory of innovation. But we already know enough to say when, where, and how one looks systematically for innovative opportunities and how one judges the chances for their success or the risks of their failure. We know enough to develop, though still only in outline form, the practice of innovation.

And Drucker presents another new concept. That is entrepreneurial society. Drucker emphasized the importance of building entrepreneurial society. That is a society filled with entrepreneurship where people can accept changes and take a positive action. However it is difficult to build such a society, because all of us tend to believe that anything that has lasted a fair amount of time must be "normal" and go on "forever." Anything that contradicts what we have come to consider a law of nature is then rejected as unsound, unhealthy, and obviously abnormal.

Drucker advocates what we need is an entrepreneurial society in which innovation and entrepreneurship are normal, steady, and continuous. We need to encourage habits of flexibility, of continuous learning, and of acceptance of change as normal and as opportunity – for institutions as well as for individuals. The emergence of the entrepreneurial society may be a major turning point in our history.

3. Diffusion of innovations by Everett M. Rogers

Drucker focuses on the both ends of innovation that are occurrence and acceptance of innovation. Everett M. Rogers pays his attention to the middle process which links both ends of innovation. Rogers names that diffusion of innovations. He shows the beginning of the research in this way (Rogers 2003). "My introduction to research on the diffusion of innovations happened in the following manner. I became interested in the diffusion of agricultural innovations by observing farmers in my home community, who delayed for several years in adopting new ideas that could

have been profitable for them. This behavior was puzzling and frustrating to me. Why didn't farmers adopt innovations? Factors other than just economic explanations must have been at work."

His research treats about regularities in the diffusion of innovations and the people who adopt them. The diffusion of innovations explains social change, one of the most fundamental of human processes. Diffusion is the process in which an innovation is communicated through certain channels over time among the members of a social system. It is a special type of communication, in that the messages are concerned with new ideas. Communication is a process in which participants create share information with one another in order to reach a mutual understanding.

Rogers classifies diffusion process by which (1) an innovation (2) is communicated through certain channels (3) over time (4) among the members of a social system. The four main elements are the innovation, communication channels, time, and social system. Rogers defines an innovation as an idea, practice, or object perceived as new by an individual or other unit of adoption. Communication is defined as the process by which participants create and share information with one another in order to reach a mutual understanding. The essence of the diffusion process is the information exchange through which one individual communicates a new idea to one or several others. And time is the third element in the diffusion process.

Rogers emphasizes social system as the fourth element in the process. A social system is defined as a set of interrelated units that are engaged in joint problem-solving to accomplish a common goal. The members or units of a social system may be individuals, informal groups, organizations, and/or subsystems. And to the extent that the units in a social system are not all identical in the behavior, structure exists in a system. Structure is defined as the patterned arrangements of the units in the system. This structure gives regularity and stability to human behavior in a system. So the structure of a social system can facilitate or impede the diffusion of innovations. Rogers emphasizes the social structure which seems like Drucker's entrepreneurship society.

Rogers focuses on the role of opinion leader and change agent in diffusion process. Opinion leader is different from innovator. And most of the innovators cannot give effect to other members. Rogers says the most innovative member of a system is very often as a deviant from the social system and is accorded a status of low credibility by the average members of the system. This individual's role in diffusion (especially in persuading others to adopt the innovation) is therefore very limited. Opinion leaders provide information and advice about innovations to other individuals in the system. Opinion leadership is the degree to which an individual is able to influence other individuals' attitudes or convert behavior informally in a desired way with relative frequency. When the social system is oriented to change, the opinion leaders are more innovative, but when the system's norms are opposed to change, the behavior of the leaders also reflects this norm. Opinion leaders thus exemplify and express the system's structure.

Change agent is an individual who influences clients' innovation – decisions in a direction deemed desirable by a change agency. The change agent usually seeks to obtain the adoption of new ideas but may also attempt to slow down diffusion and

prevent the adoption of undesirable innovations. Change agents often use opinion leaders in a social system as their lieutenants in diffusion activities.

Diffusion theory of Rogers is derived from his agricultural experiences and studies, so it seems persuadable for us.

6.3 Identifying Industrial Change and Required Innovation Type of Japanese Agriculture

I will show the framework model to consider industrial change of Japanese agriculture and required innovation type. I introduce the industrial change model that Anita M. McGahan presents. McGahan shows her basic perspective as follows: the need to understand change in your industry may seem obvious, but such knowledge is not always easy to come by. To truly understand where your industry is headed, you have to take a longer-term look at the context in which you do business. "No innovation strategy works for every company in every industry. But if you understand the nature of change in your industry, you can determine which strategies are likely to succeed and which will backfire" (McGahan 2004).

McGahan draws four distinct trajectories – radical, progressive, creative, and intermediating – defined by using two factors of threats of obsolescence. The first factor is a threat to the industry's core activities – the activities that have historically generated profits for the industry. These are threatened when they become less relevant to suppliers and customers because of some new, outside alternative. The second factor is a threat to the industry's core assets – resources, knowledge, and brand capital – that have historically made the organization unique. These are threatened if they fail to generate value as they once did.

McGahan shows trajectories of industry change map in Table 6.1. Radical change occurs when an industry's core assets and core activities are both threatened with obsolescence. This trajectory is closest to the concept of disruptive change that Christensen discusses. Under this scenario, the knowledge and brand capital built up in the industry erode and so do customer and supplier relationship. When neither core assets nor core activities are threatened, industry's change trajectory is progressive. Creative change occurs when core assets are under threat but core activities are

Table 6.1 Trajectories of industry change

		Core activities	
		Threatened	Not threatened
Core assets	**Threatened**	**Radical change** *Everything is up in the air*	**Creative change** *The industry is constantly redeveloping assets and resources*
	Not threatened	**Intermediating change** *Relationships are fragile*	**Progressive change** *Companies implement incremental testing and adapt to feedback*

Source: McGahan (2004)

stable. This means that companies must continually find ways to restore their assets while protecting ongoing customer and supplier relationship. Intermediating change occurs when core activities are threatened with obsolescence – customer and supplier relationships are stretched and fragile – while core assets retain their capacity to create value.

Then we will go to the next stage to identify the type of Japanese agriculture's change. Based on McGahan's model, I show some figures regarding 30-year changing of Japanese agriculture in Table 6.2. We can catch the facts as follows: gross agricultural output and gross agricultural income of Japan are decreased drastically in this period. And eventually the income ratio declined from 39% (1984) to 34% (2014). That shows profitability of Japanese agriculture is weakened. Moreover self-sufficiency rate is also declined from 81% (1984) to 64% (2014). That decline is caused by the increasing of agricultural import. Those agricultural import products replace Japanese products in the market. When we see such core activity indexes, we cannot deny that core activities of Japanese agriculture have been threatened.

How about core asset indexes? These indexes also show deterioration. From the viewpoint of farm labor, farmland, and capital, those assets are threatened obviously. The number of farm labor is decreased dramatically and aging is ongoing. We can see the same deterioration in other indexes. Then are core assets of Japanese agriculture also threatened? But McGahan shows core assets include not only hard assets but also soft assets like knowledge and brand capital. It is difficult to show the figures on these soft assets because those are intangible assets. In this field, Japanese agricultural products do not seem they are threatened. People in Japan trust on domestic products, and they place high value on domestic agricultural products. Washoku, a traditional dietary culture of Japanese, has been designated to UNESCO's Intangible Cultural Heritage since 2013. Washoku is a social practice

Table 6.2 Indexes of core activities and core assets of the last 30 years (1984–2014)

Core activities indexes	**Changing rate of the last 30 years (1984–2014)**
−29%	Gross agricultural production output
−39%	Gross agricultural income
39% → 34%	Farm income ratio
81% → 64%	Self-sufficiency ratio (domestic products/domestic consumption)
Core assets indexes	**Changing rate of the last 30 years (1985–2015)**
−49%	Number of farm labor
65%	Percentage of more than 65 years old in farm labor
−60%	Number of farm
30%	Percentage of the farm with any abandoned farmland
−16%	Farmland
10%	Percentage of abandoned farmland
−53%	Gross capital of agricultural investment

Source: MAFF statistical database

which links on a set of manners regarding from production to consumption of food. These manners have formed Japanese dietary culture. So it seems consociation of food and life culture. In this field, the strength of Japanese agriculture does not seem to be threatened. In worldwide, Washoku is getting popular, becomes a symbol of smart life, attracts more foreign tourists to Japan, and boosts exports of Japanese agricultural products to all over the world.

Finally we have reached the place where we should set a framework to discuss the types of industrial change of Japanese agriculture. And I will show personal opinion. If we see both of core activities and core assets have been threatened, required innovation will be disruptive innovation that can replace existing agricultural structure and form a new market. Or McGahan shows another result that is "Sometimes a few survivors can sustain profitable positions after others leave the industry." This situation seem to be an answer to the question I present at the beginning of this article: why Japanese agriculture has still been shrinking in spite of so many farmers with strong business mind who have been appearing everywhere in Japan?

I do not intend to exclude this type of innovation, but disruptive innovation will cause harsh competition to survive in the shrinking market. This situation does not fit to the essence of business that is improving social welfare. In other words, improving social welfare means the social power of making smiling face of the people in the society. There are no winners and losers there.

So I will propose to take up the required innovation type to the intermediating change in the discussion.

6.4 How Can We Draw a Strategic Scenario Based on the Intermediating Innovation?

On intermediating change trajectory, the core activity of the industry is threatened. In this case, the business activities for dealing in both downstream and upstream markets are simultaneously threatened. The industry on the intermediating change trajectory has to find unconventional ways to extract value from core assets. The ways may be diversifying the business or other business behaviors. As McGahan mentions, managing a company on the intermediating change is extraordinarily difficult. This change trajectory is perhaps the most challenging because the company must simultaneously preserve its valuable assets and restructure its business relationships.

When we intend to draw a strategic scenario, we can focus on the value chain concept, that shows the process of core assets expand core activities from production side to consumption side and untill disposal process. If so many players get involved the process as suppliers, distributers, cooperatives, wholesalers, retailers, restaurants, consumers, disposal dealers, etc. Many players take part in the process and form new value and create a new market.

When we review again core activities of Japanese agriculture for the last 30 years from the viewpoint of value chain, we can find some superior activities such as farmer's market in city and in roadside store, direct selling to the customers through the Internet, farm fair in a city, etc. These activities provide not only tangible material but also intangible value of domestic products. When we set intermediating change as a desirable direction of Japanese agriculture, we emphasize soft assets like knowledge, brand capital, etc. of Japanese agriculture. Those are all intangible assets. The advantage of intangible assets rather than tangible assets is no restriction of using resources. Tangible hard assets have a certain limitation of using resources. But intangible assets have no limitation. This will be the original power for strengthening core activities. And so many players take part in the process of creating value. Each power of players is going to pile up, and eventually it will cause big waves to expand and create a new market. Then the next stage of discussion will be how we can realize this idea. The following chapters will show some strategic ways to do that.

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Chapter 7
Innovation by Young Generations in Farm Households

Yusuke Miyaji

Abstract This chapter offers case studies to discuss the way to rebuild Japanese agriculture from the viewpoint of theories of entrepreneurship and innovation. Three cases, the Miyaji Swine Farm, Farmers' Sons and Daughters Network, and Farmers' Family Business Study Group, are analyzed, and the policy implications for the development of Japanese agriculture based on the entrepreneurship and innovation are derived.

Keywords Family farm · Innovation · Entrepreneurship · Family business succession

7.1 Introduction

I, Yusuke Miyaji, was born in 1978 as the oldest son of a small-scale pig farmer in the Shonan region. After graduating from Keio University's Faculty of Policy Management in 2001, I joined Pasona Corporation. I left the company in June 2005, after gaining experience in sales, planning and spearheading new projects, and also working in Osaka. I took over my family's swine farming operation and founded Miyaji Swine Farm in September 2006, becoming the company's CEO. With my younger brother handling production, and I being in charge of planning and marketing, we worked closely together. Using our unique BBQ-based marketing approach, we boosted Miyaji Swine Farm to become the top pork brand in Kanagawa Prefecture within 2 years. Miyaji Swine Farm received the Minister of Agriculture, Forestry and Fisheries Prize in 2008.

Although Miyaji Swine Farm grew steadily, business expansion was not the goal. I began to feel a strong sense of crisis about the status of agriculture in Japan and established the Farmers' Sons and Daughters Network, a specified nonprofit corpo-

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A. Kiminami (ed.), *Entrepreneurship and Innovation in Japanese Agriculture*,
New Frontiers in Regional Science: Asian Perspectives 32,
https://doi.org/10.1007/978-981-13-8055-6_7

ration, seeking the shortest and quickest way to achieve agricultural reform in Japan. In addition to building a platform for farmers and their sons and daughters, the nonprofit corporation provides assistance to local governments that support agriculture by working on branding their agricultural products. The nonprofit corporation also provides training for young farmers. Within Kanagawa Prefecture, the corporation has taken on such tasks as designing and marketing new Shonan souvenirs and running a training course for food and agriculture producers in Yokohama.

I published a book titled *Selling Pork with Blowing in the Wind of Shonan* in 2009 (Miyaji 2009). I received the Individuals Award, a category in the Awards of the Minister for Internal Affairs and Communications for Regional Development, in 2010. Since 2015, I have presided over the Farmers' Family Business Study Group, which studies agricultural business succession issues.

7.2 Where and How Is Innovation Brought About and by Whom?

I regard farm families' sons and daughters as those who spark innovation.

By whom: Sons and daughters of farming families
Where: In the process of taking over ancestral family operations after returning to the family farm, following business work experience in the Tokyo metropolitan area
How: Through entrepreneurship

7.2.1 Definition: A Farmer's Son and Daughter

There are two stages in being a farmer's son and daughter:

(i) The son and daughter grew up on a family farm but are not engaged in farming and instead hold a job in a different line of work or are students.

(ii) The son and daughter have returned to their family and are engaged in farming by building on the foundation of management resources (human resources, physical assets, money, information, and customers) that the previous generation has amassed.

7.2.2 The Reason that Attention Is Focused on Farmers' Sons and Daughters as Primers of Agricultural Innovation

Farmers' sons and daughters have a certain advantage that new farmers lack. Whether or not the family business has weakened, the business started by the previous generation still exists. They have access to management resources, including human resources,

physical assets, money, information, and customers, regardless of whether such resources are meager or abundant. These resources are not available to new farmers, who have to start their businesses from scratch. This is a point worth noting. Needless to say, not all farmers' sons and daughters are innovators. Vol. 54, No. 1 of *Japanese Journal of Farm Management*, April 2016, states as follows: "Many of the startups in America relate to the work that the owners were previously engaged in. There are no new business ideas and little financing from external sources. They simply do the work as independent operators and there is no innovation." As mentioned here too, farmers' sons and daughters simply returning to their family farms to engage in farming under the supervision of their parents and using the foundations built by the parents does not guarantee innovation. Conversely speaking, however, farmers' sons and daughters who gained skills, expertise, and networks through a "different job" or "academic study" prior to engaging in farming as mentioned earlier in the definition have new business ideas and connections to the outside world that the older generation of farmers lacks. They can therefore be said to be in a better position to innovate and are worthy of attention. As the first step, I will now focus on the stages that farmers' sons and daughters go through during the innovation process and reveal obstacles they encounter. It is essential that we encourage farmers' sons and daughters to return to farming and offer them assistance once they resume farming by correctly identifying their process and the obstacles they face to halt the shrinking trend of farming in Japan.

7.2.3 Stages in Which Farmers' Sons and Daughters Innovate Japanese Agriculture

Stage 01: Interested in farming and examining the possibility of returning to farming

- Something triggers the son's interest in farming (= family business).
- He begins to gather information about farming.
- He begins to recognize the meaningfulness of the family business and develops a strong respect and appreciation for his parents.
- He thinks about the purpose of work and begins to see what he wants to do at his family farm.

Stage 02: Returning to or engaging in farming

- He informs people around him of his intention to go back to his farm and persuades them to let him return to his family to start farming.
- By working with his parents, he gains an understanding of the management resources (human resources, physical assets, money, information, and customers) that his parents have built.
- He is entrusted with work and earns the trust of the people around him by completing tasks satisfactorily.
- He gains self-confidence as he becomes better at his job and realizes that he has strengths that his parents do not have.

Stage 03: Beginnings of entrepreneurship
Definition of entrepreneurship: Attitudes, ideas, and competence required to implement innovation

- Encouraged by the trust of the people around him and his self-confidence in his ability to get work done, he decides to succeed the family business as a full-time farmer.
- As he examines his parents' strengths and his own strengths in the process of succeeding the family business, it becomes clear which parts of his parents' business he should change and which parts he should preserve.

Stage 04: Innovation

- He examines what he will need to do to implement changes and proceeds to accomplish these tasks.

7.3 Case Study: Miyaji Swine Farm

7.3.1 Overview of Miyaji Swine Farm

Vision: To turn primary industries into hip, impressive, and financially rewarding industries

Mission:

- To establish a hog farming business that is capable of managing the entire process from production to the consumer's table
- To establish a business model that simultaneously reinvigorates agriculture and the community of the Shonan area
- To turn the industry into one that gives farmers' sons and daughters pride in telling others that they are family farmers and are attractive enough to entice them to eventually take over their family farms.

Business Description:

Production, processing, and sale of Miyaji Pork
Business to create barbecue culture in the Shonan area
Business of branding agricultural products

7.3.2 What Is Miyaji Swine Farm?

Miyaji Swine Farm was established in 2006 by Yusuke Miyaji, who was born in 1978 as the son of a small-scale swine farmer in the city of Fujisawa, Kanagawa Prefecture. I set up the corporation as a family business with my father Masayoshi

and my younger brother Daisuke to realize my vision of turning primary industries into hip, impressive, and financially rewarding industries. Before the corporation was established, my father Masayoshi jointly operated a pig farm with some local producers. I also independently raised Miyaji Pork as a side business. The pork that was produced and shipped was sold in supermarkets under a local brand, but the producers' names were not listed. Neither older brother Yusuke nor younger brother Daisuke initially had any intention of succeeding the family swine farm. Masayoshi did not have any particular desire to force his sons and daughters to succeed the family business either and intended to eventually close his business. The turning point came when Daisuke and I were in college and invited our friends to a barbecue party, cooking pork that Masayoshi had produced. Our brothers felt proud when our friends told them that it was the tastiest pork that they had ever eaten. But at the same time, we did not have an answer when the same friends asked where they could purchase the pork. Under the existing distribution system, farmers belong to a group that sells a certain brand of pork. Once shipped to the market, the pork that we produce is mixed with pork from other regional producers before it is sent to supermarkets. In the process, the identity of pork producers is lost.

7.3.3 Business Model of Miyaji Pork

I believed that I could make swine farming, my family's business, into an attractive profession if I could replace the conventional business model of simply producing and shipping pork with a new model in which the farmer takes control of every step from production to the consumer's table. Based on this belief, I left my corporate job after 4 years and 3 months and returned to my parents' home. My younger brother had quit his job 2 months earlier and was already working on the farm. We decided to divide the work with my younger brother taking charge of production and I handling sales. To realize our business model, we chose to name our pork after the producer rather than the location. Thus was born the name Miyaji Pork. We also named our corporation Miyaji Swine Farm. The innovation of Miyaji Pork is in its business model – what is called in the IT industry *drop shipping*. Drop shipping is a type of commercial transaction mode in which producers do not hold any inventory of their finished products and instead place a direct order with manufacturers or wholesalers only when they receive an order from their customers. Miyaji Pork has firmly established this method by forming an alliance with a meat processing company. The key point of this approach is to *purchase products only when a sale is made*. In swine farming, a unit of sale is one pig. If the pig you purchase does not sell completely before its expiration date, the rest has to be disposed of. At Miyaji Pork, pork is bought back from a meat processor only when an order is received from restaurants and individuals. Consequently, Miyaji Swine Farm bears zero sales risk.

7.3.4 Benefits of the New Business Model to Customers

The adoption of a system in which the farmer takes control of the entire process from production to the consumer's table brings certain benefits to customers. Ninety percent of Miyaji Swine Farm's customers are restaurants. Looking at this system from the point of perspective of the restaurants, pork supplied by a single producer has less variation in the taste than mixed pork from multiple producers. This makes it possible for the restaurants to offer their patrons dishes of consistent quality. Furthermore, they can buy their ingredients from specific producers. This has the effect of creating close ties between producers and restaurants. Restaurants can directly ask the producers what kind of special care they take in producing their ingredients. The restaurants can share this information with their patrons and increase the added value of their foods.

7.3.5 Stages of Innovation Creation in Farming by a Farmer's Son: Case of Miyaji Swine Farm

Stage 01: Interest in farming and examining the possibility of returning to farming

The two brothers, Yusuke and Daisuke, initially had no interest in the pig farming business (Miyaji Swine Farm) that their father ran. But they realized the exceptional flavor of the pork their father produced when they threw a barbecue party in college. They also began to wonder why they were unable to figure out where the pork could be purchased. Furthermore, they thought it would be a shame if such flavorful pork became unavailable once their father retired.

After graduating from college, the older brother went to work for a temporary employment agency, while the younger brother found a job with a major restaurant chain. Once employed, they began to explore how they could find meaningful work to devote themselves to for the rest of their careers. They remembered the barbecue and came to the conclusion that the work that best suited them would be continuing the family business. When the thought of turning primary industries into industries that are hip, impressive, and financially rewarding came to their minds, a light bulb turned on. They made a decision to return to farming. This concept became the vision for Miyaji Swine Farm, which they later created.

Stage 02: Returning to or engaging in farming

Father Masayoshi completely rejected my idea that a farmer should take control of the entire process from production all the way to the consumer's table. I had to tell my father at every opportunity I could find that I was determined to tackle this task over the entire course of his career. Once my father realized that my determination was firm, he allowed me to return home. But it took a while before I could leave the company I had been with. My younger brother Daisuke had quited his job with a restaurant chain and began to work on the farm 2 months before I returned. Not

finding a need for his help on the farm, I took it upon myself to market the flavorful pork that Masayoshi and Daisuke produced. Until then, information about the pork's distribution and consumption was unavailable to farmers. My plan was to turn the pork into a brand called Miyaji Pork, send e-mail newsletters to my friends and acquaintances, and build a fan base by hosting barbecues.

Stage 03: Beginnings of entrepreneurship – attitudes, ideas, and competence required to implement innovation

We divided the work between ourselves with my younger brother Daisuke guarding the technology to produce high-quality pork that was established by our father and I capitalizing on the network-building and sales skills that were developed by myself since I was in college. I took charge of the process from creative planning to sales. I changed distribution channels, established a direct sales system for Miyaji Pork, and held barbecues to find new customers. Once I began to hear the praise of customers for the flavorful pork first hand, and the sales from the direct sales department grew, I earned my father's trust. Upon my father's urging, I decided to incorporate the family business. The business succession took a big step forward once the business was incorporated.

Stage 04: Innovation

Stage 04 progressed parallel to the formation of entrepreneurship in Stage 03.

An established value chain exists in the stockbreeding industry. Rather than destroying it, I decided to use it effectively. A meat wholesaler who supported the idea of Miyaji Pork suggested that I buy back Miyaji Pork from the wholesaler after he purchased the pork from the market. It thus became possible to sell the pork produced under the Miyaji Pork brand without owning a store or a processing plant or hiring boning workers.

7.3.6 Summary

With this series of stages, the business model of turning an ordinary pig farm, whose job ended when meat was shipped to market, into a "pig farm and butcher without a store" became established. It became possible for the produced product (pork), which used to be mixed with pork from other local producers and sold at unknown outlets, to be sold directly to restaurants and department stores. It also became possible to design and operate a venue where the produced product could be enjoyed by consumers (at barbecues). In addition, it became possible to negotiate directly with meat processors who make ham and sausage to develop products according to Miyaji Pork's needs. In short, Yusuke was able to realize pig farming where the business operator has control over the entire process from production to the consumer's table.

7.4 Case Study: Farmers' Sons and Daughters Network—An NPO

7.4.1 Overview of the Farmers' Sons and Daughters Network—An NPO

With a mission to turn primary industries into industries that are hip, impressive, and financially rewarding, I returned home and established Miyaji Swine Farm. The business was sound, but simply letting Miyaji Pork become hip, impressive, and financially rewarding was not the same as fulfilling my mission. Using zero-base thinking, I tried to determine what was most important to turn primary industries into more attractive and rewarding industries. The conclusion I reached was that the youths who had grown up on farms and worked in cities had to return home and succeed their fathers' work. I established the Farmers' Sons and Daughters Network, an NPO that communicates the attractiveness of farming and its potential to farmers' sons and daughters who work in cities and provides support to those returning to farming.

7.4.2 Major Achievements of the Farmers' Sons and Daughters Network

(i) Social gatherings strictly of farmers' sons and daughters and farm operators
(ii) Operating a market in the heart of Tokyo
(iii) Joint planning and management of an experimental farm restaurant
(iv) Joint planning and management of an Internet shop with an IT venture company
(v) A realistic farming experiential tour in collaboration with a tourist agency
(vi) Planning and management of social exchanges between farmers and people interested in farming (in 22 prefectures all across Japan)
(vii) Matching individuals in the food industry in central Tokyo with farmers on remote islands
(viii) Organizing a business plan contest
(ix) Planning and managing a training program to nurture individuals who promote community revitalization
(x) Aiding with efforts to recover from the damage caused by the Great East Japan Earthquake
(xi) An audition to find a star farm with an award of 1 million yen

7.4.3 Tasks Ahead to Realize Agricultural Growth Fueled by Innovation

I have tackled a whole range of tasks, to say nothing of extending support to farmers' sons and daughters working in central Tokyo to return to farming. What I realized in the process is that when a son or daughter simply returns home to learn farming technology and produces crops, the business size ends up contracting. Inheriting the management resources (or five types of resources, consisting of human resources, physical assets, money, information, and customers) of a family operation does not guarantee innovation or agricultural growth.

7.4.4 Conditions for Innovation: Entrepreneurial Spirit

For a farmer's son to innovate, I must first examine my father's strengths and my own to determine what should be kept and what needs to change as I take over the management resources built by my father. These resources consist of human resources, physical assets, money, information, and customers. I need to have the desire to create new value by playing to my strengths. This process is often called *business succession*. In other words, a farmer's son develops the entrepreneurial skills – attitude, ideas, and competence – necessary to innovate during the process of business succession.

7.4.5 Farmers' Sons and Daughters and Business Succession

Entrepreneurial skills are not something a gifted individual is born with. They are acquired as the person builds experience. In the case of a farmer's son, I am not starting a new business from scratch. My motivation to link the farm land and other agricultural assets inherited from my ancestors to the next generation tends to prompt entrepreneurship. In other words, assistance has to be given to farmers' sons and daughters to ensure smooth business succession. Doing so will foster entrepreneurship, which is required for innovation that will fuel the growth of the agriculture industry.

Today, business succession is an important issue in all industries, and a number of books have been published on this subject. Many, however, are written by tax accountants, and the focus is on the inheritance of money. Four additional components, namely, human resources, physical assets, information, and customers, need to be considered. For this reason, I launched the Farmers' Family Business Study Group to help farmers' sons and daughters take over their family operations without running into difficulties by addressing all five elements.

7.5 Case Study: Farmers' Family Business Study Group

Objectives:

(i) To be proud of one's family business
(ii) To find peers to discuss management issues that cannot be discussed constructively with family members
(iii) To promote business succession

Members: Farmers' sons and daughters, farmers, successors in different types of business, and people who are interested in agriculture

Study Topics:

(i) Introduction to family business: Start business succession immediately.
(ii) Succession of *human resources*: Recognize the strengths of one's father.
(iii) Succession of *physical assets*: Create a new business model.
(iv) Succession of *money*: Strategizing inheritance is not business succession.
(v) Succession of *information*: Narrate what the family had in their mind, in starting the business and its history.
(vi) Succession of *customers*: Business means gaining new customers

The Farmers' Family Business Study Group regards business succession as the most serious task in the agriculture industry. Every month, the group offers a place for farmers' sons and daughters (regardless of whether they are already engaged in farming) to learn about techniques for smooth business transition and the value of their family business. Learning about the inherent value of their family business has the effect of fostering respect and appreciation for their fathers. Without this appreciation for the previous generation's work, business succession cannot move forward. Regardless of whether one is going to succeed the business, he has to be grateful that his parents have built a business and management resources that he can take over.

After meeting a number of farmers, I realized that learning about and implementing business succession leads one to become an entrepreneur. Entrepreneurial farmers construct a business model that capitalizes on new ideas and perspectives, skillfully make adjustments, and avoid the pressure to follow prevailing regional and farming tendencies. In many instances, these sons and daughters develop new sales channels by independently devising new production technology and marketing techniques instead of relying on the existing system. They also persevere until their business is well established without being discouraged by failures. To promote business succession, one has to maintain a positive attitude about thinking on your own and acting by yourself. This is because fathers do not trust their sons and daughters enough to take over their family business if the sons and daughters have a passive attitude.

Nevertheless, few understand the concrete steps needed in order to take over a business. Thus, the Farmers' Family Business Study Group breaks up business succession into five components, consisting of human resources, physical assets, money, information, and customers, and specifies multiple steps in each category

that need to be tackled, as well as the proper mindset for the task. For example, the succession of money involves the *planning and completion of stock transfer*. If it is information that is to be transferred, *summarizing the family's farming history such as the family tree and company history* is covered. The direction and strategies that the company should assume become evident in the process of business succession. Furthermore, one's own personal growth enables entrepreneurship.

7.5.1 Entrepreneurial Spirit and Innovation in Agriculture

What would be the steps to convert Japanese agriculture into a growth industry? I can speak confidently, based on my personal experience that started with the barbecue in my college days and stretched over the management of Miyaji Pork Corporation, activities of the Farmers' Sons and daughters Network, examples of a number of farmers I got to know, and debates held by the Farmers' Family Business Study Group, that it is essential that farmers' sons and daughters return to their homes and take over their family farms for Japanese agriculture to expand. At the risk of being misunderstood, I must say that there are only two types of people who can do farming. One is new farmers and the other is farmers' sons and daughters. Farmers' sons and daughters have advantages that new farmers do not. The advantages are the management resources that their fathers have built.

Farmers' sons and daughters do not need to have the intention of taking over their family farms from a young age. It is actually better if they have no interest in farming and study in other fields or work in different professions so that they gain skills, expertise, and networks that their fathers do not have. With these assets, they can develop and execute new business ideas that their fathers did not even fathom.

When they become interested in farming after they have gained outside experience, they will be able to examine their family's situation in an objective light. They will also have the ability to quickly recognize the strengths of their family business and identify what they must change and what they have to preserve in the course of their business succession. During this time, entrepreneurial spirit, an essential component of innovation, will be developed. In short, farmers' sons and daughters taking over their family business after going through this process has a direct impact on business growth. It is precisely because of this that farmers' sons and daughters who gain business experience in cities and develop entrepreneurial skills while succeeding and innovating their family businesses will lead the expansion of Japanese agriculture.

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Chapter 8
Women's Advancement of Agriculture and Rural Society: Considerations on the Innovations by Women in Agriculture

Hiroko Aoyama

Abstract After World War II, Japanese women in agriculture expanded their skills in food processing and direct marketing with the help of agents of the Cooperative Extension Service. This expansion of skills became the driving force behind female entrepreneurship in rural areas, which has become increasingly active year after year, with its activities demonstrating that agriculture is an industry that includes not only agricultural production but also food processing and marketing. Some more independent women in agriculture started their own businesses without participating in such cooperative activities. These more independent women in agriculture typically faced common challenges, such as weak sales, and their entrepreneurship was a response to these difficulties. We have also seen an increasing number of agricultural corporations employing female human resources in a variety of activities, including more socially responsible business practices such as environmental conservation and promoting the welfare of various groups in society.

Keywords Women in agriculture · Business startup

8.1 Introduction

Since the end of World War II, the focus of agriculture in Japan has been on mass production, with scale expansion and labor savings, in order to increase food production and achieve selective expansion. Agricultural policies have been implemented accordingly. Meanwhile, consumer-oriented agricultural activities, such as agricultural processing, direct selling of agricultural products and processed goods

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A. Kiminami (ed.), *Entrepreneurship and Innovation in Japanese Agriculture*,
New Frontiers in Regional Science: Asian Perspectives 32,
https://doi.org/10.1007/978-981-13-8055-6_8

to consumers, and managing restaurants that use local ingredients, have been sustained mainly by women in agriculture and viewed as subsidiary.

However, as farming business models became more diversified, models incorporating processing and direct sales to consumers gradually became more accepted. According to the National Chamber of Agriculture and the National Consultation Center for New Farmers (2014), about 20% of new farmers are aiming from the beginning to create this type of diversified agricultural enterprise.

Thus, while efficient production through scale expansion and labor savings is still the primary direction of agriculture in present-day Japan, the above-described type of diversified agricultural business model is now common. This is a significant innovation compared to the previous era, where mass production was the sole focus; and women in agriculture have played a significant role in this innovation. Women in agriculture have been highly influential in Japanese agriculture's adoption of the market-in concept of "producing things that sell," replacing the traditional concept of "selling things that are produced."

In this paper, the author reviews past political developments that supported women in agriculture and conducts case analyses in light of two questions: (1) What is the historical background to the innovations made by women in agriculture? (2) Having achieved these innovations, to what ends do women in agriculture intend to direct their new capacities?

In Sect. 8.2, while focusing on national policies and organizational activities led by women in agriculture, the author describes in detail how the position and activities of women in agriculture, who had long been viewed as playing a subordinate role in family and society, have changed with the times. In Sect. 8.3, the author analyzes the motivations behind the entrepreneurship of leading women in agriculture, to discover what conditions and circumstances prompted them to expand their activities. In Sect. 8.4, with the aim of elucidating the future prospects for success of innovative women in agriculture, the author introduces some examples of corporations engaged in social business and seeking to improve the situation of female employees. In the final section, the author summarizes the paper and provides some prospects for future research.

8.2 Historical Background of Women in Japanese Agriculture

8.2.1 Historical Periods

The roles and position of women in agriculture and rural areas have changed greatly over time. Table 8.1 summarizes these changes. The history being considered can be divided into three periods: the independence period (end of World War II–1991), the development period (1992–2009), and the transition period (2010–present).

Table 8.1 Historical developments related to women in agriculture

	Independence period	Development period	Transition period
Time period	End of World War II–1991	1992–2010	2010–present
Primary events relevant to women in agriculture	Activities of the home living improvement groups	Increased number of agricultural business startups	Creation of organizations aimed at cooperation between women in agriculture and companies
			2013: Agri-girl Project
			2014: Women's Association for the Development of Future Agriculture
	Establishment of a foundation for cultivating entrepreneurship	Creation of organizations by women in agriculture	Rise of women in agriculture committed to social business
		1994: Rural Heroines	Introduction of greater workforce diversity
		1995: Women Farmers Association	
		2005: Yamato Rinrin Agrinet	
Legal and political developments supporting women in agriculture	1948: Implementation of the Agricultural Improvement Promotion Act	1992: Formulation of the Medium- to Long-Term Vision	2010: Promulgation of the Sixth Industry Act
	1949: Introduction of the Home Adviser Qualification Test	1995: Full-scale promotion of family management agreements	2014: Implementation of the Act on Promotion of Women's Participation and Advancement in the Workplace
	1975: Adoption of the World Plan of Action at the World Conference on Women	1997: Implementation of the Basic Act for Gender-Equal Society	2015: Establishment of an award for Women's Active Participation in Agricultural Management (WAP 100)
	1991: Abolishment of the home adviser position	1997: Survey of the entrepreneurial activities of rural women by the Ministry of Agriculture, Forestry and Fisheries	

Source: Data prepared by the author

The foundation for the current success of women in agriculture was established in the independence period. Home living improvement groups played a major role in laying this foundation. In response to the adoption of the Agricultural Improvement Promotion Act of 1948, home living improvement groups were formed throughout the country; and women in agriculture gained experience in agricultural processing and direct sales of produce while receiving guidance and support from home advisers.

The position of home adviser was abolished in 1991, and its responsibilities were subsumed by agricultural improvement advisers. This may have reflected the government's judgment that the activities of home living improvement groups had become sufficiently established, and their aim of improving women's self-reliance and status had been significantly achieved. In 1992, the Ministry of Agriculture, Forestry and Fisheries formulated its Medium- to Long-Term Vision through 2001 for Women in New Agricultural, Mountainous and Fishing Villages (hereinafter abbreviated as the Medium- to Long-Term Vision) and began providing full-scale support for the entrepreneurship of women in agriculture. This can be seen as a shift from supporting women's independence to supporting their entrepreneurship. The above events form the basis for the division between the independence period (ending in 1991) and the development period (beginning in 1992).

The entrepreneurial activities of rural women, which went into full swing during the development period, had great influence not only on women's independence but also on local society. For instance, according to Ooba et al. (2013), "The move from having income generated by byproducts to having income generated by in-dependent projects resulting from entrepreneurial activity is one aspect of farming diversification"; and according to Tsuru (2003), "The transformation of agriculture in-to its sixth industry form prompted a reassessment of the role of women in agriculture." Due in large part to the entrepreneurial activities of women in agriculture, agriculture became a diversified industry involving not only production but also processing, distribution, sales, and consumer relations. This diversification of agriculture was eventually articulated as the sixth industry concept (primary industry + secondary industry + tertiary industry), which was positioned as one of the government's most important policies. The innovations led by women in agriculture in the development period were very successful in changing the conception of agriculture.

The transition period begins in 2010, when the Ministry of Agriculture, Forestry and Fisheries promulgated the Act on the Creation of New Businesses Using Local Resources by Persons Engaged in Agriculture, Forestry and Fisheries and on the Promotion of the Use of Local Agricultural, Forestry and Fishery Products (commonly known as the "Sixth Industry Act") and designated the act as one of the Ministry's most important policies. The Ministry categorized sixth industry agriculture into processing, direct sales, restaurants, exports, and activities that were combinations of the previous types. These categories were largely based on activities that women in agriculture had been actively pursuing since the independence period. Sawano (2012) summarizes the shift to sixth industry as follows: "This reflects the advancement of efforts of rural female entrepreneurs, and their contribution to the progress of the sixth industry." That the women-in-agriculture-led move toward a more diversified approach to agriculture was adopted in important government policy can be seen as proof that the activities of women in agriculture had become widely recognized. The period dating from 2010 onward is defined as the transition period, during which further innovation is expected.

In the transition period, which we are currently in, women in agriculture are expected to make additional innovations. The status of women in family and society has now improved considerably. Some women in agriculture have already extended

their entrepreneurial efforts into social activities related to the environment and welfare. There are also some female executives who, taking advantage of their own experience in balancing work and family, are focusing on recruiting and training female employees and on creating a workplace where work-life balance is an important consideration.

8.2.2 Characteristics of the Independence Period

Under the patriarchal system, women played a subordinate role in family farming, and their status upon marrying into a new family was low. No matter how much they worked, these women could never earn their own income; thus, when they wanted to purchase personal belongings, they had to get permission from their father- or mother-in-law. To improve this situation, home advisers at agricultural extension centers provided guidance and support to raise the status of women. Specifically, home advisers organized women in agriculture and encouraged them to take advantage of technology and experience acquired in-home living improvement group activities, to engage in such pursuits as miso and pickle processing. The processed agricultural goods produced in this way were sold at unattended farm stands, as well as at periodic morning and evening markets. The income earned in their own name (even if initially only in small amounts) gave women in agriculture a feeling of appreciation and a sense of accomplishment, which grew as sales increased. This contrasted with how unappreciated they felt at home and by society for their unpaid labor, no matter how hard they worked; thus, these women in agriculture were highly motivated by these feelings of appreciation and accomplishment to continue their paid activities outside the home.

Ichida (2003) and Sawano note the influence of the World Plan of Action (adopted in 1975) in enabling the activities of women in agriculture outside the domestic sphere (i.e., their entrepreneurial activities). This influence was primarily exerted through the home living improvement groups, whose main purpose was to promote women's self-reliance. In the World Plan of Action, aimed at improving the status of women and adopted at the World Conference on Women, the decade beginning in 1975 was designated as the UN Decade for Women. Ichida notes that this movement had an influence on the policies of the Ministry of Agriculture, Forestry and Fisheries, noting that "The Daily Life Improvement Division, which had been responsible for daily living improvement projects, was commissioned to implement policies for women in agricultural, mountainous and fishing villages; policies that would make full use of past achievements." According to Sawano, the Headquarters for the Planning and Promoting of Policies Relating to Women, established by the Japanese government in response to the adoption of the World Plan of Action, formulated domestic action plans, including policies for rural women. Sawano further notes that, in the 1980s, women's activities in agricultural processing began to draw attention, and this was related to the rise of the One Village One Product movement in Oita Prefecture and other regions. The author would suggest that business projects

evolved from experience and technology gained through agricultural processing and direct sales, coupled with the influence of the international movement and regional development policies aimed at improving the status of women.

8.2.3 Characteristics of the Development Period

1. Political developments supporting women in agriculture and voluntary organizational activities of women in agriculture

During the development period, which began in 1992, the entrepreneurial activity of women in agriculture went into full swing and grew substantially. In this year, the Ministry of Agriculture, Forestry and Fisheries developed its Medium- to Long-Term Vision. The vision statement noted the importance of supporting the development of women's entrepreneurial activities, such as agricultural processing and farm restaurant management, viewing these as incipient, regionally based businesses that were potentially profitable. Saito (2010) notes that the term "support for women's entrepreneurship" was used for the first time in this vision statement.

A movement to clarify the position of women in family agricultural businesses was occurring at the same time. Since 1995, signing a family management agreement had become a requirement for women in agriculture to join the Farmers Pension Fund; this agreement stipulated management policies, roles, employment rules, and other practices for members engaged in family-run farming. As a result of this requirement, the number of signed agreements had been increasing. In 1999, the Basic Act for Gender-Equal Society came into effect, with the aim of achieving a society where both genders' human rights were respected and their potential fully realized.

At this time, women in agriculture began to spontaneously establish organizations, such as Rural Heroines, the Women Farmers Association, and Yamato Rinrin Agrinet.[1] Founded in quick succession, these functioned as information exchanges for active women in agriculture and created opportunities for their members' activities to be recognized outside the domestic sphere. According to Tsuru, nationwide activities were "in a mutually complementary relationship" with local activities centered on villages where farmers lived, and the nationwide activities "provided constant opportunities to confirm the meaningfulness and validity of locally based activities."

Among the women in agriculture who answered the survey on the motivations for entrepreneurship (discussed in Sect. 8.3), a significant number replied, "Participating in nationwide activities was stimulating and provided a boost to

[1]Yamato Rinrin Agrinet consists of about 30 female members (as of December, 2016), who are business managers, spouses of organizational representatives, and/or executives of agricultural corporations that belong to the Japan Agricultural Corporation Association.

entrepreneurship." The nationwide activities, therefore, played a major role in encouraging the activities of women in agriculture.

During the independence period, most women in agriculture entered agriculture as a result of marrying into a farming family; however, in the development period, a growing number of women chose agriculture as an occupation. Some started their own farms despite having a background outside agriculture, and others became employed by agricultural corporations. In addition, women in agriculture expanded the range of their agricultural activities; for example, the number of women serving as corporate officials alongside their husbands increased. One of the key features of the development period was that it became possible for women to be active in agriculture in many different ways.

2. Effect of external factors

There were also external factors behind the expansion of the activities of women in agriculture. One of these was the establishment of more and better farm stands and roadside stations in various locations. During the independence period, facilities that could be used for direct sales to consumers were limited to unattended farm stands and temporary stores; however, permanent stores appeared in the 1990s, and the size of such stores gradually increased. This increase in, and evolution of, farm stands was supported by elderly farmers, part-time farmers, and women in agriculture, who supplied a variety of products in small quantities. The contribution of women in agriculture was particularly significant with respect to processed agricultural goods. According to the Ministry of Agriculture, Forestry and Fisheries (2009), the aggregate sales of 16,816 farm stands reached approximately 876.7 billion yen in fiscal 2009, contributing greatly to regional revitalization and representing a significant expansion in the activities of women in agriculture.

A second factor was the growing popularity of movements advocating "local production for local consumption" and food education to promote a healthy diet. Produce imports gradually expanded under the WTO regime, as a result of the Uruguay Round of GATT agricultural negotiations held in the late 1980s. Meanwhile, the safety of imported agricultural products was questioned, and a movement favoring domestic produce and local agricultural products grew. In addition, while convenient processed foods were widely popular, the value of homemade style food was again becoming appreciated. Agricultural products and processed goods provided by women in agriculture met both these consumer needs, leading to the expansion of rural women's entrepreneurial activity, including an increase in sales and the growth of individual businesses.

8.2.4 Characteristics of the Transition Period

Three key features of the activities of women in agriculture have emerged during the transition period. The first is a movement to further extend the kinds of entrepreneurial activities pursued in the independence and development periods. Contact

with customers and other women in agriculture has helped women running rural-based businesses become aware of such agriculture-related issues as graying, depopulation, and ecological destruction; and these female managers have begun to look for solutions to these social problems in their own businesses. In the case analysis of Corporation A, detailed in Sect. 8.4, an entrepreneurial woman in agriculture is able to develop her business while also expanding her social business activities.[2]

The second key feature of the transition period is that many women serving as corporate executives in the agriculture industry have been active in promoting women's issues. Informed by their own experiences in balancing work, childcare, and care for elderly family members, these female executives have made many contributions that have improved the lives of women, such as organizing the corporate environment and corporate systems to enable female staff to work more comfortably and encouraging women to more fully develop their skills. The case analysis of Corporation B, described below, is an example of such a scenario.

The third critical feature of the transition period is a movement to create and evolve businesses and organizations focused on women in agriculture. The Agri-girl Project, established with the assistance of the Ministry of Agriculture, Forestry and Fisheries, is a typical example. Like Rural Heroines and the Women Farmers Association (which were founded in the development period), the Agri-girl Project is a network of women in agriculture who develop their skills by exchanging information. Meanwhile, many companies involved in food development, food distribution, and/or other agricultural activities have participated in projects to sell produce made by women in agriculture and/or develop products targeted at women in agriculture as customers. In this way, many new and unprecedented types of business and business activity have emerged. A variety of companies also have participated in the Women's Association for the Development of Future Agriculture, which was established by private organizations in 2014. As little time has passed since the beginning of most of these new activities, it is still too early to fully evaluate the influence of, and roles played by, women in agriculture during the transition period. Nevertheless, in addition to continuing trends established during the independence and development periods, the cultivation of new markets in cooperation with companies has emerged as a defining feature of the transition period.

8.3 Motivations for Women in Agriculture to Start Businesses

In this section, the author examines the circumstances and environment that facilitated innovation by women in agriculture. Since 2010, the author has mainly interviewed women working in primary agriculture, writing articles for the "Encounters

[2] Sawano's study details how women start businesses in rural areas and develop them into social enterprises.

with Agriculture and Food" section of the "AFC Forum," a monthly publication by the Agriculture, Forestry, Fisheries and Food Business Unit of Japan Finance Corporation. The interviewed women either diversified existing businesses into different areas such as processing or sales or started their own businesses focused on production.

A total of 80 women were interviewed from January 2010 to August 2016. We excluded women engaged in fisheries, forestry, distribution, or service businesses. The remaining 46 women included women who have founded their own businesses or are involved in the management of pre-existing businesses. The women's data is organized in various ways in Figs. 8.1, 8.2, 8.3, 8.4, and 8.5, including by type of business activity, age at start of new business or expansion into a new line of business, and prior work experience and/or qualifications.

Figure 8.1 shows data organized by business type. For women who started more than one type of business, only the most important business type was considered. The most common business type is "processing and sales" (12 women), followed by "development of new sales channels" (11) and "restaurants and coffee shops" (6). "Development of new sales channels" primarily relates to direct sales to consumers. The "other" category includes "establishment of a public relations department," "acquisition of GAP certification," "introduction of a POS system," and "development of a field-related database."

Figure 8.2 shows the women's age when they started a new business or expanded into a significant new line of business. The greatest number of women were in the 31–40 years of age category, followed by the 21–30 years of age category.

Figure 8.3 shows data organized by primary motivation for entrepreneurship. Rather than indicating sales- and management-related motivations as their primary motivation, some women indicated the following primary motivations: "processing and selling local produce myself," "using my experience to revitalize the region," or "exploring my potential." These primary motivations were all categorized as

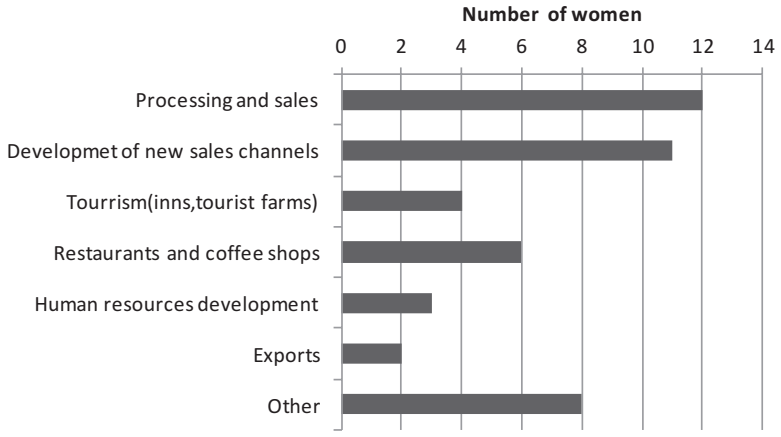

Fig. 8.1 Type of business. (Source: Data obtained by the author in interviews)

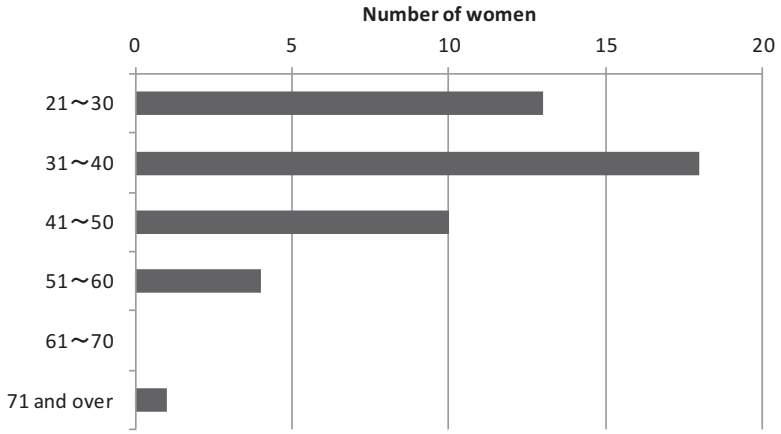

Fig. 8.2 Age at start of business or new line of business. (Source: Data obtained by the author in interviews)

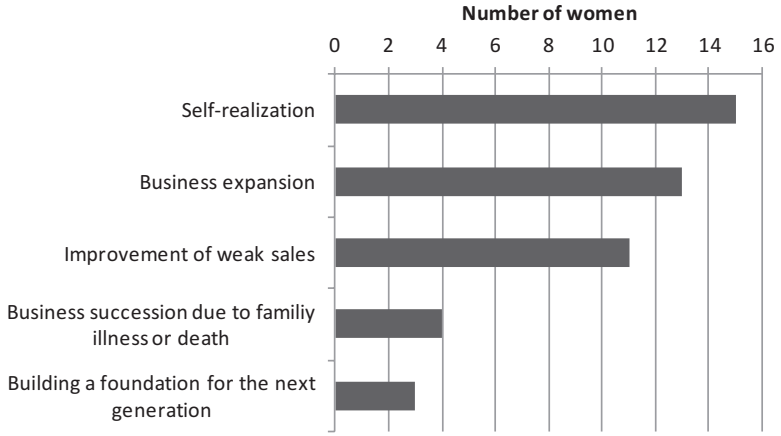

Fig. 8.3 Primary motivation for entrepreneurship. (Source: Data obtained by the author in interviews)

"self-realization," which was the leading primary motivation, followed by "business expansion" and "improvement of weak sales."

Figure 8.4 shows data organized by primary work experience and/or qualifications prior to starting a business or new line of business (hereafter referred to as primary prior work experience and/or qualifications). There are four categories: "experience working, operating a business, and/or studying abroad," "experience as a member of a home living improvement group and/or Japanese Agricultural Cooperative women's unit," "licensed cook and/or professional cooking experience," and "no applicable experience and/or qualifications."

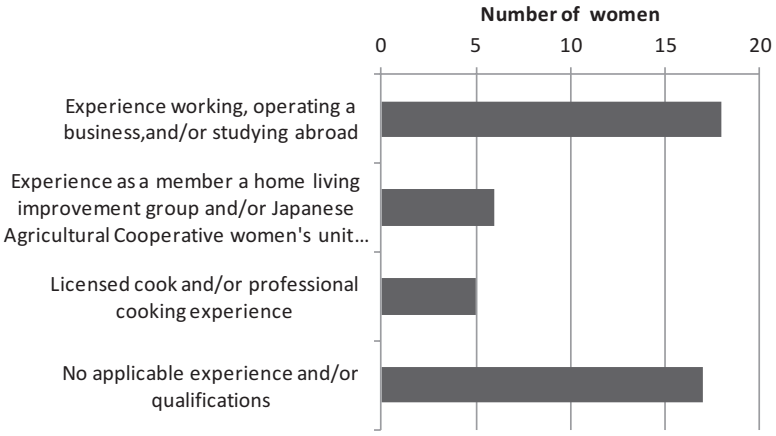

Fig. 8.4 Primary work experience and/or qualifications prior to starting a business or new line of business. (Source: Data obtained by the author in interviews)

Figure 8.5 shows entrepreneurial motivations organized by primary prior work experience and/or qualifications. Of the women who indicated "self-realization" as a primary motivation for starting a business or new line of business, the greatest number indicated their primary prior work experience and/or qualifications as "experience as a member of a home living improvement group and/or Japanese Agricultural Cooperative women's unit," compared to women indicating other types of primary prior work experience and/or qualifications. On the other hand, of the women who indicated "improvement of weak sales" as their primary motivation for starting a business or new line of business, the greatest number indicated they had "no applicable experience and/or qualifications" with respect to the primary prior work experience and/or qualifications category. For managing agricultural processing and restaurants, it appears advantageous to have had relevant prior work experience and/or qualifications. However, it is observed that some women in agriculture were able to start businesses or new lines of business and acquire the relevant skills at the same time, without having had relevant prior work experience and/or qualifications, even becoming sufficiently successful to be covered by a magazine.

It is widely recognized that home living improvement groups played a major role in fostering the early business activities of women in agriculture, activities that later became more entrepreneurial due to supportive political developments (as seen in Sect. 8.2). However, the survey results show that even without participating in the activities of home living improvement groups or the voluntary organizations focused on women in agriculture, some women were still able to start businesses or new lines of business. Many of these more independent women started their businesses or new lines of business to improve weak sales, and from their histories, we can see that even such simple and everyday factors as experience in a family agricultural business, agricultural processing skills acquired through ordinary living, and personal connections acquired living in rural communities can be enough to motivate and sustain entrepreneurship.

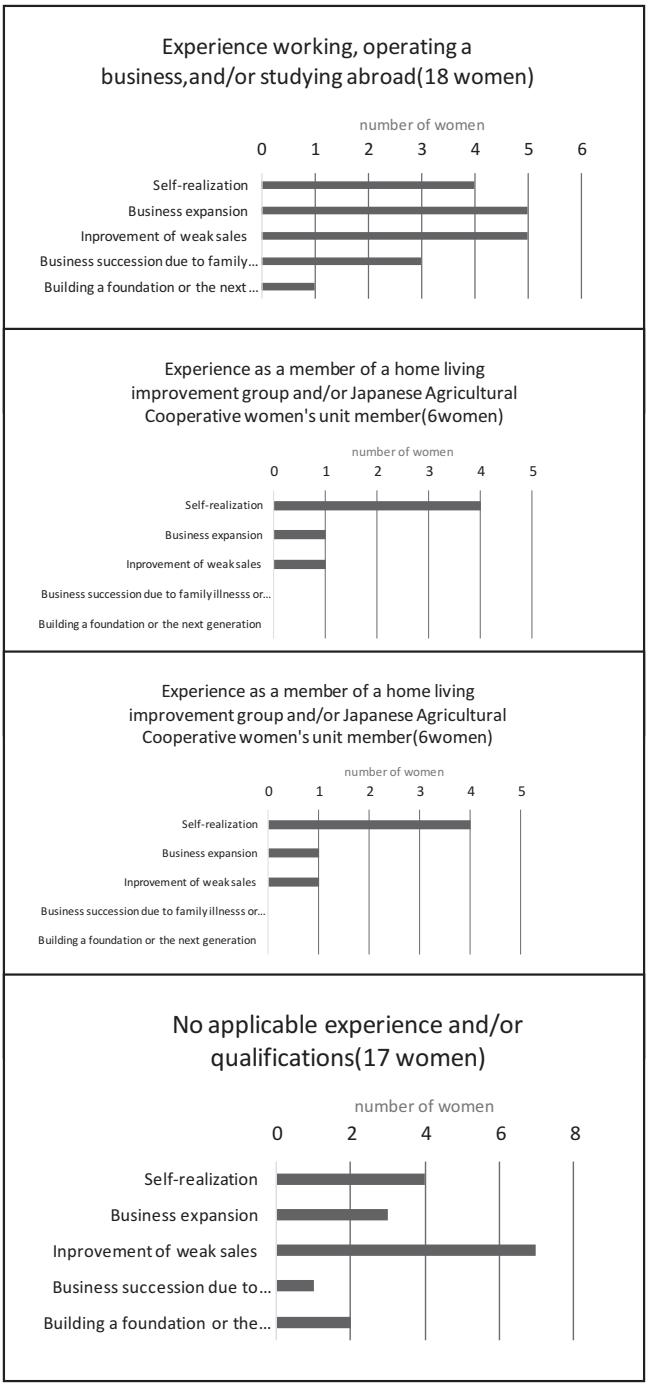

Fig. 8.5 Primary motivations for entrepreneurship organized by primary work experience and/or qualifications prior to starting a business or new line of business. (Source: Data obtained by the author in interviews)

8.4 Case Analyses

8.4.1 Corporation A

Corporation A, located in Shiga Prefecture, is a business entity that keeps about 50 dairy cows while making and selling gelato and running a farm restaurant and campsite with accommodation facilities.

The company was established in 1988, and its fiscal 2015 sales were roughly 170 million yen. The sales breakdown is roughly 46 million yen for the dairy farming division, roughly 84 million yen for the processing and sales division (which includes the gelato shop and restaurant), and roughly 40 million yen for the other divisions. The gelato shop and farm restaurant, which together account for about half of the total sales, are managed by the senior managing director, who is the wife of Corporation A's business manager.

The gelato shop opened in 1997 in response to raw milk production quotas, which had been introduced on a full-scale basis in 1979. The senior managing director had long thought that "Most consumers do not know about the current situation, where milk is being thrown out in the name of production adjustments. Therefore, it is important to deal directly with consumers to encourage consumption, rather than having to comply with production adjustments." She then began to look for a way to process raw milk and sell the resulting product directly to consumers. Through experience producing vegetables and selling them directly to consumers, which had begun as a side business to dairy farming, she already knew the feelings of pleasure and self-esteem that came from dealing directly with consumers. And using experience gained as a member of a home living improvement group, she initially considered a plan to construct and operate a gelato shop in a group with other local women. However, she thought it would be difficult to raise funds jointly, as some of the women had no income in their own name; therefore, she decided that Corporation A would start the new business on its own.

At that time, all the raw milk produced by Corporation A was shipped to a dairy products' producer. Corporation A's business manager was initially reluctant to start a new processing business, because he was concerned about spoiling the good relationship they had with the dairy products' producer. However, he began to share some of his wife's enthusiasm and became more supportive, including obtaining the dairy producer's approval for his wife's plan. Corporation A was able to cover construction costs by borrowing money from a financial institution.

The gelato shop, built next to a cattle barn, steadily attracted more customers from its opening day, with daily customers exceeding 1,000 in 1999. However, the line of customers' parked vehicles became a nuisance to neighbors, so Corporation A decided to move the shop to a mountainside location several kilometers from the ranch. A new gelato shop was opened in 2003, and a new farm restaurant was built next to it.

Taking advantage of opportunities provided by the relocation, the business adopted more socially responsible policies and practices, including environmental

conservation, resource recycling, and ecosystem preservation. For example, the restaurant made venison its specialty after learning that deer were being captured in the neighborhood (as they caused agricultural damage), but were being destroyed and not consumed. The executive director decided to offer venison as a wild game (or gibier) dish, attempting to increase consumer awareness of the realities of wildlife damage and ecosystem change. In addition, to maintain the water quality of Lake Biwa, the business decided to limit the restaurant's detergent use as much as possible, including offering reusable towels. Another socially responsible practice was the decision to use mostly vegetables and processed food that had been produced in-house or by local farmers and processors, using the menu to convey the local origin of ingredients and the local food culture to their customers. As a result, the restaurant became a place where people who produced food could interact directly with the people who ate their food.

After it opened, the restaurant initially had difficulty attracting customers. But in time it became known for its appetizing menu featuring local venison and agricultural products; and thus it became successful, gaining many more customers, most of them regular.

Corporation A's recycling-oriented agricultural practices and connection with its customers were officially recognized. In 2010, the corporation won the 5th Shiga Prefecture CSR Management Award, sponsored by the Shiga Committee for Economic Development. In 2012, it was commissioned by the municipality to manage a campsite with accommodations located near the gelato shop and since then has been operating the campsite as its designated manager. Other socially responsible activities of Corporation A have been recognized as well. In 2015, the corporation was awarded a Women's Active Participation in Agricultural Management (WAP 100) award.

There are cases other than Corporation A's, in which women in agriculture demonstrated a commitment to socially responsible business activities, such as environmental conservation and elderly welfare. In some notable examples, successful women entrepreneurs in agriculture engaged in such socially responsible activities as operating a mobile sales vehicle for elderly people who had difficulty accessing stores or delivering lunches to elderly people living in hilly or mountainous areas who would otherwise have had difficulty accessing a lunch meal service. Aging and depopulation in rural society are serious issues that should not be overlooked by women operating rural-based businesses. It is expected that the movement to engage in socially responsible business practices will grow stronger in the future, contributing to rural society and helping to sustain it.

8.4.2 Corporation B

Corporation B, in Shizuoka Prefecture, has developed its business while employing a diverse staff, including women, the elderly, and the disabled. The corporation produces hydroponic vegetables (100 are), paddy rice (70 are), and other vegetables

(50 are). Their miniature-sized green onions, honewort, and qing-geng-cai (Chinese cabbage), which account for the majority of sales, are shipped to wholesale markets throughout Japan, through a local agricultural cooperative.

When the manager started the business, it mainly produced honewort and rice. He then began focusing on very thin green onion sprouts, used as a sushi ingredient, commencing full-scale production in 1994 and increasing the cultivation area.

The company employs a staff of 74, including 4 directors, 8 full-time workers, and 62 part-time workers. As of 2015, almost half of the staff members (34) were female, and 24 were disabled. The high ratio of female employees is due to the manual dexterity required by shipping and preparation work, which makes such work better suited to female workers. In addition, Corporation B has created a working environment and labor processes that suit women's needs and that take work-life balance into consideration. Like Corporation A, Corporation B was also awarded a WAP 100 in 2015.

The company began employing full-time workers in 1998, and the first two of these workers were female. When the second full-time employee got married and became pregnant, the company made provisions for maternity leave and childcare. Initially, the female employee hoped to return to full-time employment shortly after her maternity leave ended. However, the manager's wife advised against it, saying, "A child's health can often be delicate before entering elementary school, so it may be better to work in a way that allows more time with the child." So advised, the employee eventually chose to return to work on a part-time basis. At Corporation B, part-timers are granted paid leave for attending child-related activities, such as school events, and male employees can also take childcare leave. The corporation has clearly established a system of childcare-related benefits that far exceeds what is offered by many major companies.

The corporation has also made worksite improvements, so that women can work more comfortably. For example, the size of containers containing harvested vegetables was reduced in response to feedback from female staff that the containers were too heavy. The reduction in container size not only allowed female workers to handle the containers more easily but also solved the problem of vegetables at the bottom of containers becoming damaged due to the excessive weight of having so many vegetables above them in the larger containers. Solving this problem increased vegetable profits, which was an unexpected bonus to the company.

The recruitment of persons with disabilities began in 1996. When the company faced a manpower shortage due to an expansion of onion sprout production, it tried to recruit new workers through ads in newspaper flyers and other similar means. However, only the elderly and the disabled (often through their parents) responded to the ads.

Lacking experience with disabled employees, the business manager initially hesitated to hire one. However, after learning that the number of jobs for disabled persons had decreased significantly when factories moved overseas after the collapse of the Japanese bubble economy, the business manager decided that he could accept a disabled person as a trainee. This is how he came to hire the first disabled employee. The manager was initially worried about how well disabled employees

could build relationships with other employees, but this turned out to be a needless concern. In fact, the workplace atmosphere became more positive, which benefitted the business as a whole.

After the business manager employed a second disabled person, he realized that employing the disabled was improving his management technique. When managing the mentally disabled, overly simple and unspecified instructions such as "please clean it" or "give this some water" were not sufficient to convey his full intentions. Therefore, he decided to provide more specific instructions, often indicating frequency and duration, when directing the mentally disabled. When this more specific management approach was tried on other employees, worker error decreased, and work tasks became more standardized. At first, the corporation had employed the disabled primarily out of charity. However, the corporation came to believe that employing such individuals improved and developed management techniques and practices, thus began hiring them at the rate of one a year.

When the first disabled person was employed in 1996, annual sales were roughly 96 million yen; but they had grown to roughly 300 million yen in 2014. According to the manager's analysis, diversifying the company's human resources, revising traditional production methods and practices, and increasing productivity have all contributed to business growth.

The growth of Corporation B is based on a spirit of employing and utilizing diverse human resources, including women. According to its business manager, "The agricultural industry can hire many kinds of people, including women, the elderly, and the disabled. We should be able to make all citizens understand the importance of agriculture in advancing employment diversity." He also noted that the advancement in workforce diversity would lead to a general reevaluation of agriculture in Japan.

8.5 Conclusion

In this chapter, the author explored a number of factors that have influenced the history of innovation by women in agriculture, including the acquisition of experience with food processing technologies and/or direct sales to consumers through the activities of home living improvement groups, and the activities of organizations centered on women in agriculture. The author also explored external factors, such as a dramatic rise in the number of farm stands and increased public interest in food safety.

On the other hand, a substantial number of women in agriculture started businesses without participating in the activities of home living improvement groups or female-led organizations. The experience gained simply by engaging in agricultural production and leading a rural life can often be sufficient to motivate and sustain entrepreneurship.

The innovations made by women in agriculture have been significant in terms of forming a foundation for the diversification of agricultural practices and the shift of

agriculture to the sixth industry model. More recent advances in the entrepreneurial activity of women in agriculture have resulted in a movement toward more socially responsible business models and increased incorporation of workforce diversity into management practices. As these movements become more established, they will continue to advance agriculture as a whole.

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Chapter 9
The Role of Open Innovation and Platform in Agriculture

Kazuhisa Goto

Abstract Growth in the industrialization of agriculture and food industry is important. In Japan, policies such as new technology development and sixth industrialization have attempted to develop agricultural industries. However, further breakthroughs require innovation. In this chapter, I focus on open innovation in agriculture and roles of platforms. First, I discuss the concept of open innovation theory, platform theory, and value co-creation theory, and then examples of platforms deployed in the agriculture and food industries. I evaluate cases in France, the Netherlands, and Japan and consider the roles of open innovation and platforms. I examine the applicability and future development of the open innovation theory in the agriculture and food industries through case studies of open innovation. The cases are as follows: (1) French food clusters and the Kyushu Bio Cluster Conference, which develops brand knowledge in agriculture and food industries through international collaboration; (2) Food Valley and its support to Dutch agriculture and food industries, which includes an evaluation of its participating companies/organizations; and (3) a new Japanese innovation policy that is noted for its unique support of agriculture and food industries that is called "field for knowledge integration and innovation" and is based on the policies of France and the Netherlands.

Keywords Open innovation · Platform · R&D

9.1 Introduction

There is a demand for the transformation of the agriculture and food sectors into growth industries. As such, many attempts have been made to transform agriculture into a growth industry, namely, governmental policies for the development of new technologies and sixth-sector industrialization. Although these measures produce

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A. Kiminami (ed.), *Entrepreneurship and Innovation in Japanese Agriculture*,
New Frontiers in Regional Science: Asian Perspectives 32,
https://doi.org/10.1007/978-981-13-8055-6_9

certain results, taking agriculture to a higher level of growth requires greater innovation that breaks the status quo. For this reason, open innovation is now attracting attention as a trigger for a revolution in relatively mature industries.

It is a strategy that is standing out in industries with fast technological innovation, such as communication and science and technology. A company that acquires an intellectual property relatively early and provides licenses to other companies promotes technological innovation in the entire industry. By designing common standards (e.g., platforms such as Linux) and conducting collaborative research and development (R&D), the company can decrease the cost and time required when pursuing it individually. It is believed that by applying this open innovation strategy to the agriculture and food industry, a sector that is considered to have a slow innovation speed can shorten and optimize the development process of breeding and processing technologies as well as the commercialization of new products. Ultimately, it may turn the industry into a growth industry. In breeding and development, for example, if the researcher responsible for the breeding process, the food researcher responsible for the analysis of nutrients and functional components, the food company responsible for the final product development, and the producers of the ingredients are all involved from the beginning of the process and have open access to information, it is possible to achieve rapid and efficient R&D and industrialization (Goto and Kono 2014; Goto and Sakai 2014).

Therefore, in this chapter, I focus on the role of open innovation and platform in agriculture, starting with the genealogy of open innovation theory in business administration, followed by an explanation of the platform theory and value co-creation. Then, I assess examples of platforms being developed in the agriculture and food industry in France, the Netherlands, and Japan and discuss the role of open innovation and platform in agriculture.

9.2 Open Innovation and Platform

9.2.1 What Is Open Innovation?

The R&D strategy of a company from the new perspective of open innovation was initially proposed by Chesbrough. According to Chesbrough (2003), "Open Innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology. Open Innovation combines internal and external ideas into architectures and systems whose requirements are defined by a business model. The business model utilizes both external and internal ideas to create values.

Open Innovation assume that internal ideas can also be taken to market through external channels, outside the current business of the firm, to generate additional values." He defined open innovation as "Open Innovation is the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the

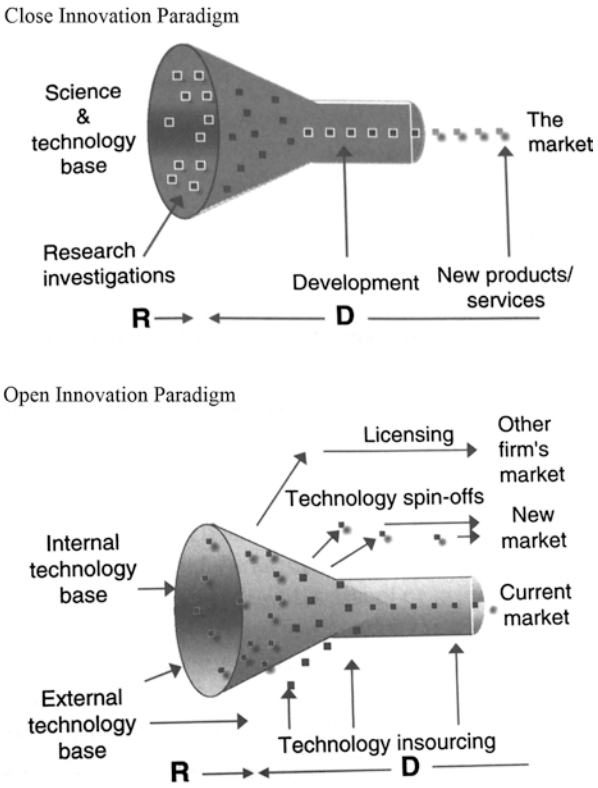

Fig. 9.1 Open and closed innovation models. (Source: Chesbrough et al. (2006), p.19)

markets for external use of innovation, respectively." Chesbrough further states that valuable ideas can be used inside and outside the company and introduced in the market through internal and external routes.

According to his innovation model, which is represented in Fig. 9.1, the companies depicted in the upper part of Fig. 9.1 follow a closed innovation model of R&D, that is, the companies conduct their own basic research, based on which the products are developed and introduced in the market. Conversely, in the open innovation model depicted in the lower part of Fig. 9.1, the technology required for starting a project can be either internal or external, and new technologies are incorporated into the product development at various stages.

This model has the advantage of actively exchanging the knowledge obtained through R&D, such that newly developed technologies are promptly licensed for the use of other companies. Table 9.1 contains a comparison between open and closed innovations. As indicated in Chesbrough's summary, open innovation emphasizes the advantages brought by the flow of people and knowledge.

The definition of open innovation by other authors after Chesbrough is detailed in the report presented by Yonekura (2012) at the symposium on "Open Innovation

Table 9.1 Comparison between open and closed innovation models

Closed innovation principles	Open innovation
The smart people in our field work for us	Not all of the smart people work for us, so we must find and tap into the knowledge and expertise of bright individuals outside our company
To profit from R&D, we must discover, develop, and ship it ourselves	External R&D can create significant value; internal R&D is needed to claim some portion of that value
If we discover it ourselves, we will get it to market first	We don't have to originate the research in order to profit from it
If we are the first to commercialize an innovation, we will win	Building a better business model is better than getting to market first
If we create the most and best ideas in the industry, we will win	If we make the best use of internal and external ideas, we will win
We should control our intellectual property (IP) so that our competitors don't profit from our ideas	We should profit from others' use of our IP, and we should buy others' IP whenever it advances our own business model

Source: Chesbrough et al. (2006)

in Global Networks," held by OECD in Copenhagen in 2008. In Japan, it has also been discussed by the Ministry of Economy, Trade and Industry (METI) and the Cabinet Office.

The METI considers that "in the middle of a drastic change in the competition model of R&D, there is a growing need for an 'open innovation-style' R&D system mainly in Europe and the Americas. An R&D with 'open innovation-style' is not intended to supplement the conventional technology with external non-core technologies, or to reduce the cost of R&D, which was very common in conventional technical cooperation between companies and industry-academia collaboration. Rather, it is a partnership with the external environment future to develop key technologies central to new products and markets. Starting with clearly proposing the concept of social system based on new values to be realized, a harsh 'competition' between (1) creating new product or service with any combination of specialized/advanced elemental technology and (2) finding ways to secure potentially dominating elemental technologies from those combinations, takes place. As a result, a 'cooperation', such as (3) the establishment and standardization of common basic technologies and (4) commonization of interface, which enables a flexible combination of elemental technologies, becomes important. The most advanced R&D model in the world is shifting from an R&D system closed within one company or organization to a multilayered model that is based on a strategic collaboration with the external environment, and aligns 'competition' and 'cooperation' through the combination of diverse elemental technologies" (Cabinet office 2010). As suggested by Yonekura (2012) and Yonekura and Shimizu (2015), as open innovation is a new concept that was conceived in the 2000s, its definition may be irregular. However, they are organizing the merits and demerits of open innovation and finding ways of conducting it. According to Yonekura and Shimizu (2015), the merits of open innovation are as follows: (1) faster development and profit of first mover, (2) faster development and cost reduction, (3) inventory of internal management resources

(choosing the resources to be kept open or closed), (4) restructuring of product technology and product development strategies, and (5) competitive pressure for internal development. As regards the demerits of open innovation, he lists the following: (1) time-consuming work implies adaptation costs for the company, (2) leaking of R&D information and technology, and (3) reduction of the scope of long-term R&D plans and core competencies. He also points out the importance of the balance between "open" and "closed" when conducting open innovation. Yashiro (2016) argues that depending on closed innovation impedes the generation of the best value and identifies four points that need to be considered: (1) diversity is strength, (2) remember "every man to his trade," (3) promptness is important, and (4) adaptability is essential. In the background lies one of the factors that hinder open innovation, the NIH (not invented here) syndrome, which is the necessity to avoid the psychological tendency of not introducing the things that are developed externally.

Hoshino (2015a, b) argues that open innovation has a globally acknowledged framework, the steps of which are presented in Fig. 9.2. It starts with an awareness-building activity within the company or team (reforming mind-sets to promote the incorporation of external technologies) and has four steps which include "want" (identify the technology to be sought externally), "find" (search for the technology), "get" (evaluate the technology), and "manage" (incorporate the technology). The building of a win-win relationship with the partner company, while achieving these steps, is regarded as the secret for successful open innovation. Further, it is particularly important to become a company that is selected by the others.

Iriyama (2012, 2015), who has done a detailed review of modern business administration, quoting Schumpeter (1977), the father of innovation economics, states that one of the sources of innovation is a new combination of one existing knowledge with another one, that is, he proposes a new combination. In his view, when two pieces of knowledge are combined for the first time, a new knowledge is born. According to Iriyama, the most highly regarded innovation theory is the "exploration and exploitation of organizational learning" proposed by March (1991). The first step to create innovation is to conduct a search as wide as possible and make a new combination with the existing knowledge. This is called the "exploration of learning." When combined learning has the potential for a profitable business, it is exploited. This is called the "exploitation of learning." However, organizations tend to incline toward the exploitation of learning and, in the process, neglect the exploration of leaning. In the short term, this is known to increase efficiency but also lead

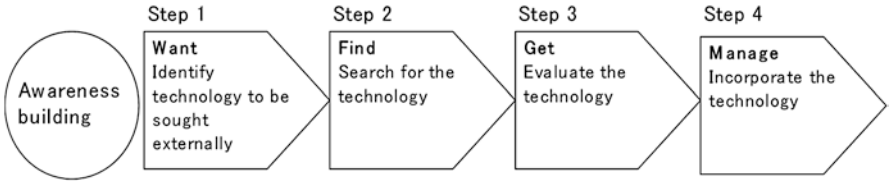

Fig. 9.2 The four steps of open innovation. (Source: Hoshino (2015a, b))

the organization into a "competency trap" in the mid to long term, when innovation dries out. To avoid this competency trap, it is important to promote March's concept of "exploration and exploitation of learning" as the goals of open innovation in the "platform," which will be discussed later, and conduct efficient R&D.

A large number of studies on open innovation have been conducted in the past, which are believed to gain greater importance in the future in the discussions on sustainable growth strategies of companies and industries.

9.2.2 What Is a Platform?

9.2.2.1 Definition of a Platform

The idea of a platform in social infrastructure and R&D is gaining force. The concept of platform is also used in communication infrastructures that have common basic technologies and seek market expansion through common standard strategies. However, here, it refers to the concept of a platform that creates value by providing a common space.

A platform is equivalent to the concept of ba (Hirano and Hagiu 2010). In a platform strategy, many related groups are placed in the same "ba," which creates an external network effect and builds an ecosystem of new businesses. The platform is a container connected by a network that gives birth to innovation. It has conditions such as freedom, trust, belief, and information sharing (Komi 2011). Initially, it was mainly used in manufacturing industries as "a technological production basis aimed at developing and producing products with multiple purposes and specifications at lower costs." But nowadays, connotations that emphasize it as "ba (open platform) for creation of value through the communication between users" are becoming more common (Kawakami and Yamaguchi 2013).

9.2.2.2 Concept of Five Functions of a Platform and Ba

According to Hirano and Hagiu (2010), a platform has five important functions:

1. Matching (a function to match the demand and supply of multiple groups on a platform).
2. Cost reduction (when a member on a platform makes an offer, the supplier can have various functions for a lower cost than as individually).
3. Branding (in some cases, the supplier provides high-quality service and content but is unable to reach the demand because of a lack of brand strength. In such situations, joining a platform with a certain brand strength, such as past achievements and stability, increases its appeal to the user).

4. External network (it is a structure in which the higher the number of users of a service or product, the higher the profit and convenience for the people who use them, also known as externality of network).
5. Triangle prism (when the mediation of a third group creates a connection between two entities that are not profitable alone) (Hirano 2011)

The important element is the idea of space. A "ba" is an extremely important system for the systematic creation of knowledge, where tacit knowledge is shared among multiple individuals with different experiences, perspectives, and motives. It is a place where personal experiences are shared and physical and spiritual rhythms are aligned to build mutual trust (Nonaka and Takeuchi 1996). Some of the conditions for a "good ba" that leads to knowledge creation are as follows: (1) a self-organized place with its own plans, objectives, direction, and mission; (2) the commitment of the participants to the objective and their proactive involvement in the events that are held in the space); (3) drawing from both internal and external perspectives; (4) hands-on experience of the participants; (5) discussions on the essence of things; (6) open borders (the participants have free access, which constantly changes the shared context); (7) a place where formal learning can be self-integrated through practice; (8) heterogeneous mix of individuals; and (9) improvised interactions (Toyama and Nonaka 2000). According to Drucker, the opportunities for innovation are as follows: (1) unexpected events; (2) existence of gaps; (3) existence of needs; (4) change in the industry structure; (5) change in the demographic structure; (6) change of perception; and (7) creation of a new knowledge (Drucker 1997). Many of these opportunities are expected in a platform.

The summary above clearly indicates that in a platform (which equals to space), various entities are expected to cause chemical reactions and give birth to new innovations.

9.2.3 Value Co-creation and Innovator

9.2.3.1 What Is Value Co-creation?

Co-creation refers to "creating together." More specifically, it is defined as "people with different backgrounds sharing the 'Ba' to do sustainable creative activity (Ueda 2004)." It can be considered synonymous to the concept of value creation through cooperation of related entities, which is discussed in the cluster theory. It is an important keyword that represents the basic thinking of different industries cooperating and growing while creating new values. The concept of value co-creation has evolved from studies on relationship with consumers as a new approach to management strategy and marketing. The concept proposed by Prahalad and Ramaswamy (2004) points out the importance of a co-creation experience, as it is defined as "an act of having a meaningful interaction with each consumer (and for that consumer), and create value through that interaction." Among the elements that support

co-creation, it is considered important to pay attention not only to the co-creation experience but also to a co-creation process through dialogue, access, risk assessment, and transparency (DART).

Based on the theories above, I propose eight important points for the food industry and agricultural entities participating in cooperatives and consortiums to establish win-win relationships with each other (Goto 2011): (1) They are independent as business companies. In individual agriculture management, which is considered especially fragile, it is probably difficult to negotiate and cooperate with food companies at an even position. Just as in agricultural incorporation, it is important that agricultural production also becomes independent as a business. (2) They possess core competencies that act as the company's strength. That is, it is important that the agricultural entities have the basic technology to produce agricultural products of the highest quality and food companies have strengths such as a manufacturing capacity that other companies cannot copy. (3) There is a mutual understanding. Different industries have different roles and positions, but it is important that each entity proactively tries to understand the others' situations. (4) Values and information are shared. In conducting new product development and cooperative business, it is important to share the information and values of each entity. (5) Objectives and targets are shared. Once the objectives and targets are defined, each entity will understand how best to employ their strengths. (6) The same "ba" is shared. As a member of the cluster, a common ba shared among the participating entities is important, so that value can be created even between different entities. (7) There is a broad network with mutual understanding. New ideas and partnerships can emerge not only from fixed or physical collaboration but also through a gentle, personal network. A network is likely to become an important management resource in the future. (8) An even relationship is maintained. In a collaborative relationship between agriculture and food industry, agricultural production always tends to take the weaker position. This is the conventional type of physical collaboration for raw materials and sales that does not lead to the creation of new values. In order for the entities to continue creating value based on mutual understanding, the relationship between them needs to remain even.

9.2.3.2 The Innovator That Promotes Value Co-creation

The five capabilities for a disruptive innovator identified by Christensen et al. in *The Innovator's DNA* (2012) are (1) questioning, (2) observing, (3) experimenting, (4) networking, and (5) the capacity to integrate the four. These characteristics are important resources for value co-creation within a platform. Further, considering that a disruptive innovator promotes business for its own firm as well as for other firms, it is possible that the characteristic of a social innovator is also present. The so-called social innovators include coordinators who mediate information and coordinate interests, as well as producers who supervise the entire business design such as final commercialization. A social entrepreneur is someone who brings about changes in highly public-oriented business and industries with their own innovative

ideas. In a field of accumulation and application of "learning," which will be discussed later, especially in R&D platforms, it is assumed that a producer (or a team) will be allocated as an executive officer who will supervise all the activities involved, as the formulation of research strategy for commercialization or industrialization. Social innovation is also important in the agricultural field, and forming platforms is seen as an effective measure for the succession of expert agricultural techniques as well (Kaneko et al. 2010). Hence, the next chapter provides examples of successful applications of open innovation.

9.3 Open Innovation in the Agriculture and Food Industry

In this chapter, we discuss possible applications of open innovation in the agriculture and food industry and future developments through case analyses. The examples to be analyzed are (1) the case of food cluster being developed in France and Kyushu Bio Cluster Conference, which is branding the knowledge in the agriculture food industry through international collaboration; (2) the development of the Food Valley, which supports the agriculture and food industry of the Netherlands, the second largest exporter of agricultural products in the world, as well as the evaluation of participating companies and groups; and (3) a discussion on the "space for accumulation and application of learning," a new innovation policy aimed at supporting Japan's own agriculture and food industry using the innovation policies of France and the Netherlands as references.

9.3.1 French Food Cluster and Kyushu Bio Cluster Conference

9.3.1.1 Evaluation of the Development of Competitive Clusters in France

The competitive clusters policy (Les pôles de compétitivité in French) was implemented in France in 2005. Currently, there are 71 certified clusters, where many projects are being conducted. The objective of a competitive cluster is to boost R&D and innovation. A cluster is a group formed by companies, higher education entities, and public and private research bodies of the same region that implement collaborative projects of economic promotion for innovation. It is a new industrial policy implemented during the Chirac administration by the "Interministerial Committee for Regional Development and Development (CIADT)" in September 2004, with the goal of strengthening the crucial elements that define the competitiveness of countries with leading innovation capacity. In the first phase, 2005–2008, at least 1.5 billion euros were injected. The second phase started in 2009. The main form of support was in the form of subsidies to companies that participate in the competitive clusters policy (large corporations, small to medium companies, foreign companies,

etc.) and collaborative R&D projects carried out by universities and research bodies. It is a system in which every company seeking to obtain public funds for R&D needs to apply for it through les pôles de compétitivité and be certified (Suda et al. 2012).

The four certification criteria for these competitive clusters are (1) the scale of the market and the entity's share in that market, (2) the R&D potential of the corresponding cluster, (3) the level of excellence of the university or research entity, and (4) the strategy for economic promotion of the region. Further, applying for a project (R&D business) by a certified competitive cluster requires two or more companies and at least one research or educational entity to form a consortium and submit a joint application. The subsidy ratio in such cases is 45% for small to medium companies, 25% for large companies, and 40% for research entities. A wide range of R&D projects have been carried out using this support system, with 2378 projects certified in 2010. Four of these competitive clusters related to food and agriculture form the French Food Cluster (F2C Innovation). The clusters participating in F2C Innovation are Vitagora, which is focused on nutrient components, health, and taste cluster; functional food cluster Valorial, Agrimip, which specializes in plant breeding and agriculture technology; and Aquimer, which specializes in marine products. F2C Innovation acts like an R&D business support platform that is mainly focused on food and agriculture and is strongly committed to business (Goto et al. 2013). Thus, the following section presents a platform in Japan that is developing a global collaboration activity with this F2C Innovation.

9.3.1.2 Outline of the Kyushu Bio Cluster Conference and Its Collaboration with F2C Innovation

Kyushu Bio Cluster Conference (hereafter KBCC) is one of the platforms established with the support of the Regional Bureau of Economy, Trade and Industry along with the public interest foundation Kumamoto Industry Support Foundation as secretariat. The objective of the activity is "to build a safe and secure 'Food and Health Island Kyushu' by offering functional and healthy foods in collaboration with preventive medicine and service industry," formed by 70 groups, 143 individuals, 16 special cases, and 3 advisors (2013) who endorse its purpose. It was established in 2007 as the first cluster of the country specialized in functional foods. KBCC's main activities are as follows:

(i) Building a network: form a broad industry-academia network.
(ii) Supporting the creation of new businesses: develop a wide range of support activities and businesses, which includes technical and human support for the creation of new businesses.
(iii) Promoting industry-academia collaboration and liaison: promote mutual collaboration between industry and academia by offering a place for face-to-face interaction.

(iv) Supporting the development of new markets: support the member companies to develop new markets for their products.
(v) Providing information and PR: sending information to participants of the cluster network and providing event information to the members.

Based on these activities and driven by the MOU signed with F2C Innovation, the KBCC has been developing activities dedicated to business as an international liaison project.

9.3.1.3 Omega-3 Eggs Developed from the MOU Between F2C Innovation and the KBCC

One example of technical and business collaboration between Japan and France conducted as an activity of the KBCC is the development of the functional "omega-3," which is becoming increasingly popular in Europe. Omega-3 is the general term for DHA, EPA, α-linolenic acid, and so on. It is a type of unsaturated fatty acid, a nutrient that cannot be produced by the human body. It recently attracted attention mainly in Europe, and various products such as oil sardine and butter can be found in supermarkets across Europe. As omega-3 is also contained in flax seed, a feed with flax seed as the main ingredient is now being developed. In 2013, the KBCC signed an MOU with Bleu-Blanc-Coeur, a French association that promotes agriculture for health, and started developing a healthy farming project that uses animal feed and flax for human consumption containing omega-3 (flax) made in France. The concept of agriculture for health, which is the goal of the Bleu-Blanc-Coeur association, is based on the idea that to produce healthy agricultural products, it is necessary for livestock and plants to be healthy first. Hence, it provides support to develop and find new markets for items such as eggs, beef, and milk produced from livestock raised by healthy farming, as well as fermented and healthy foods such as yogurt and cheese, which use the functionalities of those products.

The technology developed to produce feed with flax seed grown in France was transferred through an MOU signed between the KBCC and Valorial, which initiated trial productions with Japanese livestock (eggs, beef, and dairy cattle). It began with R&D on the specifications of poultry feed, the components of which are transferred to the eggs really well. A company called Ogata Egg Farm, located in the city of Koshi, in Kumamoto Prefecture, was attracted by this technology after coming across it at seminars held by the KBCC. Ogata Egg Farm, a company closely linked to the region, owns 10,000 chickens, 200 of which are bred in open space, with an annual production of 3 million eggs, with 360 thousand omega-3 eggs, and an annual revenue of 60 million yen. Around 90% of the production volume is sold by the company itself. The owner of Ogata Egg Farm felt deeply impressed by the concept of healthy agriculture and focused on this feeding method to make the chicken healthy. He worked along feed producers on a continuous process of trial and error until finally reaching a feed specification that maximized the content of omega-3. Kumamoto Industrial Research Institute is responsible for conducting a

regular component analysis to verify the content of omega-3. The participation in the KBCC's platform enabled a technical exchange with F2C Innovation as well as an open innovation that begins with the farmers, such as the new technology that uses flax seed as a feed component, an interactive collaboration with French technicians and researchers, the development and sales of omega-3 eggs, and the permission to use the Bleu-Blanc-Coeur certified brand. The success of this initiative is largely attributed to Mr. Koremoto Morishita, a cluster manager who became the key negotiator with the French since the early days of the project. He was responsible for many practical initiatives such as the MOU with F2C Innovation, mission trips of Japanese companies and entities participating in the platform to France, and mission trips from the France of companies such as Vitagora Valorial to Japan. His scientific knowledge in fermentation and practical experience as a business administrator are probably strongly related to his success. In terms of the four steps of open innovation, he understood the objective of the KBCC developing functional foods, identified the technologies to be searched, and focused on omega-3 (want and find). Then, he found the omega-3 technology from partner entities and assessed it (get), followed by the introduction of the technology to Ogata Egg Farm through the KBCC (manage). A person who promotes activities like him can be called a producer who creates value for all the related personnel through win-win relationships.

Therefore, in the model adopted by F2C Innovation and the KBCC, both entities collaborate to develop a new technology that adds high value, with the platform at the core. This is a practical example of open innovation accomplished through the collaboration of the members of a platform, such as poultry merchants, a producer, French feed manufacturers, and associations responsible for brand management.

9.3.2 Activities of the Food Valley in the Netherlands and Evaluation of the Players

9.3.2.1 Platform Development in the Netherlands

In the Netherlands, the Wageningen University and Research Centre, located in the province of Gelderland in central eastern part of the country, and a group of food companies and research entities of the region around it form a Food Valley. This Food Valley is a "place for accumulation of special knowledge focused on food, agriculture, and health" where companies, the government, and research entities form a close collaborative system. Among the participants are a large number of government entities that are influential in food and nutrient research, which make a large contribution to the development of the health- and nutrition-related industry through a deep accumulation and transfer of knowledge and technology, as well as incubation and spin-off support for venture companies. This model cluster of nutrient and health industry has a substantial support from government and is an example

of effective commercialization of bio-related R&D. Two of the main activities of the Food Valley are the promotion of networking among participating companies and support to the establishment of projects. It also holds several events that promote innovation of member companies, such as periodic open cafes, the Food Valley Expo, and creation and granting of the Food Valley Award. The organization's activities to promote the technological development in the agriculture and food industry are considered extremely effective.

9.3.2.2 Evaluation of Food Valley Member Entities

According to a survey conducted by Omta et al. of the Wageningen University, which is presented in Table 9.2, the activities of Food Valley, such as exchange meetings and innovative technology meetings, are highly regarded by small and medium companies and are seen as fine sources of information by large companies. Regardless of the scale of the company, the evaluation of the support of open innovation provided by Food Valley Organization (FVO) is high (Omta et al. 2012).

9.3.3 Open Innovation Conducted Through the Field for Knowledge Integration and Innovation (FKII)

To increase competitiveness in the agriculture and food industry, and to promote them as growth industries, the Ministry of Agriculture, Forestry and Fisheries (MAFF) considered it necessary to introduce ideas and technologies from fields other than agriculture and food and build a new structure of industry-academia collaborative research that leads to commercialization and industrialization. For that purpose, it created a commission to build the Field for Knowledge Integration and Innovation (FKII) in May, 2015, and published a final report in April, 2016. Field for Knowledge Integration and Innovation (FKII) is a new structure of industry-academia collaborative research, in which innovative research outputs in the fields of agriculture and food are created through the introduction of ideas and technologies from other sectors. These outputs are then industrialized and commercialized. The Field for Knowledge Integration and Innovation (FKII) is based on the idea of openness of its three elements: (1) people (not from the field of agriculture and food, but from various sectors such as finance as well as consumers); (2) information (people from various fields openly and actively exchanging information); (3) funds (utilizing both public and private funds flexibly and strategically), as well as on the incentive to the participants to collaborate and contribute to make the agriculture and food industry of the country a growing industry. Figure 9.3 depicts an illustration of the Field for Knowledge Integration and Innovation (FKII) which is conducted as a three-level structure, more specifically, an "industry-academia collaborative committee," where member companies and entities can exchange

Table 9.2 Evaluation of the service provided by the Food Valley Organization

	Total			SME Mean (SD)			Large Mean (SD)		
	Mean	(SD)	N	Mean	(SD)	N	Mean	(SD)	N
Services	3.71	(1.22)	40	3.76	(1.25)	23	3.64	(1.20)	17
Support in finding partners	4.04	(1.81)	40	3.93	(1.84)	23	4.18	(1.81)	17
Support in obtaining subsidy	4.01	(1.75)	37	3.98	(1.81)	21	4.06	(1.73)	16
International relationship	3.99	(1.73)	40	4.41	(1.72)	23	3.41	(1.62)	17
International business ∗	3.85	(1.97)	39	4.27	(2.12)	22	3.29	(1.65)	17
Market insights advice	3.78	(1.73)	40	3.57	(1.75)	23	4.06	(1.71)	17
Innovation link	3.68	(1.23)	40	3.65	(1.34)	23	3.71	(1.11)	17
Ambassador program	3.42	(1.64)	37	3.34	(1.70)	22	3.53	(1.60)	15
Support to start-ups	2.83	(1.91)	36	2.80	(1.80)	20	2.88	(2.09)	16
Activities	4.18	(1.06)	40	4.23	(1.27)	23	4.10	(0.70)	17
FVO society meeting	4.59	(1.37)	39	4.82	(1.56)	22	4.29	(1.05)	17
FVO conference	4.36	(1.40)	40	4.50	(1.51)	23	4.12	(1.22)	17
Innovation meeting	4.29	(1.23)	40	4.15	(1.51)	23	4.47	(0.94)	17
FVO award	3.44	(1.86)	39	3.39	(2.06)	23	3.50	(1.59)	16
Information sources	4.14	(1.07)	39	4.07	(1.20)	23	4.22	(0.88)	16
FVO newsletter	4.82	(1.27)	37	4.85	(1.44)	23	4.79	(0.98)	14
FVO website	4.30	(1.40)	38	4.07	(1.58)	22	4.63	(1.09)	16
FVO market insights trend rapport	3.73	(1.42)	39	3.85	(1.41)	23	3.56	(1.46)	16
FVO TOP 10 alert	3.58	(1.44)	36	3.43	(1.47)	21	3.80	(1.42)	15

Source: Omta et al. (2012)
$*p < 0.10$

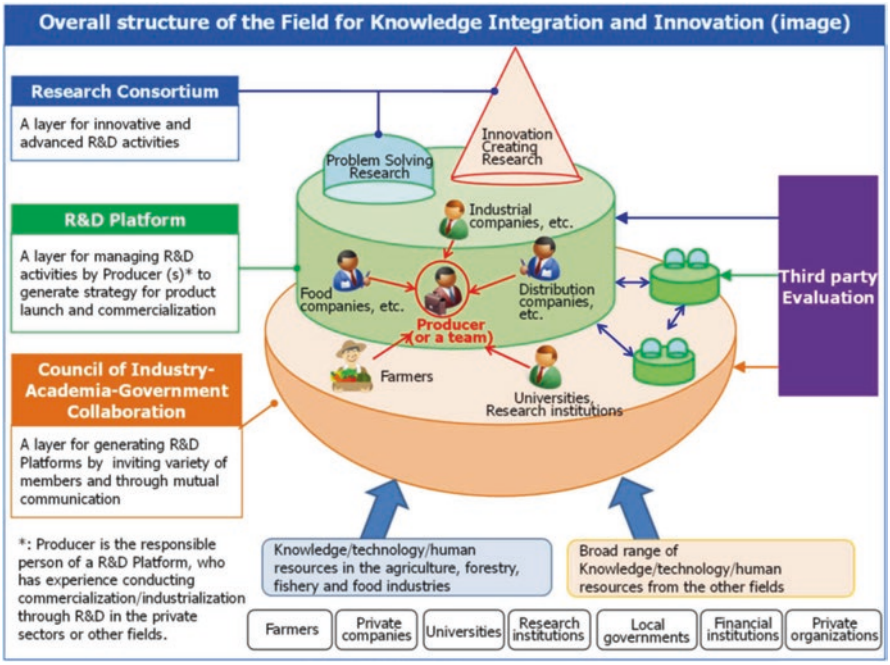

Fig. 9.3 Illustration of the Field for Knowledge Integration and Innovation (FKII). (Source: Ministry of Agriculture, Forestry and Fisheries)

information openly, an "R&D platform" engaged in common research tasks under a fixed theme, and a "research consortium," where entities participating in the R&D platform conduct studies on common issues. Moreover, it is obligatory to set up a producer, who will manage the research platform, the basis of R&D. As of April, 2018, there are 1727 entities and 683 individual members in the committee, and 116 platforms have been reported. An active open innovation activity has started.

9.3.4 Summary of Case Studies

In this chapter, we looked at three cases of open innovation both in Japan and overseas and examined the possibilities of open innovation in the agriculture and food industry. In the case of the French food cluster, we outlined the innovation policies promoted by the French government and demonstrated the effect of promoting concrete R&D projects, as well as technology transfer and branding through international collaborations. By cooperating with the Kyushu Bio Cluster Conference, it has evolved into an international R&D and branding project that created open innovation, which takes advantage of the strengths of both sides. In the case of the Food Valley in the Netherlands, we discussed the activities of the FVO and how

participating companies and entities evaluate it. We also examined a mechanism to efficiently promote open innovation and identified efficient support measures. These achievements were reflected in the development of the Field for Knowledge Integration and Innovation (FKII), which indicates the direction in which open innovation in Japanese agriculture and food industry will be conducted in the future. We also discussed about the R&D platform, which matches research needs, as well as the mechanism of research consortium, which promotes efficient researches. The open innovation deployed in these cases is proving to be effective even in the agriculture and food industry, which is known to involve a time-consuming R&D. It is an indication that open innovation is an effective means to promote innovation in the agriculture and food industry.

9.4 Conclusion: Next Steps for Open Innovation in Agriculture

In this chapter, we analyzed the concept of open innovation, which has received increased attention in recent years, and of platforms that promote open innovation. For that, we conducted a theoretical analysis complemented with actual cases of Japan and Europe. It became clear that open innovation in the agriculture and food industry requires various experiences and knowledge from the participating entities, as well as ideas from different industries. It is a mechanism in which value co-creation emerges from common objectives and challenges. Moreover, to carry out such value co-creation activities, the role of a social innovator, like a producer, is indispensable.

The last part of this chapter presents three challenges for open innovation. The first one is related to the study of the skills and experience of a social innovator in the agriculture and food industry. Social entrepreneurship and entrepreneurs are expected to play an important role in various problem-solving situations in the future. After understanding the skills and experience required for social entrepreneurs to build such societies, developing training programs will become important. The second challenge is finding an efficient way of establishing a platform for co-creation of value. It is important to create an ideal image of a platform that induces co-creations and study efficient ways to build it. This involves designing a space for multiple-related entities facing common challenges and developing techniques to build and expand networks. The third challenge is related to the study of the design of a society with active social innovation and platform activities. Enhancing the growth of agriculture and food industries involves the two difficult tasks of building an environment where entrepreneurs can challenge themselves more to open new businesses and developing a social design in which entrepreneurs are respected.

I expect open innovation to be applied in many different contexts and spread the merits of value co-creation. Further, it should lead to the growth of the agriculture and food industry.

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Chapter 10
The Problems of Technical Innovations in Farm Management

Teruya Morishima

Abstract Changes in the environment surrounding agriculture, rural villages, and food-related industries are becoming increasingly severe. In this paper, we organized tasks that assist farmers in adapting to environmental changes and creating and introducing innovation of their own management. Our approach in this paper is from two perspectives: a. type of innovation and b. development and diffusion of innovation. Regarding the former, two types of innovations exist: radical innovation based on knowledge that has not previously existed ("exploration" type) and incremental innovation through improvements in what previously existed ("exploitation" type). Regarding the latter, we reviewed the new combination pattern in innovation divided into "creation" and "introduction." Among them, creation type can be further divided into two types: closed innovation, which carries out all development on its own, and open innovation, which cooperates with external affiliates. Open innovation has been adopted by major companies in recent years as mechanisms to efficiently generate innovation using fewer management resources. This option is also a conforming mechanism in the agriculture and food industry with its numerous small- and medium-sized organizations. "Platform," an open network organization through industry-academia-government collaboration, functions as a hub for information networks for innovation. The role of coordinator is indispensable to forming such a platform and matching the entities. Therefore, finding and fostering talent who fulfills the role of "coordinator," who can act as a bridge between the entities, and who can play the role of "gatekeeper" as a contact point for introducing new knowledge with external global networks is important.

Keywords Regional innovation system · Network · Social capital · Gatekeeper and coordinator

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A. Kiminami (ed.), *Entrepreneurship and Innovation in Japanese Agriculture*,
New Frontiers in Regional Science: Asian Perspectives 32,
https://doi.org/10.1007/978-981-13-8055-6_10

10.1 Identification of Problems

Changes in the environment surrounding agriculture, rural villages, and food-related industries are becoming increasingly severe and include trade liberation, advancement of the aging of workers, diversification of dietary habits, and so on. Farm management also needs to adapt to these changes. However, the fact is that adaptation to the environment does not progress; instead, the selection of farm management is proceeding. Therefore, in this paper, we organize tasks that assist farmers in adapting to environmental changes and creating and introducing innovation of their own management. Doing so will assist us in addressing these problems in the future.

To define the range of the discussion in this paper, we first define the central concept of "innovation." According to Schumpeter (1926), the pioneer of the theory of innovation, innovation is the enforcement of new combinations (Durchsetzung neuer Kombinationen) of production means, resources, and labor in economic activities. Schumpeter (1926) divided innovation into five types: (1) launching a new product or a new species of an already known product; (2) applying new production methods or product sales (not yet proven in the industry); (3) opening a new market (the market for which a branch of the industry was not yet represented); (4) acquiring new raw material sources or semifinished good supplies; and (5) using new industry structures, such as the creation or destruction of a monopoly position. Complicated relationships exist between the following five types of innovation: product, process, market, material, and structure.

Sakaue et al. (2016) explained this phenomenon using the concept of an innovation triangle. An innovation triangle is a concept that considers as one the three innovations of product, process, and mind concerning people and organizations. Originally proposed by the Japan Management Association, Sakaue arranges and uses the innovation triangle independently to suit his own farm management. Because the original idea is "triangle," these three innovations are assumed to be in a triangular relationship. In contrast, Sakaue regarded these innovations as a cycle, such as a certain type of PDCA (plan-do-check-act) cycle. By conceptualizing it as a three-dimensional concept that rises when turning it during business, he explained these innovations by accumulating them during the developmental stage.

In addition to product, process, and mind innovation, material innovation also occurs within the organization to which the subject belongs. However, only the market is treated as an environment outside the organization. Therefore, although changing channels is possible by approach of the subject, completely controlling the market is impossible. In an environment for entrepreneurs, although it is not as far apart as the institution/policy that becomes a given condition, it is also characteristic with a narrow manageable range. Regarding this market innovation, Saitoh (2016) proposed a means, such as seeking a market abroad that uses scale merit as a strategy for crossing two valleys called Death Valley and Chasm.

Different innovation types have mutual relationships, as previously described, and are inherently difficult to separate; however, because targeting everything is difficult, in this paper we discuss product and process innovation and focus in

particular on "technical innovation" for the production method. Thus, we first consider the issues that apply to general management, and then proceed with considerations by comparing them to special issues related to agriculture.

10.2 Cardinality of Newness and Perspective of Approach

Although innovation says in a word "new combination," this related newness has various degrees and ranges. For example, is it "innovation" when the farmer who only produced wheat newly introduces soybeans? In addition, when vegetables are introduced, new investments are necessary, and managing the resource allocation also differs significantly. Actions such as introducing livestock in addition to cereals and vegetables, when introducing food processing as well as agriculture, or starting overseas exports after engaging only in domestic sales are management innovations in "new" products, sales channels, and production methods. However, even if an action is new to management, if that action is normally carried out within the industry, can it be called an innovation?

Diversification of management, such as a new entry, entrepreneurship by women, or a farmer's restaurant, is "new" for those who engage in such actions for the first time. However, if "new" means that an action has never previously existed, then actions already done by others are not innovations. For example, if followers make a "new entry" in a city's suburbs in which many farmer's restaurants already exist, that action is not an innovation. Therefore, approaching innovation and entrepreneurship from the phenomenon itself is said to be impossible. However, in contrast, is the first challenge to a farmer's restaurant in an area innovative? Additionally, although a crop is grown extensively in foreign countries, those who first introduce it to Japan—where it previously did not exist—are considered entrepreneurs.

After all, the "newness" required for innovation has ranges and degrees, and its vertex is to be the first in history and the first throughout the world; however, an innovation that is meaningful for the first time in Japan and for the first time in a specific area is also effective. The smallest range is narrowed to specific management. Because this range/degree is continuous, from where to where does innovation fall? The question itself is subject to discussion. For example, defining a prerequisite in three stages for discussions that classify "innovation" by creating or introducing to management new combinations using the cardinality of newness is effective: i. developing completely new ideas that have never been implemented in any area, ii. incorporating innovation in other industries into agriculture as soon as possible, and iii. Learning from pioneers in agriculture and incorporating new technologies and ideas.

Regarding these three stages, our approach in this paper is from two perspectives: a. type of innovation and b. development and diffusion of innovation. Regarding the former, two types of innovations exist: radical innovation based on knowledge that has not previously existed (i) and incremental innovation through improvements in what previously existed (ii and iii). In innovation theory, these

types are called the "exploration" type (i) and the "exploitation" type (ii and iii), and the more important type depends on the industry (Coenen et al. 2006).

Regarding the latter, we review the new combination pattern in innovation divided into "creation" and "introduction" and compare the "creation" type (i.), in which the subject of new technology development exists within management, and the "introduction" type (ii and iii), which exists outside management. Among them, creation type can be further divided into two types: closed innovation, which carries out all development on its own, and open innovation, which cooperates with external affiliates. In contrast, regarding introduction type, the innovators in Rogers' diffusion theory (Rogers 2010) fall under the stage ii category and incorporate innovation in other industries into agriculture as soon as possible. The early adopters or early majority under the stage iii category learn from pioneers in agriculture and incorporate new technologies and ideas.

10.3 Development and Diffusion of Innovation by Two Types

The two types of innovation previously described are based on different types of knowledge. The "exploration" type of innovation is based on analytical explicit knowledge and typically takes advantage of scientific knowledge born from collaborations between companies and research institutions in product development (analytical knowledge base: scientific, deductive, explicit knowledge/radical innovation). In contrast, the "exploitation" type becomes product development that results from a new combination of existing knowledge, such as mutual learning between customers and suppliers (synthetic knowledge base: technical, inductive, implicit knowledge/incremental innovation).

The mechanism of knowledge creation and transmission leading to innovation is approached from various viewpoints. Among them, Adkins et al. (2007) used Granovetter's "embeddedness" concept to analyze the cross-organizational linkages in the design sector of Brisbane (Australia) and to investigate the role of proximity in creativity and innovation practices. In other words, collaborative projects as nodes are already embedded in the social network in each context, whereas the value chain relationship between projects is connected beyond that context. Thus, the composed social proximity functions as a "field" that creates the innovative potential that enables these functions to be understood in relation to the "symbolic representation" of Bourdieu (1979) and the "awareness space" of Grabher (2004).

Vanhaverbeke (2001) also explained this knowledge creation and transmission mechanism by combining the concept of "value constellation" and an analysis on industrial districts. In the linear and one-way value chain model, values are added sequentially; however, in that case, each functional department was often unable to grasp the creation of overall value. Yet, because the constraints were largely eliminated by advances in information technology, companies have rebuilt their interdependent relationships with their customers and suppliers and have formed a "value constellation" network. Vanhaverbeke (2001) illustrated the regional appearance

using construction and home furnishing business clusters in South West Flanders (Belgium), among which each stakeholder's various technologies and resources are combined according to the situation. This illustration explains the importance of "regional core competencies" that enable a sustained competitive advantage.

Furthermore, some studies attempted to reveal innovative organizational modes of interfirm relationships, knowledge creation, and transfers within the industrial district from the perspective of "knowledge management." Boari and Lipparini (1999) analyzed the networking process through which the leading firm within industrial districts outsources tasks that were once undertaken in-house. They also highlighted the role of a coordinating agent with direct responsibility over a selected team of specialist suppliers to build a moderately hierarchical network relationship without losing control and strategic legitimization. This relationship building means adopting the open innovation strategy in the case of the research and development (R&D) department, which treats its own research results and external knowledge and technical elements equally in product development.

From any of these viewpoints—"embedding" and "field," "value constellation" and "regional core competence," or "knowledge management" and "open innovation"—the importance of a regional network is emphasized in the knowledge creation and transmission mechanism. The reason why knowledge spillover is restricted by geographical factors is as previously described, and Breschi and Lissoni (2001) argued that because knowledge itself is a public good, it views the essence of propagation in that it is noncompetitive and cannot be excluded. In contrast, locality is assumed to be high, particularly in the case of tacit knowledge that depends on the context and is difficult to code because communicating in personal relationships is easy, such as face-to-face, and spatial closeness is required despite being a public good.

Per Camagni's "Innovative Milieu" theory (1991), the regionality and proximity brought about by the local environment are the (1) "collective learning" effect attributable to the existence of regional human capital resources inherent in the area, (2) usual informal contact between regional agents, and (3) implicit treatment code derived from a common background, and so on. In contrast, he also stated that collaboration with external organizations, companies, or public institutions and laboratories is decisive for the continuous regeneration of local competitiveness and innovation capability (Camagni 1995). For these reasons, Fromhold-Eisebith (1995) pointed out that an agent located at the intersection of different local networks, or between local and external networks, can supply a network with information on market trends, development in other regions, or development in related sectors. When agents acting as a "bridge" between such different types of economic and sociocultural activities are given the task of translating information from different external sources for a certain enterprise or sector, they are called "gatekeepers" (Allen 1977) (Kamann and Strijker 1991).

According to Scott (2004), the actor (individual/organization) is simultaneously involved in various relations, such as social, institutional, and cultural, in addition to economic relations, and is embedded in these multiple overlapping and partially intersecting networks. Therefore, its relationship structure constitutes a creative

environment that enables and restricts the entrepreneurship, learning, and innovation of individual actors. In other words, an internalized network relationship provides enterprises with the opportunity to exchange and complement complex knowledge, complementary skills, and other resources. Gulati and Gargiulo (1999) understood interdependence among actors from exogenous mechanisms derived from the exchange and distribution of critical resources (information, knowledge, money, and material goods) as an endogenous formation factor, and mentioned the embedding of an actor in a network effective for selecting a cooperating partner. From the former (exogenous) point of view, the positions on the network are related to the allocational function of resources; however, from the embedding point of view, these positions are related to the problem of status or social capital (Burt 1992).

Lin (2001), who regarded the concept of "capital" as an investment made to earn profits in the market, found the existence of "social capital" in investing in social relations in anticipation of returns in the market, and defined it as a resource embedded in a social network that people access and utilize to do something. According to Lin, the first characteristic of capital is that it is embedded in social relations and not individuals, which allows an analysis that distinguishes it from other capital, such as individual ability or proprietary property. Coleman (1990) also stated that social capital is different from other capital in that it is inherent in the relationship structure of individuals. He also stated that social capital cannot be divided, and emphasized the aspect as a public good, of which the profit or loss resulting from the behavior of some individuals affects the whole within the structure.

For Coleman (1988), social capital is attributable to the relative closure of social systems and networks. He emphasized the importance of a strong, complex relationship, particularly close to the occurrence of social capital between actors. According to Coleman, a closed tie provides the necessary insurance to promote economic activity in the market, thereby assuring credibility and facilitating trading. This phenomenon occurs because socially strong pressure exists to enable effective sanctions in closely interconnecting actor networks for those who do not comply with commonly shared norms (Coleman 1988). However, on the one hand, this closedness produces negative externalities by continuing to exclude nonmembers and on the other hand increases the risks of a free-rider problem within groups (Portes 1998). Actions driven by strong distrust and rivalry rather than social exchange based on trust are reported to lead to strengthening innovation and competitiveness (Staber 2007).

Therefore, Burt (1992) presented a new viewpoint of social capital that avoids the problems associated with this closure of a social system: that fragmentation of the social structure forms the potential of social capital. The center of the discussion is that the unrealized relationship between actors in a disconnected network called a "structural hole" results in information and control advantages with each connection. Such a nonredundant relationship constitutes the social capital of the actor and mediates with other unconnected members, thereby creating its own interest.

On the premise of the discussion on the relationship between social capital and network structure, Kogut (2000) approached issues of creation and assignment of value from an analysis of corporate behavior, such as that of Toyota. He stated that when a company takes coordinated actions in a competitive market and value is generated, ownership claims to such value appear in the network structure. These claims occur because the structure emerges from the operation of generative rules that instruct the decision to cooperate, enabling it to be viewed as knowledge to code for organizing principles of coordination. From this point of view, the Burt-type social capital is profitable because of the increased network efficiency, enabling information to flow in the network at the maintenance cost of the minimum relation number. Moreover, the structure of the network enables distribution to be concentrated on those in a broker's position. In contrast, the Coleman-type flat and a redundant network structure is linked to the benefit of trusting the support adjustments in long-term relationships instead of information efficiency. Therefore, profit distribution is determined by the arbitrage rule and the relative bargaining power.

Although they are different types, they are the same in terms of generating profits through adjustments and stating a priori which way is good cannot be done. For example, Burt-type social capital has the problem that realizing the benefit of the entire system depends on whether or not the broker's incentive matches the collective benefit. In contrast, the danger of restricting searches on closed Coleman-type networks exists, thus reducing diversity and decreasing the occurrence and introduction of innovation. Conceptually, these two types of social capital conflict, but do not have to be compatible. Rather, they should be combined and used according to their features. In this regard, Obstfeld (2005) pointed out the following: in a Burt-type loose network, new ideas that lead to innovation are introduced by bridging structural holes, but organizing the power to put it into practice is unaccompanied. In contrast, in Coleman-type tight networks, although such a network is excellent in spreading ideas and mobilizing resources to realize such ideas, generating and introducing original ideas in the first place, as previously described, is difficult. Therefore, to solve this conflict between the idea problem and the action problem, he advocated a "third party" ("tertius jungens") strategy that gradually grows in density by filling the structural holes of a loose network.

Although relatively simple coded knowledge in the technology transfer and innovation process can be transmitted by a weak Burt-type tie, the transfer of more complex tacit knowledge assumes a strong relationship through repeated routine contacts. Therefore, Gilsing and Nooteboom (2005) focused on the fact that the social capital required to acquire knowledge differs depending on knowledge type. In addition, case studies of the Dutch multimedia industry and the pharmaceutical biotechnology industry found two types of innovation: the "exploration" type, which is the development of a completely new terrain, and the "exploitation" type, including improvements in existing practices and clarifications of the network structure required for each (exploration: Burt type/exploitation: Coleman type).

10.4 Characteristics of Innovation in the Agriculture and Food Industry

Asheim and Coenen (2005) used five empirical illustrations in Scandinavia to distinguish between two types of knowledge bases and clarify the composition of the regional innovation system that differs for each industry sector. They found that "analytical" knowledge for the information technology and biotechnology industry and "synthetic" knowledge for the furniture and food industry, and both knowledge bases for the electronic industry, are particularly important (Asheim and Coenen 2005). In fact, product development in the food industry is generally more traditional and conservative than other industries, and many consumers exist who resist new foods using the latest technology, such as biotechnology.

Several large food enterprises exist, and many small- and medium-sized manufacturers are rooted in specific areas. These companies cannot maintain an internal R&D department and make substantial investments in new markets. Therefore, because introducing the "exploration" type of innovation is difficult, the role played by public research institutions is important when developing new technologies beyond improving existing products in the food industry, and introducing new technology is expected to be a collaboration between companies and research institutes. Similarly, regarding agriculture, stating that the diffusion of innovative new technologies has been mainstreamed from public institutions such as agricultural experimental stations and universities is not an exaggeration; however, in recent years, companies' cooperation in the private agribusiness sector has been increasing.

In Saito (2015), a mismatch between agriculture and food processing and the distribution industry was found to be a structural problem of the Japanese food system, but it is not merely a "dominance-dependent relationship." Rather, given the change in the environment surrounding the recent food system, a new trend has emerged of relationships being reorganized such that food and agriculture cooperate. On the one hand, from the standpoint of agriculture, the agribusiness management unit within the region grew spontaneously. On the other hand, integration from secondary and tertiary industries or contract production expansion occurred. The development of this new partnership also appears not only between food and agriculture but also within the food industry, such as the commissioned production of convenience store chain and vendor or OEM between food manufacturers. However, the globalization progress advances one step from the vertical and horizontal partnerships between these individual economic entities, resulting in competitive and cooperative relationships within a certain geographical area to jointly utilize regional resources and to share information. This process has resulted in collaboration with new entities, such as administrative and research institutions. In the "food industry cluster" as an evolutionary form of "food and agriculture cooperation," the process is expected to lead to the development of product development and regional revitalization strategies from learning effects through the mutual transfer of management resources.

Regarding the food industry cluster, Saito pointed out its following characteristics: (1) it is a collection of relatively small economic agents, (2) it utilizes unique regional resources, and (3) it is likely to be an entire regional effort, including the service industry. Moreover, these features are advantageous to selling the developed product as a "regional brand." Regarding the relationship among the entities, in accordance with Porter (1998), core players in the region in the initial stage form vertical and horizontal "networks" in agriculture and the food industry, respectively. As the cluster grows, it strengthens the character of the "system." Moreover, concerning the diffusion of knowledge and innovation, Saito emphasized the role of public research institutions. That is, per Saito, the advantage of Porter's "cluster" of industries is also observed to some extent in the agriculture and food industry; however, many problems are unique to the food industry. For example, unlike clusters based on high-tech industries, such as information technology and biotechnology, innovation is less likely to occur in the food industry. To complement this point, it is necessary to organize technological innovation in cooperation with research institutes in the country and region, especially in the processed food development department.

Regarding this point, Nozu (2016) demonstrated the factors that influence R&D through public agricultural experimental stations using econometric analysis on the theme of developing new varieties of major agricultural crops, such as rice, wheat, soybeans, and others. Thus, although the number of researchers and the scale of the facilities had no influence, the increase in research expenses significantly promoted the development of new varieties. In contrast, the agricultural output of these major agricultural products was also found to have a negative effect on the development of new varieties of public experimental stations for agriculture. This reason is behind the fact that the Japanese subsidy system and consumer preferences have strong relationships with specific existing varieties, such that a greater production area results in greater care being needed to switch varieties. Regarding the diffusion of innovation, Uenishi and Sakamoto (2017) is analyzing the social innovation process through the creation of the "farming formula for nurturing oriental storks," which is widely adopted by local farmers in Toyooka City, Japan. The focus of that analysis is in the different roles and incentives of the actors involved in the initial technological development process to establish farming methods. The results of the case studies indicate that the passion and commitment of key actors, a reduction in the risks associated with the introduction of the farming formula, and the selection of cultivators who are enthusiastically conscious of protecting storks led to collaborators in social innovation processes.

In the diffusion of such an innovation, the role of the gatekeeper is significant as a contact point in the link between the global and local networks. To verify such an influence caused by social capital, which links the structural holes in the creation and introduction of innovation in the food industrial cluster, Morishima (2012) applied the social network analysis method to the confectionery industry in Hokkaido, which is concentrated in the Sapporo and Tokachi areas. An analysis of the "cooperation" between actors centered on the confectionery makers of each area

showed that the Sapporo area actors have fragmented relationships and sectional activities because no foremost hub exists in the network. Meanwhile, in the Tokachi area, a large group is formed by two central confectionery companies as a network hub, and one of the two companies is a leader in local economic organization. Both networks are divided into four to five blocks, and structural holes exist between them. However, the difference is that, for the Tokachi area, a large gap exists with the enterprise block established outside the area. In contrast, for the confectionery industry within the Sapporo area, a gap exists between the enterprise block that has come in from the outside.

Especially, in the Sapporo area confectionery network, the information centrality of the confectionery materials' wholesaler that has the head office outside Hokkaido is particularly high. This suggests that information exchange in this cluster organization is possible not only in the local Sapporo area network but also in networks outside the region. The network of a food industrial cluster may be viewed as relatively local compared with other industries because of the "synthetic" knowledge base (Coenen et al. 2006); however, gaining new knowledge by connecting to global or at least supra-regional networks is crucial to successful innovation. Therefore, this confectionery materials' wholesaler are expected to play the role of a "gatekeeper" that bridges the structural holes between local and supra-regional networks.

The introduction of new knowledge that brings innovation is not the only "gatekeeper." In Onishi et al. (2015), on promoting regional revitalization through improvements in the cognition and reputation of agricultural products through the development of processed chestnut products in Collobrieres Village, France, the existence of multiple intermediaries and the type of intermediary were identified as potential factors in the success of regional revitalization activities. In addition to the roles of various intermediaries, especially in addition to the gatekeeper, representative and coordinators played an important role in revitalizing the region. As a result, in the context of this case study, agricultural products attracted tourists and became a source of regional revitalization through the promotion of public relations activities and reputations.

An approach using social capital theory is effective for analyzing types and functions of networks that bring innovation within the food industry. Morishima (2015) performed a structural analysis employing a network analysis approach, taking as its subject the case of the industrial cluster, which has soybean as its central axis, and the cluster organization, which was set up by 15 soybean food processors in the Sapporo urban area in 2000. Consequently, it is found that although the distribution channel by a hierarchical architecture of JAs (Keitou) is central to the network because of an institutional factor, more important to the creation of a new business is developing relationships with food processors in different subnetworks, and the beans wholesaler plays a key role as a bridge between a producer's organization and processors. Because Hokuren collects cargo for approximately 90% of the subsidized soybean produced in Hokkaido, it cannot but become the bottleneck in this network. Additionally, because contracts for cultivating soybean are signed in the downstream industry generally as "made in Hokkaido," a communication problem exists between producers and actual users. In contrast, this cluster organization has

been successful at high value-added product development by matching the needs of producers and actual users through a "pluralistic distribution system." We interpret the meaning of this success as the bean wholesaler in the mainstream "Keitou" distribution transforming the network structure by having a "weak tie" with recipients in structurally gapped subnetworks (e.g., a local natto maker), and changes in the network structure whereby small-world characteristics increase created new values.

Thus, Burt's concept of social capital functions. However, to convert the cluster organization as a knowledge network into a business network, a new business risk must be taken that does not arise during the knowledge transfer phase. In this case, the wholesaler as a broker and a natto maker has mainly taken over, which is possible because each enterprise already has its own network through which it diversifies innovation risks. Yet, the risk is never so great because, in this network, innovations are mainly incremental and "synthetic" in that they use a knowledge base with novel combinations of existing knowledge through interactive learning with clients and suppliers. However, to observe what Asheim and Coenen (2005) called "analytic" or scientific knowledge-based innovation is not unheard of, such as the new good (soy milk yogurt) that introduced the developed technology (lactic acid bacterium) of a food-processing research institute. Therefore, innovation does not bring new risk by differing widely from the company's usual process of product development and market introduction.

Burt's concept of a structural hole certainly explains the development of food industry clusters; however, as a key concept for explaining the mutual relationship between clusters and regional brand building, the social capital of closure (Coleman 1988) is effective. Bertolinia and Giovannetti (2006) used case studies that investigated the structural change corresponding to the internationalization of the Modena region (Italy), which traditionally produced ham and salami, to clarify that a dense network contributes to the diffusion of technological innovation and a reduction in transaction costs. In particular, the reputation within the network and the risk of damage to credit become sanctions against violations. Moreover, because network governance is being created, the collective brand of Modena ham and Modena balsamic vinegar, which is protected by protected designation of origin (PDO) or protected geographical indication (PGI), is preserved as a common asset of this area.

10.5 Entrepreneurship and Risk Management

The definition of entrepreneurship by Kiminami and Morishima (2016)—the "attitude, idea, and ability" to achieve an innovation—is slightly different from the definition by the Global Entrepreneurship Monitor (GEM) of "attitude, activity, aspiration." These three elements of GEM delimit the level of behavior when innovation is practiced, and not the different dimensions of constituent elements such as in Kiminami and Morishima (2016). Because the "idea" appears for both "attitude" and "ability," if entrepreneurship is limited to a discussion related to attitude and ability, attitudes are difficult to control from the viewpoint of human resource development. In

contrast, ability can be learned through education. According to Sakaue et al. (2016), management capability is the ability to realize ideas, in addition to strategic planning ability, using information management for the former and mobility and management of human resources and funds for the latter (Sakaue et al. 2016).

Considering management skills from such a point of view, uncertainty always accompanies the situation when tackling something new like innovation. Therefore, if the power to control uncertainty is managerial ability with entrepreneurship, then risk management is important. In contrast, attitudes are required to challenge risk, and the concept of "risk" seems to be a keyword to solving entrepreneurship. Even in human resource development, if the hedge is too effective and the risk is too low, no challenge occurs. In contrast, a difficulty level that is too high does not affect whether or not a challenge is useful. In other words, because management ability and risk are inversely proportional to each other, carefully judging and following up on failure is important.

Examining the risk of developing and introducing innovation that is limited to the introduction of new technology during the new product development phase can be done through an analysis that considers the business risk at each stage with respect to the decision-making flow of product development. This process of developing a product and introducing it to the market can be expressed as follows, if modeled according to Kotler (2000). First, we collect ideas and screen them for product concepts. Then, after receiving customer responses to the concept, we develop a marketing strategy and proceed with the business analysis. Through these processes, the go-ahead is given to full-fledged product development. However, even during that process, we test the product's function and the customer's reaction, and proceed to commercialization after a market level test if the response is good. Subsequently, relationships with other departments such as manufacturing and sales are the main focus, with importance on product development ultimately aiming for "customer satisfaction." Therefore, we will grasp the customer satisfaction level from sales and awareness surveys, and feedback to the development of next-generation new products. This process has been formulated in consideration of manufacturers' product development but also applies to developing menus in the food-service industry.

However, as Kotler attempted to model the "decision-making" process of product development as part of a marketing management policy, he made little mention of the relationship with the "technology development" process, which is important in the actual product development process. The flow of this technology development process is in the form of planning-project-design-prototyping-evaluation through experiments and measurements, and corresponds to the connection from idea to concept in the product development process. However, a marketing strategy is not worked out in the technology development process itself. Moreover, this developed technology is utilized in product development and can be combined with the related business analysis. As a result, this process is externalized if licensing technology developed by another company is a superior option. However, if the value of intellectual property such as developed patents is sufficiently high, a manager will make the business decision to internalize the R&D department.

A review of the related decision-making flow in connection with business risk is as follows. Even if we are working on developing new products, the possibility exists of such efforts being canceled given changes in business conditions and the market environment (I. development risk). Therefore, a lack of funds creates the risk of no commercialization (II. incompletion risk). After commercialization, the possibility exists of withdrawing from the market because of losses from a failed marketing strategy (III. market risk), losing litigation concerning patents, trademarks, and legal rights even if the product is a hot seller (IV. legal risk), and the possibility of becoming obsolete through competitive technology even if the product continues to sell for a while (V. obsolescence risk).

These general risks are considered through examples of the product development of processed foods. For example, when examining the risk of introducing new varieties for the first time, the expected variety may not be developed (I), although a new variety was created, a product based on its characteristics cannot be developed (II), although a product was commercialized using that variety, sales are slow (III), the breeding institution offers the varieties to competitors (IV), or successor breeds become popular and products branded with the existing variety cannot be developed (V); in other words, management faces many possible risks. However, from the viewpoint of agricultural producers, because technology development is usually externalized with respect to introducing new varieties, the development risk of the first stage is low, but the incompletion risk and market risk of the latter stage are rather large compared with the case of the existing variety.

Therefore, Morishima (2013), who compared several cases to analyze how business risk after product development appears in the case of new potato varieties, defined business risk through a matrix of supply chain processes (procurement/processing/storage/sales/transportation) and management items (quantity/quality/cost/time). The first half of supply chain is primarily the manufacturer's side, and the second half is the risk that the seller side is responsible. However, business risk cannot be unequivocally defined simply using the form of each company. The analysis results suggested the following. First, for product development through collaborations between agriculture commerce and industry, the existence of companies that take on major risks and a leadership role in promoting businesses becomes important because collaborative projects do not progress easily if farmers are exposed to risk in the early stages of such projects. Second, given the characteristics of the potato, contractual behavior that covers 3 years in the future with respect to original species, seeds, and products is required to prevent epidemics, making the long-range risk more likely than other risks. Therefore, potato chip manufacturers contracted with agricultural producers on the basis of area during the initial product development stages for new varieties. Although processors are responsible for product development and incompletion risks, the risk is transferred to distributors during commercialization. In this case, the product was commercialized through the receipt of a subsidy from the Ministry of Economy, Trade and Industry. Therefore, public support in the form of financial provisions for risk retention is also considered effective at such an early stage.

10.6 Future Research

Given this discussion, the purpose of this paper, which was to resolve issues related to the introduction of new technology in agricultural management and to identify the necessary conditions for human resource development to solve such issues, is partly achieved; additionally, some issues remain. Therefore, we highlight these remaining open issues for which further discussion is required.

According to Kawasaki (2016), the entrepreneur should interact in two types of environments: the given condition and the condition that can be changed. Regarding the latter, other organizations such as business partners and cooperating parties are applicable. In particular, stakeholders within the region to which the subject belongs are important because the region acts as a "field" in which entities put themselves, and it is an external environment. However, such relationships within the region can be both a promoting factor and an inhibiting factor for entrepreneurship. Therefore, regarding measures to address this issue, ignoring regional relations and going outside for seeking technologies, human resources, and markets may be possible. In contrast, other strategies exist, such as grouping existing farmers in the area and collaborating, and putting together lots. The possibility exists that relationships with others in the area may differ depending on the type of agriculture, such as cultivation and livestock production.

Such an "individual" as a manager and an "organization" as a corporation involving the individual, the formation of the organization—that is, the management within the organization—is subject to debate. Meanwhile, from the viewpoint of innovation, the environment outside the organization includes policies and international relations as given conditions, as well as relationships with other organizations that can be controlled to a certain degree. One way to develop an argument for this relationship with an environment of individuals and organizations is through the "sociality of innovation" problem. Regarding this point, as described at the beginning of this paper, it is important to evaluate innovation from the viewpoint of the economic ripple effect to the region because the influence that exceeds a specific subject defines the nature of innovation. By solving innovation with respect to its significance and purpose, the problem of the scope of entrepreneurship may be solved as well. In addition to discussing these "sociality" issues, discussing not only industrial policy but also regional policy aspects regarding the relationship with institutions and policies as a given environment is important. In other words, the possibility exists that not only the subject is influenced unilaterally by existing institutional policies but also that some suggestions can be made.

Another interaction with the environment is a matter of "interorganizational relationship." Goto (2017) suggested that this relationship is a function of its "platform." He explored the effectiveness of collecting knowledge and co-creating value in a consortium form for open innovation in the agriculture and food industry by investigating cases of the bio-cluster of the Kyushu region and the food valley of the Netherlands. Two types of extension directions exist from this platform: open innovation through network expansion and construction of an innovation ecosystem or a regional innovation system, as in Saitoh (2016). Although both are ultimately

important elements that can lead to the formation of food industry clusters, each has its own problems. Specifically, the latter case, a regional innovation system, has autonomy and can self-organize when being constructed to continuously create innovation. Therefore, relying on specific individual leadership is not necessary but independence is lost. In other words, a discussion is necessary on whether attempting to enable innovation without entrepreneurship is desirable.

Meanwhile, the former—network and open innovation—have been adopted by major companies in recent years as mechanisms to efficiently generate innovation using fewer management resources. This option is also a conforming mechanism in the agriculture and food industry with its numerous small- and medium-sized organizations. "Platform," an open network organization through industry-academia-government collaboration, functions as a "field" to embed relationships among subjects in the social network and as a hub for information networks for innovation. In addition, the platform may play the role of "regional brand" management as a symbolic way to mobilize resources within the region. The role of coordinator is indispensable to forming such a platform and matching the entities; however, the "coordinator" prepared for various collaborative projects is not related to the area from the viewpoint of network theory and is often defined as a "broker" (Gould and Fernandez 1989). Therefore, finding and fostering talent who fulfills the role of "coordinator," who is inside the local network itself, who can act as a bridge between the entities, and who can play the role of "gatekeeper" as a contact point for introducing new knowledge with external global networks is important.

Platforms are required not only to coordinate among stakeholders but also to have regional management functions. However, in contrast to systems, networks have no boundaries, which makes managing the network essentially impossible (Morishima 2014). If the ego-network is centered on a specific subject, then it can be controlled to some extent; however, if the focus is exceeded, management difficulties increase significantly. Specifically, although a company may change its business partner, changing the supplier's business partner at his wishes is difficult unless the partner has significant influence. In response, the effectiveness of governance through social capital (Nooteboom 2008) is discussed, but the elucidation of concrete measures is a task for future research.

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Chapter 11
Modernizing Farm Business Management: Comparative Analysis of Japanese and Californian Rice Farming

Yukio Kinoshita

Abstract In Japan, farming companies, particularly those that grow rice, have recently been promoted to supersede conventional small farms under increasing competitive pressure. Modernization of farm management is a key concept that measures the extent to which modern enterprise management has evolved from the family farms. We conducted unique benchmarking surveys to compare the degrees of modernization between Japanese rice-farming companies and their major international competitor, Californian rice farmers. It was found that Californian producers outperform those in Japan not only in terms of farm scale and rice yield but also in terms of farmers' capabilities and economic modernization metrics. It was revealed that entrepreneurial advancement, information gathering, and risk-accepting behavior were influential capabilities of Japanese rice farmers with regard to their business innovations. From the perspective of global competitiveness, Japanese rice farmers need to enhance their managerial abilities to further progress in the modernization of their farm business and to get further involved in effective marketing management. Also, our analysis suggests that the research methodologies designed to explore farm management modernization originating from studies in Japan would be worth applying as an international benchmark.

Keywords Farming companies · Farm modernization · International benchmark · Management improvement · Managerial capability

11.1 Introduction

Japanese rice farming must become more competitive to remain viable, particularly if (i) possible trade arrangements stimulate the import from more japonica rice (medium- and short-grain varieties)-growing countries such as the Unites States and

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A. Kiminami (ed.), *Entrepreneurship and Innovation in Japanese Agriculture*,
New Frontiers in Regional Science: Asian Perspectives 32,
https://doi.org/10.1007/978-981-13-8055-6_11

Australia and (ii) Japan's five-decade-old rice-reduction program faces abolition in 2018 (Arahata 2014). Contemporary Japanese rice farmers have to revamp their strategies to adapt to such agricultural policy changes.

A number of possible determinants of competitiveness in agricultural sectors have been identified: farm size, factor intensity, farm specialization, human capital, consumer demand, natural environment, density, facilities, public investments in infrastructure, public policies and regulations, and research and development (Organization for Economic Cooperation and Development [OECD] 2011). For any determinants, competitiveness is a relative concept that should be measured according to a benchmark.

Few studies have examined the Japanese rice farming sector from the viewpoint of international competitiveness. There is a particular lack of attention in the literature to internal farm-level factors, such as business strategy, management capability, and innovation, as drivers of farm management modernization. Kinoshita et al. (2015) delineated a comparison of internal farm management factors between Japanese and Australian rice farming. Such a benchmarking survey can be generalized and applied to other competitive countries, and there is the potential for innovating methodologies from the perspective of international competitiveness. Therefore, we assessed the managerial aspects of rice farming by surveying farmers in Japan and in California in the United States, Japan's chief rival in the rice market. We also addressed issues in research methodologies that were applicable to farm management modernization.

The remainder of this chapter proceeds as follows. Section 11.2 describes the Japanese rice industry with some comparisons with California. Sections 11.3 and 11.4 explain the analytical framework and survey methodology. Section 11.5 focuses on a questionnaire administered in Japan and on interviews conducted in California. Sections 11.6 and 11.7 conclude by discussing the results and comparing relative competitiveness across the two countries by their case studies with a viewpoint of internal farm management factors.

11.2 The Rice Industry in California and Japan

California accounts for 20% of all US rice production and is the nation's fourth-largest rice-growing area after Arkansas, the Gulf Coast, and the Mississippi River Delta (Baldwin et al. 2011). California almost exclusively grows high-quality medium-grain and short-grain rice for export and domestic markets. According to the US Census of Agriculture (United States Department of Agriculture [USDA] 1999, 2014), the number of Californian rice farms fell from 1567 in 1997 to 1392 in 2012, whereas land under rice cultivation rose from 208,122 to 227,421 ha within the same timeframe. Accordingly, the size of the average rice farm increased by 23% during this period, reaching 163 ha devoted almost exclusively to rice production. Consolidation and structural change in California's rice sector have occurred in the pursuit of an economy of scale and lower production costs (Baldwin et al.

2011). Indeed, since 1997, rice farms of 200 or more hectares have become more representative in California.

Compared to the national average, the average size of California's rice farms is 16% smaller, and their per-acre production cost is 40% above (Cost of Production Dataset 2015, Economic Research Service, USDA), which reflects the higher cost of land, irrigation, custom operations, and commercial drying in this area. Nonetheless, Californian producers generate 50% more gross value per acre of production than the average US rice farm and are nearly twice as profitable. That profit is supported by substantially higher prices (USD28.97 per 60 kg at harvest) and slightly better yields (9639 kg per planted hectare) than in other US rice-growing areas.

On the other hand, in Japan, rice is an important staple food and so the rice industry operates on a national scale. Although Japanese rice farmers typically produce the best medium-grain rice and satisfy the demands of discerning Japanese consumers, the small-scale farm operations and consequently high costs have weakened the price competitiveness of the Japanese rice industry. Furthermore, an ageing population of rice farmers is jeopardizing the viability of rice farm businesses. Long-term time series data show that both domestic production and consumption of rice are decreasing, implying that Japanese rice is being overproduced.

At present, the Japanese rice industry includes approximately 1.2 million farms, the majority of which are family-owned and family-operated, whereas land under rice cultivation remains mostly static at 1.6 million hectares. The average area for rice cultivation on a Japanese farm is approximately 1 ha. Rice production costs in Japan are much higher than those in California (Kamegai and Hotta 1991, Yagi 1992), and most rice production cost is associated with machinery and labor expenses. Japanese rice farms produce nearly half the yield (5260 kg per planted hectare) of Californian rice farms (Ministry of Agriculture, Forestry and Fisheries [MAFF] 2016).

Overall, the industry seems to be less competitive in terms of farm size, cost and price of production, and yield compared with California. To address this, the Japanese government has been developing a rice policy, such as promoting the enlargement and corporatization of rice farms to improve competitiveness in the industry. Indeed, the number of farming companies that grow rice and/or other grains in Japan has recently increased to 6540 companies as of 2015 (based on customized data from the Japanese Census of Agriculture and Forestry, MAFF). Japanese farming companies account for less than 1% of all rice farms, but they are, in agricultural policy terms, earmarked to become competitive businesses with larger farms and increasing sales (Kinoshita and Kimura 2016).

11.3 Study Framework

Kimura (2008) and other authors (Kay et al. 2012, Malcolm et al. 2005, Olson 2011) have emphasized that conventional farm management differs from modern enterprise management, and this has been seen as a barrier to their competing on a

global scale. Kimura (2004, 2008) presented a theory of farm business growth in the Japanese context and explained that two domains captured the progression from livelihood farming to enterprise farming: quantitative measures (farm size and sales) and management styles (business strategies, extent of modernization, management practices, innovations, and human resources). Although some quantitative differences between Japanese and Californian rice farms have been established in previous studies that conducted comparative analyses on that basis, differences in the managerial aspects between them remain unclear.

Farm management modernization is an essential concept that examines the extent to which modern enterprise management has developed on family farms. This is an interesting investigation because a family farm has a common business structure in both Japan and California. Modernization refers to the efficient use of time, economic modernization, functional modernization, and spatial modernization; all of these aspects are critical for farmers (Kimura 2004, Kinoshita and Kimura 2016). To better understand farm modernization, this study also focuses on management styles, such as farmers' intentions and managerial capabilities, farm business strategies, marketing management, and innovations, in order to facilitate a benchmarking survey for competitiveness.

Various literatures have emphasized the importance of the "disposition" of the farmer and the role that it plays in his/her approach to farm management, referred to as the farmer style (Kay et al. 2012, Kimura 2008, Malcolm et al. 2005, Maybery et al. 2005, Nuthall 2009a, Olson 2011). Farmers' intentions refer to the underlying goals of management activities, including economic, environmental, cultural, and social objectives that have been identified as pertinent to farming. The farm business strategy is one of the factors that guide management practices as well as farmers' intentions. Specific farm business strategies could differ according to the attributes of the sample groups, for example, by country, region, and product category. However, because we conducted an international comparison between sample groups from Japan and California in this study, we only used more generic questions related to crop farming. Farmers' intentions and strategies refer to strategic management in this study.

Farmers adopt various management practices to implement their strategies. Key practices in this study are production and marketing practices, because rice farmers in both countries have to address current and future market challenges and changes. Production practices fundamentally concern the processes and exchanges executed by farmers for the purposes of supplying suitable products in contemporary market contexts. More specific practices are marketing strategies and customer management. Herein, these refer to production and marketing management.

From the view of human elements, managerial capability is a crucial driver of farm business viability (Kimura 2008, Muggen 1969, Nuthall 2009a, b). In modernized farm business, managerial tasks including planning, organizing, monitoring, and analyzing are more important than physical work in the fields if the business is to grow sustainably (Gasson and Errington 1993, Hutson 1987, Kingwell 2002). With the increasing importance of managerial tasks, the skills required by farmers have been specified in empirical studies. These skills contain entrepreneurship

(Alsos et al. 2011, McElwee and Bosworth 2010, Olsson 1988), information-gathering and information-using skills (Nuthall 2006), and developing a long-term business plan and controlling time schedules (Kingwell 2011, Rikkonen et al. 2013). Kimura (2008) argued that the ideal farm manager has the capability and superior skills required to fulfill the three functions of entrepreneurship, adaptability, and administration. In addition, the managerial capability of a farmer is part of the input factor necessary to generate innovations which are defined as changing how a farm system operates (Castle et al. 1987, Kimura 2004, Malcolm et al. 2005).

11.4 Sample Data

Survey questions explored five issues: operating structure, management attitudes, business strategies, workforce and financial management, and sales and marketing. These questions were common in both the Japanese and Californian surveys we conducted.

A Japanese questionnaire survey was delivered by post to a directory list of 1683 rice-farming companies across Japan in December 2014, generating 618 usable responses by return of post. The population of Japanese rice/other-grains farming totaled 6540 companies, as seen in Sect. 11.2; thus, the capture rate of our sampling frame was 26% of this population, and our final sample size represented nearly 10% of that population. This sample size is sufficient for the purposes of statistical analysis.

Table 11.1 summarizes the Japanese respondents included in this study. Respondents constituted a tolerably balanced sample in terms of rice industry locations, which mainly included *Hokuriku*, *Tohoku*, and *Chugoku* regions, while there were relatively fewer respondents from *Kinki* and *Kyusyu* regions. Drawing from official MAFF data, 43% of Japanese farming companies (including those of non-rice) stand as a limited liability company, 28% as a stock company, and 27% as an agricultural producers' cooperative company. Respondents were thus reasonably balanced in terms of farm legal status, although agricultural producers' cooperative companies were overrepresented and limited liability companies underrepresented.

Lately, given an execution rate of 40% in the Japanese rice-reduction program, it was estimated that all Japanese rice-farming companies had, on average, 23.2 ha of total farmland. This value was calculated from MAFF data (2017), and it showed that an average of 13.9 ha was allocated to rice planting out of the total farmland area. Therefore, the Japanese respondents were likely to be reasonably consistent with the overall Japanese population in terms of farmland scale, with a mean scale of 37.7 ha and a median scale of 23.8 ha. According to the Statistics Bureau of Japan (2014), the mean number of workers (including non-regular workers) on a Japanese rice-farming company was 12, whereas respondents listed just six (excluding non-regular workers). However, differences in the number of workers between respondents and the population diminish if non-regular workers on the sampled farms are taken into account. Through the same statistical reference, the mean sale of a

Table 11.1 Characteristics of sampled Japanese rice-farming companies

Sample size	618
Response rate	37%
Responses by region	
Hokkaido	8%
Tohoku	18%
Hokuriku	35%
Kanto/Tozan	9%
Kinki	4%
Chugoku	16%
Kyusyu	5%
Others	5%
Organization type	
Limited liability companies	21%
Stock companies	24%
Agricultural producers' cooperative companies	47%
Others	8%
Farmland scale	
Mean	37.7 ha
Median	23.8 ha
Mean regular workers	6.4 people
Sales[a]	
Mean	58 million yen
Median	40 million yen

[a]One Japanese yen was approximately equivalent to USD 0.01

Japanese rice-farming company was 41 million yen[1], which again corresponds sufficiently with our sample where the mean sale amount was 58 million yen with a median of 40 million yen.

Data from the Californian sample were compared with standard Japanese rice-farming companies, in order to be applied to the Japanese context. We interviewed six Sacramento Valley rice farmers in April 2014, assisted by an influential rice farmer. However, the six farms represented by our data are not fully representative in statistical terms, given that there are approximately 1400 rice farms in California. Respondents' farms were sequenced by acreage and labelled A–F (Table 11.2). Of the 22 rice-growing counties in California, the rice industry is primarily located in the northern counties of *Colusa*, *Glenn*, *Sutter*, *Butte*, and *Yuba.* Despite the small sample size, respondents were relatively balanced in terms of rice farm locations, which included *Colusa*, *Glenn*, *Butte*, and *Yuba*.

According to USDA statistics for California (2014), three-quarters of the primary operators on rice farms were aged 45 years or older, whereas the modal age class was 55–64 years old. Given this, our respondents constituted a relatively bal-

[1] One Japanese yen was approximately equivalent to USD 0.01.

Table 11.2 Characteristics of sampled Californian farms

Farm	A	B	C	D	E	F
Respondents' age	66	59	60	59	52	52
Farm area (hectares)	101	287	342	583	686	1336
Full-time workers (Male/Female)	M 1	M 2	M 2	M 3	M 5	M10
			F 2	F 1	F 1	F 1
Part-time (P-D)	90	60	110	65	240	800
Full/part-time farm	Part-time		Full-time			
Organization type[a]	PS		FM		PS	CO
Crops excluding rice	None				Oats, vegs, legumes	

[a]FM indicates a family operation, PS a partnership, and CO a corporation

anced sample in terms of rice farm manager age, which ranged from 52 to 66 years old. Furthermore, the majority of primary operators on Californian rice farms spent more than half of their working time on farming which, again, is not inconsistent with our sample.

Using the same statistical reference, 56% of Californian rice farms were organized as family/individual, 31% as a partnership, and 8% as a family-held corporation; by way of comparison, our respondents comprised two family operations, three partnerships, and one family-held corporation. Half of the Californian rice farms covered 40–200 ha and around 40% of the farms covered 200 ha or more. Therefore, our sample is biased in terms of this metric; five of the six farms were greater than 200 ha, the exception being Farm A. Farm F was a top producer and highly reputed in the region.

Considering these statistical references, it would be worth comparing the samples from the two countries. The respondents from Japanese farming companies comprised a group that presumably exhibited relative advantages and high performance compared with other such farms across Japan. They are, therefore, a critical and competitive benchmark in terms of management and suitable for comparison to our sample of rice farms in California, where, at the population level, the competitive superiority of rice farms in the United States vis-à-vis their Japanese counterparts is well established.

11.5 Results

11.5.1 Strategic Farm Management

Factors that guide management practices include farmers' intentions and their strategies. Kimura (2008) reported that farmers' intentions could be delineated into four categories: (i) a desire to continue family tradition, (ii) a desire to maintain a rewarding and enjoyable livelihood, (iii) a desire to achieve business profit, and (iv) a desire to maintain a socially acceptable business, following the pattern of business

objectives. Seven questions investigated business objectives: (1) to pass the farm to children, (2) to earn a livelihood, (3) to earn income on a par with other industries, (4) to optimize profit, (5) to enjoy being an innovative farmer, (6) to satisfy consumer demand and appreciation, and (7) to expand the business.

More simply, in this study by using the same questions, farmers' intentions were integrated into the following: (I) traditional-directed, that is, they wish to pass their farms to children; (II) life-orientated, that is, their objective is to earn a livelihood or income commensurate with other industries, and they expressed no intention to pass the farm to children; and (III) business-minded, that is, they had higher-level objectives without the intention to pass the farm to children and without objectives of earning a livelihood or income commensurate with other industries. Responses that constituted our data and on which we based conclusions were self-rated, subjective, five-item Likert scales.

Table 11.3 summarizes business intention responses and shows all results from the Japanese sample and the proportion of positive responses. In summary, positive responses included "agree" and "strongly agree." By categorizing their responses into their intentions, it was found that as much as 71% of Japanese respondents were tradition-directed, 24% were life-orientated, and the remaining 5% were business-minded. By contrast, the Californian respondents were more devoted to life-orientated farming rather than tradition-directed. Unlike the other Californian respondents, Farms A and B were tradition-directed. All other respondents were life-orientated. No Californian respondent identified its sole objective as satisfying customer demand or sustaining growth. Business-minded farming comprised the lowest intention among both the Japanese and the Californian groups.

Table 11.3 Farmer intentions

Variable/Item	Japan[a] (N = 611)[b]	California[c] A	B	C	D	E	F
Farming focus		Tradition-directed		Life-oriented			
Business objectives							
(1) to pass farm to children	70.9%	+	+	0	− −	−	−
(2) to earn enough income to make a living on the farm	85.1%	+	0	++	++	+	++
(3) to earn income from farming on a par with other industries	85.1%	−	+	+	+	0	+
(4) to optimize net profit	81.2%	0	+	+	0	0	+
(5) to derive enjoyment from being an innovative farmer	86.1%	+	0	++	+	+	+
(6) to satisfy consumer demand and appreciation	94.3%	0	−	+	+	+	+
(7) to grow and expand the business	86.7%	−	+	++	+	+	+

[a]The percentage of positive responses ("agree" and "strongly agree") is used to summarize the Japanese sample

[b]Seven Japanese respondents were excluded from the tabulation due to data unavailability

[c]++ strongly agree, + agree, 0 neutral, − disagree and − −strongly disagree

While farm business strategies cover a variety of basic directions after a farmers' intentions, they are generalized as capital-intensive farming strategies (connected with expanding farm acreage or intensifying mechanization), technological innovation strategies (investing in technology), market adaptation strategies (expanding sales/marketing activities and product differentiation, or initiating food processing business), restructuring strategies (developing off-farm investments or rethinking the overall enterprise mix), external management strategies (reducing price risk or less-intensive farming for environmental reasons), or a human resource strategy. Table 11.4 itemizes such farm business strategies and those most selected are reported.

The proportion of positive responses to business strategies in the Japanese sample are indicated in Table 11.4. The Japanese respondents showed a greater inclination toward capital-intensive farming by expanding acreage and investing in machinery rather than by technological innovation. Market adaptation strategies, including vertical diversification and active marketing, were also prominent. As for the human resource strategy, personnel development was a notable strategy among the Japanese respondents.

Increasing acreage and investing in advanced technologies were common among Californian respondents. That finding coincides with long-observed efforts to streamline production and minimize costs. Market adaptation strategies were not as prominent among the Californian respondents as they were among the Japanese respondents, and only Farm F was an active marketer pursuing such strategies as promoting its processing business and branded products.

It should be noted that there are two strategies that require farm-level investment but they have different effects: "investing in technology" and "intensifying mechanization." The latter merely increases fixed capital of the existing technologies, whereas the former leads to innovation in production processes with the introduction of new or more advanced technologies. Specific technologies in rice farming vary, but some examples are precision farming in California and direct-seeded farming in Japan.

Table 11.4 Major strategies

Variable/Item	Japan (N = 616)[a]	California					
		A	B	C	D	E	F
Maintain with no changes	5.7%	✓					
Develop off-farm investments	6.3%		✓				
Expand farm acreage	60.6%		✓	✓	✓	✓	✓
Invest in technology	21.3%	✓	✓	✓	✓	✓	
Intensify mechanization	54.1%			✓	✓		
Expand sales/marketing activities	39.9%						
Expand product differentiation	15.7%						✓
Initiate food processing business	19.8%						✓
Hire qualified staff	37.8%						✓

[a]Two Japanese respondents were excluded from the tabulation due to data unavailability

11.5.2 Production and Marketing Management

Farmers adopt management practices in order to implement their farm business strategies. Production practices for marketing are fundamentally important ideas for supplying their products that are suitable for the changing markets they face. More specific practices are marketing strategies and customer management. Marketing strategy is an aspect of sales competition in which farmers place the most emphasis, and includes season, marketing channel, cost-cutting, and product differentiation. Customer management is the end-user-orientated practice, not the rice industry itself; individual farmers have adopted such practices to attract and retain customers.

Table 11.5 indicates the proportion of positive responses to production practices for marketing in the Japanese sample. It shows that around 40% of Japanese respondents maximized the use of natural advantages on their farm. Practices such as time of harvest and selling to and addressing customers' needs were not so popular among them, whereas they were more likely to have introduced traceability systems (or agricultural product tracking). Product safety and quality are essential values among Japanese consumers.

Table 11.5 also reveals that the majority of Californian respondents optimized the use of natural advantages. They were also more likely to have a realized harvest time and selling to and addressing customers' needs compared with the Japanese sample. Overall, the Californian respondents' production practices for marketing were scattered. Only two have introduced a traceability system, Farms E and F, which had done so because they were committed to organic farming. Farm F also pursued product differentiation.

The proportion of positive responses to customer management in the Japanese sample is shown in Table 11.6. It shows that 56% of the Japanese respondents engaged in customer management, but no specific practice was popular. In the Japanese market, rice products are very common and it is difficult to create sales competition. The mediation sale of rice via agricultural cooperatives rather than direct selling by rice farms is a highly dominant marketing channel. Therefore, it is

Table 11.5 Production practices for marketing

Variable/Item	Japan (N = 616)[a]	California					
		A	B	C	D	E	F
Exploit natural advantages	40.4%		✓	✓	✓	✓	✓
Time harvesting and selling	27.9%			✓	✓	✓	✓
Produce to customer demands	26.1%		✓	✓	✓		✓
Commit to organic farming	31.0%		✓			✓	✓
Use special materials or methods	18.8%			✓			✓
Introduce traceability	44.6%					✓	✓
Develop differentiated products	18.5%						✓

[a]Two Japanese respondents were excluded from the tabulation due to data unavailability

considered that the limited number of Japanese respondents who customize their products is dependent on different uses, such as for the table, food service industry, and feed for livestock. Trust in producers is an essential value among Japanese consumers as well as product safety and quality.

Table 11.6 also demonstrates that half of the Californian respondents follow no specific marketing strategy. This finding was expected because they generally sell to mass markets, including cooperatives and contract pools. Even so, Farm D concentrates on seasonal sales and grows a specialty product (rice seeds), and Farms E and F target channels such as direct sales and offer value-added products (organic foods or rice crackers). No Californian respondent sells his/her products after cutting costs or by differentiating against his/her rivals. Table 11.6 shows that the Californian respondents generally did not distinguish themselves in customer-management practices, although Farms E and F tailor products to customers and encourage visits.

11.5.3 Modernization of Farm Management

Basically, since family-owned and family-operated farms are a common business structure, farm entities often represent a "farm–household complex" as individuals, partnerships, and, occasionally, private companies (Nuthall 2011). Thus, there is an intimate relationship between the farm and the family, which naturally leads to conflict over capital and labor allocation. A further difference between the farm–household complex and public company arrangement is that the owners of the former are not usually separated from the business spatially or in management, whereas those of the latter are. Thus, the modernization of farm management is considered to involve practices that allow a farm to be split from the farm–household complex and managed as a business to reduce conflict between the families.

Our survey questions inquired about four aspects of modern farm management: (I) time modernization, (II) economic modernization, (III) functional moderniza-

Table 11.6 Marketing strategy and customer management

Variable/Item	Japan (N = 616)[b]	California					
		A	B	C	D	E	F
Marketing strategy[a]					S	C	C
Customer management							
Offer new products to meet demand	23.4%		✓		✓	✓	✓
Alter production to meet demand	20.6%					✓	✓
Provide farm tours to customers	16.9%					✓	✓
Maintain mail communications	19.3%						✓
Provide information over the internet	23.9%						✓
No specific practice	44.0%	✓		✓			

[a]S indicates selling during specific seasons. C indicates selling in specific channels
[b]Two Japanese respondents were excluded from the tabulation due to data unavailability

tion, and (IV) spatial modernization. Time modernization includes clearly segregating business hours from private hours. Economic modernization includes controlling accounting and finance practices and isolating business budgets from household budgets. Functional modernization relates to organizing and coordinating work duties and the separation of work and family relationships. Spatial modernization is evidenced by a separate business and work space.

Indicators for each of these dimensions are explained in Table 11.7. We evaluated responses from these indicators on a five-point scale and combined them. The possible score of each dimension was 0–25 points (Fig. 11.1). Overall, the Japanese respondents demonstrated moderate degrees of modernization, without any remarkable aspects. However, these are farms which have been corporatized and it was anticipated that they would adhere well to modernization criteria and objectives.

Among the Californian respondents, modernization was evident in all dimensions among larger farms, particularly Farm F. Moderate modernization was the overall norm for California, although economic modernization was more advanced on Farms C, D, E, and F. Economic modernization mainly included financial diagnosis and analysis and clarification of accounting and financial targets, although we did not analyze data using these disaggregated terms. Only one of the farms kept double-entry records, which is not legally required, and single-entry is sufficient for tax purposes (Internal Revenue Service, 2013).

We also did not disaggregate analyzing personnel practices, but hiring seasonal workers and clarifying work roles was common. As more workers were hired (Table 11.1), more workforce management practices were implemented. As seen in Fig. 11.1, Farms D, E, and F exhibit time and functional modernization. Examples of moderate spatial modernization include the creation of office space.

If Japanese rice-farming companies are to be taken beyond the level of modernization seen among the Californian respondents, they need to be seriously examined. Specifically, one Californian respondent, Farm C, exhibits levels of modernization similar to the Japanese respondents, as seen in the figure, whereas progress in economic modernization is nonetheless noteworthy. Again, we refrained from disaggregated analyses vis-à-vis the Japanese respondents, but slow economic modernization is mainly due to a lack of accounting and financial target clarification, despite the extensive use of double-entry records. Poor time modernization is largely due to time poverty issues: overworking on farms, insufficient holidays taken, and seasonal workers not being hired.

11.5.4 Managerial Capabilities

Farm managers need superior skills in entrepreneurship, adaptability, and administration capability (Table 11.8). Table 11.8 summarizes the results from the 10 questions that explored managerial capabilities. Responses that constituted our data and on which we based conclusions were, again, self-rated Likert scales with five levels.

Table 11.7 Viewpoints on management improvements intended to modernize farm management

(I) Time modernization
Holidays are periodically set and taken
Time management is practiced (e.g., fixed daily work hours and breaks)
Employees are hired to reduce overworking during busy seasons
Work is spread over the year to mitigate seasonal slack
A systematic work plan is established and implemented
(II) Economic modernization
Periodic (e.g., monthly) salaries are paid to family workers
Managers are paid to manage
Farms are managed based on financial targets such as revenues and expenses
Accounting and financial management employ double-entry bookkeeping
Results are analyzed, diagnosed, and adopted in succeeding plans
(III) Functional modernization
Work roles are classified according to the technical level of difficulty
Work roles are classified as managerial- or production-based
Supervisors are assigned as required and provided the necessary authority
Farmers receive training
Positions in the workplace and the duties of each member are documented
(IV) Spatial modernization
Establishment of an office area
Construction of a management office
Streamlining of experimental fields
Acquire a trade name
Job titles (director, department head, and section manager) are assigned

Ten points were given for each capability-related question if the response was positive. Positive responses included "agree" and "strongly agree." The points were then combined for each respondent so that the possible range of capability score was 0–100 points. Table 11.8 demonstrates the combined results from the Japanese sample and average points associated with each capability-related question, which ranged from 0 to 10. The average capability score for the Japanese respondents was approximately 48 points.

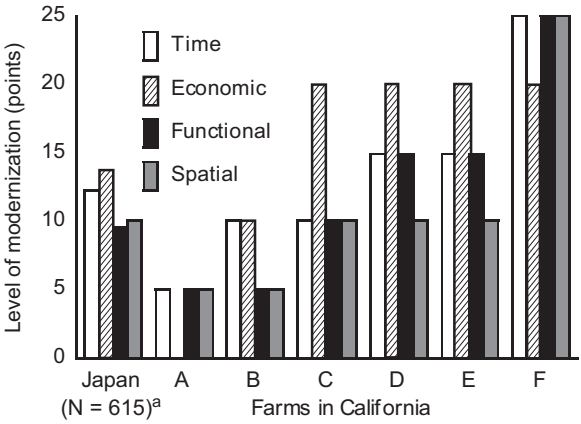

Fig. 11.1 Modernization of farm management
[a]Three Japanese respondents were excluded from the analysis due to data unavailability

Table 11.8 Farmer managerial capabilities

Variable/Item	Japan (N = 615)[a]	California[b]					
		A	B	C	D	E	F
Entrepreneurship							
(1) Values, hope, and vision	5.9 points	+	+	+	++	+	+
(2) Setting aggressive targets	5.7 points	0	+	0	+	−	−
(3) Entrepreneurial advancement	3.4 points	0	0	+	+	+	+
(4) Risk-accepting behavior	4.9 points	0	−	+	0	+	+
Adaptability							
(5) Curiosity	5.4 points	+	−	+	+	+	+
(6) Information-gathering	5.0 points	+	0	+	++	+	+
(7) Predictive ability	2.0 points	−	+	+	++	+	+
(8) Preparedness	5.6 points	+	0	+	++	0	+
Administration capability							
(9) Rational thinking	5.2 points	+	+	++	+	+	+
(10) Analytic behavior	4.7 points	+	+	+	+	+	+
Total score	47.8 points	60	50	90	90	80	90

[a]Three Japanese respondents were excluded from the tabulation due to data unavailability
[b]++ indicates strongly agree, + agree, 0 neutral, − disagree, − − strongly disagree. ++ and + count for 10 points

The average capability score for the Californian respondents was 77 points, with a minimum score of 50 and maximum score of 90. Those who manage farms full time (Farms C–F, as seen in Table 11.2) had evidence of high managerial capabilities. The Californian respondents scored high for administration. Overall, respondents displayed greater adaptability, curiosity, information-gathering skills, and predictive ability, although intra-sample adaptability scores differed. The Californian respondents lagged slightly in entrepreneurship. In particular, they did not set aggressive targets and avoided risk-accepting behavior.

Total capability scores of all Californian respondents were higher than the average score for the Japanese respondents. The Californian respondents had an overwhelming edge in managerial capabilities, specifically in self-reported stronger entrepreneurial advancement and predictive ability. Administrative capabilities were also lower among the Japanese respondents.

11.5.5 Innovations and Managerial Capabilities

In OECD and EUROSTAT (2005), innovations were delineated into four types: product innovation, process innovation, marketing innovation, and organizational innovation. Product innovation was defined as the introduction of a goods or service that was new or significantly improved with respect to its characteristics or intended uses. Process innovation was defined as the implementation of a new or significantly improved production or delivery method. Marketing innovation was defined as the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion, or pricing. Organizational innovation was defined as the implementation of a new organizational method in the firm's business practices, workplace organization, or external relations.

We questioned whether farms had accomplished any innovation of these types, and Table 11.9 shows the result only from the Japanese respondents. The majority of them had accomplished some type of innovation. Process innovation was the most popular and 62% of the respondents had accomplished this, although product, marketing, or organizational innovations were limited, accomplished by ≤30%. All of the sampled Californian farms other than Farm F accomplished only process innovation, whereas Farm F accomplished all types of innovations (data not shown). Thus, process innovation was possibly dominated in both groups although our survey covered a limited number of Californian farms.

Table 11.9 also reveals the relationship of innovations to capabilities of the Japanese farm managers. Positive correlations were observed between each type of innovation and clear differences in the total average capabilities' score (the same as that evaluated in the previous subsection) between the accomplished and non-accomplished respondents were demonstrated. This implies that managerial capability is part of the input factor that leads to any innovation at the farm level.

Furthermore, we applied multivariate analyses using a logit model for binary data to the Japanese sample to identify the significant capabilities out of the 10 capabilities surveyed that influence innovation. Table 11.10 summarizes the results, although we abbreviated the model equation and statistical details due to a space constraint. Information gathering and entrepreneurial advancement were important capabilities that influenced any innovation. Interestingly, specific capabilities varied for different innovation types. Values, hope, and vision, analytic behavior, and entrepreneurial advancement were important for process innovation.

Table 11.9 Relationship between capability score and innovation (616 samples from Japan)

Type of innovation	Accomplished sample	Total capability score		Correlation ratio
		Accomplished	Non-accomplished	
Any innovation	78.6%	52.7 points	30.2 points	0.31
Process innovation	61.5%	53.9 points	38.2 points	0.26
Product innovation	29.1%	59.4 points	43.1 points	0.25
Marketing innovation	25.8%	61.0 points	43.2 points	0.26
Organizational innovation	26.0%	59.9 points	43.6 points	0.24

Table 11.10 Significant capabilities that influence innovation (Japanese sample)

Type of innovation	Capabilities
Any innovation	Information gathering, entrepreneurial advancement
Process innovation	Values, hope, and vision, analytic behavior, entrepreneurial advancement
Product innovation	Information gathering, risk-accepting behavior, setting aggressive targets, (rational thinking)[a]
Marketing innovation	Information gathering, risk-accepting behavior
Organizational innovation	Information gathering, curiosity

[a]Text in parenthesis indicates a negative factor for the innovation

Unlike process innovation, information gathering and risk-accepting behavior were significant capabilities consistently through product and marketing innovations, while setting aggressive targets was positive but rational thinking was of negative importance, particularly for product innovation. Adaptability such as information gathering and curiosity is significantly influential in organizational innovation.

11.6 Discussion

One way to improve competitiveness is the application of a benchmarking to current farm management. As repeatedly pointed out by Jack (2009), an important approach for farm managers to bring about "change" was to clarify the criteria for obtaining results (profits) earlier than others do. This was accomplished by generating the motivation to change, showing the vision after the change, showing data/evidence/success examples that could bring a willingness to change, and identifying the methods that could bring about the change. The introduction and development of a process benchmarking could serve as a useful tool in this respect (Ronan and Cleary 2000).

We found clear differences in farm business strategies among Japanese and Californian rice farmers. The Japanese are not only production-driven managers

pursuing low-cost strategies but also marketing-driven and are able to adapt to markets. They accommodate their business environments by exploiting their proximity to markets. Nonetheless, they make poor use of such marketing opportunities in their management practices. Arguments can be made that these conclusions are reasonable and robust given our large sample size of Japanese farmers and the fact that the prevailing conditions in the rice market are common to all Japanese farms. The selling environments in Japan and California are markedly different; most Californian rice is sold overseas and most Japanese agricultural produce is sold within Japan. Thus, Japanese rice farmers are closer to the customer and should directly and more readily grasp their needs. Porter (1990) pointed out that the demand condition is an industry advantage, and discerning Japanese consumers of rice possibly provide a competitive edge for the Japanese rice industry.

On the other hand, the sampled Californian managers were especially production-driven, pursuing low-cost strategies. They accommodate their business environments by exploiting favorable production conditions. Together they constituted a biased sample with a larger scale in terms of farm size compared with population level norms. Even so, most Californian rice farmers would be likely to adopt the same strategies because the higher production costs (see Sect. 11.2) trigger cost-reduction strategies, and this is more likely on smaller-sized farms (compared with our sample farms), which are not in a position to reap substantive benefits in terms of economies of scale.

In this study, the Californian group were primarily family farms, whereas the Japanese group were farming companies. Due to differences in the legal farm status, we anticipated that the Japanese group would demonstrate higher levels of farm management modernization than the Californian group. However, we did not reach the conclusion that Japanese rice-farming companies have progressed comprehensively and remarkably in terms of farm modernization. Both groups exhibited a degree of management that was modernized, and the challenge remains for further farm modernization. The modernization level may be lower in the population of Californian rice farms compared with that in our sample, because the Californian group was biased toward larger farms and scores were higher for larger and more sophisticated producers. More importantly, well-organized management remains unrealized even in Japanese rice-farming companies, although such management is believed to occur when a farm is corporatized.

Another issue for Japanese rice farmers is how to enhance their managerial capabilities. The sampled Californians exhibited far higher managerial capabilities than Japanese managers of rice-farming companies. Similar to farm management modernization, capabilities may be more generally limited in Californian rice farmers compared with our sample. Even if that is the case, Japanese rice farmers need to develop human resource policies and invest in facilities for business management to sharpen their competitive edge. This is particularly important because Japanese rice farming, with its tendency to a smaller scale, generally cannot compete by expanding its acreage under cultivation without substantial developments in other aspects of the business.

Business evolves as a process of innovation (Schumpeter 1934), and this also applies to the farm business. While market changes provide opportunities for inno-

vation at a starting point (Malcolm et al. 2005), accomplishing innovations requires three types of inputs from managers to their business: entrepreneurship, risk-bearing capacity, and fund of information (Aoki and Itami 1985). Based on the results stated in Table 11.10, it would be worth considering the relationship between such necessary inputs and farmer capabilities in Japanese rice-farming companies that accomplished innovations.

Specifically, process innovation, which was the most popular type among the Japanese (and presumably the Californian) rice farms, was influenced by values, hope, and vision, analytic behavior, and entrepreneurial advancement. This is because production efficiency is a critical issue for Japanese rice farms addressing societal and economic pressures by intensifying mechanization with less labor and cost saving. Again, it should be noted that this is still led by increases in fixed capital of the existed technologies, rather than by strategic investments in the new or more advanced technologies that prevail in the Californian context. After process innovation, product and marketing innovations were significantly influenced by information gathering and risk-accepting behavior. Innovators in product and marketing areas have to understand the unknown needs of customers and manage market uncertainty beyond the production level. That would be true particularly because rice sales of the Japanese farmers were too dependent on the agricultural cooperatives to develop more favorable marketing, and the producers made few product appeal points except for product safety and quality. Thus, among a variety of managerial capabilities, entrepreneurial advancement, information gathering, and risk-accepting behavior are necessary human element inputs to generate innovations on Japanese rice farms.

11.7 Concluding Remarks

People in the rice industry pay more attention to international competitiveness if progress in economic globalization boosts the trade in rice. This study analyzed and compared managerial aspects rather than production/technological aspects among Japanese and Californian rice farmers. In Japan, rice-farming companies are generally expected to supersede many small family farms because of their relative competitiveness. Therefore, we took a novel approach to investigate their relative competitiveness by comparing Japanese rice-farming companies with their international eminent rival, Californian rice farmers.

Our survey covered only six Californian rice farms and is not designed for or amenable to generalizable inferences; a larger survey sample and a more comprehensive questionnaire are needed to support the findings of our study. Nonetheless, the analysis herein suggests that the research methodology of farm management modernization originating from studies in Japan would be worth applying to an international benchmark among competing rice-growing countries/areas such as Japan, California, and Australia (first applied in Kinoshita et al. 2015). Moreover,

the findings from this study may possibly give farmers from surveyed countries/areas an unprecedented perspective and specific ideas to improve their understanding of management in terms of global competitiveness. Further development of a farm managers' capability is a challenge for increasing competitiveness as well as for generating innovation in Japanese agriculture.

Acknowledgments This research was supported by JSPS KAKENHI, grant numbers 24330113 and 15 K03642. The author thanks Sandy and Wally Denn of Snow Goose Farms; Tim Johnson, President & CEO of the California Rice Commission; and, especially, all of the interviewed and surveyed farmers for their time.

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