Empirical Studies on Human Resource Management (HRM) in Agricultural Sector: Case Studies from China and Japan

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Abstract

Human resources are essential for the sustainability and competitiveness of agricultural development not only in developing countries but also in developed countries. Especially, with the advent of increasing scale of farm households and agricultural corporations, attention to the management of human resources (HRM) should be paid for realizing the objectives of human development.

The purpose of this paper is to empirically analyze the situations and the characteristics of HRM in the agricultural sector in China and Japan. First, current situations of human resources in agricultural sector both in China and Japan were described according to the data from government statistics and censuses, and literature review on HRM in agricultural sector was undertaken for understanding the background of the issue. Secondly, for the empirical analysis on HRM in agricultural sector in China, case study from state-owned farms in Heilongjiang province was undertaken to clarify the actual conditions and characteristics of HRM in these farms through person to person and telephone interview as well as questionnaire survey. Additionally, Data Envelopment Analysis (DEA) was introduced for measuring the technical efficiency of state-owned farms in Heilongjiang province and that of targeted farms. Thirdly, empirical analysis on the HRM in agricultural sector in Japan was undertaken focusing on the employee attitude and using the Structural Equation Modeling (SEM) to clarify the causal relationship among multiple dependent variables as well as factors. Finally, policy implications on the HRM in agricultural sector both in China and Japan were drawn based on the analytical results.

Following analytical results are obtained. Results from case study in China showed that, first, by introducing new strategy so called “Baiqianwan Talents Project”, they started to pay more attention to the importance of human resources and cultivating managers. Second, questionnaire on employees of farms manifests the importance of material HRM and the promotion opportunity

as well as learning opportunity. Third, they started to search their own corporate cultures such as “learn by doing”, “harmonization” and “development”.

Results from case study in Japan showed that, first, communication between managers and employees and appropriate HRM policies and practices may affect employees’ attitude was clarified. Second, both professional training and education before and after employment can be an important career path for the employee in agricultural corporations. Third, providing agricultural experience to young people at an early stage not only influences them to choose agriculture as a profession but also provides them with greater satisfaction with their job.

Based on the above empirical results, we can draw policy implications as follows. For the case of China, it is assumed that they are trying to change their goal of development from the stage of emphasizing on physical capital to the stage of emphasizing on human capital. However, in the processes of agricultural development, more attentions should be paid to the accumulation of knowledge capital as well as social capital for creating innovation and increasing competitiveness under the progress of globalization. On the other hand, although Japanese economy has passed its initial stage of development for the decades, the agricultural sector in Japan is still facing the problems of accumulation of human capital, knowledge capital as well as social capital. For realizing a sustainable and competitive agricultural sector, it is important for Japanese government to encourage young farmers to have entrepreneurship and give more opportunities to agricultural corporations to be innovative and competitive.

However this paper focused on the state-owned farms in China and agricultural corporations in Japan, HRM in other kinds of organization both in the two countries might be better to be included into the investigation. Furthermore, a research reflecting the change of HRM in these organizations might also be better to be undertaken in the paper. These will be our next research agenda.

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Chapter 1 General Introduction

1.1 Issues and purpose of the research

Human resource mainly means the workforce of an organization or an economy. It has both quantitative and qualitative dimensions. The quantitative characteristics of human resource refer to the number of people and the work hour; the qualitative characteristics are skill, knowledge, and factors affect human capabilities to do productive work. However, human capital usually refers to the quality part of human resources (Schultz, 1961, [1], P8). In 1990, Human Development Report (HDR) by the United Nations Development Programme ([2]) proposed that "People are the real wealth of a nation" and "the objectives of development should be to create an enabling environment for people to enjoy long, health and creative lives". It emphasizes the importance of people both as the resources and objectives of development.

Along with the change in the goals of development in the evolution of development thought (from the increase of GDP to sustainable development), the capital accumulation has also been shifted from physical capital, human capital, and knowledge capital to social capital. On the other hand, from the Schumpeterian type of competition, it is based on innovation and depends on entrepreneurial performance. Therefore the supply of entrepreneurship has to be increased to accelerate development. However entrepreneurial ability depends on ideas being accepted as individual knowledge and implemented through human capabilities, it is thus a form of human capital (Meier, 2000, [3]).

Following the above way of thinking, human resources are essential for the sustainability and competitiveness of agricultural development not only in developing countries but also in developed countries. Especially, with the advent of increasing scale of farm households and agricultural corporations, attention to the management of human resources (HRM) should be paid for realizing the objectives of human development.

In China, with the reform of state-owned enterprises, the increasing of private corporations and foreign enterprises, HRM is facing the problem of pursuing scientific and standardized management. In Japan, on the other side, recent years have seen an increase in the number of people who enter farming through employment in agricultural corporations. HRM has become an urgent issue to understand the attitude of employees, what influences these attitudes, and how to bring about improvement in order to increase the effectiveness of associated policies.

The purpose of this paper is to empirically analyze the situations and the characteristics of HRM in the agricultural sector in China and Japan. For the study from China, we will choose state-owned farms (a main part of agricultural corporations in China) in Heilongjiang province (one of the most concentrated province of state-owned farms) to understand the problems of HRM in the sector. However, HRM may have different characteristics in the different phases of development (including the different aspects of politics, economy, culture and institutions), therefore, we will go further to explore the cause and effect relationship of HRM on the performance in Japanese agricultural corporations for the study from Japan.

1.2 Research framework and methodology

Research framework of the paper is shown in Figure 1. Following methodologies were adopted for achieving the goal of our research. First, current situations of human resources in agricultural sector both in China and Japan were described according to the data from government statistics and censuses, and literature review on HRM in agricultural sector was undertaken for understanding the background of the issue. Secondly, for the empirical analysis on HRM in agricultural sector in China, case study from state-owned farms in Heilongjiang province was undertaken to clarify the actual conditions and characteristics of HRM in these farms through person to person and telephone interview as well as questionnaire survey. Additionally, Data Envelopment Analysis (DEA) was introduced by using the BCC model for measuring the

technical efficiency of state-owned farms in Heilongjiang province and that of targeted farms. Thirdly, empirical analysis on the HRM in agricultural sector in Japan was undertaken focusing on the employee attitude and using the Structural Equation Modeling (SEM) to clarify the causal relationship among multiple dependent variables as well as factors. Finally, policy implications on the HRM in agricultural sector both in China and Japan were drawn based on the analytical results.

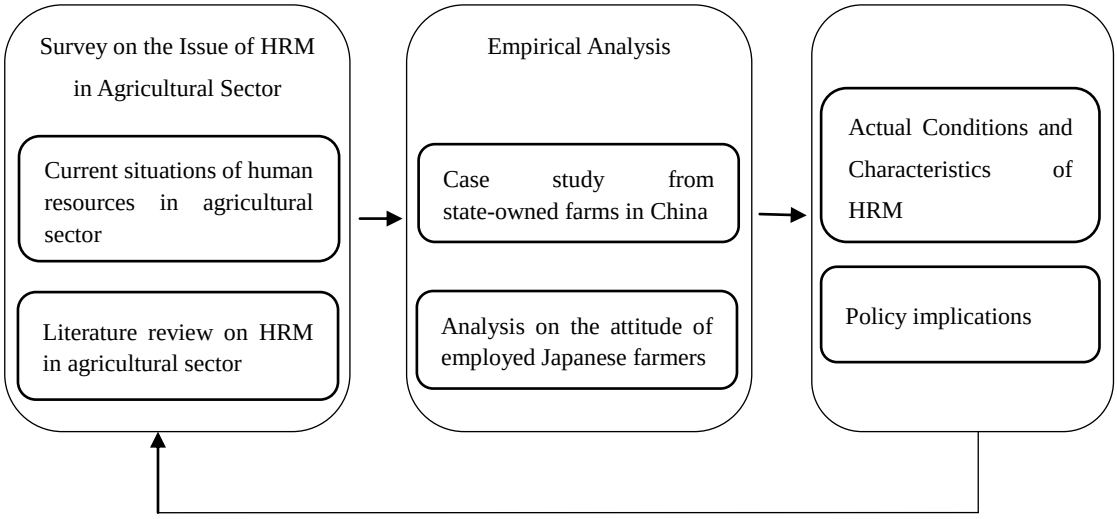

Figure 1 Research Framework

Chapter 2 Literature Review on HRM and HRM in Agricultural Sector

2.1 Human Resource Management (HRM) and Human Resource Development (HRD)

2.1.1 HRM and HRM strategy

In the management of earlier years, "division of labor" of Adam Smith and principles from "scientific management" of Taylor were used to aim to improve labor productivity. However, the scientific management used labor as production machines, lacking the concern on labor themselves. Hawthorne studies and studies about influence of group on individuals of Elton Mayo represented the human resource approaches for exploring management. In the early of twentieth century, human resource movement, by Carnegie and Maslow and so on, examined the effects of social relations, motivation and employee satisfaction. All of the above management resulted in the creation of human resource management. On the other hand, with the development of industrial welfare work and separate employment office, HRM departments grew out (Kaufman, 2007, [4]).

Definition of HRM

A broader definition of human resource management (HRM) means the management of human resources in the whole society, not specifically in an organization. It closes to the definition of human resource development (HRD) in a broad way and is connected to the management of labor in labor market. Some literatures use the broad definition to explore human resource management, especially in developing countries.

a) A societal definition

Budhwar and Debrah (2001, [5]) presented a framework of four factors (national culture, national institutions, dynamic business environment and industrial sector) to examine cross-national HRM in developing countries. Cooke (2012, [6]) presented a whole HRM/HRD situation in China, including 1) recruitment, retention and staffing strategy, 2) human capital, training and development, 3) performance management, 4) pay systems, pay gaps and employers' reward strategies, 5) equal opportunity and diversity management, 6) workers' representation and voice, 7) employment laws and regulations, 8) leadership and management development and 9) strategic human resource management.

From this view, HRM can be considered as a whole management of labor resources by the government or economy of one country. It includes the details of specific HRM, such as recruiting, selecting, training, rewarding, retaining and firing of employees as well as employment relationship within the context of culture and economic-society in one country.

b) An organizational definition

Human resource management (HRM) means management of human resources in an organization. It sometimes equals to the definition of personnel management and labor management. HRM in this way is usually defined as "a strategic and coherent approach to the management of an organization's most valued assets – the people working there who individually and collectively contribute to the achievement of its objectives" (Armstrong, 2006, [7], P3). In a research perspective, Paauwe (2009, [8]) see HRM as an "evolving field of academic inquiry focusing on the study of the employment relationship and of the way in which people are managed at work".

From the perspective of an organization, HRM plays a strategic role in achieving organizational goals. Usually, it includes HRM policies and practices such as recruiting, selecting, training, rewarding, retaining and firing of employees and it also relates to the whole corporate culture and employment relationship. In this paper, we mainly use the organizational definition of HRM.

Scope of HRM

For the scope of HRM, Boxall, et al. (2007, [9]) pointed out three major subfields of HRM, 1) Micro HRM, which includes subfunctions of HR policy and practice. Micro HRM can be grouped into two groups: a. management of individuals and small groups, including areas of recruitment, selection, induction, training and development, performance management, and remuneration. These are mainly from the perspectives of personnel or industrial-organizational psychology or personal and institutional economics; b. work organization and employee voice systems, which are under the concepts of industrial sociology and industrial relations. 2) Strategic HRM (SHRM), which is considered to be related to other organizational activities and broader context. SHRM and its companion term, 'human resource strategy', imply a concern with the ways in which HRM is critical to organizational effectiveness (Boxall and Purcell, 2000, [10]). SHRM usually focuses on the relationship with strategic management, performance and competitive advantage. 3) International HRM (IHRM), which is related to HRM operating in companies across nations.

In this paper, we consider HRM both from the micro HRM of management of individuals and small groups and the strategic HRM in the organizational context.

Goals of HRM

If HRM is a kind of inputs in the production, what is the result we want to obtain? Boxall and Purcell (2011, [11]) indicates that goals of HRM are economic goals including cost-effective labor, organizational flexibility and human resource advantage, and socio-political goals including social legitimacy and managerial power.

From the view of corporate performance, HRM can be considered as the tool for encouraging employees for their best performances. On the other hand, HRM can also be seen as the tool for improving employees' well-beings as well as for the whole society. In conclusion, ideally, HRM

is for the improvement of human resource quality towards the improvement of corporate performance. Therefore, the measurement of HRM outcomes can be divided into individual level and organizational level. In the individual level, researchers suggest that HRM performance such as employees' attitudes and commitments should be measured because they link close to HRM outcomes. In the organizational level, researches usually focus on the relationship between HRM and performance to investigate the impact of HRM on performance. Furthermore, sustainability and competitiveness are ultimate indicators for the consideration of HRM's importance.

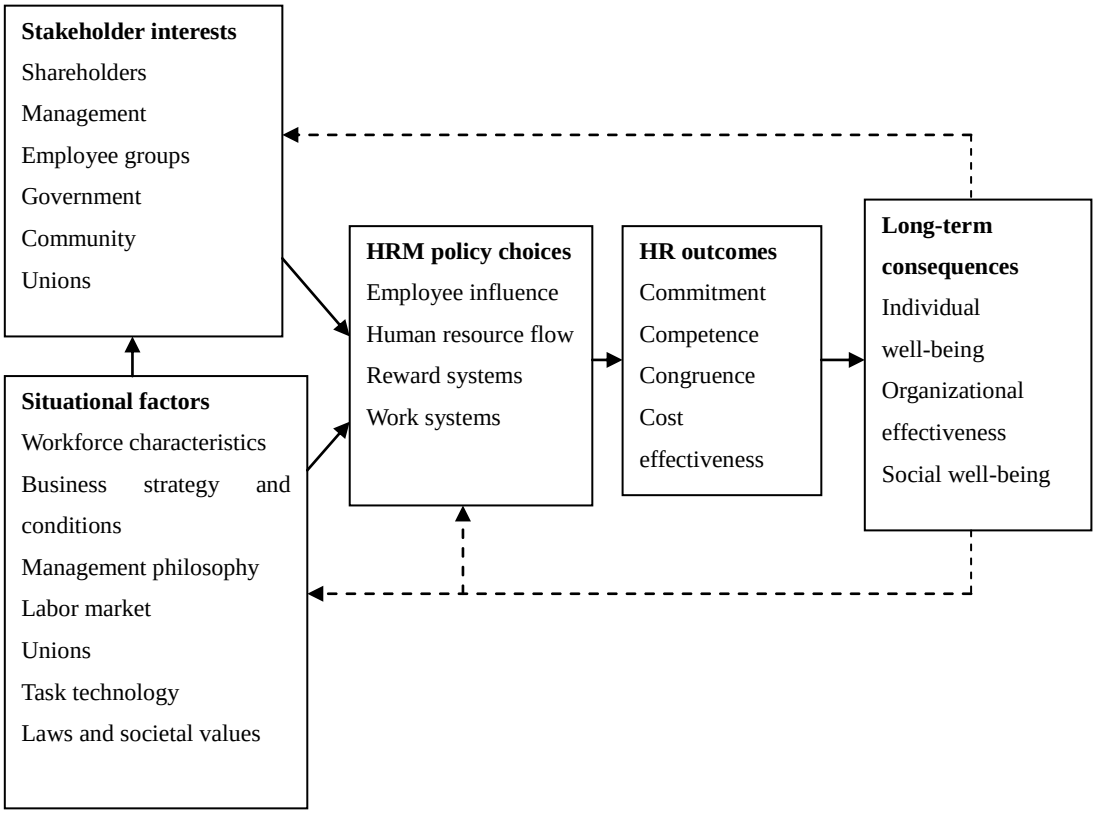

Figure 2 The Harvard Map of the HRM Territory

Source: Beer et al., 1984, [12].

Framework of HRM

The Harvard framework (Figure 2) provides the statements about HRM showing the casual relationship in the HRM area. It shows that HRM policy choices are based on the various

stakeholders' interest and situational factors. HRM outcomes give influence on the three levels of long-term consequences, the individual well-being, organizational effectiveness and social well-being.

In the HRM policy choices, employee influence means delegated levels of authority, responsibility, and power. The human resources flow refers to recruitment, selection, placement, promotion, appraisal and assessment, termination, etc. Reward systems represent pay systems, motivation, etc. Work systems are the definition, design of work and alignment of people.

HRM strategy

When coming to strategy in management, it is usually defined as "the determination of the basic long-term goals and objectives of an enterprise, and the adoption of courses of action and the allocation of resources necessary for carrying out these goals."[1] In detail, in the definition of Porter (1996, [13]), strategy is the core of management, and it includes defining a company's position, making trade-offs, and forging fit among activities; and "the essence of strategy is choosing to perform activities differently than rivals do." Therefore, strategy is usually used to express the fit activities of internal company to suit the external environment for obtaining the sustained competitive advantage.

In this way, HRM strategy concerns the need to show how human resources contribute to business viability and lay a basis for sustained competitive advantage (Boxall et al., 2007, [9]). And it is shaped by contextual contingencies, including national, sectoral and organizational factors (Boxall and Purcell, 2000, [10]).

For developing and implementing HRM strategy, it should include an external fit (HRM fits the developmental stage of the organization) and an internal fit (the components of HRM complement and support each other) (Barid and Meshoulam, 1988, [14]). For example, Table 1 shows that under the generic Porter's competitive advantage (cost leadership, differentiation, and

[1] http://en.wikipedia.org/wiki/Strategy#cite_note-3

focus), and the two have the same choice of competitive strategy of cost leadership, but the implications for HR strategies are different according to different internal and external situations.

Table 1 Predicting HR Strategy: Two Different Scenarios despite the Same Type of Competitive Strategy

Firm's choice of competitive strategy	**Nature of productive technology in the sector**	**Worker actions and impacts of state regulation**	**Implications for HR strategy**
Cost leadership	Low technology, often highly labor intensive operations and large scale	Where workforces are strongly unionized, this often strengthens the drive to locate operations in low-wage countries. Among lightly unionized workforces, employment regulation sets the lower bound of wages and conditions.	HR strategy is dominated by the need to survive in an environment where labor costs are in competition. Prediction: firms seek out low-wage sites where output is high and quality is acceptable. Firms will pay the going rate in the local labor market but avoid paying premium conditions or over-investing in training.
Cost leadership	High technology or highly capital intensive; often low staff numbers but key specialist skills very important to operations	If organized into unions, workers may extract more of a wage premium but this is not likely to affect the economics of the firm unless work practices are inefficient or unduly inflexible. Regulation by the state is not likely to have much relevance because wages and conditions are high in the sector.	HR strategy is based on developing and motivating workers to maximize the benefits of the technology (which will help to achieve the cost leadership strategy). Prediction: high-wage, high-skill models of labor management are cost effective. Investments in creating 'high-performance work systems' are likely to be justified.

Source: Boxall, et al., 2007, [9], P54.

HRM policies and practices

In the field of HRM, researchers concentrate on the relationship between HRM policies and practices and turnover rate and business performance with methods of empirical analysis and qualitative analysis (Tyson, 1997, [15]; Guest, 1987, [16]; Becker and Gerhart, 1996, [17]; Paauwe, 2009, [8]). Within HRM policies and practices, one important discussion is the best practices or best-fit practices. The view of best practices recognizes some practices have universal functions based on the Resource-based View theory. The view of best-fit practices observes the practices should change according to the different strategy of different organizations in the theory of contingency. However, they are relevant in exploring the linkage between HRM and performance (Paauwe and Boselie, 2005, [18]).

Although there are kinds of different practices, the top four, in order, are training and development, contingent pay and reward schemes, performance management (including appraisal) and careful recruitment and selection (Boselie et al., 2005, [19]). That means several practices may be the basic principles for employee management, but according to different contexts other practices could also be used.

HRM performance and long-term performance

In the relationship of HRM policies and practices and the performance, there are different levels of performance, such as financial outcomes (e.g. profits, sales, market shares, Tobin's q), organizational outcomes (e.g. output measures such as productivity, quality, efficiency), and HR-related outcomes (e.g. attitudinal and behavioral impacts among employees, such as satisfaction, commitment, intention to quit) (Paauwe, 2009, [8]). However, HRM performance, which equals to HR-related outcomes, is usually directly linking to HRM policies and practices.

2.1.2 HRM and employee attitude toward work

In existing studies, researchers have conducted probit and regression analyses and concluded that

certain HRM policies and practices improve employee attitudes, but with limiting conditions (Petrescu and Simmons, 2008, [20]; Gould-Williams, 2004, [21]). Meyer and Smith (2000, [22]) conducted a structural equation modeling (SEM) analysis on the relations between HRM practices and employee commitment and found that the effects of HRM practices indirectly influence employee commitment. However, the analysis may have bias of response since the data are all obtained from respondents' self-description.

2.1.3 Human resource development (HRD)

The definition of human resource development (HRD) also has different levels. McLagan and Suhadolnik (1989, cited from Wilson, 1999, [23]) defined HRD as the integrated use of training and development, career development, and organization development to improve individual and organizational effectiveness. Including the societal objectives, HRD is the latest evolutionary stage in the long tradition of training, educating and developing people for the purpose of contributing towards the achievement of individual, organizational and societal objectives (Wilson, 1999, [23]). For the common point of HRM and HRD, they both can be recognized as designed for the individual, organizational and societal objectives. However, the difference between them is that HRM emphasizes on management as a whole while HRD focuses on training, learning and development. HRM is broader than HRD in a certain level, but HRD also focuses on organizational culture, formal mentoring, work design and cross-cultural and so on (Mclean, 2005, [24]; Hegstad, 1999, [25]; Torraco, 2005, [26]; Hansen and Brooks, 1994, [27]).

2.2 Strategic human resources management (SHRM) and SHRM in China

2.2.1 Goals and approaches of strategic HRM

Usually, “the field of strategic HRM focuses specifically on the role of human resources in improving firm performance or competitive advantage.”(Wright and Snell, 1997, [28]) Wright and McMahan (1992, [29]) defined strategic HRM as “the pattern of planned human resource deployments and activities intended to enable the firm to achieve its goals”. It includes two dimensions: vertically it links HRM practices with the strategic management process of the organization, and horizontally, it emphasizes the coordination or congruence among the various HRM practices. In strategic HRM, the word “strategic” concerns the ways in which HRM is critical to organizational effectiveness. It means the strategic choices of HRM (Boxall and Purcell, 2000, [10]). “The fundamental aim of strategic HRM is to generate strategic capability by ensuring that the organization has the skilled, committed and well-motivated employees it needs to achieve sustained competitive advantage.”(Armstrong, 2006, [7])

In the field of strategic management, resource-based theory means through strategy and the internal resources to achieve competitive advantage. “A fundamental aim of resource-based HR strategy, as Barney (1991) indicates, is to develop strategic capability – achieving strategic fit between resources and opportunities and obtaining added value from the effective deployment of resources.” (Armstrong, 2006, [7], P32)

“An organization’s HR strategies, policies and practices are a unique blend of processes, procedures, personalities, styles, capabilities and organizational culture. One of the keys to competitive advantage is the ability to differentiate what the business supplies to its customers from what is supplied by its competitors. Such differentiation can be achieved by having HR strategies that ensure that the firm has higher-quality people than its competitors, by developing and nurturing the intellectual capital possessed by the business and by functioning as a ‘learning organization’.” (Armstrong, 2006, [7], P33)

Besides, “best fit” means that SHRM will be more effective when it is appropriately integrated with its specific organizational and environmental context; while “best practices” advocates every firm will be better if they adopt best practices (Boxall, P., and Purcell, 2000, [10]).

2.2.2 Empirical studies about strategic HRM in China

HRM in China experienced from the period of personnel management to the period of HRM, and the history of HRM in China is shown as follows (Zhao, 2009, [30]):

Before 1980s, China was in the stage of personnel management ("laodong renshi guanli" in Chinese), which is the administrative management under the planned economy, including personnel appraisal (renshi kaohe), giving wages (gongzi fafang), and managing personnel files (renshi dangan guanli). The deployment of people is carried out by administration, lacking of competitive employment mechanism, labor's contract is informal, there is no effective appraisal for jobs, and there are also no effective incentives.

From the mid of 1990s, HRM in China experienced a time of exploring from the recruitment, training, appraisal, to welfare. However, because of the underdevelopment market, HRM had some problems, such as indefinite rights and liabilities due to the vague right system, and the administration system in state-owned corporations.

From the late 1990s, with the development of labor market in China, labor laws are gradually sound, corporations have the right to recruit employees and begin to emphasize the importance of HRM.

In summary, the change from personnel management to HRM emphasizes the importance of people as the competitiveness. The differences of personnel management and HRM could be concluded as follows:

a) They have different focuses of management. Personnel management emphasizes the management of personnel files, wages and simple recruitment. HRM emphasizes people as resources, and it is important to motivate and incentive people for better performance using recruiting, selecting, training, rewarding and so on.
b) They have different scopes of management. Personnel management focuses on the behavior of individuals. Human resource management focuses on the relationship of individuals, the

corporate culture as well as internal and external environment.

c) They are in different stages of management. HRM is developed on the basis of personnel management with human resource movement and the theory of organizational behavior.

Recently, for pursing a knowledge economy, to develop human capital is an important strategy. Besides, with increasing growth of foreign-invested enterprises and economic reform, there is the convergence in strategic HRM practices under both external and internal pressure. (Akhtar et al., 2008, [31]). Recent empirical researches showed that there is a positive linkage between strategic HRM practices and firm performance in China (Akhtar et al., 2008, [31]; Ngo et al., 2008, [32]).

Before the economic reforms in 1978, China's state-owned enterprises (SOEs) adopted "iron rice bowl" (tie fan wan), which ensured centrally planned job allocation, lifetime employment, egalitarian pay, and "cradle-to-grave" welfare. The personnel reform legislation of 1992 and the 1994 labor law made "three systems reform", which are the introduction of labor contracts, performance-related reward systems, and contributory socially security. With the increase of joint ventures and multinational corporations, the term of HRM is used instead of personnel management. Some giant SOEs also introduced strategic HRM practices. (Akhtar et al., 2008, [31])

Akhtar et al. (2008, [31]) identified that four core strategic HRM practices have positive influences both on product/service performance and financial performance by a sample of 465 Chinese enterprises. The four core strategic HRM practices are training, participation, results-oriented appraisals, and internal career opportunities. These are ground for "nurturing, involving, motivating, and promoting professional and managerial employees."

By adding different ownerships of Chinese enterprises, Ngo et al. (2008, [32]) identified that state-owned enterprise (SOEs) used less SHRM and HR practices than foreign-invested enterprises (FIEs) and privately owned enterprises (POEs). They also pointed out that ownership doesn't have strong moderating effects on firm outcomes, and it may be because of that reformed SOEs are already adopted SHRM. Since SOEs are more administrative, less strategic in nature,

and have poor performance than other firms, the result also shows that SOEs should have more changes in HR systems to achieve competitive advantage through human resources.

2.3 HRM in agricultural sector

Before the concept of HRM in agriculture, labor management and personnel management are the important issues concerning the managing of people in agriculture.

2.3.1 Labor management and personnel management in agriculture

Labor management in agriculture

Research on farms especially in California made contributions to the labor management in agriculture.

Rosenverg et al. (1994, [33]) analyzed the hiring and managing labor for farms in California of 924 responses in 1993. Sole proprietorship is the most common ownership of California farms, followed by corporations, family partnerships, and nonfamily partnerships. Vegetable farms have the largest number of workers. About managing workers, 60% of farms pay their workers by the hour. Year-round employees have vacation pay (65% of farms), health insurance (53%), and housing (52%).

Billikopf (2003, [34]) made the details of managing people on farm from employee selection, to promotion, incentive, interacting with employees as well as termination. These are very useful and practical issues on managing human resources on farms.

Personnel management in agriculture

About personnel management in agriculture, Billikopf (2001, [35]) interviewed 42 farm supervisors in the northern San Joaquin Valley in the United States. He found supervisors felt

good for their jobs and farm supervisors' relations with people were the most challenging and rewarding aspects of their positions. Bitsch and Yakura (2007, [36]) focused on the role of middle managers in agribusiness by in-depth interviews of 14 case studies in Michigan and found that middle managers apply practices of both types of traditional practices (based on Theory X assumptions) and participative practices (based on Theory Y assumptions).

Bitsch and Hogberg (2005, [37]) conducted interview on 14 case studies in labor- manager of horticulture in Michigan to explore horticultural employees' attitudes towards their jobs and found that family-business values, achievement, recognition, work itself, involvement, and other factors were related to job satisfaction. Duc (2008, [38]) explored farmers' satisfaction with their fish farming by conducting interview on 120 fish farmers. Regression results show that relative income (not absolute income from aquaculture) has enhanced job satisfaction. With increasing age and involvement in extension services and others, famers increase their satisfaction with fish culture.

Bitsch (2009, [39]) concluded five points about the research on personnel management in agribusiness. "First, many agribusiness managers perceive their personnel management competencies as a weakness, in particular during periods of organizational growth. Second, experienced managers typically have an adequate conceptual frame of the personnel management functions, but with respect to the details gaps and misconceptions persist. Third, the peculiar circumstances of agribusiness and farm work require specific skill sets and beginning managers could benefit from targeted training. Fourth, although compensation is important, employees' job satisfaction and retention can be increased with inexpensive measures, such as feedback and appreciation. Fifth, the relationship between personnel management practices and financial success measures is complicated and difficult to assess. Few personnel management studies have been able to provide evidence of a substantial relationship between any particular personnel management practice and profit, or even productivity". (Bitsch, 2009, [39])

2.3.2 HRM in agriculture

Howard and McEwan (1989, [40]) presented a framework of HRM, and discussed the processes of HRM policies including recruitment, reward systems, employee turnover, job satisfaction, motivation and management style. They reviewed studies about factors such as regular hours, good living conditions and good wages are priorities for farm labor, reasons for lower agricultural wages are noneconomic rewards and identify of expectations, and unionized workers receive more employer-paid benefits.

Howard et al. (1991, [41]) made survey on employers and employees for understanding the characteristics of HRM on Ontario swine farms of Canada. Table 2 shows their findings about the situation on farms. They suggest that farms may benefit from using common HRM practices such as attendance work sheets, job titles, performance appraisals, and staff meetings. Besides, incentive plans should be well thought out.

Table 2 Characteristics of HRM on Ontario Swine Farms in Canada

Items	**Characteristics of HRM**
HRM policies	Employer and employee lacked communication because of the absence of staff meetings and performance appraisals for employees. 47% of employees didn't know their employer's goals, while 61% of employers had no written goals.
Attracting labor	The most frequent recruitment method was personal contact, followed by newspaper advertisements, and communication from current employees.
Keeping labor	Wages, compensation and interesting work were important factors for employees.
Hours worked and Compensation	Married, educated males with higher skill levels made more money.
Turnover	The average staff turnover on the surveyed swine farms was 5.7 years which was much slower than in nonagricultural industries.
Motivating labor	Factors and motivation had no significant relationships, so did the motivation and performance. Each employee may perform according to their own characteristics in a particular work situation.

Note: Employers on 42 farms and 121 employees were interviewed. The average staff size was 1.73 employees.

Source: adapted from Howard et al, 1991, [41].

From the perspective of resource-based theory, Mugera (2004, [42]) conducted a case study on six dairy farm enterprises and concluded that dairy farms have the potential of achieving competitive advantage through the HRM function. In dairy farm, Stup et al. (2006, [43]) concluded that technical HRM practices (including milk quality incentives, performance reviews, Spanish-speaking employees, standard operating procedures, continuing training, and job descriptions) do not significantly affect dairy farm productivity and profitability. But a significant positive relationship was found between return on equity and the use of continued training.

With non-HRM variables and HRM practices (including job descriptions, standard operating procedures, premiums for milk quality, and formal employee reviews), Hyde et al. (2008, [44]) further performed a multiple linear regression in dairy farms to find their influences on farm profitability. Among non-HRM variables, advisory teams (including individuals such as business consultants, accountants, nutritionists, and lenders) have positive influence on farm profitability. The use of milk quality premiums paid to employees is the only factor among HRM variables which have positively effect on profitability. Therefore, it shows little evidence that HRM practices has influence on farm profitability.

Although these HRM practices above may have little influence on farm profitability, these HRM practices themselves may be important experience for farms, especially for dairy farms. Stup et al. (2006, [43]) described these explanatory variables in above researches as follows.

Milk quality incentives. Milk quality incentives are commonly used to improve the performance of milking employees and are typically paid when a predetermined level of milk quality is attained.

Performance reviews. Performance reviews are periodic interviews between employees and their supervisors to discuss performance and to provide feedback to employees about their job performance.

Standard operating procedures. Standard operating procedures are written instructions for milking, feeding and reproductive tasks to avoid different performances in production.

Continuing training. Producers were asked to indicate the approximate number of hours of training that

employees receive per year, excluding new employees.

Job descriptions. Job descriptions are commonly used by business organizations to clarify the duties, roles, and specific responsibilities of employees. Ideally, job descriptions are used as a basis for performance appraisal and feedback and to improve communications about specific job responsibilities.

These are all very specific HRM practices applied in dairy farms, but not all farms have the same practices. According to the classification of HRM, standard operating procedures can be considered as HRM standard, job descriptions and performance reviews are considered as communication between employees and supervisors, continuing training relates to training and development in HRM, and milk quality incentives are related to HRM reward system. From these practices, we can see that the purpose of these practices is to improve the quality of human capital towards good performance.

A survey of 350 Hungarian farm managers relating their views on HRM shows that they consider performance assessment as their most important task, incentives management as second important task, and HR development as the least important task (Berde, 2006, [45]). Managers consider job and task correspondence as well as ability to cooperate as importance for selecting employees (Berde, 2006, [45]). Using the qualification index in 89 agricultural small- and middle-enterprises, Berde and Piros (2006, [46]) conclude that companies employing higher educated employees operate more effectively.

After about 20 years of the appeal for application of HRM in agriculture, “Creating and implementing a human resource management plan”, in Year of 2007, by Ministry of Agriculture, Food and Rural Affairs of Ontario in Canada, describes the process of recruiting workers in agriculture using HRM. It includes first assessing the need for employees by assessment of the situation of operation, writing job description for the positions on the farm, making an employee handbook, and recruiting and finally hiring employees. In order to make good communication, it suggests that employers can let employees write their job expectations in an employee “handbook”

to see if employees understand their duties. Although this plan is mainly about the recruitment of HRM, it demonstrates that the HRM approach is working on farms and tends to have great importance.

HRM in agriculture in China

(1) HRM in agricultural enterprises

Agricultural enterprises lack of scientific mechanism of recruiting human resources, individual incentives and so on (Wu, 2010, [47]), and the top, medium, low level managers and workers at the production line have low qualities in agricultural leading enterprises (Chen and Li, 2011, [48]).

With respect to the situation and model of cultivating skilled persons in agricultural enterprises in Beijing, Pan (2009, [49]) concluded the system of cultivating skilled persons by the integration of "the model of production, learning and research", "the model of introduction" and "the model of training employees". With respect to human resource investment in agricultural enterprises, Wang (2011, [50]) conducted factor analysis, order logistic regression analysis and principle component regression on the behavior of human resource investment, and concluded that agricultural enterprises have big differences in the investment behavior between inside and outside of enterprise.

Wang (2003, [51]) pointed out four strategic measurements for improving agricultural human resource management and development in China: (1) Educational development is the foundation of agricultural human resource management and development. Establish educational system for rural adults, develop rural professional education and promote practical training. (2) Systematic development is the key point in agricultural human resource management and development. Establish complete managing system for rural human resources, construct labor markets and enforce labor resource management as well as constitute institutions for training and controlling transform of rural labors. (3) Migratory development is the centre in agricultural human resource

management and development. Develop small towns and township enterprises, expand rural labor's employment and establish developed rural labor markets. (4) Development under policies is the guarantee of agricultural human resource management and development. Increase investment in human resources, develop human resource allocation, make favorable policies for human talents, enforce professional training and unemployment aids, as well as make regulations for human resource development.

Some researches, such as "research on the problem and solution of human resource management in Chinese agricultural enterprises", "research on the problem and solution of human resources in agricultural enterprises", and "research on the model of 'people oriented' human resource management in Chinese agricultural enterprises" and so on, widely argue on the problem and solution of human resource management in agricultural enterprises, but lack of empirical study and case study.

(2) HRM in state-owned farms in agricultural reclamation of China

State-owned farms in agricultural reclamation are major in agricultural planting and mechanized large-scale production to realize large-scale production and processing by modernized leading enterprises. Agricultural technicians, corporate managers and skilled operators are required human resources. Human resources in farms are mainly original workers (now they are farmers belonging to farms but they are also called farm workers), outside farmers by contracting on land, employees of farms or corporations (Song and Yan, 2011, [52]).

The problems of human resource plan in farms were pointed out that there are no sufficient human resources, especially high-level human resources; mangers have old ideas and there are serious flow out of human resources, especially managers; the overstock and insufficiency of human resources exist simultaneously (Yu, 2011, [53]). Yu (2011, [53]) pointed out the countermeasures of absorbing college students, enlarging human resources; culturing existing human resources; transferring the overstock human resources to the insufficiency kinds of human

resources.

Human resource investment and development are important methods for cultivating human resources. Sun (2004, [54]) emphasized the development of quantity and quality of human resources in reclamation areas. To mobilize the enthusiasm and creativity of human resources is essential for the development of the quality of human resources, and motivation is an important method. Enterprises in reclamation areas should decide their own practical policies by their own nature and characteristics to formulate incentives to mobilize the enthusiasm and creativity of employees, promote employees to improve their own quality and create a good corporate culture (Sun, 2004, [54]).

The deficiency of HRM in reclamation area had been pointed out by existing researches as follows (Song, Yan, 2011, [52]; Lu, 2011, [55]; Yu, 2011, [53]; Huang, 2010, [56]): First, they didn't pay much attention on HRM. They were influenced by the concept of personnel management rather than the concept of HRM. They paid attention on finical and physical resources than the human resources, neglecting the core effect of human resources. Second, the training system fell behind. They didn't combine the training with corporate actual needs, and the content and form of training were not various. Third, they neglected the motivation system and they only emphasized the physical incentives rather than mental incentives.

Lu (2011, [55]) pointed out the methods for solving problems in the HRM in agricultural reclamation areas: (1) Change the cognition to HRM. Emphasize the roles of human resources and HRM, put HRM as corporate strategy and make clear the functions of HRM. (2) Select the HRM system that suit the development of corporation. (3) Improve the training system. First, make professional career plans for employees; second, strengthen the training through various ways; third, improve training system with the development of corporate culture. (4) Establish incentive system of HRM. Pay attention not only on physical incentives but also on mental incentives. Amongst, mental incentives include promotion and opportunity for development as well as challenging works, making employees feel satisfied.

HRM in agriculture in Japan

(1) Employed Japanese farmers

With respect to Japanese employed farmers, Sakoda (2011, [57]) studied their characteristics from the perspective of HRM. Sawada (2003, [58]) explored the features and turnover of employed farmers with discriminant analysis and concluded that turnover rate is related to corporate attributes. Kanaoka (2010, [59]) conducted a job satisfaction analysis on core employee, and indicated that half of the core employees were satisfied because of "working in close touch with nature", "interest in agricultural work" and so on, but dissatisfied with salary and welfare.

From the perspective of managers from agricultural corporations, Kiminami, et al., (2010, [60]) clarified key issues in HRM by comparing low and high turnover rates for the competitiveness and sustainability in Japanese agricultural industry. They found that better HRM has the potential to improve the competitiveness and sustainability of Japanese agriculture and suggested that agricultural policies should improve HRM of agricultural corporations by allocating resources. From the view of newly employed farmers, Kiminami and Kiminami (2012, [61]) by using SEM carried out analysis on the process of how HRM policies and practices affect HRM performance, as well as attributes and attitude of employee. They concluded that job satisfaction, such as fulfillment of work, description of job, and educational system, has the most direct influence on employees' consciousness toward employment. And the organization commitment (the will of working in the same corporation) is effective in raising job satisfaction.

(2) Cultivating human resources through agricultural corporations

About the agricultural corporations cultivating employees or HRM, as agricultural corporations will grow to include not only primary and secondary industries but also third industry which contains management of regional resources, marketing, and consumer service, human resources should have the management and professional abilities. At the same time, the management

system, the form of organization, operation, and planning, and system which could improve motivation of members should be established. (Ito, 1992, [62])

According to the investigation on employment of agricultural corporations by the National Chamber of Agriculture of Japan (2011, [63]), more than half of corporations adopt “Make workshop or tour in agricultural fields for employees”, more than one third of them adopt “Have meeting to confirm the obtain of capability of employees”, and “Make a work manual”. Sakoda (2011, [57]) by case studies on the HRM in agricultural corporations concluded that, it is common to teach employees by teamwork about goals and the methods of increasing efficiency and have on the job training about practice and experience on farms. At the same time, managers hope employees to have autonomy, to provide management ability and wisdom for management planning.

2.4 Knowledge management and ‘ba’ in Japan

The history of Japanese HRM has two stages (Kishita, 2006, [64]). First, during the 1960s to the 1980s, Japanese firms were famous of the “people oriented” HRM. The characteristics of HRM during this period were, such as employers implemented lifetime employment, employers invested in education and training of employees and offered benefits, employees were paid and promoted on a seniority basis. Because of the lifetime employment and seniority system, employees had the commitment to their work and companies, and employers offered managerial positions for improving employees’ competitiveness. Second, during the 1990s, Japanese companies began to introduce “performance oriented” HRM. Due to the collapse of the “bubble economy”, employers had to reduce workforce, costs and changed the incentive system. The “performance oriented” HRM seems to have problems in Japan and motivating employees is a major challenge for Japanese managers (Kishita, 2006, [64]).

In the field of knowledge management, knowledge creation is an essential topic. For exploring

knowledge creation in organizations, Nonaka and Konno (1998, [65]) introduced Japanese concept of "*ba*" and SECI model. They consider "*ba*" as a shared space which serves as a foundation for knowledge creation. With separating knowledge into explicit knowledge (which is able to be expressed and transmitted with others) and tacit knowledge (which is personal and hard to formalize, communicate and share with others), Figure 3 shows the process of knowledge creation by the interaction between explicit and tacit knowledge and the four types of *ba*.

In Figure 3, socialization means the sharing of tacit knowledge between individuals. Then, externalization requires the understandable expression of tacit knowledge. Combination makes the complex of explicit knowledge. Finally, internalization includes the explicit knowledge to tacit knowledge of the organization. Knowledge-creation process begins at originating *ba*, tacit knowledge becomes explicit at interacting *ba*, cyber *ba* represents the combination phase, and explicit knowledge converts to tacit knowledge at exercising *ba*.

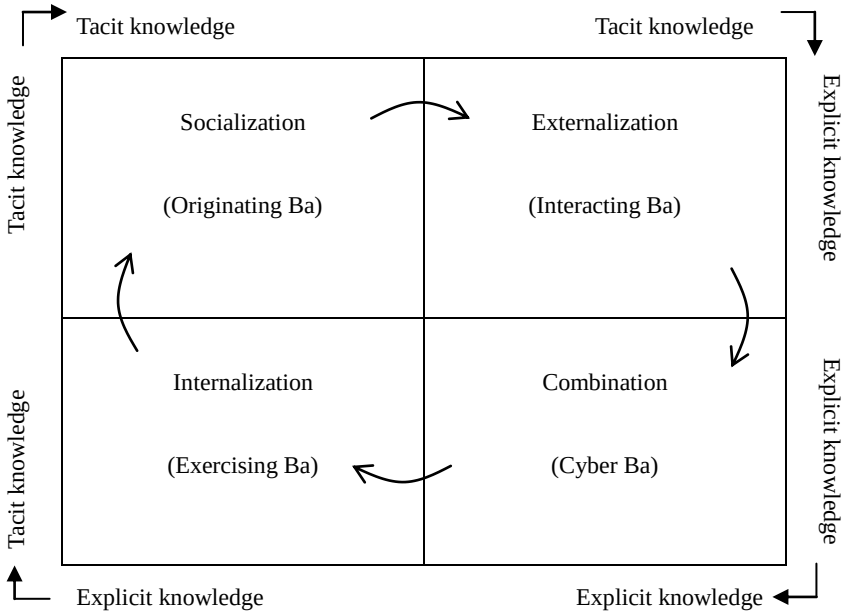

Figure 3 The SECI Model of Knowledge Creation and Four Types of Ba

Source: adapted from Nonaka and Konno (1998, [65])

This model expresses the process of knowledge creation in an organization through individuals, groups to the whole organization, and then the new created knowledge goes back to individuals. It also emphasizes the importance of *ba* for knowledge creation.

By using this model, Souma and Kiminami (2011, [66]) analyzed the knowledge management in agricultural succession by case studies. For succession of intangible assets, they emphasized the importance of *ba* and consider the concept of cluster for developing various human resources and insuring succession in agriculture.

Some research also focus on the transfer and succession of agricultural skills and knowledge as well as information management in Japan. Yamaguchi et al, (2008, [67]) clarified the knowledge management in cultivation of black beans. Fujii and Fukuhara (2011, [68]) clarified the contents of skills and knowledge in the management of water on paddy field farms for promoting the succession of skills and knowledge. They concluded that making technical materials according to different stages of planting, records on the characteristics of farms and check lists for management are important methods for the succession of skills and knowledge. Besides, manual, adoption of Information and Communication Technologies (ICT) and technical data were suggested for farm operations and planning (Fujii, et al., 2012, [69]).

Nanseki (2011, [70]) tried to develop technology to get the information about farming (name of people, time, location, content, used machine, movie by operator etc.), environment (temperature, humidity, soil moisture etc.) and crops (height of crops, weight of fruits, color of leaves etc.) and made the information visualization for getting the knowhow and cultivating human resources.

2.5 Conclusions

In this chapter, the definition, scope, goals, framework of HRM, HRM strategy, HRM policies and practices, HRM performance and long-term performance are clarified. In summary, HRM

plays strategic role in achieving organizational goals, it includes HRM policies and practices such as recruiting, selecting, training, rewarding, retaining and firing of employees and it also relates to the whole corporate culture and employment relationship. Simply, HRM is the management of all the things about people. Research focused on every part of HRM process as well as the whole relationship between HRM and organizational performance.

The difference between HRD and HRM is also discussed. From the perspective of their role in cultivating people, they have almost the same definition. But they may have different focuses. In China, the definition of SHRM has been investigated. They made contribution to the field of exploring the relationship between HRM and corporate performance, demonstrated that there is positive relationship between strategic HRM practices and corporate performance in China and the type of ownership doesn't have strong moderating effects on corporate performance (Akhtar et al., 2008, [31]; Ngo et al., 2008, [32]).

With respect to HRM in agriculture, labor management and personnel management about different parts of managing people in farms or agricultural organizations have been discussed a lot. HRM also has been explored in agriculture. However, research on HRM in agriculture has characteristics by regions and agricultural categories, because of the different natures of agricultural activities. In China, agricultural corporations seem to have problems of lacking HRM, and the importance of HRM is also ignored in agricultural reclamation. But there are few empirical study and case study. In Japan, the characteristics, turnover rate and job satisfaction of Japanese employed farmers have been discussed, the agricultural succession is also studied with the exploration of knowledge management. However, existing studies mainly focused on one side of the relationship between employees and the policies and practices of HRM. Therefore, in chapter 3 the case studies of HRM in Heilongjiang reclamation will be clarified and the causal relationship between HRM policies and practices and performance from employees and managers in Japanese corporations will be clarified in chapter 4.

As the resources for managing organizations, human resources couldn't be emphasized any

more. Human resources are not only important for making the strategy, producing, but also for creating knowledge and making innovation. From the labor management to personnel management to human resource management, it goes to emphasize not only the role of human resources play, but also the relationship they are with the whole internal and external environments as well as the definition of sustainable and competitive development. In agriculture, HRM should also be made for seeking policies and practices for the convenience of human resources to be creative and active as well as contribute to corporations and society. The way of moving from the common HRM to agricultural HRM and the way of HRM is particular in agriculture are seen. To a certain degree, HRM in other industry could be used in agricultural sector and the only difference is the working contents. But HRM in agriculture may need more flexible and has problem of low quality of human resources or the problem of people have more tacit knowledge than explicit knowledge to become the whole organizational knowledge. However, the way of thinking should be the same, such as putting importance on the concept of HRM, making HRM strategy, emphasizing physical and mental incentives, training and motivation, as well as promoting innovations. Therefore, the development and training of human resources, improving their quality as well as communication to transfer knowledge should be emphasized in HRM in agriculture. The corporate culture and ideas for development should also be emphasized.

However, the cultivation of human resources needs a long time and needs kinds of efforts from all aspects, such as schools, organizations, society and even the values and culture. It also relates to the future for what kind of agriculture we will have, what kind of society we are going to make, and what kind of environment we will live in. With the technology goes further, the involvement of human being seems to slow down. Therefore, it is more important to motivate human resources and create a learning organization for development.

Chapter 3 Empirical Analysis on the HRM in China: Case Study from State-owned Farms in Heilongjiang Province

3.1 Situation of agricultural human resources in China

According to the "Statistical Report of Chinese Talents Resources 2010" [71], agricultural human resources (nongye renli ziyuan) refer to labors who engage in agriculture, including labors in rural areas and urban areas. Rural human resources (nongcun renli ziyuan) refer to those in rural areas, including both labors engage in agriculture and non-agriculture. Rural practical human resources (nongcun shiyong rencai) refer to the rural labors that have some knowledge or skill, provide service and make contribution to the development of rural economy, technology, education, culture and health, and make an example or play a leading role.

In 2008, Chinese government integrated original Ministry of Personnel (renshi bu, which is in charge of cadre, the office-holder) and Ministry of Labor and Social Security (laodong he shehui baozhang bu, which is in charge of labor) into Ministry of Human Resources and Social Security of the People's Republic of China (renli ziyuan he shehui baozhang bu). It began to emphasize the importance of human resources.

It was pointed out by Chinese government in "2010-2020 Medium and Long-Term Plans for Construction of Rural Practical Human Resources and Agricultural Technical Human Resources (nongye keji rencai)"[2], the problems which China faces with agricultural human resources are as follows: 1) the shortage of the total number of agricultural human resources and its low quality; 2) the practical results from agricultural researchers are not sufficient; 3) the shortage of high level human resources; 4) the unreasonable distribution of human resources both by region and by industry, and there are serious shortage of human resources in less developed regions; 5) the system of human resources from training, developing, recruiting, evaluating and inspiring to

[2] Source: http://www.moa.gov.cn/zwllm/zcfg/nybgz/201110/t20111018_2364086.htm

securing is not completely established, the investment in working conditions is not adequate, and there are serious flow out of human resources. The main goals for the constructing of human resources are given as follows:

a) To expand the scale of human resources. Until 2015, the goal is to expand the number of agricultural technical human resources to 680,000 and rural practical human resources to 13,000,000. Until 2020, to expand the number of agricultural technical human resources to 700,000 and rural practical human resources to 18,000,000.

b) To improve the structure of human resource. Until 2020, to improve the quality of rural practical human resources, increase people of production, manager, and technical service types.

c) To optimize environment for human resources. Until 2020, to improve the system of human cultivation, use, evaluation, incentive and securing, and establish a good social environment for the development of human resources.

d) To realize the role of human resources.

From Table 3, we can see that, most of the rural practical human resources graduated from middle school, 40% of them are higher than 45 years old and 90% of them have no technical titles.

Table 3 The General Situation of Rural Practical Human Resources in China 2010

Item	Number of people	Ratio （%）
Agricultural human resources	10,486,360	100.0
Female	1,452,090	13.8
Grouped by education		
Junior college and above	341,374	3.3
High school	2,385,127	22.7
Middle school	6,498,252	62.0
Primary school	1,189,354	11.3
Uneducated	72,253	0.7
Grouped by age		
35 and younger	1,970,649	18.8
36-40	1,904,019	18.2
41-45	2,250,020	21.5
46-50	1,986,592	18.9
51-54	1,124,793	10.7
55 and older	1,250,287	11.9
Grouped by skill level		
Farmer senior technician	29,683	0.3
Farmer technician	147,876	1.4
Farmer assistant technician	179,527	1.7
Agricultural technician	695,141	6.6
No title	9,434,133	90.0
Grouped by work type		
Production type	4,025,224	38.4
Manager type	3,181,893	30.3
Technical service type	1,026,548	9.8
Skill drive type	1,460,023	13.9
Social service type	792,672	7.6

Source: “Statistical Report of Chinese Talents Resources 2010”, [71], P81.

Besides, Wang et al. (2013, [72]) pointed out that, among the 8 business environment indices in China, the supply of human resources (calculated by the complexity of getting technicians, managers and skill workers in local corporations, reflecting the situation of the supply of the 3 kinds of human resources) has the lowest evaluation, which is 2.79 in 2012. “Although the supply of human resources has been improved in recent years, it is still not good. The supply of

human resources has become one of the essential factors affecting the business environment. Under the situation of long-term labor surplus in China, the shortage of human resources indicates the big problem of education system in cultivating human resources, which is not suitable for economic development and needs to be improved." (Wang et al., 2013, P40, [72])

According to the different types of corporations in business environment indices, the supply of human resources has the characteristics as follows:

Table 4 shows that both state-owned and non-state-owned corporations have negative evaluations on the supply of human resources, with 2.98 for the former and 2.77 for the latter. But the evaluation of state-owned corporations is higher than that in non-state-owned corporations, and the difference is significant at the level of 1%. "This may indicate that state-owned corporations have advantage on employment conditions and welfare, therefore in the market of human resources, people would like to go to state-owned corporations for employment." (Wang et al., 2013, P79, [72])

Table 4 The indices of the supply of human resources: compared by state-owned and non-state-owned corporations (2012)

	Technicians	Managers	Skill workers
State-owned corporations	2.94	3.05	2.94
Non-state-owned corporations	2.71	2.78	2.82

Source: "Business Environment Index for China's Provinces 2013", P80, [72].

3.2 Agricultural human resources in Heilongjiang province

According to the "Chinese Talent Development Report No.3" [73] in 2006, the talent competitiveness in Heilongjiang province ranked 16 in 31 provinces, autonomous regions and municipalities. Amongst, the indices of talent scale, scientific research investment for talents, output of talent sci-tech outcome, and living environment for talents ranked separately 14, 15, 15 and 16, which are in the middle level of the nation. The index of talent quality ranked 8, which is in a little advanced position. However, the index of output conversion rate of talent sci-tech

outcome ranked 23. The index of labor productivity of primary industry in Heilongjiang province ranked 16, which was also low for an agricultural province. The report also pointed out that, for the revitalization of northeast old industrial base, it is important to implement talent strategy, optimize talent allocation, and attract outside talents to ensure the sustainable development of economy and society of Heilongjiang province.

From the situation of talents development by region in Table 5, the unbalance of regional development in R&D staff is very serious between east and west. Amongst, Beijing, Tianjin and Shanghai have a very high level but Guizhou, Yunnan and Tibet have a very low level. Although Heilongjiang is in a middle state in the level of R&D staff in every million labors, the ratio of high skill talents in skill labors and the ratio of total human capital investment to GDP, the ratio of talents contribution to GDP in Heilongjiang is in a relative low level. On the other hand from Table 6, Heilongjiang has a relative high level of ratio of agricultural technicians in the public sector which is the same as that of Qinghai and Ningxia. Table 7 clarifies the correlations between agricultural human resources and regional economic development in China.[3] It can be explained as follows.

First, regional economic development is dependent on the human resources in the region which means that the ratio of talents is positive to the GDP per capita. Secondly, the contribution of human resources to regional economic development is not dependent on how much human capital investment is made but on how effective human capital investment is realized, which means that human capital investment can be both positive and negative to the ratio of talents contribution to GDP. Thirdly, as the share of agriculture in the total GDP is declining along with

[3] Note: Shen and Zhu (1998, [Chinese references-(11)]) analyzed the relationship between human capital and economic growth in agricultural sector from 1980-1995. They calculated that the contribution rate of the increase of human capital to the GDP in primary industry is about 27.8%, the contribution rate of the increase of fixed assets to the GDP in primary industry is about 57.4%, and the contribution rate of technical progress to the GDP in primary industry is about 14.8%. They emphasized that the contribution of human capital to economic growth is important but not sufficient.

the economic growth, the role that agricultural human resources play to the development of agricultural sector, as well as to the regional and national economy is becoming more and more important, which means that the effectiveness of human resources management as well as human resources development (including redistribution of human capital investment among sectors and research fields) is called for.

Table 5 The Situation of Indexes about Talents (rencai) Development by Region in 2010

Region	Total number of talents resources	R&D staff in every million labors (person a year/million persons)	Ratio of high skill talents in skill labors (%)	Ratio of labor-age population who has high education	Human capital investment		Ratio of talents contribution (%)
					Total amount (100 million)	Ratio to GDP (%)	
Total	12,165.4	33.6	25.6	12.5	47,328.3	12.0	26.6
Beijing	290.8	147.0	26.3	37.7	2,367.3	18.4	35.8
Tianjin	171.1	112.8	25.6	21.3	888.0	9.8	27.6
Hebei	462.1	16.4	25.0	10.4	1,725.4	9.3	20.0
Shanxi	261.7	27.8	25.3	12.4	1,103.1	13.5	11.4
Inner Mongolia	185.2	20.9	20.9	13.6	944.0	10.2	13.9
Liaoning	362.2	37.8	19.3	15.5	1,921.7	11.8	19.6
Jilin	191.3	36.3	26.2	12.6	913.4	11.3	16.4
Heilongjiang	245.3	35.5	25.0	11.6	1,334.3	12.6	15.0
Shanghai	425.2	145.9	20.0	26.6	2,011.7	12.5	36.7
Jiangsu	797.6	66.7	16.7	14.5	3,656.6	9.7	31.3
Zhejiang	752.1	56.0	16.1	12.6	2,808.4	11.1	29.9
Anhui	343.0	16.7	23.8	9.8	1,627.5	15.0	10.9
Fujian	356.8	35.2	21.5	11.4	1,153.8	9.8	25.7
Jiangxi	292.2	15.1	20.3	9.6	999.8	12.3	15.5
Shandong	818.9	33.7	26.7	12.3	3,125.8	8.5	20.9
Henan	551.5	16.8	24.5	9.8	2,678.0	12.8	11.2
Hubei	417.1	31.4	26.0	12.7	1,579.4	11.2	16.4
Hunan	432.6	18.1	25.3	10.5	1,805.5	13.0	14.1
Guangdong	1,018.1	59.7	19.2	12.2	3,522.9	8.3	30.2
Guangxi	275.8	11.5	16.0	9.4	1,008.0	12.0	8.6
Hainan	45.9	11.0	12.3	11.3	253.7	14.7	11.9
Chongqing	242.4	19.4	26.5	12.8	1,013.2	13.1	19.9
Sichuan	437.6	16.8	25.0	10.0	2,307.6	15.0	16.0
Guizhou	148.0	6.3	19.4	9.0	740.8	19.6	7.6
Yunnan	264.0	8.0	18.6	8.7	975.2	14.2	6.7
Tibet	22.3	7.2	20.0	8.7	83.2	15.5	5.8
Shananxi	275.6	37.5	24.5	14.5	1,461.8	17.7	11.2
Gansu	151.4	15.1	21.3	11.4	707.1	19.4	6.5
Qinghai	33.0	16.5	13.5	12.9	212.5	18.4	6.1
Ningxia	45.5	19.6	14.1	14.1	218.1	17.2	8.9
Xinjiang	150.5	16.9	19.6	15.7	715.1	15.6	7.9
Others	1,698.4	-	44.5	-	-	-	-

Note: Others include central government and state departments, ministry and commission, central government enterprises and institutions, as well as subordinate enterprises and institutions of Xinjiang Production and Construction Corps etc.

Source: “Statistical Report of Chinese Talents Resources 2010”, [71], P4.

Table 6 The Situation of Professional Technicians and Types in the Public Sector of the Economy in 2010

Region	Total amount	Ratio of engineering technicians (%)	Ratio of agricultural technicians (%)	Ratio of scientific research staff (%)	Ratio of health technicians (%)	Ratio of teaching staff (%)	Ratio of other staff (%)
Total	32,315,497	16.76	2.13	1.05	11.88	38.41	29.76
Beijing	529,822	18.71	0.85	0.98	15.64	28.27	35.54
Tianjin	343,825	18.76	0.79	0.70	15.83	33.60	30.31
Hebei	1315,839	9.54	2.06	0.22	12.42	52.93	22.83
Shanxi	982,365	15.15	2.37	0.37	12.21	44.53	25.37
Inner Mongolia	646,982	9.39	4.30	0.29	13.52	47.08	25.44
Liaoning	858,707	12.61	2.95	0.67	15.38	42.55	25.85
Jilin	732,108	10.54	3.65	0.82	14.87	42.94	27.17
Heilongjiang	909,488	12.56	3.98	0.55	15.12	42.21	25.58
Shanghai	655,125	16.50	0.51	0.83	14.11	22.44	45.60
Jiangsu	1,323,924	8.01	2.04	0.46	15.65	49.28	24.55
Zhejiang	975,289	10.08	1.75	0.46	18.02	43.76	25.93
Anhui	916,924	9.30	2.15	0.28	13.61	54.90	19.76
Fujian	673,090	9.90	1.75	0.75	13.44	53.68	20.48
Jiangxi	824,186	8.22	2.47	0.34	14.54	50.31	24.11
Shandong	2,099,102	12.64	2.57	0.72	13.68	43.16	27.24
Henan	1,381,851	7.16	1.53	0.28	11.85	53.31	25.87
Hubei	1,054,950	7.62	1.60	0.40	17.51	45.46	27.41
Hunan	1,165,028	8.38	2.37	0.56	15.06	46.41	27.22
Guangdong	1,630,397	9.03	0.82	0.27	15.07	51.44	23.37
Guangxi	917,608	15.79	2.30	0.29	12.57	49.01	20.04
Hainan	165,638	4.50	2.02	0.23	16.71	53.35	23.18
Chongqing	510,391	9.40	2.71	0.41	12.20	50.27	25.00
Sichuan	1,257,918	9.16	3.56	0.61	13.99	51.47	21.22
Guizhou	672,940	8.70	3.58	0.22	10.80	53.68	23.01
Yunnan	844,631	11.18	4.69	0.37	12.93	53.37	17.46
Tibet	58,096	4.73	4.82	0.74	14.97	61.02	13.72
Shananxi	883,892	11.87	3.40	0.57	12.69	43.96	27.52
Gansu	632,144	9.39	3.77	0.34	11.33	48.77	26.39
Qinghai	133,094	13.19	6.66	0.51	15.20	44.12	20.31
Ningxia	144,106	9.90	6.35	0.46	13.11	45.37	24.79
Xinjiang	533,768	8.94	5.33	0.39	14.49	47.22	23.63
Others	6,542,269	40.96	0.50	3.33	3.28	4.22	47.71

Note: “Others” mainly include central government enterprises and institutions, as well as subordinate enterprises and institutions of Xinjiang Production and Construction Corps etc.

Source: “Statistical Report of Chinese Talents Resources 2010”, [71], P60.

Table 7 Agricultural Human Resources and per capita GDP, per capita Agricultural GDP by Region in the Year of 2010

	Per capita GDP by region	Per capita agricultural GDP by region
The ratio of investment on human capital to GDP	-1995.616 (coefficient) -2.16 (t-value) 0.109 (adjusted R square) 31 (number of sample)	
The ratio of corporate managers in public sector to the total number of corporate managers	-867.015 (coefficient) -2.38 (t-value) 0.134 (adjusted R square) 31 (number of sample)	
Per capita agricultural GDP by region	-5.752 (coefficient) -2.31 (t-value) 0.127 (adjusted R square) 31 (number of sample)	
The ratio of agricultural technicians to the total number of technicians in public sector	-6127.471(coefficient) -3.576 (t-value) 0.282 (adjusted R square) 31 (number of sample)	
The ratio of professional technicians in agriculture, forestry, animal husbandry and fishery to the total number of professional technicians in public sector	-2524.058 (coefficient) -2.91 (t-value) 0.199 (adjusted R square) 31 (number of sample)	171.259 (coefficient) 2.87 (t-value) 0.194 (adjusted R square) 31 (number of sample)

Notes: (1) This is the regression analysis on the cross section by province.

(2) One dependent variable is per capita GDP in region. The other dependent variable 'Per capita agricultural GDP by region' is calculated by 'agricultural GDP/ (GDP/per capita GDP)' of every province.

Sources: Data of 'per capital GDP by region', 'agricultural GDP by region' and 'GDP by region' are from "China Statistics Yearbook 2011" [74]. Data of 'The ratio of investment on human capital to GDP', 'The ratio of corporate managers in public sector to the total number of corporate managers', 'The ratio of agricultural technicians to the total number of technicians in public sector' and 'The ratio of professional technicians in agriculture, forestry, animal husbandry and fishery to the total number of professional technicians in public sector' are from "Statistical Report of Chinese Talents Resources 2010" [71].

Furthermore, for the total index of business environment, the big gap between the indices of northeast, middle, western regions and that of eastern region is reducing, but there is no obvious reducing on the gap of index with government administration. (Wang et al., 2013, P109, [72])

The business environment in Heilongjiang province has improved in score and ranking, with a score of 3.11 and a ranking of 7 in the nationwide in 2012 (see Table 8). Heilongjiang province has the weakness in the indices of finical service and infrastructure, but it has relatively high ranking of the supply of human resources. (Wang et al., 2013, P166, [72])

Table 8 The index, score, ranking of the supply of human resources and the total index in Heilongjiang province (2006, 2008, 2010, 2012)

	2006		2008		2010		2012	
	Score	Ranking	Score	Ranking	Score	Ranking	Score	Ranking
The supply of human resources	2.51	13	2.85	6	2.87	5	2.89	6
Technicians	2.55	8	2.76	7	2.74	6	2.79	11
Managers	2.42	21	2.87	5	2.99	3	2.87	9
Skill workers	2.56	16	2.92	7	2.89	7	3.02	7
Total index	2.85	15	3.11	13	2.93	20	3.11	7

Source: "Business Environment Index for China's Provinces 2013", P165, [72].

3.3 State-owned farms in agricultural reclamation in China[4]

State-owned farms in China are economic organizations which are invested by the state and the main factors of production and products belong to the state. In China, there are four types of state-owned farms according to their different leaderships: state-owned farms which belong to agricultural reclamation sector, overseas Chinese farms which belong to overseas Chinese affairs departments, army's production farms which belong to the army and breeding farms which belong to agricultural sector.

[4] The history and characteristics of agricultural reclamation areas and state-owned farms in Heilongjiang province are in Appendix 1.

Table 9 The Basic Situation about Corporations Mainly for Agriculture Divided by the Ownership

Name	Number	Ratio	Number of employees at the end of the year	Ratio	Number of agricultural technicians at the end of the year	Ratio
Divided by ownership (not including non-registered units)	111,992	100%	5,052,121	100%	622,292	100%
State-owned	49,712	44.39%	3,511,366	69.50 %	438,518	70.47%
Collective	13,275	11.85%	269,633	5.34%	50,213	8.07%
Private-owned by domestic investment	31,356	28.00%	676,627	13.39 %	66,171	10.63%
Joint venture or cooperation by domestic investment	16,556	14.78%	540,088	10.69 %	61,982	9.96%
Single ownership by Hong Kong, Macao or Taiwan	452	0.40%	16,542	0.33%	1,390	0.22%
Joint venture with Hong Kong, Macao or Taiwan	113	0.10%	6,215	0.12%	565	0.09%
Single ownership by foreign investment	291	0.26%	12,692	0.25%	1,680	0.27%
Joint venture with foreign investment	237	0.21%	18,958	0.38%	1,773	0.28%

Note: The belonging system refers to the attributes of agricultural corporations by their management sectors. It mainly includes agricultural corporations by the management of sectors of agricultural reclamation, forestry, justice, Chinese army, guardee etc.

Source: “The Compile of the Second National Agricultural Census in China: for agriculture”, 2008, [75].

According to the pattern of ownership, among all the agricultural corporations (not including non-registered units), about 44.39% of them are state-owned (see Table 9). The number of employees from state-owned agricultural enterprises accounts for 69.5% of the whole employees. State-owned agricultural enterprises are the majorities. According to their belonging systems, the number of agricultural reclamation system (state-owned farms belong to agricultural reclamation system) accounts for about 7.18% of the number of corporations, and the employees account for

36.32% of the total employees (see Table 10).

In this paper, the state-owned farms which belong to agricultural reclamation system (simply as state farms) will be referred.

However, the state-owned farms are considered to have some advantages, such as 1) under the market transition, compared to the urban state-owned enterprises, state-owned farms can directly put production materials into industrial processing and commercial sales, which add more values to products and have faster speed of commercialization of agricultural production; 2) under the agrarian transition, compared to the household farming in the rest of rural China, state-owned farms have the big scale for the development of modern agriculture (Zhang, 2010, [76]).

Table 10 The Basic Situation about Corporations Mainly for Agriculture Divided by the Belonging System

Name	Number	Ratio	Number of employees at the end of the year	Ratio	Number of agricultural technicians at the end of the year	Ratio
Divided by belonging system (not including non-registered units)	111,992	100%	5,052,121	100%	622,292	100%
Agricultural reclamation system	8,040	7.18%	1,834,900	36.32%	90,751	14.58%
Forestry system	13,571	12.12%	952,118	18.85%	135,460	21.77%

Note: The belonging system refers to the attributes of agricultural corporations by their management sectors. It mainly includes agricultural corporations by the management of sectors of agricultural reclamation, forestry, justice, Chinese army, guardee etc.

Source: “The Compile of the Second National Agricultural Census in China: for agriculture”, 2008, [75].

On the other hand, state-owned farms still have problems to be operated as corporations. It is thought to be difficult to separate the function required from government, community and

enterprises. Furthermore, the roles played by managers for government and for enterprises sometimes have crossed. It may decrease efficiency and increase organization cost. Moreover, there is low competition in state-owned farms (Zheng, 2004, [77]).

3.4 State-owned farms in Heilongjiang reclamation area

Heilongjiang reclamation area, known as the "Great Northeast Wilderness" (Beidahuang), located in the region of Xiaoxinganling Region, the Song-Nen Plain (Songnen pingyuan) and the Three-River Plain (Sanjiang pingyuan) of China. It is the second biggest group of state-owned farms in China. It locates in the Northeast Asian economic zone. Heilongjiang reclamation area occupies a total area of 56.2 thousand square kilometers, 2.8 million hectares' cultivated land, 0.92 million hectares' forestland, 0.36 million hectares' gross land, and 0.26 million hectares' water area. It is the Nationally Designated Eco-Demonstration Region. Heilongjiang reclamation area has 9 administrations, 113 agricultural and animal husbandry farms (105 agricultural farms and 8 animal husbandry farms), 615 state-owned and state holding enterprises, and 846 non-state-owned enterprises, which distribute in 12 cities in Heilongjiang province.

As shown in Table 11, at the year-end of 2009, the total population of Heilongjiang reclamation area accounts for 4.4% of the population in Heilongjiang province and 12.7% of the population in national reclamation areas. The total employees account for 4.9% in Heilongjiang provinces and 15.3% in national reclamation areas. The average wage of workers on the job in reclamation area is 14,862 yuan/person, which is 95.7% of national reclamations and 56.3% of Heilongjiang province.

Table 11 The Ratios of Main Economic Indices of Heilongjiang Reclamation Area in Heilongjiang Province and National Agricultural Reclamations (2009)

Indices	Unit	N	HP	HRA	Ratio of HRA in N (%)	Ratio of HRA in HP (%)
Year-end total population	10 thousand persons	1,316.8	3,826.0	166.8	12.7	4.4
Total employees	10 thousand persons	601.2	1,877.0	91.7	15.3	4.9
Gross domestic product	100 million yuan	2,738.8	8,288.0	545.3	19.9	6.6
Income						
-Net income per capita of rural residents	Yuan/person	7,096.0	5,207.0	10,936	154.1	210.0
-Average wage of workers on the job	Yuan/person	15,535.0	26,382.0	14,862	95.7	56.3
Output of grain	10 thousand ton	2,773.2	4,353.0	1,652.6	59.6	38.0
-Output of rice	10 thousand ton	1,354.3	1,574.5	927.3	68.5	58.9

Note: N represents National agricultural reclamations; HP represents Heilongjiang province; HRA represents Heilongjiang reclamation area.

Source: "Statistical Yearbook of Heilongjiang Reclamation Area 2010", [78].

In 2009, Heilongjiang reclamation area has 2.644 million hectares of various crops cultivation. Among them, they have 2.544 million hectares of grain planting area, which account for 96.2% in all the cultivation. And the output of grain accounts for 38% of that in Heilongjiang province (Table 11). They provided 15.287 billion kilograms commodity grain for the state, and the commodity rate of grain achieved 92.5%. Besides, the output of rice accounts for 58.9% in Heilongjiang province and 68.5% in national reclamation areas. Heilongjiang reclamation area is an important rice production area for Heilongjiang province and the national agricultural reclamations. (Statistical Yearbook of Heilongjiang Reclamation Area 2010, [78])

According to the regulations of Heilongjiang Agricultural Reclamation Bureau (2010, [79]), state-owned farm is a state-owned agricultural enterprise, which takes state-owned land as the basic production factor, operates agricultural production, processing and sales, implements

autonomous management, independent accounting, self discipline, self development, and takes civil liability independently. State-owned farms implement two-layer management system with the combination of centralization and decentralization (tongfen jiehe), which is based on the household contract management. State-owned farms establish the production and management system by the centre of farm director. Farm director is in charge of organizing, directing the production and operating work, giving suggestion to production and operating activities, after approved by the workers' congress, organizing the practice.

Figure 4 shows the relationship of provincial agricultural reclamation bureau, administrations and state-owned farms and their duties.

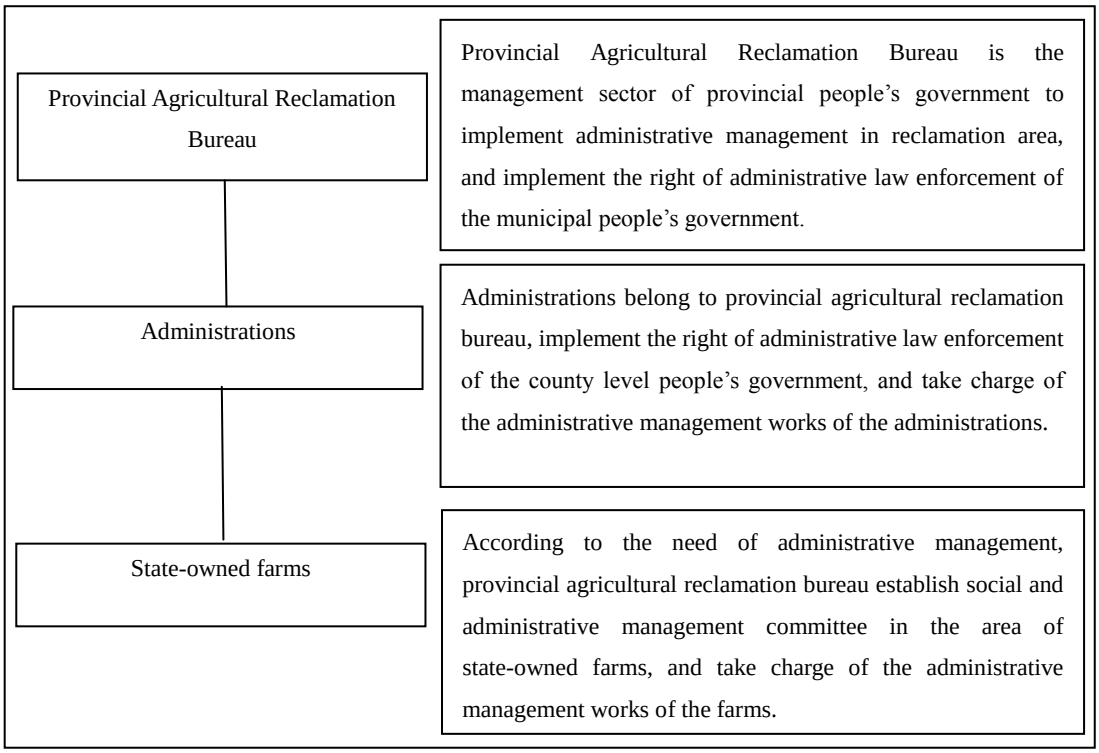

Figure 4 The Relationship of Provincial Agricultural Reclamation Bureau, Administrations and State-owned Farms and Their Duties

Source: "Regulations of Heilongjiang Agricultural Reclamation Bureau (2010)", [79].

Although the state-owned farms in Heilongjiang reclamation area have become corporations

under the name of Beidahuang Enterprises (beidahuang jituan) through the process of reform, they are not operated exactly as corporations. They have to meet the production quotas from the state and keep the profits of surplus. Similar to the agricultural production in family level, compared to the household farming in the rest rural areas, state farms implement a tow layered system: households of farm workers are allocated land by contract to meet the production quotas before keeping the surplus.

In the next section, DEA method will be used to see the technical efficiency of farms. The technical efficiency of three selected farms will also be checked. After this part, the characteristics of three selected farms will be clarified.

3.5 Technical efficiency in state-owned farms in Heilongjiang reclamation area

Technical Efficiency usually means the ratio of output to input quantitatively. An efficient organization may have efficient management and allocated resources by maximizing outputs or minimizing inputs. It is an important index for analyzing organizational performance, especially for non-profit organizations. Since state-owned farms are aimed to maximize output, we intend to examine the performance of state-owned farms by evaluating their technical efficiency using the method of DEA (Data Envelopment Analysis)[5].

Since grains are mainly products in Heilongjiang state-owned farms, we use the output of grain as the output, and use labor, sown areas, chemical fertilizer and total power of agricultural machinery for grain production as inputs. The description of variables is shown in Table 12. Through the number of standard deviation, it shows that farms vary differently.

Software of DEAP 2.1 is applied for evaluation (see also Li et al., 2012, [81] and Fraser and Cordina, 1999, [82]). And we use input oriented models because we could know how to reduce

[5] The introduction and reason for choosing DEA are shown in Appendix 2.

inputs when they get the same outputs.

Table 12 Variables and Summary of State-owned Farms in Heilongjiang Reclamation Area, 2011

Variable	Description of the variable	Unit	Max	Min	Mean	Standard Deviation
Output	Output of grain production	tons	917,948	55	199,753	192,271
Input 1	Labor for grain production	persons	31,335	27	5,073	4,428
Input 2	Sown areas for grain	hectares	101,676	8	24,397	20,665
Input 3	Net quantity of chemical fertilizer for grain production	tons	18,833	2	4,507	3,844
Input 4	Total power of agricultural machinery for grain production	kw	380,878	65	63,613	61,293

Source: "Statistical Yearbook of Heilongjiang Reclamation Area 2012", [80]

Note: (1) The number of farms is 112, deleting one farm which has no data of input 4 and input 5.

(2) Labor for grain production= Labor in primary industry*sown areas for grain/total sown areas; Net quantity of chemical fertilizer for grain production=Chemical fertilizer*sown areas for grain/total sown areas; Total power of agricultural machinery for grain production=Total power of agricultural machinery* sown areas for grain/total sown areas.

Table 13 Farms with Different Efficiency in 2011

Total efficiency	Number of farms	Means			Number of farms		
		Technical efficiency	Pure technical efficiency	Scale efficiency	drs	irs	crs
1.000	11(9.8%)	1.000	1.000	1.000	0	0	11
0.800-0.999	58(51.8%)	0.893	0.902	0.990	25	11	22
0.600-0.799	33(29.5%)	0.702	0.727	0.973	10	10	13
0.400-0.599	10(8.9%)	0.537	0.538	0.998	2	1	7

Note: drs=decreasing returns to scale; irs=increasing returns to scale; crs=constant returns to scale.

Source: result from DEAP 2.1

Table 13 shows the results of efficiency in farms by variable return to scale model of DEA (which is called BCC model). About 9.8% of farms are efficient, but more than half of the farms have the efficiency between 0.800-0.999. Farms with less than 0.800 of efficiency should try to improve their efficiency. Besides, nearly half of the farms are constant returns to scale. That

means they could increase their output by the same ratio of inputs.

Table 14 The Efficiency of Three Targeted Farms in Heilongjiang Reclamation Area, 2011

	B farm	X farm	Y farm	Mean of 112 farms
Technical efficiency	0.832	0.792	0.878	0.815
Pure technical efficiency	0.860	0.798	1.000	0.827
Scale efficiency	0.967	0.992	0.878	0.987
Returns to scale	drs	drs	drs	-
Ranking of technical efficiency in 112 farms	62	70	44	-

Note: drs=decreasing returns to scale; irs=increasing returns to scale; crs=constant returns to scale.

Source: result from DEAP 2.1

Table 14 shows that B and X farm have relatively low efficiency among the 112 farms. From the pure technical efficiency, they can have the same output by reducing the inputs proportionally. However, the scale efficiency also shows that they could be more efficient if they change the structure of allocated inputs. Besides, the three farms are all decreasing returns to scale.

However, we mainly focused on the quantity of inputs from the view of efficiency, without paying attention to their quality, such as the employee's education level, their agricultural experience and their attitude towards work. In the next section, we will focus on HRM in farms to clarify how they deal with labor's quality, referring to how they manage their human resources.

3.6 HRM in state-owned farms in Heilongjiang reclamation area

3.6.1 Characteristics of three farms for case study

Human resource departments in farms take charge of directors of operating areas, agricultural technicians, operators and accountants, which we mainly took (not including households) as agricultural human resources in this study. Therefore, this study interviewed managers of human

resource departments in farms for exploring the characteristics of HRM in agriculture. (State-owned farms have the centralization of management, and they mainly have the same HRM strategies, policies and practices. From this view, the three farms could represent some kind of the characteristics and problems of other farms. Therefore, this paper mainly explores the consciousness of managers about the same HRM to see the differences of characteristics of HRM.) The following assumptions are supposed: they have similarities of policies as they are in the same reclamation area; and they have differences in the practices and consciousness of HRM.

Table 15 Basic Information about Targeted Farms

Farm	Population	Total land area (hectare)	Gross domestic product (10 thousand yuan)	Social-economic composite index	Farm type	Gross domestic product per capita(10 thousand yuan)
Average	13,334	47,783	53,538			
B farm	27,023	67,100	105,749	182.96	I	3.9
X farm	23,027	55,873	70,650	147.82	I	3.1
Y farm	101,723	188,812	217,062	581.07	I	2.1

Note: the methods of calculation are (1) composite index = (population on farm/average population*50) + (total land area/average land *30) + (gross domestic product /average gross domestic product*20). (2) The composite index of farm type I is more than 130, type II is between 50 and 130, and type III is less than 50.

Source: Compile of employment policy, 2011, [83].

Case studies use the method of person to person interview on farms and supplement interview by telephone (undertaken from June to August, 2012) targeting managers from Human Resource Departments of Youyi (represented by Y) farm which belongs to Hongxinglong administration as well as Baoquanling (represented by B) and Xinhua (represented by X) farms which belongs to Baoquanling administrations. Amongst, Y farm is the biggest farm in China. And there have been some research on the X farm before. B farm is in the region of Baoquanling administration. Table 15 shows the basic situation about three farms. Although composite index of Y farm is highest, B

farm has higher domestic production per capita. Besides, they all belong to the type I by calculating the composite index.

Baoquanling farm

B farm locates Luobei County in Heilongjiang province, and Baoquanling Administration also locates inside the farm. It locates between north latitude of 47°13′～47°43′, and east longitude of 130°18′～130°53′.

B farm was established in 1950. At the end of 2000, farm has 31 agricultural production units. It has 0.39 million mu of cultivated land, 0.145 million mu of forestry and 0.128 million mu of arable wasteland. Soybean, wheat, rice, corn and cash crops are major agricultural products. [6]

Xinhua farm

X farm locates in three-river plains, south of xiaoxing'an mountains, and neighboring with Jiamusi and Hegang cities in Heilongjiang province. It locates between north latitude of 45°05′～47°15′, and east longitude of 130°05′～130°45′. It has Songhua River, Heli River, Alingda River, Fuerji River, Shitou River, and Wulong River. Haluo Road and Heda Highway go through farm, making the traffic convenient. The resources here are plentiful. Rice, soybean and corn are major agricultural products, with some cash crops of other beans and sticky corn.

X farm was established on November 1949. In 2005, the total area of land is 56 thousand hectares, and the area of cultivated land is 27 thousand hectares. It has population of 24.9 thousand, and employees of 8.4 thousand. X farm has 39 agricultural and husbandry production units, 24 corporations of industry, commerce, transport, construction and service. It has one junior secondary school and one primary school.[7]

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[6] The two parts are from "Records on Baoquanling farm (1986-2000)"
http://www.bql.com.cn/ArticeList1.aspx?id=131149&CategoryID=319&ColumnID=81

[7] The two parts are from "Records on Xinhua farm (1986-2005)"

Youyi farm

Y farm locates at the brink of marshland in the center of three-river plain. It locates between north latitude of 46º28′～46º59′, and east longitude of 131º29′～132º15′. Baoqing County is in its east, Jixian County is in its west, Shuangyashan City is in its south, and Fujin County is in its north. Youyi farm was established in the spring of 1955. The total area of Y farm is 189 thousand hectares, with 56 kilometers from east to west and 44 kilometers from north to south. [8]

In 1984, there were eight kinds of people made up the employees: a. the employees at the beginning of establishing farm; b. the demobilized officers and soldiers in 1958; c. some members from villages absorbed by farm; d. the educated urban youth according to "go to work in the countryside or mountain areas (shangshanxiaxiang)"; e. the migration and youth who work in remote areas from Beijing, Shandong and Harbin; f. the students graduated from special secondary schools, colleges and universities by state allocation; g. the active army from corps; h. the new workers who are the children of old workers on this farm. [9] In 2005, it has 13 administration regions, and 48 corporations of industry, commerce, transport, construction and service.

3.6.2 Human resources in state-owned farms in Heilongjiang reclamation area

Human resources in farms are mainly original workers (now they are farmers belonging to farms but they are also called farm workers), outside farmers by contracting on land, employees of farms or corporations (Song and Yan, 2011, [52]). Agricultural technicians, corporate managers and skilled operators are required human resources.

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http://www.bql.com.cn/ArticeList1.aspx?id=131149&CategoryID=319&ColumnID=81

[8] This part is from "History of Youyi farm (1954-1984)"

http://www.hljyy.gov.cn/EC_ShowArticle.asp?EC_ArticleID=888

[9] Source: the history of Youyi farm http://www.hljyy.gov.cn/EC_ShowArticle.asp?EC_ArticleID=905

From Table 16 we can see that Baoquanling administration which includes X farm and B farm, and Hongxinglong administration which includes Y farm have relative high level of education in Heilongjiang reclamation area.

Table 16 The Ratio of People (over the age of 6) according to Different Education by Administrations (according to the fifth population census in 30th, December, 2000)

Units	Total	Undergraduate	Junior College	Technical Secondary School	Senior High School	Junior High School	Primary School
Baoquanling Administration	197,565	1.68%	3.37%	5.49%	15.22%	39.83%	25.73%
Hongxinglong Administration	326,817	3.20%	6.74%	5.46%	16.27%	34.59%	18.39%
Jiansanjiang Administration	175,149	1.45%	3.99%	4.04%	16.94%	41.55%	32.03%
Mudanjiang Administration	197,819	0.99%	3.81%	3.80%	11.96%	39.61%	31.27%
Beian Administration	184,172	0.71%	2.93%	4.04%	13.51%	43.62%	28.16%
Jiusan Administration	150,823	0.27%	2.09%	2.64%	28.68%	37.47%	28.85%
Qiqihaer Administration	93,538	0.57%	3.21%	2.79%	13.93%	47.82%	24.41%
Suihua Administration	69,306	1.44%	2.82%	7.29%	19.54%	43.26%	23.68%
Haerbin Administration	29,307	3.21%	3.36%	4.28%	29.41%	29.88%	29.86%

Source: “Statistical Yearbook of Heilongjiang Reclamation Area 2011”, [80].

Table 17 The Basic Situation of Three Farms in the Year of 2010

	Total area of land (hectare)	Total area of cultivated land (hectare)	Number of total population	Number of total employee	Number of employee in primary industry	Number of workers on their post	Number of professional technicians
B	67,100	28,183	27,023	16,323	9,450	2,695	683
X	55,873	29,307	23,027	12,871	8,729	2,223	491
Y	18,812	106,676	101,723	41,968	33,524	21,899	1,094

Source: Statistics on Heilongjiang agricultural reclamation, 2011, [80].

In B farm in 1999, there are 67 of technicians engaging in agricultural production, including 5 people in agricultural office (nongyeke), 2 people in rice office (shuidaoban), 6 people in agricultural service corporation, 7 people in seed company, 3 people in other office and 44 people in agricultural and husbandry production units. 30% of them have undergraduate degree, 33% have senior college degree, 30% have junior college degree, and 7% of them have high school degree. [10]

Table 17 shows the number of employees in each farm in 2010. It shows that the ratio of the number of professional technicians in the number of total employee is 4.18%, 3.81%, and 2.61% in B, X, Y farm separately. B farm has relative high ratio of professional technicians.

[10] This part refers to "Records on Baoquanling farm (1986-2000)"
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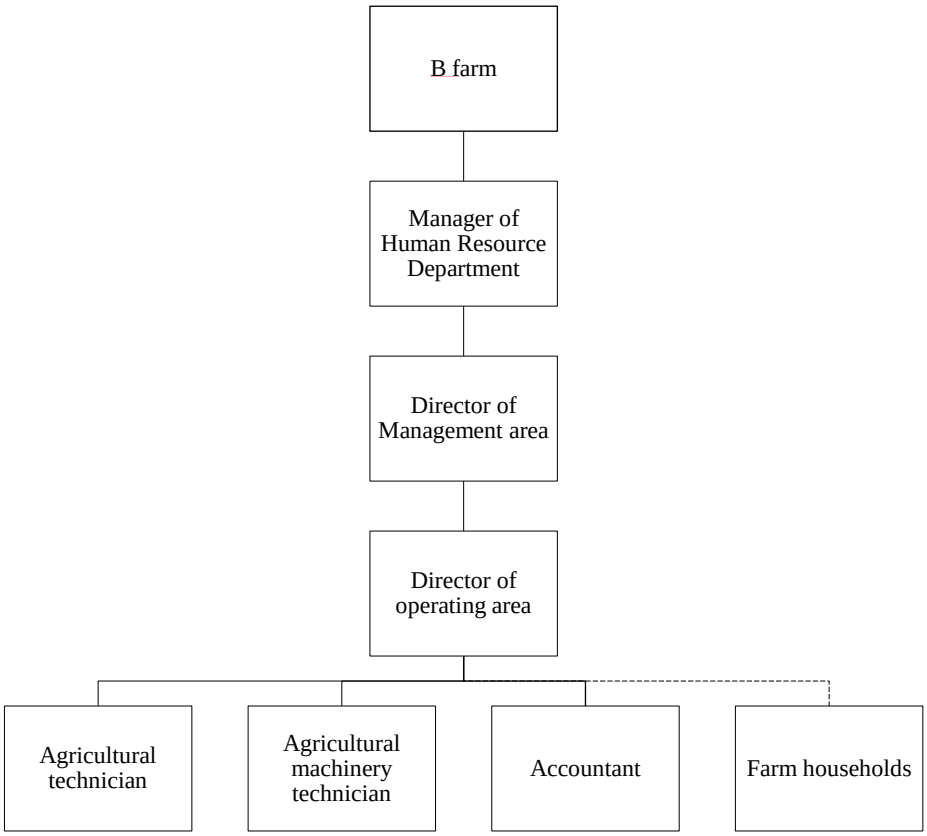


Figure 5 Structure of Human Resources for Agricultural Production in Baoquanling Farm

Source: Author's interview

Note: (1) Farm households on farms are contracting with state-owned farms and managed by state-owned farms.

(2) Farm households usually have small scale of labors in China. In 2013, Chinese government pointed to encourage the development of "family farms", which emphasizes farming by family members. It is reported that the average labor for every family farm is 6.01 persons, including 4.33 persons from family members and 1.68 persons of long-term hired labors.[11] It is difficult to establish HRM in the small labors of family farms. But the importance of labor management should also be noticed for further development.

Figure 5 and 6 show the structure of human resources for agricultural production in B and X farm. They have almost the same structure of human resources because they all belong to Baoquanling administration. Figure 7 shows the structure of human resources for agricultural production in Y farm. By interview, they have 11 management areas (guanliqu), 86 operating

[11] The analysis on the scale and development of family farms in China, http://www.51report.com/free/3018126.html

areas (zuoyezhan). One management area is in charge of some operating areas. Every management area has one director, one vice director and one assistant. Every operating area has one director, one vice director, several agricultural technicians, agricultural machinery technicians, and accountants. The director of operating area is in charge of the agricultural production of farm households in this area, and agricultural technicians help and train farm households to do agricultural production and solve problems. The difference between Y farm and others is the existing of assistants. It is because of the large scale of Y farm and they provide the position of assistant to graduate students for getting prepared carders. It is also important for realizing the importance of cultivating future managers.

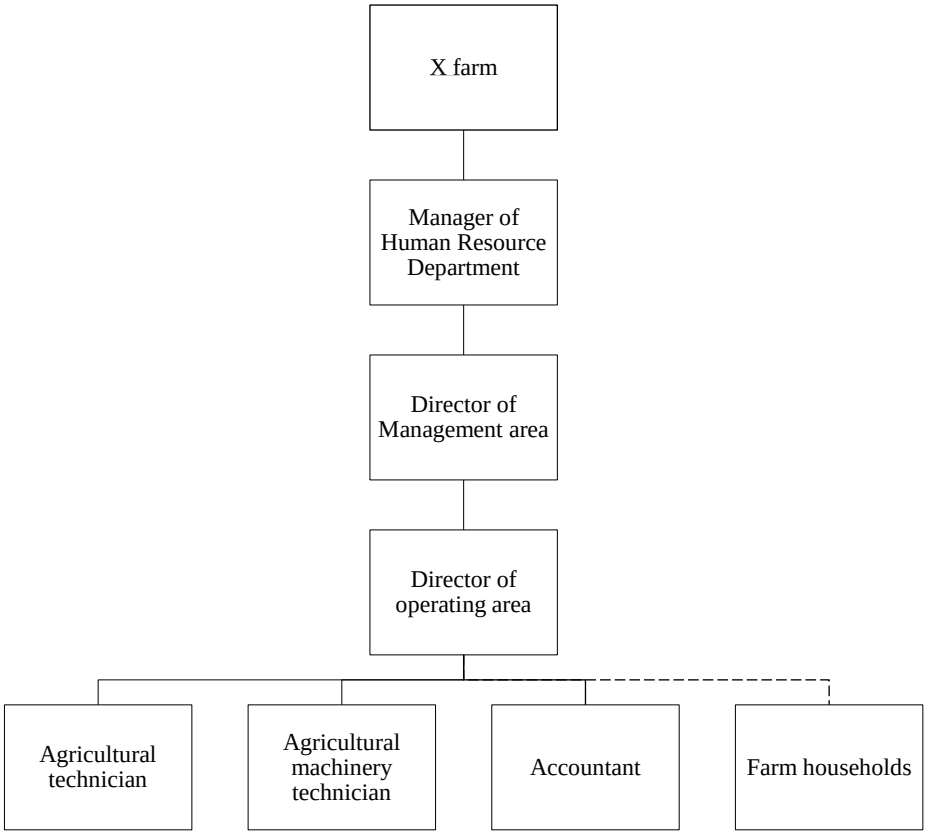


Figure 6 Structure of Human Resources for Agricultural Production in Xinhua Farm

Source: Author's interview

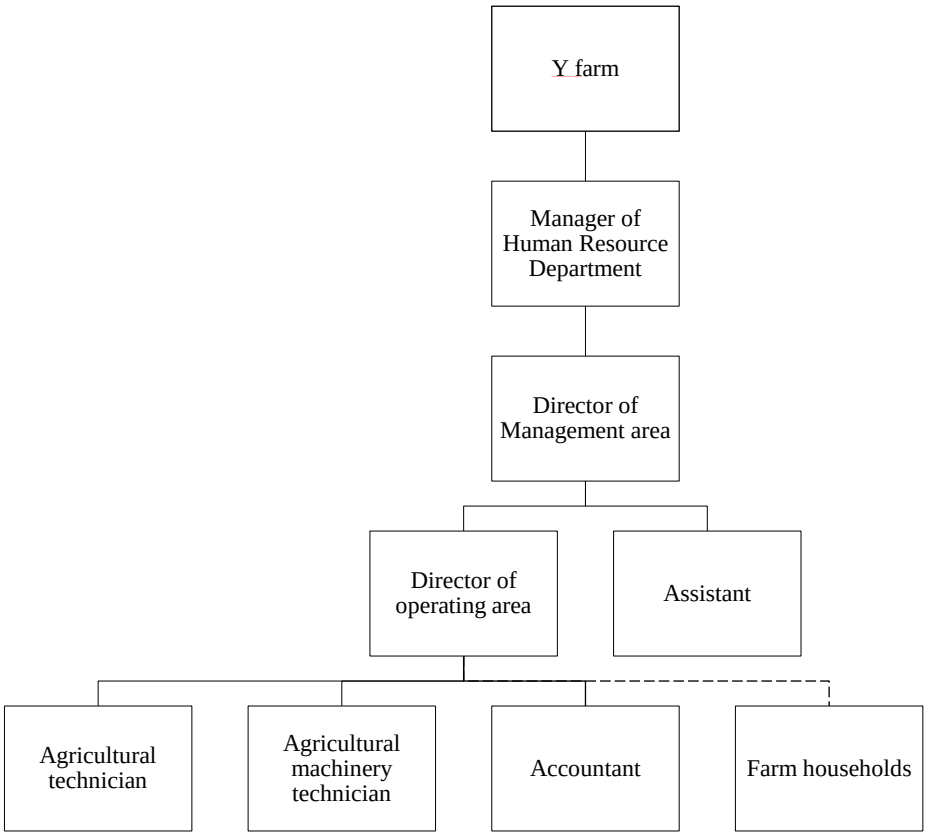


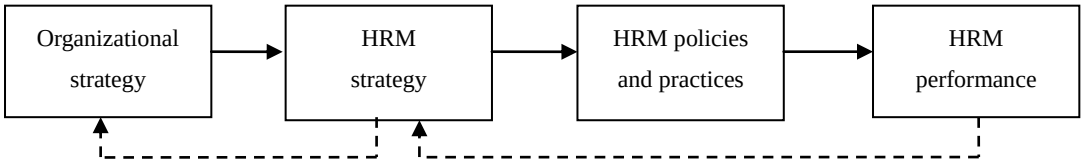
Figure 7 Structure of Human Resources for Agricultural Production in Youyi Farm

Source: Author's interview

3.6.3 Research framework and questions for interview

Based on exiting research, research framework for exploring the characteristics of HRM in farms is shown in Figure 8: an organization should have its own aim and plan, which is called organizational strategy; HRM strategy is made according to organizational strategy; HRM policies and practices are the implementation of strategy, which will affect HRM performance; Adversely, HRM performance will give influence on HRM strategy even on organizational strategy.

Person to person interview on farms and supplement interview by telephone were undertaken from June to August in 2012 targeting managers of Human Resource Departments from B farm, X farm and Y farm in Heilongjiang reclamation area.



Items	Organizational strategy	HRM strategy	HRM policies and practices	HRM performance
Descriptions	Aim and plan	HRM objectives	Recruitment methods; Training and development; Salary and job-leaving	Evaluation on human resource department and summary
Method	Survey	Interview	Interview	Interview and summary

Figure 8 Research Framework for Case Study in China

According to the framework and for better understanding the situation of farm, this paper conducted the interview through the following questions (see also Appendix 3 in Chinese).

First, the following questions were asked to managers of human resource departments.

a. What is your position? What are your duties?

b. What are the functions and position of your office in human resource department?

c. What is the organizational structure of farm?

Then, the following question concerning about the organizational strategy, HRM strategy, HRM policies and practices, HRM performance as well as corporate culture and so on were asked.

Q1. About the organizational objectives and HRM strategy

Q1.1About the farm	Q1.1.1 The history and events on farm Q1.1.2 What is the position of farm on the agriculture in Heilongjiang province? Q1.1.3 What is the position of farm in Heilongjiang agricultural reclamation? Q1.1.4 What is the position of farm in the administration? Q1.1.5 Do you have cooperation or connections with other organizations or sectors? Q1.1.6 Do you have public materials or data? Q1.1.7 What are the objectives of farm? What are the connections with the objectives of administration? Q1.1.8 How do the objectives distribute to every sector? Does every sector have clear

	mission?
Q1.2About human resource department in farm	Q1.2.1 The history and events of human resource department Q1.2.2 What are the functions and responsible regions of human resource department? Q1.2.3 What is the relationship with farm? Q1.2.4 What are the strategic goals of human resource department? What are the relationships with the goals of farm? Q1.2.5 What are the relationships with other departments? Q1.2.6 How do you convey the goals to employees? What are the effects? Does everyone know his or her mission? Q1.2.7 How do you assign missions and make communication in your department? Do you have some methods to ensure working smoothly? Q1.2.8 Do you have meeting regularly? How many times in a week? How about the effects of the platform for information management? Q1.2.9 What are the differences of agricultural HRM with others?
Q1.3 About HRM strategy	Q1.3.1 What are the goals and contents of HRM strategy and "Baiqianwan Talents Project"? Q1.3.2 What is the implementation department? Which stage the strategy is in? Q1.3.3 What are the concrete methods (how to work and coordinate)? Q1.3.4 Do you have awards or punishment for the strategy? Q1.3.5 How about the effects and performance? Q1.3.6 What are the limitations?

Q2. About the HRM policies and practices on farm

Q2.1 About recruitment and agricultural human resources	About recruitment and allocation	Q2.1.1 What are the recruitment methods? Q2.1.2 Who are the objects? Q2.1.3 What are the allocation methods? Q2.1.4 How about the effects and performance? Q2.1.5 What are the limitations?
	About agricultural human resources	Q2.1.6 What are the situations of agricultural human resources? Q2.1.7 What are the special of agricultural human resources? Q2.1.8 How many are the quantity of agricultural human resources? Q2.1.8 How about the quality of agricultural human resources? Q2.1.9 What needs improvement? Q2.1.10 What kinds of help are needed?
Q2.2 About training and development	About training	Q2.2.1 What kinds of training programs do you have? Q2.2.2 Who are the objects? Q2.2.3 What are the training contents? Q2.2.4 How about the effects and performance? Q2.2.5 What are the limitations?
	About	Q2.2.6 What kinds of opportunities do you have?

	opportunities for future study	Q2.2.7 Who are the objects? Q2.2.8 What are the learning contents? Q2.2.9 How about the effects and performance? Q2.2.10 What are the limitations?
Q2.3 About performance management		Q2.3.1 What are the methods of performance management? Q2.3.2 Who are the objects? Q2.3.3 How about the effects and performance? Q2.3.4 What are the limitations?
Q2.4 About salary and welfare		Q2.4.1 How to decide salary and welfare? Q2.4.2 What kinds of welfare do you have? (pensions, healthcare, unemployment, work injury, maternity insurance, housing fund, food subsidy, legal holidays, commuting subsidy, others) Q2.4.3 Do you have material subsidy or bonus for festivals (Spring Festival, Women's Day, Dragon Boat Festival, Labor's Day, Mid-autumn Festival, National Day) Q2.4.4 What are the conditions for housing? (What are the dimensions and facilities?) Q2.4.5 What are the awards and punishment? Q2.4.6 Do you have the system for pay raise? Q2.4.7 Do you have the system for promotion? Q2.4.8 How about the fairness? Q2.4.9 Do you have special treatment for agricultural human resources?
Q2.5 About management of labor relationships (focus on retention of human resources and culture as well as atmosphere)	Management of labor relationships	Q2.5.1 What are the channels for understanding the dissatisfaction and complain of employees? How to solve the problems? Q2.5.2 What is the punishment? Q2.5.3 The quantity of job-leaving people. What are the reason and trend for leaving? Q2.5.4 Do you dismiss or fire people? Q2.5.5 How to solve the flow-out of human resources? Q2.5.6 Do agricultural human resources have special phenomenon and solutions? Q2.5.7 How about the effects and performance? Q2.5.8 What are the limitations?
	About corporate culture	Q2.5.9 What is the corporate culture? Q2.5.10 How to convey corporate culture to employees? Q2.5.11 What about the atmosphere of working? Q2.5.12 How about the effects and performance? Q2.5.13 What are the limitations?
Q2.6 About the ownership of		Q2.6.1 What are the advantages of SOEs?

state-owned enterprises	Q2.6.2 What are the disadvantages of SOEs?

Q3. About effects and summary

Q3.1 How do you evaluate the work in your department?
Q3.2 What are the achievements of your department?
Q3.3 What is the advantage of your department?
Q3.4 What is the weakness? How to improve it?
Q3.5 What are the advantages of agricultural HRM? Do you need what kinds of help? How do you think about the future?
Q3.6 Does the investigation help you? Do you have suggestion for improving the questions?

Q4. About the situation of farm households

Q4.1 How many farm households do you have? What are the situations of contracted land?
Q4.2 What are the relationship between farm households and farm?
Q4.3 The distribution of the age of farm households and their income.
Q4.4 How about the management of farm households?

Q5. About personal experience of respondents

Q5.1 What is your learning experience?
Q5.2 What is your work experience?
Q5.3 What is your experience on farm?
Q5.4 What is the important or unforgotten experience on farm?
Q5.5 Please summarize and make suggestion for your work.

3.6.4 Characteristics of HRM in state-owned farms

The characteristics of HRM in state-owned farms are clarified as below according to the interview survey and documentary survey.

Until 2015, the goals of Heilongjiang reclamation area are to expand two times of the total GDP and net income per capita than that in 2010, to build a better-off society with advanced economy, robust democracy, prosperous culture, harmonious society, civilized ecology and happy people, to make contribution to the food security, food safety and ecological safety of the country, to promote rural development and participate in the internationally agricultural competition, and

to maintain the stability and prosperity of the country's territorial frontiers.[12]

HRM strategy and "Baiqianwan Talents Project" (BTP) [13]

According to the "Instruction of increasing the construction of agricultural practical human resources", the goals of constructing human resources in Heilongjiang reclamation area are, until the end of 2015, the total agricultural human resources in reclamation will be 150,000, accounting for 35% of the total workers; and in every farm there are at least one or two leading person.[14] From the year of 2009, through "Baiqianwan" project in agricultural reclamation in Heilongjiang, they have introduced human talents of 21,991, including 85 have doctoral degree, 760 have master's degree, 7,591 have junior college degree, and 772 have middle and high levels. Some of these college students become the agricultural technicians or assistants of directors of management areas.

The reason for implementing this strategy could be explained from two aspects: First, for the development of reclamation area and rural areas, and for food security of this important agricultural province. Second, it is made for solving the problem of increasing unemployment of college students.

From interview, managers of HR department mainly take the HRM strategy as the organizational strategy (see Table 18). For the HRM strategy itself, they didn't give much attention. As the managers of HR department, they should have the consciousness of the importance of human resources.

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[12] This part refers to http://bdhzw.chinabdh.com/bdhzw/kqgk_5.aspx

[13] "Baiqianwan Talents Project" (BTP) is one HRM strategy. "BTP" means to introduce one hundred graduate students to farms, one thousand college students to administration area, and ten thousands of students graduated from junior college or technical secondary schools to the reclamation area.

[14] Instruction of increasing the construction of agricultural practical human resources http://www.nkrbj.com/ShowText.aspx?ArticleID=286

Table 18 HRM Strategy and "BTP"

	B farm	X farm	Y farm
HRM strategy	"Support farmers, beautify city, enrich citizens and strengthen industry"	Achieve the increase of cereals and per capital income.	To achieve modern and big agriculture.
Content of "BTP"	To build the practical base for agricultural technicians in reclamation area.	Within two years, we introduced about 60 people.	Stock human resources for the aim of providing 43 billion jin cereals, and for the development of technology.
Implementation method	Train college students in operating areas, strengthen their contacts with basic staff and cultivate everyone.	There are 44 agricultural human resources working in operating areas.	Provide college students housing allowance and treatment of vice section (fukeji).
Effects and evaluation	Their practical ability is relatively poor. They can't endure hardship. There is shortage of human resources majored in agricultural machinery. They should have more training in schools, and cultivate willpower and practical ability.	The quality of human resources is improving. The average age of 44 college students is 26. They make up for the deficiency of human resources. But their practical ability should be improved.	Technicians should have more practice and work on the producing line. We need human resources of agricultural machinery. They should increase experience, knowledge, as well as social knowledge, such as interpersonal relationship knowledge.

Source: Author's interview

This strategy is mainly conveyed to employees by documents and meetings. However, according to interview, the duration of this project is not clear. Moreover, three managers have different understandings about this strategy. B farm has a big view about the whole environment of human resources. X farm puts stress on the effect of this strategy, while Y farm emphasizes the

aim of stocking human resources.

From their evaluation about the strategy, it shows that college students lack of practical ability and farms need human resources of agricultural machinery. Therefore, it may be important for agricultural schools to learn more about the demand of farms to cultivate students. In short, the "BTP" strategy intends to change the structure of agricultural human resources and improve the ability of college students. The farms may try to pay attention on the importance of human resources, but the importance of HRM should also be emphasized.

HRM policies and practices of three farms

(1) Recruitment methods

By interview, the administration of bureau organizes farms to participate recruitment fairs. They arrange fairs in agricultural universities, advertise job opening on internet and provincial human resource center. However, the recruitment was limited in agricultural universities, and there was no widely and deeply understanding about reclamation area from students, especially the students from south areas of China. Furthermore, some students who major in agriculture are not willing to do agricultural work. Therefore, it is important to give more information about reclamation area and cultivate students' interesting about agriculture. For recruitment, knowing the motivation of human resources and the matching between human resources and organizations are also important.

(2) Training and development

Table 19 shows that all the three farms emphasize on training of human resources not only on professional skills but also on comprehensive quality. They also have some practice such as "one old helps one new (yibangyi)". However, because of large land, Y farm has a bigger development space than others. The intention of training and development for employees are important for farms and human resources, but attention should also be paid on the content of training and how

to retain them after training.

Table 19 Training and Development

	Training projects	Effects and evaluation
B farm	Every year we have training on professional skills and comprehensive quality of agriculture, accounting, agricultural machinery, husbandry, and water conservancy human resources.	After working for a while, they know what they need to learn. After training they improved their professional skills.
X farm	We have training on general introduction of the farm, agricultural technique, financing, animal husbandry and comprehensive knowledge. We support college students to get agricultural or accounting undergraduate degree.	After training they improved their professional skills.
Y farm	We have training on management and agroeconomic management to cultivate young cadres. Provide college students general introduction of the farm, knowledge of agriculture, forest, and agricultural machinery. Provide opportunity to get master degree of agricultural extension.	After training we have reserve cadres.

Source: Author's interview

(3) Salary and job-leaving

All the three farms provide five insurances (include pensions, healthcare, unemployment, work injury, and maternity insurance), housing fund, food subsidy and legal holidays, which are almost the same with state-owned enterprises. This system provides insurance for their engaging in agriculture. B farm provides apartments while X and Y farms provide commuting subsidy. Furthermore, they all have professional promotion.

Table 20 shows current years have seen few people left jobs and these state-owned farms take Beidahuang spirit as their corporate culture and they have their local connotation. Besides, B farm emphasizes the intangible influence; X farm conveys culture mainly through written materials; Y farm attaches importance on the tangible education, such as the exhibition of agricultural machines.

Table 20 Job-leaving and Corporate Culture

	B farm	X farm	Y farm
Job-leaving and reasons	We don't fire employees. Some people left because of treatment.	People left before, but now a lot of people want to go back because of good treatment and development.	We don't fire employees. Some people left because their couples had better choices.
Corporate culture	The spirit of Baoquanling, and the spirit of Beidahuang.	We have good culture, and emphasize on relationship. We have the culture of army, sent-down youths, and youth who support to build frontier regions.	The culture of Beidahuang: good faith, pragmatic, innovative, and excellent. We also have the culture of Youyi.
The method of conveying culture	Be influenced by what one hears or sees. Old ones take care of new ones.	By meetings, sending pamphlets, and organizing employees to study corporate culture.	Through reports, meetings, educations, sightseeing and travels.
Atmosphere of working	Pretty good. They are plain and kindness.	Great. We are harmonious and have no questions on communication.	Great. Harmonious. They are active.
Advantage of SOEs	We have policy support.	The advantage can only be seen by outsiders.	With big land and centralized management, it's convenient to implement policies.
Disadvantage of SOEs	Competitiveness is weaker than private corporations.	The disadvantage can only be seen by outsiders.	The power is too centralized. We need strengthen management and innovation.

Source: Author's interview

The most impressive characteristic of state-owned farms is the corporate culture, "Beidahuang spirit", which is from the history of the development of state-owned farms. Beidahuang spirit may influence people a lot before, but now it is important to keep up with the knowledge economy to refresh the spirit to attract people.

Although they have good atmosphere on farms, they should have more awareness of competitiveness and innovation for their development.

Evaluation on HRM performance

For analyzing the emphasis in their answers, we put all their words of the interview in the software of text analyzer and get their frequencies of keywords (Table 21). From their answers in Table 22, it shows that they understand their duties, give high evaluation on their work and point out their weakness as well. From the key words by analyzing, B farm emphasizes practice, and we conclude it as the "learn by doing" type. X farm emphasizes support and culture, and we conclude it as the "harmonization type". Y farm emphasizes cadres, and we conclude it as the "development type".

Table 21 The Frequencies of Keywords on Each Farm of the Interview

B farm	**Used percent (%)**	**X farm**	**Used percent (%)**	**Y farm**	**Used percent (%)**
Practice	1.6	Support	1.37	Machine	1.16
Training	1.6	Training	0.91	Training	1.16
Profession	1.07	Profession	0.91	Cadres	1.16
Spirit	1.07	Culture	0.91	Culture	1.16
-	-	Outsiders	0.91	-	-

Source: calculated by text analyzer

Table 22 Evaluation on Human Resource Department and Key Points of HRM Policy

	B farm	X farm	Y farm
How to evaluate the work of your apartment	We provide information for leaders. We are very young. We provide energy and vitality by putting young people in every department.	Great. Our department has been selected as the advanced section every year. We provide support to human resources and security for achieving aims. We are fair, decent and treat human resources fairly.	We perform our duties. We attach importance to human resources, and give platform for college students.
Weakness and improvement method	We don't have too much experience.	The professional skills of employees need further improvement by various kinds of trainings.	We need to attract more people with professional skills in management, economy, trading and other specific aspects.
Keywords by analyzing	Practice, training, profession, spirit	Support, training, profession, culture, outsiders	Machinery, training, cadres, culture
Farm Type	Learn by doing type	Harmonization type	Development type

Source: Author's interview and calculated results.

3.6.5 Questionnaire on employees in X and Y farms

In order to explore the effect of HRM by employees, this paper conducts the "questionnaire on the job satisfaction of employees on farms" (see Appendix 4 in English and Appendix 5 in Chinese) on X and Y farms and the results are shown in Table 23 and 24.

About the top three satisfied items by orders, Table 23 (left part) shows that on X farm, employees feel satisfied about the content of work, management of farm and training and learning by orders. On Y farm (see left part on Table 24), employees feel mostly satisfied about the promotion opportunity. The management of farm, working equipment and promotion opportunity are second satisfied items. About the third satisfied item, most of them choose the human relationship. By comparing the answers from two farms, employees from X farm get satisfaction from the content of work, while employees from Y farm get satisfaction from the promotion opportunity. It may be related with their different employees' attributes. Employees on

X farm may be good at their routine work by their accumulated experience on farming, while employees on Y farm may have more opportunity for improving management and making innovation.

Regarding to the top three items to be improved by orders, Table 23 (right part) shows that on X farm employees hope to improve working equipment, salary and promotion opportunity for the second and regular holidays for the third. On Y farm (see right part on Table 24), employees want to improve salary and training and learning for the first, regular working hours for the second, management of farm for the third. It shows that employees from X farm want to improve working equipment for the first, while employees on Y farm are satisfied their working equipment. Y farm also have better promotion opportunity than X farm. X farm may have better training and learning than Y farm.

Both employees from X and Y are satisfied with the management of farm, but they both want to improve their salary, the regular working hours and holidays. It shows that employees on farms are dissatisfied with their salary and working hours. For X farm, the improvement of their working equipment may enhance their motivation, while on Y farm training and learning may give more satisfaction for their work. In this stage, the material HRM is important, while the promotion opportunity and learning opportunity are also needed through HRM.

Table 23 Responses' Ratio of the Top Three Satisfied Items by Orders and the Top Three Items to be Improved by Orders by Employees on X Farm

	The top three satisfied items by orders			The top three items to be improved by orders		
	First	Second	Third	First	Second	Third
A. the content of work	67.74%	6.45%	3.23%	0.00%	0.00%	0.00%
B. management of farm	12.90%	38.71%	12.90%	12.90%	0.00%	0.00%
C. working equipment	0.00%	9.68%	6.45%	32.26%	3.23%	6.45%
D. salary	12.90%	9.68%	6.45%	3.23%	19.35%	3.23%
E. bonus and subsidy	0.00%	3.23%	0.00%	19.35%	9.68%	16.13%
F. training and learning	0.00%	22.58%	32.26%	6.45%	0.00%	12.90%
G. promotion opportunity	0.00%	0.00%	16.13%	0.00%	19.35%	16.13%
H. regular working hours	0.00%	0.00%	6.45%	0.00%	9.68%	9.68%
I. regular holidays	0.00%	0.00%	0.00%	19.35%	12.90%	19.35%
J. human relationship	0.00%	3.23%	6.45%	0.00%	9.68%	0.00%
K. atmosphere of culture	6.45%	6.45%	9.68%	3.23%	12.90%	9.68%
L. others	0.00%	0.00%	0.00%	0.00%	0.00%	3.23%
No answer	0.00%	0.00%	0.00%	3.23%	3.23%	3.23%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Notes: (1) Questionnaire on X farm are distributed by print-out paper to one agricultural technician or agricultural machinery technician in 31 operating areas (the total number of operating areas is 37 in X farm) by the interviewed manger. The questionnaire were distributed on 23rd, September 2012, and taken back on 27th, September 2012. The number of effective answer to the questionnaire is 31.

(2) The attributes of respondents have some similarities, such as graduated from junior colleges, 20-39 years old, born in X farm in Heilongjiang province, half of them have agriculture-related major and half have non-agricultural-related major, and have agricultural experience because 65% of them are farm households.

(3) The highest ratio is marked.

Table 24 Responses' Ratio of the Top Three Satisfied Items by Orders and the Top Three Items to be Improved by Orders by Employees on Y Farm

	The top three satisfied items by orders			The top three items to be improved by orders		
	First	Second	Third	First	Second	Third
A. the content of work	8.33%	0.00%	0.00%	8.33%	0.00%	0.00%
B. management of farm	0.00%	25.00%	0.00%	0.00%	8.33%	41.67%
C. working equipment	16.67%	25.00%	16.67%	0.00%	0.00%	8.33%
D. salary	0.00%	0.00%	0.00%	25.00%	0.00%	16.67%
E. bonus and subsidy	0.00%	0.00%	0.00%	16.67%	25.00%	16.67%
F. training and learning	0.00%	0.00%	0.00%	25.00%	8.33%	0.00%
G. promotion opportunity	41.67%	25.00%	8.33%	0.00%	0.00%	0.00%
H. regular working hours	0.00%	8.33%	0.00%	8.33%	33.33%	8.33%
I. regular holidays	0.00%	0.00%	0.00%	16.67%	25.00%	8.33%
J. human relationship	16.67%	16.67%	75.00%	0.00%	0.00%	0.00%
K. atmosphere of culture	16.67%	0.00%	0.00%	0.00%	0.00%	0.00%
L. others	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
No answer	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Notes: (1) Questionnaire on Y farm are distributed by email (by the interviewed manger) to 15 undergraduates employed through the Baiqianwan Talents Project in 11 administrations, including the posts of agricultural assistant, agricultural machinery assistant, and farm assistant. The questionnaire were distributed on 12th, September 2012, and taken back on 11th, October 2012. The number of effective answer to the questionnaire is 12.

(2) The attributes of respondents have some similarities, such as graduated from universities, 20-29 years old, born in Heilongjiang province, have agriculture related major, and have agricultural experience because 42% of them are from farm households, 33% of them have relatives or friends of farm households.

(3) The highest ratio is marked.

3.6.6 Building learning organization

Farms can have human resources through two ways: the first is cultivating existing employees and the second is introducing new employees. In Y farm, the existing employees have relative low level of education, mostly under the degree of junior college and technical secondary school.

[15] Through the "Baiqianwan talents project", farm gets 130 undergraduate students since 2009. Through some concentrative training, they may improve their knowledge. From the perspective of knowledge, we will try to find how to improve their knowledge creation.

By taking one existing employee and one undergraduate student as an example, the existing employee may have more tacit knowledge (from agricultural experience and long time working on farm), while the undergraduate student may have more explicit knowledge (from the learning in school and book, but have few experience). In Figure 3 in Chapter 2, if they could have the exchange of tacit knowledge, they should work together or learn from each other (such as being apprentice). Through the interacting ba (such as by talking to each other), they could turn their tacit knowledge into explicit knowledge. Then, by combination of explicit knowledge of groups, the explicit knowledge may become the tacit knowledge of the whole organization. Then, in the exercising ba, individuals learn from the tacit knowledge from the organization through learning by doing.

Furthermore, it is clarified by interview that the practical ability of undergraduate students is not good, the communication between existing workers and undergraduate students are considered to be important not only for improving their ability but also for creating new knowledge. For making state-owned farms be a learning organization, the following seven points are thought to be the keys, having the same vision; learn by team; get rid of fixed ideas; self achievement; thinking through the system; disclosure and knowledge management; and the leadership of facilitator (Takanashi, 2001, [84]).

Besides, the corporate culture of "Beidahuang spirit" should also help to establish the learning and innovation environment. With the institutions and systems together, they may contribute to the social capital. The social capital may help the farm to the sustainable development and competitiveness as well as improve the regional economy.

[15] Source: http://bdh.chinafarm.com.cn/article.php/74549

3.7 Conclusions

This chapter shows that both the quantity and the quality of agricultural human resources in China should be improved. In Heilongjiang province, talents for regional development are extremely needed. It also shows the need for effective HRM and the distribution of human capital investment among sectors and research fields.

The history and characteristics of agricultural reclamation and state-owned farms in Heilongjiang are also presented. It shows that state-owned enterprises and reclamation still account for a great part in agricultural corporations in China. Although the net income in reclamation is higher than in the rural areas, it still has distance with the urban residents. From the history of state-owned farms in Heilongjiang reclamation area, it can be seen that state-owned farms have the functions not only in agricultural production, but also in contributing to the society and frontiers. However, although farms began to have profit after financial responsibility, the burden for taking the responsibility of government has hindered the development somehow. But they have the advantage of facing the market as well as big scale for developing modern agriculture.

The technical efficiency of farms in Heilongjiang province has been calculated for understanding their performance from the economic perspective. It shows that the three farms for case study have lower efficiency than others. Although the method may have problem of ignoring the quality of development, the results show that the increase of scale should be cautioned.

Finally, the characteristics of HRM of three farms can be concluded as follows:

First, providing good treatment attracts agricultural human resources. Farms provide household allowance (anjiafei) even titles to attract human resources, especially when investigated farms are in frontier regions.

Second, providing professional training and cultivation on practical ability helps the development of agricultural human resources. Investigated farms provide practice and experience opportunity for college students, and create a good environment for the agricultural human

resources.

Third, local features and corporate culture have effect on retaining agricultural human resources. Local people of farms tend not to leave their jobs, but a closed system will lack creativity and competitiveness. Therefore, it is necessary to develop corporate culture to attract and retain human resources not only inside but also outside.

Forth, from the relationship of HRM strategy and HRM policies and practices, state-owned farms have the advantage of policy support and centralized management to facilitate the implement of projects. For example, they can promote "BTP" in all the state-owned farms at the same time. But they also have the disadvantages of too centralized power. Therefore, attention should be paid on these characters in the process of HRM to improve the management performance. At the same time, every farm should have their own scientific management method based on the practice of management and the advantage of state-owned farms.

For the performance of HRM, the problems of HRM seem to be improved somehow from our case study by setting new strategy and introducing "Baiqianwan Talents Projects", but the consciousness of the importance of HRM strategy, the details of human resource plan, training, the corporate culture and the awareness of competitiveness and innovation in farm should also be emphasized. Furthermore, the long-term development and plan for human resources, the functions they will play and the environment they face on farms should also be considered carefully.

Furthermore, farms should also pay attention on the R&D and the extension activities. It is believed that the increase in productivity resulted from the rapid dissemination of technologies among the farming sector in Japan. Ratnayake (2009, [85]) concluded five important lessons that developing countries can learn from the Japanese experience of extension activities[16]: "first, the

[16] The extension activities of agricultural sector in Japan are to contact with farmers and support the management of farming techniques by specialized staff from prefectural and city governments. Specifically, it means to provide technique support for the raise of agricultural productivity and the quality of agricultural products, to provide support for the effective and stable agricultural management, and support for the

government policy towards agricultural administration and education; second, the adaptation to local requirements of imported modern technologies; third, appointing of knowledgeable people as extension officials; fourth, the unification of education, research experiments and extension; and fifth, the peoples' contribution, social values and responsibility".

improvement of rural life. Now, there are about 8,000 extension workers in the extension centers of Japan. (source: http://www.jadea.org/fukyujigyou/fukyujigyou.html)

Recently, beyond the extension of farming techniques, the roles of extension activities in agriculture are also to support new entrants and agricultural corporations, provide directions for young famers, and promote the consciousness reform of women in rural areas.(http://www.maff.go.jp/j/press/seisan/gizyutu/pdf/110824-04.pdf)

The Meiji government modernized agricultural technology through the combination of "University Extension" and a "Top-down Extension Service", and after WWII, Japan disseminates its new technologies through the unification of "Education, Experiment and Extension" and through close links with the farming community (Ratnayake, 2009, [85]).

Chapter 4 Empirical Analysis on the HRM in Japan: Focusing on the Attitude of Employed Japanese Farmers[17]

4.1 Agricultural human resources in Japan

According to the definitions from 2010 world census of agriculture and forestry in Japan, the agricultural and forestry management entities include farm households (katei keiei tai) and organizations (soshiki keiei tai). Farm households include commercial farm households（hannbai nouka) and non-commercial farm households (jikyuu nouka) (divided by the scale of cultivated land and the income from selling agricultural products). Among the commercial farm households, household members are called household members engaged in own farming (nougyou jyuugyousya), people mainly engaged in farming (nougyou syuugyou jinnkou), and core persons mainly engaged in farming (kikannteki nougyou jyuugyousya)[18].

Table 25 shows that the quantity of people mainly engaged in farming in 2010 is decreased by 58.6% of that in 1995. The average age is increased from 59.1 in 1995 to 65.8 in 2010. They show the deceasing and aging problems of agricultural human resources in Japan.

[17] Note: “Employed farmers” in this study means regular employees in agricultural corporations. And we use “employed farmers” to imply that they choose farming as professions.

[18] The definitions are as follows:

Household members engaged in own farming: Household members who are 15 years old or more and were engaged in farming during the year prior to the survey period.

People mainly engaged in farming: Among household members mainly engaged in farming, they are household members who are mainly engaged in own farming between those who engaged only in own farming and both of own farming and other jobs.

Core persons mainly engaged in farming: Persons who are engaged in own farming as usual work among people mainly engaged in farming.

Table 25 The Quantity and Average Age of People Mainly Engaged in Farming on Several Years (commercial farm households)

Units: million persons and year-old

	1995	**2000**	**2005**	**2010**
Quantity	4.14	3.89	3.35	2.61
Average age	59.1	61.1	63.2	65.8

Source: Statistics on several years of Census of Agriculture and Forestry in Japan[19]

Table 26 The Situation of New Farmers in Japan

Unit: thousand persons

Farmers/year	90	95	00	01	02	03	04	05	06	07	08	09	10
New farmers	15.7	48.0	77.1	79.5	79.8	80.2	81.1	78.9	81.0	73.5	60.0	66.8	54.6
Self-employed farmers	15.7	48.0	77.1	79.5	79.8	80.2	81.1	78.9	72.4	64.4	49.6	57.4	44.8
New participants	-	-	-	-	-	-	-	-	2.2	1.8	2.0	1.9	1.7
Employed farmers	-	-	-	-	-	-	-	-	6.5	7.3	8.4	7.6	8.0
The ratio of employed farmers among new farmers	-	-	-	-	-	-	-	-	8.0 %	9.9 %	14.0 %	11.4 %	14.7 %

Notes: Definitions are as follows,

(1) Self-employed farmers: Members of farm households whose living status has changed from "student" to "mainly engaged in own farming" or from "employed in other work" to "mainly engaged in own farming" during the year prior to the survey period.

(2) New participants: Persons who have started farming by managing land and funds on their own.

(3) Employed farmers: Persons engaged in farming that have been hired by corporations (for 7 months and above in a year) during the year prior to the survey period.

Source: The trend of new farmers in Japan, MAFF, "Survey on Trends of Farming Employment," "Survey on Agriculture Structure Dynamism," "Census of Agriculture and Forestry," and "Survey on Newcomers in agriculture". [20]

[19]Source:http://www.e-stat.go.jp/SG1/estat/GL08020103.do?_toGL08020103_&tclassID=000001047487&cycleCode=0&requestSender=search

[20] http://www.maff.go.jp/j/new_farmer/pdf/syuunou22.pdf

Therefore, the need for attracting new farmers becomes important for Japanese agriculture. In 2010, there are 54,600 new farmers (people newly engaged in farming). Although the self-employed farmers are the majority, there is the trend of the increasing percentage of employed farmers from 2006 to 2010 (see Table 26), and many young people are among those employed by agricultural corporations (Census of Agriculture and Forestry, 2010)[21]. It is for this reason that policy measures such as the "Farm Employment Project" ("Nou-no Koyo Jigyo") were initiated in fiscal 2008 in Japan; the aim of this project was to promote employment by agricultural corporations and secure and train farmers. However, along with implementing measures in support of young farmers, it has become an urgent issue to understand the attitude of employees, what influences these attitudes, and how to bring about improvement in order to increase the effectiveness of associated policies. Therefore, in this paper, we investigate the attitude of employed Japanese farmers from the viewpoint of HRM.

Agricultural corporations in Japan

Agricultural corporations are important receivers for employment among new farmers. The agricultural corporation[22] is the generic name of a corporation for managing agriculture. According to MAFF (Ministry of Agriculture, Forestry and Fisheries), agricultural corporations have the advantages of (1) improvement in the ability of management, (2) increase trust from financial institutions, (3) increase of expansion possibility, and (4) securing the welfare of human resources and the succession of management.

Table 27 shows the structure of management entities by type of organization. Incorporated

[21] Source: http://www.maff.go.jp/e/annual_report/2010/pdf/e_2.pdf

[22] According to whether the corporation has the right of agricultural land or not, it divides into "agricultural production corporation" and "other agricultural corporation". "Agricultural Production Corporation" is the corporation that has agricultural land for agricultural management, including Stock Company, Stock Company (special limited liability company), Agricultural Cooperative Corporation (the corporation that manage agriculture, which is also called No.2 Corporation), Partnership Corporation and Limited Partnership Company.

Management Entities are 21,627, which are increased by 13.0% than that in 2005.

Table 27 Number of Management Entities by Type of Organization

Agriculture Management Entities							
	Incorporated Management Entities					Local Authorities / Property Wards	Non-incorporated Management Entities
		Agricultural Producer's Cooperative Corporations	Companies	Cooperatives and Associations	Other Corporations		
1,679,084	21,627	4,049	12,984	4,069	525	337	1,657,120

Source: Report on results of 2010 World Census of Agriculture and Forestry in Japan[23]

Small and Medium Enterprises (SMEs) in Japan

For understanding more deeply and objectively about the situation of HRM in agricultural corporations in Japan, we summarize the characteristics of employment in SMEs as follows (from the 2009 White Paper on SMEs in Japan-English version[24]):

(1) About employment, it shows that there is the employment mismatch in SMEs ("appearing with a surplus in the occupation of "general office work" on one hand and a lack of personnel in specialist occupations such as engineering, and medical and welfare-related on the other", P162)

(2) For new graduates, "because of the sense of security as a place of employment (low risk of bankruptcy and other dangers" is the common reason for they want to work in a large enterprise. (P186)

(3) About working hours, in 2007, the average number of hours per month for permanent employees in SMEs was 184.3 hours (175.3 hours in large enterprises) while for

[23] http://www.e-stat.go.jp/SG1/estat/ListE.do?bid=000001037762&cycode=0

[24] http://www.chusho.meti.go.jp/pamflet/hakusyo/h21/h21_1/2009hakusho_eng.pdf

non-permanent employees it was 113.3 hours (116.2 hours in large enterprises). (P172)

(4) For wages, the average for SMEs in 2007 was 1,618 yen per hour for permanent employees (2,187 yen for large enterprises) and 1,067 yen for non-permanent employees (1,154 yen for large enterprises). But the distribution of industry should be considered. (P173)

(5) About turnover rate, according to MIC's Employment Status Survey, 11.8% of permanent employees in large enterprises, and 13.3% of permanent employees in SMEs feel they "want to change jobs". "Low income" is the most common reason by permanent employees who want to change jobs in SMEs, while "the time and physical burden is great" is the most reason for permanent employees in large enterprises. Besides, the turnover rate is 19.8% in large enterprises and 17.9% in SMEs by non-permanent employees. The most common reasons by non-permanent employees are "low income" and "because it is a temporary job". (P177)

(6) About job satisfaction, on average, the number of permanent employees in SMEs feeling satisfied with their work is slightly below that of permanent employees in large enterprises. (see Table 28) (P212)

(7) About the source of job satisfaction by permanent employees, the most common reply was "wage levels (wage increases)", followed by "internal evaluation towards one's work" and a "sense of achievement after completing work". (P214)

Table 28 Rate of Job Satisfaction by Permanent Employees in SMEs and Large Enterprises

	Fully satisfied	**Very satisfied**	**Neither**	**Not very satisfied**	**Barely satisfied**
SMEs	5.9%	35.5%	33.2%	15.2%	10.2%
Large enterprises	6.6%	38.2%	30.9%	16.2%	8.2%

Note: The result excludes "no responses".

Source: from the 2009 White Paper on SMEs in Japan (English version)[25], P213

[25] http://www.chusho.meti.go.jp/pamflet/hakusyo/h21/h21_1/2009hakusho_eng.pdf

(8) About the communication between managers and employees, the larger the size of company, the more obstacles they face because “it is difficult for the managers to communicate actively with each employee due to the large number of employees”. Besides, with 20 or less employees, about 70% of the companies replied that they have “no particular obstacles”. (P217)

(9) In order to realize active communication, most companies chose “have occasions (morning meetings and other times) to explain the management strategy and business plan to employees”, they also “have introduced a system for employees to make proposals” and “have opportunities for each individual to hold direct interviews with the president and other top management”. About the gap of communication between managers and employees, it shows that employees didn’t feel the same positive results of having communication as managers. (P219)

(10) For the measures taken by SMEs to train employees, “Systematic OJT”, “Off-JT” and “Support for self-enlightenment” are common measures. Bigger size of companies tended to have more “Job rotation”. (P220)

The results show that in SMEs it is important to design favorable wage systems as well as develop leadership to improve internal evaluation of employees. Furthermore, it is also important to enhance job satisfaction and motivation through communication between managers and employees and through conducting employee development.

4.2 Analytical framework

Existing studies mainly focus on one side of the relationship between employee and HRM policies and practices. Employee attitudes are affected not only by their attributes, but also by the attributes of corporations as well as HRM policies and practices. Therefore, in this study, we used

data from employees and managers and SEM in order to clarify the causal relationship among multiple dependent variables as well as factors.

Figure 9 depicts the analytical framework of the study, which is based on the assumption that the attributes of a corporation and those of an employee may affect HRM policies and practices as well as the attitude of the employee. Although employee attitudes are also correlated with the job-leaving rate and annual sales of corporations, they are generally not directly linked to the job-leaving rate; moreover, occasionally, its positive or negative impact on annual sales is not visible. This paper focuses on the analysis of the left side of the framework presented in Figure 9.

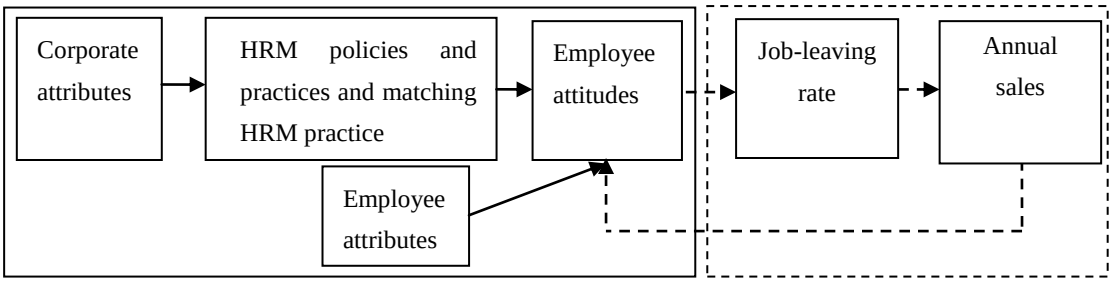

Figure 9 Analytical Framework for Case Study in Japan

Data used for this study have been obtained from the "Questionnaire Survey on Employment at Agricultural Corporations, etc." conducted by the National Chamber of Agriculture of Japan in February 2010 in nine prefectures. The questionnaire was collected in October 2011 among 550 employees and 291 managers. Among the 550 employees, 259 employees from the prefectures of Chiba, Tochigi, Okayama, and Hiroshima had corresponding answers from managers in the same agricultural corporations. The data used for analysis in this study is 117 employee-manager pairings with appropriate responses.

4.3 Analytical results

4.3.1 Variables for analysis

This section presents a description of the variables for analysis from the result of the questionnaire, the analysis of the distribution, and the features of HRM policies and practices.

1) Variables of agricultural corporate attributes

Variables of agricultural corporate attributes are business form and the number of regular employees. It is evident from Table 29 that more than half of agricultural corporations are stock companies (special limited liability companies). The average number of employees in each corporation is approximately 11.7 and most are small-scale corporations with less than 10 regular employees.

Table 29 Variables of Business Form and the Number of Regular Employees (by managers)

Business form	**Ratio (%)**	**Variable**	**The number of regular employees**	**Ratio (%)**
Stock company	20.5	3	0-9	62.4
Stock company (special limited liability company)	61.5	3	10-19	23.9
Agricultural cooperative corporation	15.4	2	20-29	4.3
Sole proprietorship	2.6	1	30-39	0.9
-	-	-	40-49	0.0
-	-	-	50-59	8.5

Note: The variable of the number of regular employees is scored by the actual number of people.

2) Variables of HRM policies and practices

Salary form (for regular employees), vacation days, and fixed salary regulation and insurance and allowance are three factors in the HRM reward systems. The variable of matching HRM practice is also an outcome of HRM. In this paper, we chose these variables as HRM policies and practices as they affect employee attitudes.

Table 30 Variables of Salary Form and Vacation Days (by managers)

Salary form (for regular employees)	**Ratio (%)**	**Variable**	**Vacation days (every month)**	**Ratio (%)**
Hourly wage payment	6.0	1	More than 8 days (two days a week)	9.4
Daily wage payment	10.3	2	7 days	8.5
Monthly salary payment	83.8	3	6 days	32.5
Annual salary payment	0.0	4	5 days	24.8
According to people and others	0.0	0	Less than 4 days	24.8

Note: The variable of vacation days is scored by the actual number of vacation days in a month.

It is evident from Table 30 that approximately 84% of agricultural corporations implement a monthly salary payment system. Each corporation has at least four vacation days every month, and approximately one-third of the corporations have six vacation days in a month. Among the 117 agricultural corporations that we analyzed, almost every corporation provides its employees with “workers’ accident compensation insurance” and “unemployment insurance.” Further, more than 75% of corporations provide “commutation allowance” and “employment regulation” (Table 31).

Table 31 Variables of Fixed Salary Regulation and Insurance and Allowance (by managers)

Fixed salary regulation and insurance and allowance	**Ratio (%)**	**Fixed salary regulation and insurance and allowance**	**Ratio (%)**
Employment regulation	75.2	Accident insurance by private sector	52.1
Salary regulation	59.0	Bonus	45.3
Retirement plan	31.6	Commutation allowance	80.3
Company housing system	24.8	Housing allowance	35.0
Regular pay raise system	39.3	Sustenance (family) allowance	25.6
Congratulation-or -condolence money system	41.9	Meal allowance	1.7
Workers' accident compensation insurance	97.4	Overtime money	37.6
Unemployment insurance	96.6	Fixed overtime money	17.1
Health insurance	65.0	Annual paid holidays	41.9
Employees' pension insurance	67.5	Other vacations	8.6

Notes: (1) The variable of fixed salary regulation and insurance and allowance is scored by its actual total number of items.

(2) The question of fixed salary regulation and insurance and allowance is a multiple-choice question.

Table 32 The Variable of Matching HRM Practice (by employees and managers)

Hope for future career by employee	**Consideration of employee by managers**	**Ratio (%)**	**Variable**
Engage in the same work as the presently are and in the same corporation	Just be employee	4.3	1
Become a manager in the same corporation	Make employee a manager	5.1	1
	Make employee business partners	0.0	1
	Make employee the successor of business	0.9	1
Become an independent farm manager	Encourage employee to be an independent farm manager	2.6	1
Others		87.2	0

In this study, the variable of matching HRM practice is based on the question regarding the future career of an employee, which is answered by managers and employees separately (Table 32). When the answers are corresponding, the variable is one. It is evident from the ratio that there is a great mismatch between employees and managers. Only approximately 5% of the pairs

have the common consciousness of becoming managers.

3) Variables of employee attributes

Table 33 Variables of Employee Attributes (by employees)

Sex	**Ratio (%)**	**Variable**	**Agricultural experience**	**Ratio (%)**	**Variable**
Male	51.3	1	Have	28.2	1
Female	48.7	2	Don't have	71.8	0
Final degree	**Ratio (%)**	**Variable**	**Age**	**Number of cases**	**Ratio (%)**
Middle school	10.3	1	10-19	0	0.0
High school	41.9	2	20-29	30	25.6
Junior college and others	29.1	3	30-39	32	27.4
College	17.9	4	40-49	19	16.2
Graduate school	0.9	5	50-59	28	23.9
Agricultural education	**Ratio (%)**	**Variable**	60 above	8	6.8
Have	60.7	1			
Don't have	39.3	0			

Notes: (1) The variable of age is scored by the actual number of age.

(2) "Agricultural education" is classified by whether the final degree is agriculture or not, which includes agricultural high school, agricultural training institutes (nogyo-daigakko), and faculty of agriculture in universities.

Variables of employee attributes are age, sex, education, agricultural education, and agricultural experience. The personal background of an employee influences the employee's attitude toward work. In particular, agricultural education and agricultural experience may contribute to the choice of being employee in an agricultural corporation. It is evident from the result presented in Table 33 that the proportion of men and women is almost the same. Approximately 90% of employed farmers have a higher degree than a high school degree. Further, 60% of employees have an agricultural education but approximately 70% of them have no agricultural experience. Among those who have agricultural experience, the most frequent answer regarding the kind of experience is, "I am from an agricultural family." Moreover, the average age of employed

farmers is approximately 39.99 years and the average employment period is approximately six years.

4) Variables of employee attitudes

Variables of employee attitudes are satisfaction from work, a commitment toward the organization, and a commitment toward a career. Job satisfaction is a self-consideration with regard to both the job itself and the environment of the job. Commitment implies that people do things or promise to do so with the motivation of a reward or special feeling such as attachment, loyalty, or sense of responsibility. When the commitment refers specially to work, it becomes the concept of work commitment. Work commitment can be divided into organizational commitment, career commitment, job participation, ethics of labor, and so on (Watanabe, 2008, [86]). Here, commitment is considered to entail organizational commitment, which is a willingness to remain in a particular organization, and career commitment, which is a willingness to work in the agricultural industry. The three classifications with regard to employee attitudes include different levels of working sense in an agricultural corporation, for the employee (himself or herself), the organization, and the agriculture industry. Therefore, by observing these three, employee attitudes become evident.

Table 34 Commitment Variables (by employees)

Hope for future career	**Ratio (%)**	**Variable of Organizational commitment**	**Variable of Career commitment**
Engage in the same work as they presently are and in the same corporation	52.1	1	1
Become a manager in the same corporation	8.5	1	2
Become an independent farm manager	12.0	0	2
Work for other farmers	2.6	0	1
Work in non-agricultural field	10.3	0	0
Didn’t consider it	14.5	0	0
Average point		0.61	0.97

Variables of commitment are scored by answers given by employees to the question of hope for a future career. Table 34 presents the commitment condition of employed farmers. Approximately half of the employed farmers tend to continue engaging in the same work as they presently are and in the same corporation. Moreover, there are also diverse choices for employed farmers, such as to be an independent farm manager or to become a manager in an agricultural corporation.

Employees' job satisfaction is a crucial factor, which is usually used as an indicator of employee attitudes. Table 35 shows that more than half of employed farmers are satisfied with their current employment. However, there are still numerous "no comment" answers, which may represent some dissatisfaction.

Table 35 Degree of Job Satisfaction (by employees)

Degree of job satisfaction	**Ratio (%)**	**Variable**
Very dissatisfied	2.6	1
Dissatisfied	6.8	2
No comment	39.3	3
Satisfied	41.0	4
Very satisfied	10.3	5

4.3.2 Analytical result of the casual relationship in the formation of employee attitude

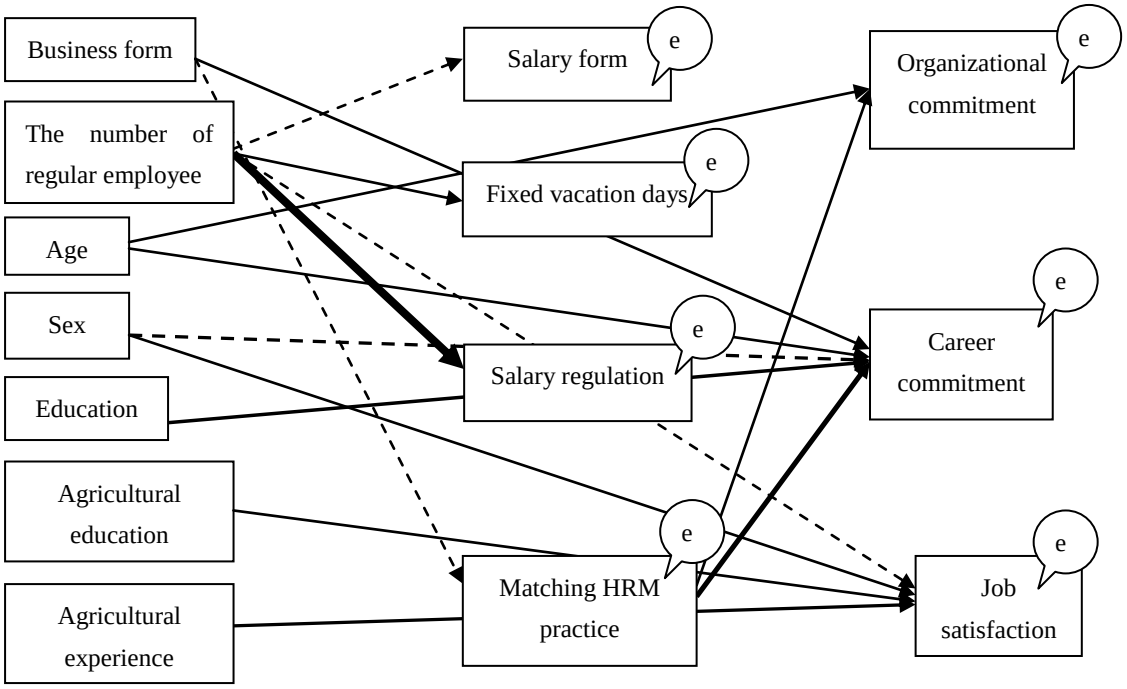

Figure 10 Analytical Results of the Causal Relationships in the Formation of Employee

Notes: (1) The lines indicate as follows: black line=positive effect, black dashed line=negative effect.

(2) The thickness of a line expresses the strength of the relation.

Through covariance structure analysis by using excel GM 1.71 (Kojima, 2003, [87]), the result is exported by path Figure (Figure 10 and Table 36). At the level of causal sequence, variables of corporate attributes and employee attributes are one, variables of HRM policies and practices and matching HRM practices are two, and variables of employee attitudes are three.

With respect to the goodness of fit of the model, typical indicators have the following values: Goodness of Fit Index (GFI) = 0.967, Adjusted Goodness of Fit Index (AGFI) = 0.829, Standardized Root Mean Square Residual (SRMR) = 0.044, Root Mean Square Error of Approximation (RMSEA) = 0.0614, Normed Fit Index (NFI) = 0.885; thus, the result is good.

From the result, the following factors and processes can be said to affect employee attitudes:

Table 36 Path Coefficients, P-value, Indirect Effects and Comprehensive Effects

Variable		Path coefficients	P-value	Indirect effects	Comprehensive effects
the number of regular employee	salary form	-0.145	0.113	0.000	-0.145
the number of regular employee	fixed vacation days	0.145	0.114	0.000	0.145
the number of regular employee	salary regulation	0.611	0.000	0.000	0.611
business form	matching HRM practice	-0.110	0.232	0.000	-0.110
age	organizational commitment	0.142	0.163	0.000	0.142
matching HRM practice	organizational commitment	0.152	0.114	0.000	0.152
business form	career commitment	0.163	0.045	-0.052	0.111
age	career commitment	0.105	0.227	0.000	0.105
sex	career commitment	-0.250	0.005	0.000	-0.250
education	career commitment	0.264	0.003	0.000	0.264
matching HRM practice	career commitment	0.389	0.000	0.000	0.389
the number of regular employee	job satisfaction	-0.128	0.270	0.036	-0.092
sex	job satisfaction	0.168	0.092	0.000	0.168
agricultural education	job satisfaction	0.167	0.072	0.000	0.167
agricultural experience	job satisfaction	0.246	0.010	0.000	0.246

First, HRM policies such as salary form and vacation days do not significantly influence employee attitudes. However, organizational commitment is an important variable; as pointed out by Meyer and Smith (2000, [22]), “Commitment might be influenced more by the message that HRM practices convey to employees than by the practices themselves.”

Second, matching HRM practices, which mean that both employee and managers have the

same considerations regarding the future of the employee, significantly and positively affect the attitude of the employee, particularly the commitment toward farming as a profession.

Third, the educational attribute has a positive influence on career commitment, but agricultural education seldom influences career commitment. This means that current agricultural education at the undergraduate level can barely impart professionalism to employed farmers. However, the results also show that agricultural education contributes to the employee's satisfaction with work.

Fourth, the attributes of employees related to agriculture, particularly the experience of agricultural operation, mostly and positively affect the employee's satisfaction with work. Therefore, it is necessary to include agricultural operation in agricultural education in Japan.

Fifth, the number of regular employees significantly and positively affects salary regulation in HRM policies and practices. This may demonstrate that the bigger the business scale, the more the HRM policies required.

4.4 Conclusions

From the results discussed above, we obtain the following conclusions.

First, compared to the material HRM policies and practices, communication between managers and employees is very important for the retention and attraction of new farmers. The reality is that, although the size of agricultural corporations is small, there is an obvious mismatch between managers and employees. Therefore, cooperation in the organization through effective HRM, such as the establishment of good communication between the employee and manager, may lead to more effective HRM that, in turn, may have a positive impact on business performance and positively influence the attitude of the employee.

Second, the positive effect of the employees' educational level on their career commitment implies that both professional training and education before and after employment can be an important career path for the employee in agricultural corporations.

Third, the results also reveal that employees with agricultural experience tend to have greater job satisfaction. This means that providing agricultural experience to young people at an early stage not only influences them to choose agriculture as a profession but also provides them with greater satisfaction with their job.

Therefore, employees' commitments to their organizations and their agricultural career could be improved through communication with managers and greater job satisfaction could be obtained from appropriate HRM policies and practices. With regard to HRM policies and practices, attention must be paid to agricultural internship or experience before employment and job training, counseling, and consultation after employment.

It must be noted that the analytical process in this study did not include all HRM processes. The strategy and financial performance of agricultural corporations should be examined and a long-term goal of conducting follow-up research on employed farmers must be established. These will be our next research agenda.

Chapter 5 Concluding Remarks and Policy Implications

Based on the aforementioned analytical results, actual situations and characteristics of HRM in agricultural sector in China and Japan are summarized in Table 37.

First of all, for the case of HRM in agricultural sector in China, both the quantity and the quality of agricultural human resources should be improved against the problems of lack of HRM in agricultural corporations and less importance of HRM in agricultural reclamation, especially the ineffectiveness of investment on human capital. In addition, our case studies of three state-owned farms in Heilongjiang reclamation area showed that they have low technical efficiency compared to other farms although they have relative high performance in the social-economic composite index by the method of DEA.

On the other hand, for the case of HRM in Japanese corporations, under the situation of deceasing and aging problems of agricultural human resources, recent years have seen an increase in the number of people who enter farming through employment in agricultural corporations. However, there exist the problems of a high turnover rate and a low job satisfaction of Japanese employed farmers.

For dealing with the situation and resolving the problems in China, a new strategy so called “Baiqianwan Talents Project” has been introduced in Heilongjiang reclamation in order to help them to pay more attention to the importance of human resources and cultivating managers. As a matter of fact, different corporate cultures are being searched in three farms such as “learn by doing”, “harmonization” and “development”. For the case of Japan, policy measures such as “Farm Employment Project” (Nou-no Koyo Jigyo) were initiated from the year of 2008 for promoting employment in agricultural sector.

However, in order to draw policy implications from our empirical analysis both from China and Japan, a framework of long-term relationship between HRM and business performance in agricultural sector is shown in Figure 11 by using the keywords of physical capital, human capital, knowledge capital, social capital, innovation and entrepreneurship in Table 38.

Table 37 Actual situations and characteristics of HRM in agricultural sector in China and Japan

	Case study of agricultural HRM in China	Case study of agricultural HRM in Japan
Actual Conditions	1. Both the quantity and quality of agricultural human resources in China should be improved, and especially the investment on human capital is not effective. 2. In Heilongjiang province, talents for regional development are extremely needed. 3. Agricultural corporations have problems of lacking HRM, and the importance of HRM is also ignored in agricultural reclamation. 4. Three farms have relative low technical efficiency compared to other farms although they have relative high performance in the social-economic composite index by the method of DEA.	1. Under the situation of deceasing and aging problems of agricultural human resources, recent years have seen an increase in the number of people who enter farming through employment in agricultural corporations. 2. There exist the problems of a high turnover rate and a low job satisfaction of Japanese employed farmers. 3. Policy measures such as the "Farm Employment Project" ("Nou-no Koyo Jigyo") were initiated in fiscal 2008 in Japan.
Characteristics of HRM	1. By introducing new strategy so called "Baiqianwan Talents Project", they started to pay more attention to the importance of human resources and cultivating managers. 2. Questionnaire on employees of farms manifests the importance of material HRM and the promotion opportunity as well as learning opportunity. 3. They started to search their own corporate cultures such as "learn by doing", "harmonization" and "development".	1. Communication between managers and employees and appropriate HRM policies and practices may affect employees' attitude was clarified by the method of SEM. 2. Both professional training and education before and after employment can be an important career path for the employee in agricultural corporations. 3. Providing agricultural experience to young people at an early stage not only influences them to choose agriculture as a profession but also provides them with greater satisfaction with their job.

Notes: These two case studies are not for compare, because they are not in the same level of management. Agricultural corporations in Japan are the same as the family farms in China. But since family farms in China have no formal HRM, this paper chose the state-owned farms which are in charge of the family farms. Besides, China and Japan are in the different levels of development, so the problem and emphasis are also different.

It is supposed that an appropriate HRM of a corporation will not only assure the materials of employees but also help the accumulation of knowledge capital which is an essential component of human capital as well as the accumulation of social capital which gives great influences to human capital in return for realizing a sustainable development. Knowledge capital could be obtained through building learning organization, and knowledge creation among people and organizations. Social capital could be obtained by the understanding of their attitude, communication and corporate culture.

For the case of China, it is assumed that they are trying to change their goal of development from the stage of emphasizing on physical capital to the stage of emphasizing on human capital. However, in the processes of agricultural development, more attentions should be paid to the accumulation of knowledge capital as well as social capital for creating innovation and increasing competitiveness under the progress of globalization.

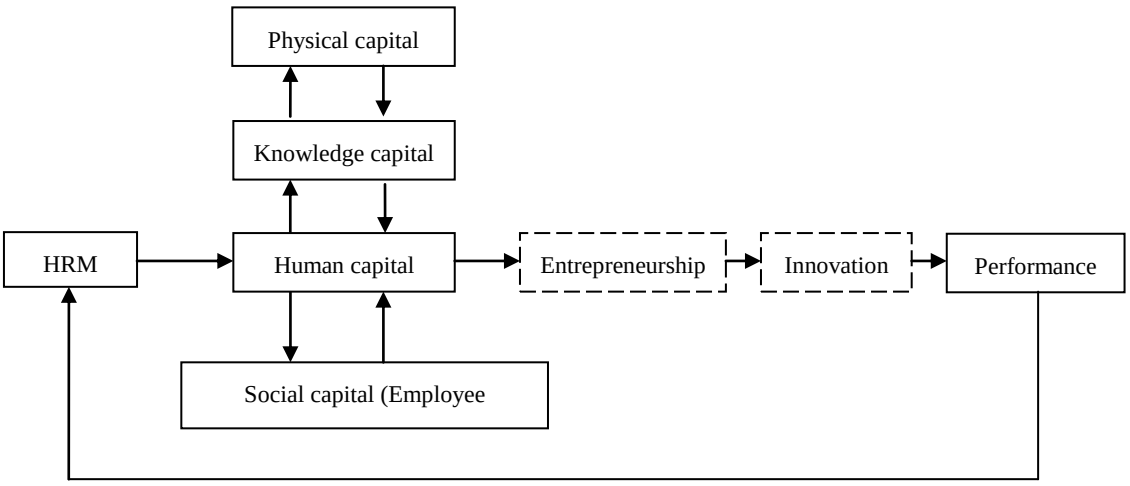

Figure 11 A long-term relationship between HRM and performance

On the other hand, although Japanese economy has passed its initial stage of development for the decades, the agricultural sector in Japan is still facing the problems of accumulation of human capital, knowledge capital as well as social capital. For realizing a sustainable and competitive

agricultural sector, it is important for Japanese government to encourage young farmers to have entrepreneurship and give more opportunities to agricultural corporations to be innovative and competitive.

Table 38 Definitions of keywords

	Definitions
Physical capital	Physical capital refers to a factor of production, such as machinery, buildings, or computers.
Human capital	Human capital refers to the quality part of human resources, such as skill, knowledge, and factors affect human capabilities to do productive work.
Knowledge capital	Knowledge capital is an essential component of human capital.
Social capital	Social capital refers to the norms and networks that enable people to act collectively (Woolcock and Narayan, 2000, [88]). Trust, reciprocity, interpersonal networks, cooperation, and coordination can be viewed as "civil social capital" that conditions the interaction of agents and yields externalities (Collier, 1998, [89]).
Innovation	Shumpeter (1934, [90]) pointed out that innovation is highly relevant for development. For development to occur, it has to produce "new combinations of productive means"- that is innovations. These include the introduction of a new good or a new quality of a good, the introduction of a new method of production, the opening of a new market, the introduction of a new source of supply, or the carrying out of new organization of an industry.
Entrepreneurship	The term put emphasis on the risk and effort of individuals who own and manage a business, and on the innovations that result from their pursuit of economic success. Shumpeter (1934, [90])

However this paper focused on the state-owned farms in China and agricultural corporations in Japan, HRM in other kinds of organization both in the two countries might be better to be included into the investigation. Furthermore, a research reflecting the change of HRM in these organizations might also be better to be undertaken in the paper. These will be our next research agenda.

Appendix

Appendix 1 The history and characteristics of agricultural reclamation areas and state-owned farms in Heilongjiang province

Appendix 1.1 The history of agricultural reclamations in China

Based on developing state-owned farms, agricultural reclamations (Nongken) are established by the nation for developing state-owned mechanized farms, realizing self-reliance, settling down demobilized officers and soldiers, building frontiers and producing strategic products. (Fifty Years of China Agricultural Reclamation, 2000, [91], P11) The history of agricultural reclamation areas are shown as follows:

(1) Start the business (1949-1966)

Begin to start (1949-1956) At the beginning of new China, in order to recover and develop production, settle down demobilized officers and soldiers, government organized soldiers to participate in production. 1950-1954, demobilized soldiers established Xinjiang Production and Construction Group. In 1952, in order to meet the need of native rubber, officers and soldiers established rubber farms and Zhanjiang and Hainan Agricultural Reclamation Bureau. 1954-1956, demobilized railway soldiers established railway soldier's farm bureau on the base of original state-owned farms in northeast. Other provinces and municipalities also developed the agricultural reclamation business.

Rapid development period (1957-1966) During this period, state-owned farms developed rapidly. With officers and soldiers and young people responding to the call for the construction of farm, till 1966, the number of farms increased to 1940.

(2) The winding development period (1967-1978)

During this period, with the call of “educated youth to go to farms, to accept reeducation from poor and lower-middle peasants (pinxiazhongnong)”, about 2 million educated urban youth participated in the construction of state-owned farms. In 1976, state-owned farms reached the maximum of 2,377. Farm workers reached the maximum of 5.14 million in 1978. However, affected by the Cultural Revolution (wenhua dageming), agricultural reclamation areas had a 12-year deficits from 1967 to 1978, and the accumulated deficits were about 3.72 billion yuan. (Fifty Years of China Agricultural Reclamation, 2000, [91], P11)

(3) The reform and opening-up period (after 1979)

The test and exploration period (1979-1984) In 1979, reclamation system began to take reform and exploration in operating model and management system. They changed the single agricultural operating and established the joint enterprises of agriculture, industry and commerce. They implemented family farms of workers, established management system of “ding, bao, jiang” (in production brigades implementing task to a group, responsibility to people, credits by fixed amount, and reward by credits) in production brigades. After 1980, similar to Household Responsibility System in rural areas, farms gave production and business indicators to households, and implemented giving quota to the state, providing expenses by households, and keeping surplus.

The steadily development period (1985-1991) In 1986, reclamation system implemented two-layers system of a large state farm with small family farms.

The deepening period (1992-1998) From 1992 to 2003, both the number of farms and workers had a decline in the state-owned farms (Figure 12). On the other hand, the ratio of gross fixed capital formation in gross domestic product was showing an increasing, but the ratio of total wage in gross domestic product was declining since 1989 (Figure 13). In 1994, with the development of market economy, agricultural reclamation enterprises tried to have modern

enterprise system of "clear property rights, clear rights and responsibilities, separated government and enterprise, and scientific management". In the reform of agricultural operating system, they implemented "take care of two expenses" (take care of production and living expenses by households) and "make four items to households" (make land contract, accounting, profits and loss, and contribution to households). Reclamation system also tried to establish agricultural industrialization, adjust the ownership structure (to develop non state-owned economic development, such as collective economy, individual economy, private economy and stock cooperative system) and improve the social security system gradually.

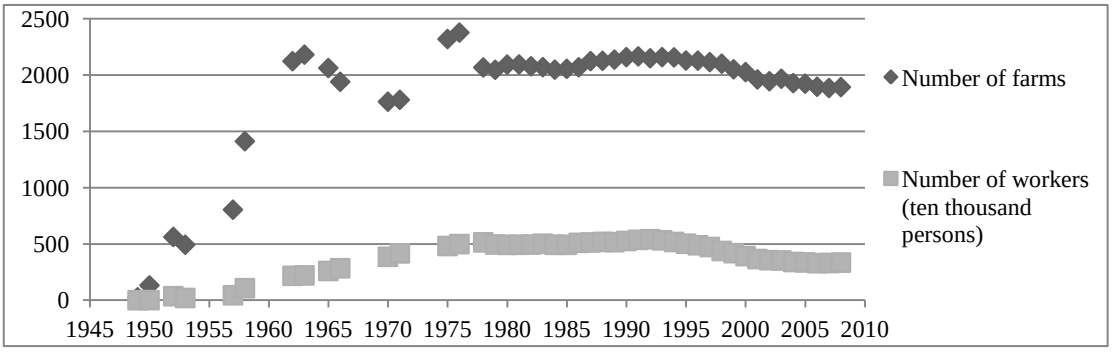

Figure 12 The basic situation of agricultural reclamation in China

Source: made by "Statistic Materials of 60 Years' Agriculture in New China", [92], P61 and "Fifty years of China agricultural reclamation", [91], P119-120 and "China agricultural year book" 2010-2011, [74].

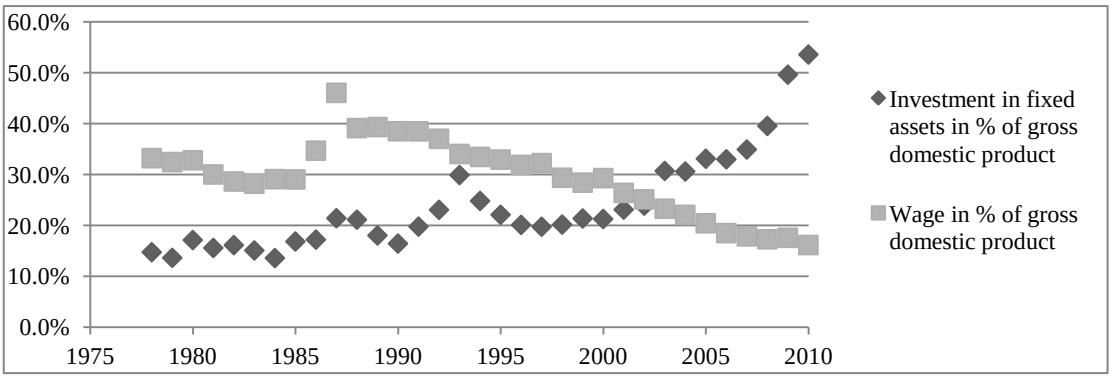

Figure 13 The ratio of gross fixed capital formation and wage in gross domestic product in agricultural reclamation system

Source: made by "Statistic Materials of 60 Years' Agriculture in New China", [92], P61 and P62.

Table 39 The Basic Situation of Agricultural Reclamation in China (for Figure 12)

	Number of farms	Number of workers (ten thousand persons)
1949	26	0.4
1950	132	1.1
1952	562	35.9
1953	493	20.1
1957	804	44.1
1958	1,412	106.7
1962	2,123	216.8
1963	2,181	220.3
1965	2,062	260.0
1966	1,940	284.0
1970	1,763	385.6
1971	1,780	416.2
1975	2,320	481.7
1976	2,377	498.4
1978	2,067	514.0
1979	2,047	495.0
1980	2,093	492.1
1981	2,094	492.8
1982	2,078	494.5
1983	2,070	501.8
1984	2,048	492.8
1985	2,055	492.4
1986	2,069	509.5
1987	2,124	513.0
1988	2,126	518.0
1989	2,137	516.0
1990	2,159	526.3
1991	2,166	536.6
1992	2,149	541.9
1993	2,159	532.3
1994	2,157	517.5
1995	2,129	502.1
1996	2,128	488.3
1997	2,115	473.1
1998	2,101	437.5
1999	2,051	417.8
2000	2,026	391.9
2001	1,961	366.0
2002	1,945	355.7
2003	1,967	353.7
2004	1,928	339.6
2005	1,923	335.9
2006	1,896	329.3
2007	1,885	330.1
2008	1,893	334.5
2009	1,818	339.7
2010	1,807	330.8

Source: made by “Statistic Materials of 60 Years’ Agriculture in New China”, [92], P61 and “Fifty years of China agricultural reclamation”, [91], P119-120 and “China agricultural year book” 2010-2011, [74].

Table 40 The Ratio of Gross Fixed Capital Formation and Wage in Gross Domestic Product in Agricultural Reclamation System (for Figure 13)

Item	Gross fixed capital formation in % of gross domestic product	Wage in % of gross domestic product
1978	14.7%	33.2%
1979	13.6%	32.4%
1980	17.1%	32.8%
1981	15.6%	30.0%
1982	16.1%	28.6%
1983	15.1%	28.2%
1984	13.6%	29.1%
1985	16.8%	29.0%
1986	17.2%	34.7%
1987	21.4%	46.0%
1988	21.1%	39.1%
1989	18.0%	39.3%
1990	16.4%	38.5%
1991	19.8%	38.5%
1992	23.1%	37.0%
1993	29.9%	34.0%
1994	24.8%	33.4%
1995	22.1%	32.9%
1996	20.1%	31.9%
1997	19.7%	32.2%
1998	20.2%	29.4%
1999	21.4%	28.4%
2000	21.3%	29.3%
2001	23.1%	26.4%
2002	23.9%	25.1%
2003	30.7%	23.3%
2004	30.6%	22.1%
2005	33.1%	20.4%
2006	33.0%	18.5%
2007	34.9%	17.8%
2008	39.5%	17.3%
2009	49.6%	17.6%
2010	53.5%	16.1%

Source: made by “Statistic Materials of 60 Years’ Agriculture in New China”, [92], P61 and P62.

Appendix 1.2 Characteristics of state-owned farms in agricultural reclamation areas

In 2008, total population at the year-end in reclamation areas is 13.04 million, accounting for 0.98% of the population in China. Cultivated areas are 5.5 million hectares, accounting for 4.5% of cultivated areas in China. GDP of reclamation areas is 235.61 billion yuan in 2008, accounting for 0.78% of the GDP in the whole country. And there are 1,893 farms around the country. (Statistical Yearbook of China Agricultural Reclamation 2008, [93])

In 2010, cultivated areas of reclamation areas account for 4.92% cultivated areas in China (Table 41). GDP in reclamation areas accounts for 0.84% of the GDP in the whole country. Output of grain accounts for 5.4% the whole output of grain in China.

Table 41 The Main Economic Indicators' Ratios of Agricultural Reclamation Areas in Agriculture in China in 2010

Item	Unit	Agricultural reclamation areas	Agriculture in China	Ratio
Total population (year-end)	10,000 persons	1,332.31	134,091	0.99%
Cultivated areas	1,000 hectares	5,989.27	121,715.9	4.92%
Gross domestic product	100 million yuan	3,382.67	401,202	0.84%
Primary industry	100 million yuan	1,171.3	69,319.8	1.69%
Total sown area	1,000 hectares	6,310.42	160,675	3.93%
Sown area of grain crops	1,000 hectares	4,557.64	109,876	4.15%
Output of grain	10,000 tons	2,953.29	54,647.7	5.40%
Total power of agricultural machinery	10,000 kw	2,126.49	92,780.5	2.29%

Sources: China Agricultural Yearbook 2011, [74]; China Statistical Yearbook 2011, [94].

(1) The distribution of state-owned farms

In 1980, state-owned farms had 0.43 billion mu (a Chinese landmeasure unit, 1 hectare=15 mu) of land after 30 years of construction, in which there were 66.84 million mu of arable land, 177.14 million mu of grassland, 26.54 million mu of forestland, 2.04 million mu of orchards, mulberry and tea plantations, 4.83 million mu of rubber plantations and 2,093 of farms. These

farms distributed in eight temperature zones from south to north around country. With different climates, farms formed regionalization and specialization of production structure, and can be divided into eight categories roughly (see Table 42). Figure 14 shows the map of specialized regional production in agricultural reclamations in China.

Table 42 Specialization and Regionalization of Production in State-owned Farms (for Figure 14)

	The distribution of state-owned farms	**Details**
1	Northeast reclamation areas in which grain crops and soybean are major products	They include 350 farms in Heilongjiang, Jilin and Liaoning provinces, and they belong to mid temperate and cool temperate semi-humid zones.
2	Northwest reclamation areas in which grain crops, cotton and oil-bearing crops are major products	They include about 200 farms in Xinjiang, Qinghai, Gansu, Ningxia provinces and autonomous regions. Climate is drought, and they belong to irrigated farming areas.
3	South reclamation areas in which rubber, tropical and subtropical crops are major products	They include farms in Guangdong, Hainan, Zhanjiang areas, Xishuang banna, Honghe, Lincang in Yunan, and Guangxi, Fujian.
4	Coastal areas in which grain crops and cotton are major products	Grain crops are major products in coastal farms of Liaoning and Hebei. Jiangsu province has a large proportion of cultivation of cotton.
5	Areas along the river and lake in which grain crops and cotton are major products as well as managing freshwater aquaculture	They include about 100 farms in Hubei, Hunan, Jiangxi, Anhui province, and they are major production areas of rice, cotton, lotus root and fresh water fish.
6	Suburbs farms in which milk and subsidiary food are major products	Suburb farms around large and middle-sized cities breeding milk cow, and producing poultry, eggs, pork, fruits and vegetables etc.
7	Farms in grassland where animal husbandry are major business	They include about 300 farms in Hulumbeir league, Xilingele league, Zhaouda league of Inner Mongolia, Yili, Altay Administrative Offices of Xinjiang, Nenjiang, Suihua of Heilongjiang and Aba of Sichuan etc.
8	Specialized products farms	There are about 400 of this kind of farms, such as ginseng, deer farms in Jilin, tea farms in south provinces, herb farms, wild animal farms, silkworm and mulberry farms, and fruit tree farms etc.

Source: adapted from “China Agricultural Yearbook 1981”, [74], P116-117.

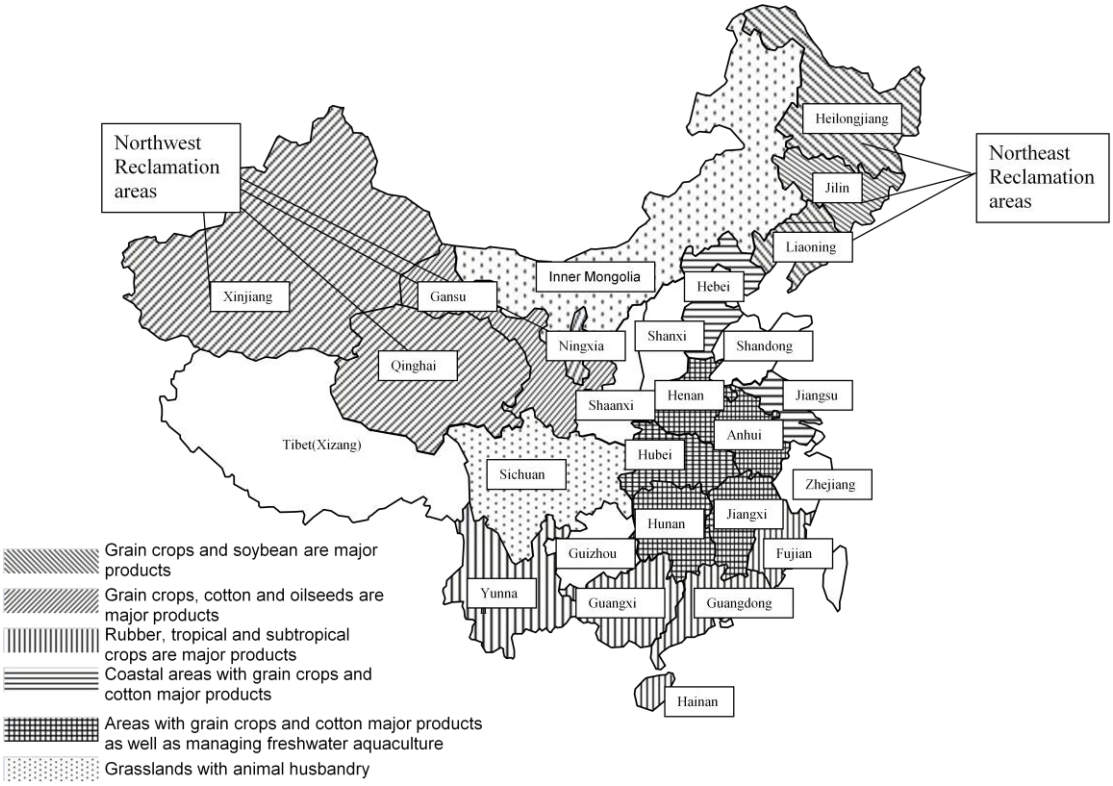

Figure 14 Specialized Regional Production Of Agricultural Reclamations in China

Notes: Suburbs farms in which milk and subsidiary food are major products and specialized products farms are not marked in this figure.

Source: made by China Agricultural Yearbook 1981, [74].

(2) Characteristics of agriculture in agricultural reclamation areas

a. Gross domestic product in reclamation areas and its compose

Since reform and opening-up in China, the ratio of primary industry in gross domestic product in reclamation areas decreased from 58% in 1978 to 34.6% in 2010 (see Figure 15 and 16). Reclamation areas tried to develop their secondary and tertiary industry. However, in 2010, the primary industry ratio of 34.6% is higher than that in the whole country of 10.1% (Figure 17). Therefore, reclamation areas are areas for developing primary industry.

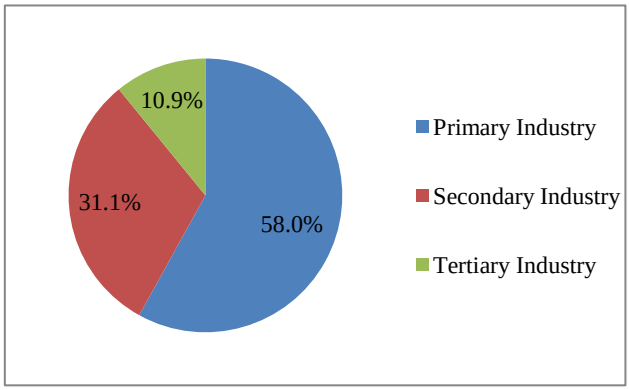

Figure 15 Composition of Gross Domestic Product in agricultural reclamation in 1978

Source: Statistic Materials of 60 Years' Agriculture in New China, [92], P61.

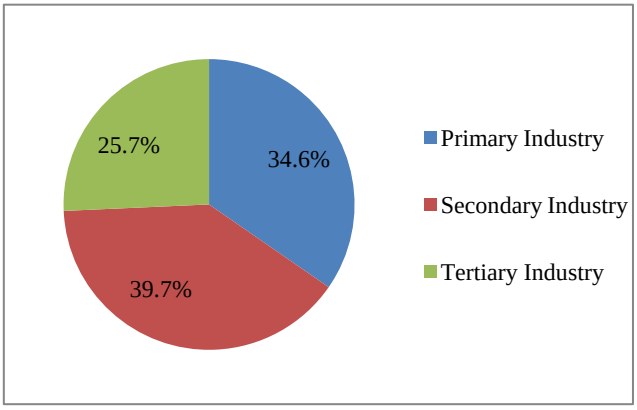

Figure 16 Composition of Gross Domestic Product in agricultural reclamation in 2010

Source: China Agricultural Yearbook 2011, [74], P370.

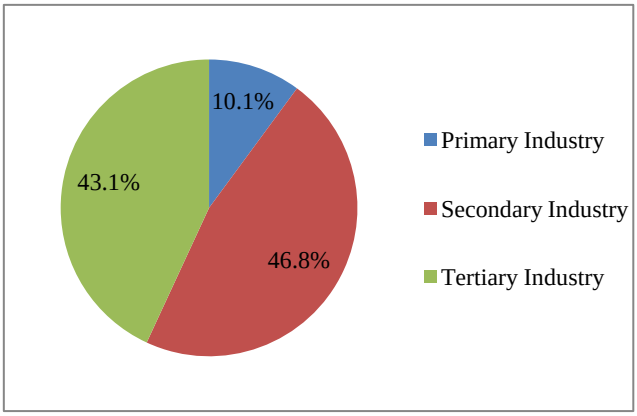

Figure 17 Composition of Gross Domestic Product in China in 2010

Source: China Statistical Yearbook 2011, [94], P45.

Table 43 Composition of Gross Domestic Product in Agricultural Reclamation, per capita GDP in Agricultural Reclamation and per capita GDP in China (for Figure 18)

	Percentage of every industry %			Per capita GDP in agricultural reclamation (yuan)	Per capita GDP in China (yuan)
	Primary industry	Secondary industry	Tertiary industry		
1978	58.0	31.1	10.9	688	381
1979	57.9	31.0	11.0	-	419
1980	54.9	31.5	13.6	843	463
1981	52.9	33.0	14.1	870	492
1982	51.4	33.6	15.0	-	528
1983	49.9	34.9	15.2	-	583
1984	49.0	36.9	14.1	-	695
1985	48.9	36.7	14.4	1,319	858
1986	48.1	37.1	14.7	1,657	963
1987	47.9	37.3	14.8	-	1,112
1988	47.4	37.6	15.0	1,541	1,366
1989	47.7	36.8	15.6	1,702	1,519
1990	50.5	33.8	15.8	1,881	1,644
1991	44.9	37.2	18.0	2,043	1,893
1992	42.0	39.0	19.0	2,288	2,311
1993	38.5	40.4	21.0	2,805	2,998
1994	42.5	34.9	22.6	3,705	4,044
1995	46.1	31.4	22.5	4,582	5,046
1996	47.1	28.8	24.1	3,179	5,846
1997	48.6	28.5	23.0	3,346	6,420
1998	47.2	28.2	24.6	5,500	6,796
1999	44.0	29.6	26.4	5,572	7,159
2000	43.2	30.4	26.4	6,013	7,858
2001	40.6	31.1	28.3	6,510	8,622
2002	40.6	30.7	28.7	7,279	9,398
2003	42.3	30.0	27.6	8,432	10,542
2004	42.4	29.9	27.7	9,471	12,336
2005	41.2	30.7	28.0	10,851	14,185
2006	38.3	33.7	28.0	13,035	16,500
2007	36.8	35.9	27.3	15,566	20,169
2008	35.7	37.5	26.7	18,116	23,708
2009	34.8	38.4	26.9	21,035	25,608
2010	34.6	39.7	25.7	25,669	29,992

Source: made by “Statistic Materials of 60 Years’ Agriculture in New China”, [92], P61; “China agricultural year book” 2011, [74], P295; “China Statistical Yearbook 2011”, [94], P44.

Note: Data in this table are calculated at current prices.

From the percentage of every industry in gross domestic product in Figure 18 (see Table 43), from 1978 to 2010, the percentage of primary industry decreased 15%, the percentage of

secondary industry increased 8%, and the percentage of tertiary industry increased 5%. The percentages of secondary and tertiary industry increased in reclamation areas. After 2008, the secondary industry became the largest percentage industry in reclamation areas.

Before 1992, per capita GDP in agricultural reclamation was higher than the per capita GDP in China in the same year. However, after 1992 the per capita GDP in agricultural reclamation is lower than that in China in the same year.

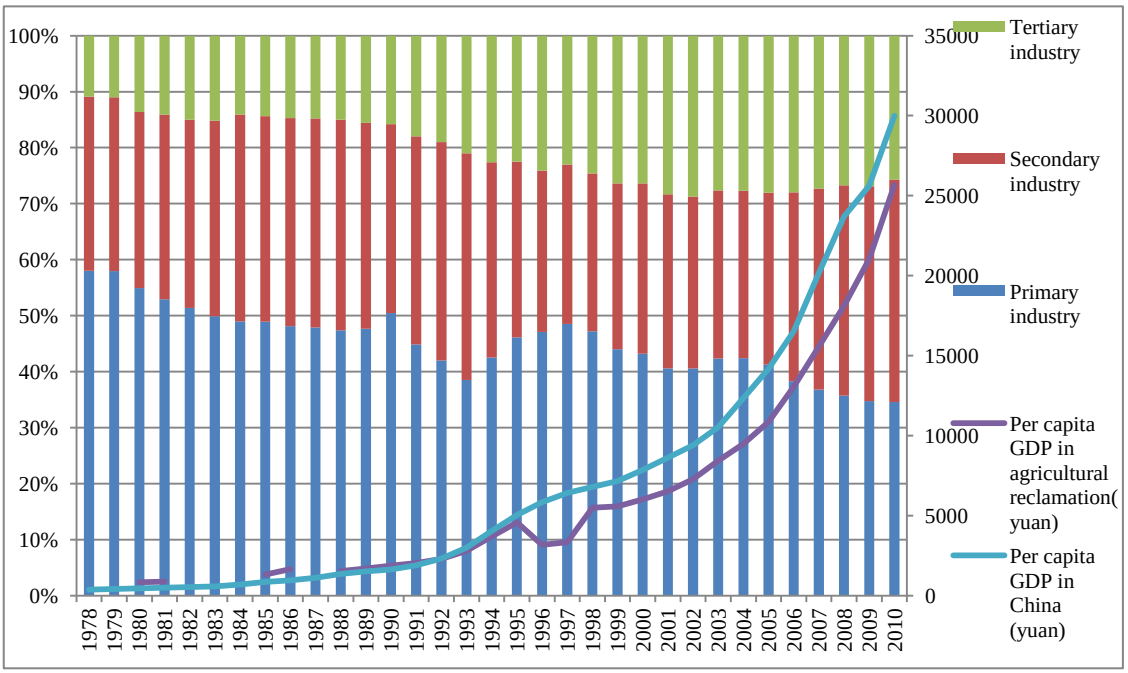

Figure 18 Composition of Gross Domestic Product in Agricultural Reclamation, per capita GDP in Agricultural Reclamation and per capita GDP in China

Sources: made by "Statistic Materials of 60 Years' Agriculture in New China", [92], P61; "China agricultural year book" 2011, [74], P295; "China Statistical Yearbook 2011", [94], P44.

Note: Data in this figure are calculated at current prices.

b. Per capita cultivated land in agricultural reclamation

Table 44 shows that the per capita cultivated land in agricultural reclamation is 0.42 hectares at the year-end of 2008, which is higher than 0.09 hectares of the per capita cultivated land in China. Reclamation areas have the advantage of agricultural development.

Table 44 Per capita Cultivated Land in Agricultural Reclamation and in China at the Year-end of 2008

	Cultivated land in China (1,000 hectares)	Total population in China (10,000 persons)	Per capita cultivated land (hectare)	Cultivated land in agricultural reclamation (1,000 hectares)	Total population in agricultural reclamation (10,000 persons)	Per capita cultivated land in agricultural reclamation (hectares)
2008	121,715.9	132,802	0.092	5,498.9	1,303.9	0.422

Source: "China Statistical Yearbook 2009", [94], P89, P449; "Statistic Materials of 60 Years' Agriculture in New China", [92], P61.

c. Per capita total agricultural machinery power in agricultural reclamation

Agricultural machinery power refers to the total mechanical power of machinery used in agriculture, forestry, animal husbandry and fishery, including machinery for ploughing, irrigation and drainage, harvesting, transportation, plant protection, animal husbandry, forestry and fishery and other agricultural machineries. At the year-end of 2008, per capita total agricultural machinery power in reclamation areas was higher than that in China (Table 45). Agricultural reclamation areas have the advantage of agricultural machinery. In 2010, the comprehensive mechanization degree is 84% in reclamation areas, which is higher than the average level in China (China Agricultural Yearbook 2011, P55).

Table 45 Total Agricultural Machinery Power in Agricultural Reclamation and in China at the Year-end of 2008

	Total agricultural machinery power in China (10,000 kw)	Total population in China (10,000 persons)	Per capita total agricultural machinery power in China (kw)	Total agricultural machinery power in agricultural reclamation (10,000 kw)	Total population in agricultural reclamation (10,000 persons)	Per capita total agricultural machinery power in agricultural reclamation (kw)
2008	82,190.4	132,802	0.619	1,800	1,303.9	1.380

Source: "China Statistical Yearbook 2009", [94], P89, P447; "Statistic Materials of 60 Years' Agriculture in New China", [92], P61.

d. Per capita output of major agricultural products in agricultural reclamation

In Table 46, we can see that per capita output of major agricultural products in agricultural reclamation is higher than that in China. Per capita output of grain in agricultural reclamation is 1,857.1 kg, which is more than 4 times than that in China.

Table 46 Per Capita Output of Major Agricultural Products in China and Agricultural Reclamation at the Year-end of 2008

	Per capita output of major agricultural products in China (kg)	**Output of major agricultural products in agricultural reclamation (10.000 tons)**	**Per capita output of major agricultural products in agricultural reclamation (kg)**
Grain	399.0	2,421.5	1,857.1
Cotton	5.7	163.6	125.4
Oil-bearing Crops	22.3	78.4	60.1
Pork, Beef and Mutton	40.3	157.1	120.5
Milk	26.8	320.8	246.0
Aquatic Products	37.0	97.1	74.5

Source: "China Statistical Yearbook 2009", [94], P475, P480; "Statistic Materials of 60 Years' Agriculture in New China", [92], P61.

Appendix 1.3 The history of state-owned farms in Heilongjiang province

Heilongjiang agricultural reclamation was also called "the Great Northern Wilderness (Beidahuang)". It is famous of state-owned farms and it is the second biggest agricultural reclamation in China except to Xinjiang Production and Construction Corps. First we will see the main history of Heilongjiang agricultural reclamation to understand the background and culture in this area. ("Development and Construction of the Great Northern Wilderness", 1998, [95]):

(1) Start the business (1947-1955)

In 1945, according to the "build the solid base in the northeast" from central government, a group of army personnel and local cadres organized to develop the northern wilderness to build

state-owned farms. The missions of state-owned farms proposed by central government were: “to increase grain for the state, to make benefit for production, to make demonstration for farmers, accumulate experience and cultivate cadres; to accumulate capital for the state and expand new farms”. In 1954, the Soviet government donated machines and devices for establishing 20 thousand hectares sown areas of state grain farms, and according to “about the decision of building state-owned farms” by the State Council, the “state-owned farm for friendship (guoying youyi nongchang)” was established in Sandaogang in Jixian County of Heilongjiang province.

Numbers of demobilized offices and soldiers and teenager volunteers also participated in the establishment of state-owned farms.

(2) The development period (1956-1966)

In 1954, demobilized railway soldiers established farms in the Great Northern Wilderness, and established the railway soldier’s farm bureau. In 1958, about 100 thousand demobilized officers and soldiers went to the Great Northern Wildness. At the same time, they also established penal farms to accept prisoners.

(3) The winding development period (1967-1978)

In 1966, the demobilized officers and soldiers of Shenyang People’s Liberation Army established Heilongjiang Production and Construction Corps in the Great Northeast Wilderness, and the main missions of corps were “to defend the frontiers, establish the frontiers and develop production”. In 1968, with the call of “educated youth to go to farms, to accept reeducation from poor and lower-middle peasants (pinxiazhongnong)”, about 450 thousand educated urban youth from Beijing, Shanghai, Tianjin, Zhejiang and Heilongjiang and so on went to the Great Northeast Wilderness. In 1976, state-owned farms bureau was established in Jiamusi city, and was changed from the system of corps.

(4) The reform and opening-up period (after 1979)

The national conference about state-owned farms in 1977 aimed to establish Heilongjiang reclamation area as the national bases of commercial grain, industrial raw materials, export of local agricultural and husbandry products, and supply of urban subsidiary food. They also promoted to establish the joint enterprises of agriculture, industry and commerce, established experiments of introduced advanced machinery and technology, implemented family responsibility system and established family farms and so on.

From Table 47 and Table 48, we can see that, the productive (operating) revenue was less than the productive (operating) expenses from 1948 to 1953, but after 1953 the productive (operating) revenue was greater than the expenses gradually. From 1979, agricultural reclamation enterprises implement the method of "full financial responsibility" (caiwu baogan), which is independent accounting, self-financing, having no supplement from the state, having profit for self-development and having loan when lack of funds. Tax was increasing before 1994, but after 1994 it was decreasing. Besides, non-productive (non-operating) expenses were more than the non-productive (non-operating) revenue before 1994. (The non-productive (non-operating) expenses mainly include training expenses, extra salary for implementing policy and allowance expenses and so on.)

About the productive and operating profit, during the 17 years (1979-1997) after the "full financial responsibility", except deficit of 390 million yuan in 1981 due to flood, and deficit of 86 million yuan in 1984 and 1985 due to the reform of cherry farm, in the other 14 years Heilongjiang agricultural reclamation had a net profit about 2.18 billion yuan ("Heilongjiang Agricultural Reclamation Accounting History", 2000, [96], P264).

The main source of investment was from the state budget, after the comprehensive economic reform in 1985, the enterprise self-financing increased as well as loan at home and abroad. In general, from 1949-1997, the returns to investment in that year were not high. From the relationship between accumulative investment and returns to investment, years of returns to

investment had a tendency of from short time to long time (see Table 49 and Table 50). From 1948 to 1955, the years of returns to investment were about 5 years; from 1956 to 1961, the years increased to about 10 years; after 1962, the years achieved about 20 years.

Table 47 Profit table of Heilongjiang agricultural reclamation 1948- 1997

	Productive (operating) revenue	Productive (operating) expense	Tax	Non-productive (non-operating) revenue	Non-productive (non-operating) expense	Profit
1948	92.5	89.3		0.2	0.1	3.3
1949	374.5	356.2	0.6	42.9	22.6	38
1950	550.1	822.3	2.8	17.9	113	-370.1
1951	657.2	713.8	4.5	4.5	20.7	-78.7
1952	802.4	970.5	12.7	36.2	22.2	-175
1953	1,561.5	1,904.8	7.1	8.8	41	-396.9
1954	1,873.6	1,735.1	8	17	89.2	41.6
1955	2,752.7	2,555.5	9.5	13.9	70.3	100.9
1956	5,101.6	6,250.9	14.9	29.3	538.1	-1,844.6
1957	6,414.5	9,561.7	21.8	54.4	1,031.8	-4,543.8
1958	15,769.8	14,788.4	94.1	199.3	441.5	276.9
1959	28,192	26,372.8	216.7	404.2	1,216.5	546
1960	25,211	29,916.0	302.4	431.5	2,468.7	-8,731.5
1961	26,580.7	32,369.3	879.1	359.4	2,813.9	-9,585.4
1962	27,652.5	30,803.8	1,068.1	312.6	2,582.4	-6,723.1
1963	29,413.4	31,098.9	1,411.2	273.2	2,441.8	-5,993.0
1964	25,812.9	26,439.3	1,100.1	270.2	2,486.5	-4,470.9
1965	32,156.9	29,179.3	1,228.1	250.1	2,900.4	-2,379.5
1966	39,957.8	33,764.1	1,386.9	491.1	2,715.9	884
1967	51,236.5	41,747.7	1,822.7	482.4	1,947.0	5,750.8
1968	51,540.4	45,613.9	1,854.4	655.5	1,688.9	3,438.1
1969	46,549.3	54,125.7	930.3	532.4	1,097.6	-8,672.8
1970	59,236.1	57,835.8	1,496.5	354.8	1,491.9	-933.2
1971	60,914.5	65,629.7	1,285.1	942.6	2,168.9	-6,956.2
1972	64,028.5	67,748.6	1,288.2	536.7	6,348.5	10,930.2
1973	82,349.7	108,320.6	2,378.2	279.8	6,325.0	-34,446.3
1974	111,809.6	12,929.8	3,639.7	418.2	5,440.2	-10,136.9

Table 48 Profit table of Heilongjiang agricultural reclamation 1948- 1997 (continued)

	Productive (operating) revenue	Productive (operating) expense	Tax	Non-productive (non-operating) revenue	Non-productive (non-operating) expense	Profit
1975	135,440.8	120,717.4	4,648.0	927.9	5,351.9	4,196.4
1976	139,843.6	138,989.7	4,491.2	579.3	11,819.6	-14,823.0
1977	143,655.2	145,499.5	4,661.7	770.3	9,688.4	-15,458.1
1978	163,584.9	162,928.7	4,682.0	704.4	6,461.1	-11,104.9
1979	208,074.2	174,270.5	6,959.6	584.7	9,156.8	10,006.0
1980	253,534.6	200,740.7	8,134.6	898.7	11,993.0	19,327.1
1981	185,131.2	210,910.0	6,181.6	1,403.1	11,239.9	-39,120.0
1982	243,226.5	208,456.4	7,711.9	2,291.9	14,553.7	13,700.9
1983	293,083.9	230,145.4	8,782.7	1,370.8	16,816.3	29,285.7
1984	262,568.3	233,321.3	9,663.2	2,105.0	18,408.5	-5,169.5
1985	347,563.8	314,221.3	10,387.0	8,395.2	24,814.6	-3,468.3
1986	392,879.9	359,586.3	7,856.9	7,186.9	25,018.6	815.3
1987	426,597.7	387,200.4	8,644.9	3,532.8	24,714.6	3,981.0
1988	444,340.7	400,402.2	7,998.8	3,041.4	27,865.2	5,384.8
1989	564,604.6	507,587.1	10,668.2	4,245.8	41,974.3	10,654.9
1990	656,914.2	593,629.2	12,135.9	4,356.7	37,859.3	22,646.8
1991	734,465.0	669,262.2	13,577.0	5,306.1	46,052.4	4,727.5
1992	785,550.0	722,515.0	13,963.0	5,426.0	44,314.0	2,800.0
1993	1,076,330.0	934,130.0	16,486.0	9,768.0	16,845.0	9,000.0
1994	1,086,038.0	941,836.0	6,008.0	16,729.0	16,318.0	10,835.0
1995	1,461,295.0	1,277,647.0	6,011.0	17,747.0	16,451.0	32,052.0
1996	1,562,959.0	1,395,808.0	5,526.0	23,529.0	13,690.0	41,611.0
1997	1,572,278.0	1,430,328.0	5,433.0	21,870.0	12,417.0	48,905.0
Total	13,938,551.3	12,593,776.1	213,075.9	150,189.1	512,347.7	74,497.1

Note: Some items about profit are not listed in this table. Unit: 10 thousand yuan.

Source: “Heilongjiang Agricultural Reclamation Accounting History”, [96], P953.

Table 49 Sheet about Accumulative Investment and Returns on Investment

Year	Investment		Returns on investment	
	Investment in this year	Accumulative investment	Returns on investment in this year	Accumulative returns on investment
Total	1,416,344	1,286,878	497,544	497,554
1948	219	219	6.1	6
1949	222	441	47.3	54
1950	816	1,256	29.4	83
1951	753	1,977	15.4	98
1952	1,635	3,599	100.9	199
1953	2,837	6,340	202.4	402
1954	1,477	7,670	271.5	673
1955	5,853	13,406	727.7	1,401
1956	11,627	24,951	881.8	2,283
1957	15,392	40,110	1,182.5	3,465
1958	11,607	50,743	1,263.6	4,729
1959	11,525	61,451	1,718.6	6,447
1960	24,171	84,424	2,024.1	8,471
1961	18,899	102,183	2,842.4	11,313
1962	19,648	119,300	2,828.1	14,141
1963	20,041	137,880	3,263.5	17,405
1964	18,437	155,058	2,657.5	20,063
1965	17,219	170,749	2,993.9	23,057
1966	12,337	181,802	3,183.3	26,240
1967	9,766	191,318	8,937.1	35,177
1968	12,810	204,009	6,918.5	42,095
1969	31,193	235,127	3,116.1	45,211
1970	22,957	257,919	4,496.6	49,708
1971	30,284	288,084	2,174.7	51,882
1972	32,423	319,457	1,971.4	53,854
1973	69,874	387,504	3,654.8	57,509
1974	34,487	416,234	5,046.7	62,556
1975	17,490	433,100	6,076.0	68,632
1976	33,567	466,667	6,026.4	74,658

Table 50 Sheet about Accumulative Investment and Returns on Investment (continued)

Year	Investment		Returns on investment	
	Investment in this year	Accumulative investment	Returns on investment in this year	Accumulative returns on investment
1977	24,565	491,177	6,287.9	80,946
1978	49,106	537,300	7,365.0	88,311
1979	64,673	577,368	8,662.0	96,973
1980	36,564	613,332	10,052.0	107,025
1981	24,010	627,003	8,098.0	115,123
1982	24,980	651,974	7,712.0	122,835
1983	24,013	675,721	14,553.0	137,388
1984	22,447	662,573	13,230.0	150,618
1985	12,961	674,998	17,151.0	167,769
1986	36,467	694,651	13,531.0	181,300
1987	46,904	741,508	13,952.0	195,252
1988	27,949	766,890	15,271.0	210,523
1989	29,666	759,402	17,758.0	228,281
1990	34,021	829,110	19,602.0	247,883
1991	38,936	867,714	19,980.0	267,863
1992	43,725	911,017	21,552.0	289,415
1993	45,002	954,250	26,247.0	315,662
1994	67,816	1,021,125	36,285.0	351,947
1995	78,615	1,099,423	42,802.0	394,749
1996	81,614	1,177,939	48,178.0	442,927
1997	112,746	1,286,878	54,627.0	497,554

Note: The dashed line links the year that accumulative returns cover the accumulative investment. Unit:10 thousand yuan.

Source: “Heilongjiang Agricultural Reclamation Accounting History”, [96], P956-957.

Appendix 2 About DEA method

Data Envelopment Analysis (DEA) is one of the methods of measuring technical efficiency of decision making units (or DMUs). By using DEA, researchers analyzed the efficiency of firms, industries as well as non-profit organizations. For Japanese agricultural cooperatives (Nokyo or JA), literatures concerning the efficiency of JA in two prefectures showed that there exits the problem of decreasing returns to scale of inefficient offices, especially for large ones (Sueyoshi et al., 1998, [97]; Sueyoshi, 1999, [98]). Some researchers also analyzed the agricultural technical efficiency in China by DEA (such as Chen and Xiao, 2010, [99]; Zhu et al, 2011, [100]).

About DEA models, Charnes, Cooper and Rhodes (1978) assumed constant returns to scale (CRS) and proposed the CCR model while Banker, Charnes and Cooper (1984) proposed a variable returns to scale (VRS) model-BCC model. When not all DMU's are operating at the optimal scale, we can use the BCC model. The input-oriented BCC model evaluates the efficiency of units by solving the following (envelopment form) linear program (Cooper et al., 2000, [101], P88):

$$\begin{aligned} &\min && \theta_B \\ &\text{subject to} && \theta_B x_0 - X\lambda \geq 0 \\ & && Y\lambda \geq y_0 \\ & && e\lambda = 1 \\ & && \lambda \geq 0, \end{aligned}$$

In input-oriented BCC model, the frontiers have piecewise linear and concave characteristics with increasing returns to scale, decreasing returns to scale and constant returns to scale. Besides, CCR=BCC *scale efficiency, which represents that technical efficiency=pure technical efficiency (PTE) * scale efficiency (SE). In this decomposition, we can see whether the inefficiency is caused by inefficient operation (PTE) or by disadvantageous conditions displayed by the scale efficiency (SE) or by both (Cooper et al., 2000, [101]).

We use DEA method for its advantages. First, it can analyze the technical efficiency of multiple inputs and outputs no matter what the production function is. Second, it can analyze an individual's diversity. Third, it can calculate the quantitative improvement values

Appendix 3 Interview questions in Chinese

调查问题

调查日期：

调查部门：

单位地点：

A. 您的职位是什么？有哪些职责？

B. 你所在科室在人力资源部门中的作用和位置？

C. 农场的组织结构图是怎么样的？

1. 关于组织目标和人力资源管理战略

关于农场	1.1.1 农场的历史与重大事件 1.1.2 农场在全省农业中的地位如何？ 1.1.3 农场在黑龙江农垦系统中的地位？ 1.1.4 在宝泉岭管理局的地位？ 1.1.5 与其他哪些机构或者部门有合作、联系？ 1.1.6 有哪些公开的资料、数据？ 1.1.7 农场的目标规划有哪些？与管理局有什么关联？ 1.1.8 目标规划是如何传达给部门的？是否明确每个部门的任务？
1.2 关于农场人力资源部	1.2.1 人力资源部的历史与重要事件 1.2.2 人力资源部的主要作用和负责领域？ 1.2.3 与农场有什么关联？ 1.2.4 人力资源部的战略目标是什么？与农场的目标有何关系？ 1.2.5 与其他部门的关系如何？ 1.2.6 如何传达给员工的？效果如何？每个人知道自己的任务吗？ 1.2.7 人力资源部内部如何分配任务与沟通？有哪些措施保障工作顺利进行？ 1.2.8 是否定期开会？一周几次？信息管理平台效果如何？ 1.2.9 农业人力资源管理与其他有什么不同？
1.3 关于人力资源管理战略	1.3.1 人力资源管理的战略目标和内容有哪些？百千万人才工程的目标和内容有哪些？ 1.3.2 实施部门是什么？现在位于什么阶段？ 1.3.3 具体方法（如何开展、协调工作）

	1.3.4 有什么奖励或惩罚？ 1.3.5 效果如何？取得哪些成绩？ 1.3.6 有哪些不足之处？

2. 关于人力资源管理政策和实施

2.1 关于招聘和农业人力资源	招聘和分配	2.1.1 招聘方法有哪些？ 2.1.2 招聘对象有哪些？ 2.1.3 如何分配方式人才？ 2.1.4 效果如何？有哪些成绩？ 2.1.5 有哪些不足之处？
	农业人力资源	2.1.6 农业人力资源的现状如何？ 2.1.7 农业人力资源有什么特殊性？ 2.1.8 农业人力资源的数量如何？ 2.1.9 农业人力资源的质量如何？ 2.1.10 有哪些需要改进？ 2.1.11 需要哪些帮助？
2.2 关于培训与开发	关于培训	2.2.1 有哪些培训项目？ 2.2.2 对象是谁？ 2.2.3 培训内容是什么？ 2.2.4 效果如何？取得哪些成绩？ 2.2.5 有哪些不足之处？
	关于深造的机会	2.2.6 有哪些深造机会？ 2.2.7 对象是谁？ 2.2.8 内容是什么？ 2.2.9 效果如何？取得哪些成绩？ 2.2.10 有哪些不足之处？
2.3 关于绩效管理		2.3.1 有哪些绩效管理方法？ 2.3.2 对象是谁？ 2.3.3 效果如何？取得哪些成绩？ 2.3.4 有哪些不足之处？
2.4 关于薪酬与福利管理		2.4.1 决定薪酬的方法和依据是什么？ 2.4.2 享受哪些福利待遇？（养老保险、医疗保险、失业保险、工伤保险、生育保险、住房基金、伙食补贴、法定假日、交通补贴、其他） 2.4.3 有哪些实物补助或奖金？（春节、妇女节、端午节、劳动节、中秋节、国庆节、其他节日） 2.4.4 提供住房的条件（面积多大？设施如何？） 2.4.5 是否有奖励、惩罚措施？

		2.4.6 是否有加薪制度？ 2.4.7 是否有升职制度？ 2.4.8 是否公平？ 2.4.9 对农业人才有什么特殊待遇？
2.5 关于劳动关系管理（侧重于人才定留、文化和氛围	劳动关系管理	2.5.1 有哪些渠道了解员工的不满、抱怨？如何解决？ 2.5.2 有哪些惩罚措施？ 2.5.3 离职的人数、原因和趋势 2.5.4 是否有解雇和开除？ 2.5.5 如何解决人才外流？ 2.5.6 农业人才有哪些特殊的现象和解决方法？ 2.5.7 效果如何？取得哪些成绩？ 2.5.8 有哪些不足之处？
	企业文化	2.5.9 企业文化有哪些？ 2.5.10 如何传达给员工？ 2.5.11 工作中人际关系氛围如何？ 2.5.12 效果如何？取得哪些成绩？ 2.5.13 有哪些不足之处？
2.6 关于国营企业所有权问题		2.6.1 国营企业有哪些优势？ 2.6.2 国营企业有哪些劣势？

3. 效果和总结

3.1 如何评价自己部门的工作？ 3.2 取得了哪些成绩？ 3.3 部门有哪些优点？ 3.4 有哪些不足？如何改进 3.5 农业人力资源管理有何优点与缺点？需要什么帮助？对未来的考虑 3.6 此次调查对您是否有帮助，问卷有什么需要改进的地方？

4.关于农户的情况

4.1 农场有多少农户？承包地的情况如何？ 4.2 农户与农场的关系是怎样的？ 4.3 农户的年龄分布、家庭收入情况如何？ 4.4 农户管理有什么问题？

5. 关于个人经历

5.1 个人学习经历是怎样？

5.2 工作经历是怎样？
5.3 在农场有哪些经历？
5.4 在农场有哪些重要或难忘的经历？
5.5 对你的工作的总结和建议

Appendix 4 Questionnaire on the Job Satisfaction of Employees on Farms

This investigation is made for understanding and improving the job satisfaction of employees on farms. It is only used for paper, and the opinion of participant is anonymous. The personal material will not be in the public. And you can add your opinion and suggestion. Thank you for your help!

1. Sexuality （ ）
2. Age （ ）
3. Education （ ）

A. primary school B. middle school C. high school, technical secondary school, professional high school D. junior college E. university F. master's degree G. doctor's degree and more H. others ( )

4. What is your major? （ ）
5. Where is your hometown? （ ）

A. this farm B. other farm in Heilongjiang province C. nonfarm in Heilongjiang province D. farm in other farm out of Heilongjiang province E. nonfarm out of Heilongjiang province F. others（ ）

6. When did you start to work here? （ Year Month ）
7. What kind of agricultural experience do you have before working here?（multiple choices）（ ）

A. I worked on farms or corporations B. I had experience in school C. My family is farm household D. I had experience by helping relatives or friends E. No experience F. Others（ ）

8. The reason you chose working here （multiple choices）（ ）

A.I am interested in agriculture B. I have responsibility to agriculture C. My major is about agriculture D. I can work on my advantage E. The treatment is good here F. The atmosphere and human relationship is good here G. The work is stable here

H. The work is easy here I. For finding a job J. I grew up here or have relatives here K. I am not used to the life in big city L. Others（ ）

9. Through what kind of method you worked here? (multiple choices)（ ）

A. recruitment fair B. recruitment fair on campus C. through internet D. through newspaper or magazine E. through advertisement or leaflet F. through job centre G. graduated from this farm H. introduced by acquaintance I. introduced by school J. employment support policy K. others (（ ）

10. The name of your post（ ），and your major work（ ）

A. agricultural work B. administrative work C. processing work D. marketing work E. management work F. service work G. scientific, educational or health work H. others（ ）

11. What kind of work you are good at（ ）

A. agricultural work B. administrative work C. processing work D. marketing work E. management work F. service work G. scientific, educational or health work H. others（ ）

12. Your satisfaction about your current job（ ）

A. very satisfied B. satisfied C. neutral D. dissatisfied E. very dissatisfied

13. Please make √where is suitable for your situation

	Very satisfied	Satisfied	Neutral	Dissatisfied	Very dissatisfied
About management on farm					
About the recruitment method on farm					
About the training on farm					
About the opportunity of promotion on farm					

About the salary on farm					
About the bonus and subsidy on farm					
About the length of working time on farm					
About the human relationship on farm					
About the atmosphere of culture on farm					

14. Please choose the first three satisfied items by orders, First（ ），Second（ ），Third（ ）；And the first three items you want it to improve by orders, First（ ），Second（ ），Third（ ）

A. the content of work B. management of farm C. working equipment D. salary E. bonus and subsidy F. training and learning G. promotion opportunity H. regular working hours I. regular holidays J. human relationship K. atmosphere of culture L. others（ ）

15. What is your plan for the next three years（ ）

A. hope to work at the same position B. want to become a professional technician C. want to become a manager D. want to go to school E. want to contract land for farming F. want to set up an agricultural corporation G. haven't thought it H. others（ ）

16. Do you want to leave farm within three years（ ）（A. yes B. no）；If you choose yes, what is the reason for leaving (multiple choice）（ ）

A. I lost interesting with agriculture B. I am not suitable with the content of work

C. The treatment is not good D. The working hours are long, and the intensity is big

E. There is no competition, and I can't use my advantage F. The working equipment is not good G. Human relationship is not good H. The atmosphere of culture is not good

I. The geographical position of farm is not good J. Self reason (body and mind)

K. Family or friends' reason L. others（ ）

Appendix 5 Questionnaire on the Job Satisfaction of Employees on Farms (in Chinese)

农场职工工作满意度调查问卷

本调查为了了解和改善农场的职工工作满意程度而制作，仅作为论文资料使用，参与者的意见全部为匿名，个人资料不会公开。可在后面附加您的意见或建议。谢谢您的协助！

(1) 您的性别 （ ）

(2) 您的年龄 （ 岁）

(3) 您的学历 （ ）

A.小学 B.初中 C.高中/中专/职高 D.大专

E.大学本科 F.硕士 G.博士及以上 H.其他（ ）

(4) 您的专业是 （ ）

(5) 您的家乡是 （ ）

A.本农场 B.黑龙江省内其他的农场 C.黑龙江省内非农场 D.黑龙江省外的农场 E.黑龙江省外的非农场 F.其他（具体是 ）

(6) 您开始在农场工作的时间是 （ 年 月）

(7) 在农场工作前，您从事过的农业活动的经验有哪些（可多选）（ ）

A.在农场或农业公司工作过 B.在学校学习体验过 C.自己家是农户

D.在亲戚、朋友家帮过忙 E.没有经验 F.其他 （具体是 ）

(8) 您选择在农场工作的理由（可多选）（ ）

A.对农业感兴趣 B.对农业有责任感 C.与自己的专业对口 D.能发挥自己

的长处　　E.农场福利待遇好　　F.农场工作氛围、人际关系好　　G.农场工作稳定
H.农场工作轻松　　I.为了找工作　　J.在农场长大、或者有亲属在农场
K.不习惯大城市的生活
L.其他（具体是　　）

(9) 您是通过什么渠道到农场工作的（可多选）（　　）
A.招聘会　　B.校园招聘　　C.互联网　　D.报纸、杂志　　E.广告、传单
F.就业中心　　G.垦区的生源　　H.熟人介绍　　I.学校介绍　　J.就业援助政策
K.其他（具体是　　）

(10)您的职务（请具体填写）（　　），现在主要从事的工作（　　）
A.农作业　　B.事务　　C.加工　　D.销售　　E.管理　　F.服务
G.科学、文教、卫生　　H.其他（具体是　　）

(11)您认为自己比较擅长的工作（　　）
A.农作业　　B.事务　　C.加工　　D.销售　　E.管理　　F.服务
G.科学、文教、卫生　　H.其他（具体是　　）

(12)您对现在的工作的满意程度（　　）
A.非常满意　　B.满意　　C.一般　　D.不满意　　E.非常不满意

(13)在下面各项中，请在符合自身情况的地方打√

	非常满意	满意	一般	不满意	非常不满意
农场的经营管理					
农场的招聘方式					
农场的培训					
农场的进修机会					
农场的工资待遇					

农场的奖金补贴					
农场的工作时间强度					
农场的人际关系					
农场的文化氛围					

(14)请按顺序选出令您感到满意的3个事项。第一(　　),第二(　　),第三(　　);

以及您希望得到改善的3个事项。第一(　　),第二(　　),第三(　　)

A.工作内容　　B.经营管理　　C.工作设备设施　　D. 工资待遇

E.奖金补贴　　F.培训、进修　　G.升职机会　　H.法定工作时间

I.法定公共假日　　J.人际关系　　K.文化氛围　　L.其他(具体是　　)

(15)您对未来三年的打算(　　)

A.希望在本农场本职位　　B.想要成为专业技术人员　　C.想要成为管理人员

D.想要继续上学　　E.想要自己承包土地　　F.想要自己开农业公司

G.没想过　　H.其他(具体是　　)

(16)三年内您是否想要离开农场(　　)(A.是　B.不是);如果选择{是},您想要离开农场的原因是(可多选)(　　)

A.对农业失去兴趣　　B.工作内容不适合　　C.待遇不好　　D.工作时间长、工作强度大　　E.缺少竞争,能力得不到发挥　　F.工作设备、设施差　　G.人际关系不好　　H.文化氛围不好　　I.农场地理位置不好　　J.自身原因(身心)　　K.家人或朋友的原因　　L.其他(具体是　　)

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