

A Study on Human Resource Development to Competitiveness of Korean Manufacturing Firms

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I. Introduction

It is said that national power is determined by economic power, which in turn is determined by the productivity and competitiveness of manufacturing firms. That is, a decrease in the competitiveness of manufacturing firms brings about a decrease in national power. The competitiveness of Korean manufacturing firms, however, has declined for the past several years. It is important that we identify the causes of this trend, and investigate policies to enhance competition. Thus this article will emphasize on human resource development.

Manufacturing firms are composed of physical, monetary, and human resources. In modern times, human resources have become the most important factor. To put it another way, the competitiveness of a manufacturing firm depends largely upon the ability of its human resources to utilize physical and monetary resources. Thus, firms which aim to be competitive should have in place a human resource management system which can develop the abilities and skills of its human resource. Also, it is necessary to develop the abilities and skills of human resource for both technology innovation from the company's perspective and for the humanization of work from the employee's perspective.

Ultimately the company should be converted to a learning firm (Hayes, et al, 1988; Meyer-Dohm and Schneider, 1991 Nirenberg, 1994). To become a learning firm, employees must possess the ability to undertake tasks allocated by the company. Without developing the employees' qualifications

and abilities, a firm will not survive on the ever changing business environment nor achieve technology innovation, and the people in the firm will not satisfy their own self-realization needs.

This article first examines the position of human resource development strategy within this rapidly changing environment. Then, the situations and issues of human resource development of Korean manufacturing firms will be described, followed by suggested policies for human resource development.

II. Human Resource and Competitive Strategy

A. Human-Resource-based Competitive Strategy

Competitive strategy is composed of two groups : exogeneous-oriented strategy and endogeneous-oriented strategy. The former focuses on adaptation to an externally constrained environment, the latter on internally developed resources. Also, the former may be what we call an environment-based strategy, the latter a resource-based strategy. Recently the endogeneous-oriented strategy has been considered the core strategy for a successful business.

The majority of world class firms have formulated and implemented strategies based on endogeneous power, rather than on exogeneous power.

To achieve a successful competitive strategy, firms should formulate and implement strategies based on dynamic resources, rather than on static resources.

Dynamic-resource-based strategy uses creative and human resources instead of material or monetary resources as its source of energy.

In summary, dynamic-resource-based strategy, a basic form of modern competitive strategy, has the following characteristics:

- 1) based on internal resources, rather than external constraints
- 2) based on intangible resources such as flexible and creative human beings, rather than tangible resources such as the money, raw materials and machines
- 3) based on human resources which create intangible resources

4) based on dynamic human resources such as information, technology (skills), and organization, rather than static human resources such as the number of employees

In the last half century, most firms with a high degree of competitiveness have considered labor and human resources as the main factors in achieving growth and development.

This means that the competitiveness of a firm depends ultimately on the people working for the company. Thus, if a company suffers a drop in the ability and morale of its management and employees, the competitiveness of the company is also likely to suffer.

This competitive strategy goes in tandem with firm-specific technology innovation strategy, which must exist for a company's growth and development. Firm-specific technology innovation strategy is divided into two parts. One is hardware-oriented strategy focused on physical accumulation, the other is software-oriented strategy focused on human accumulation.

The former is achieved through the improvement of equipment such as machines and facilities, the latter through the improvement of the quality of labor such as skills and technologies. In other words, the former is achieved by physical investment in the improvement of equipment, the latter by human investment in the development of human resources. It is desirable for the two to be connected with each other. However, when we talk of technology(skill) formation, the focus is on software-centered technology innovation through the development of human resources. That is, technology innovation means technology or skill formation through the development and acquisition of skilled or technical manpower. This view specially emphasizes skills or technology formation in the workplace. If technology innovation was not built on a software-centered or human resource-centered basis, firms would face limitations of growth.

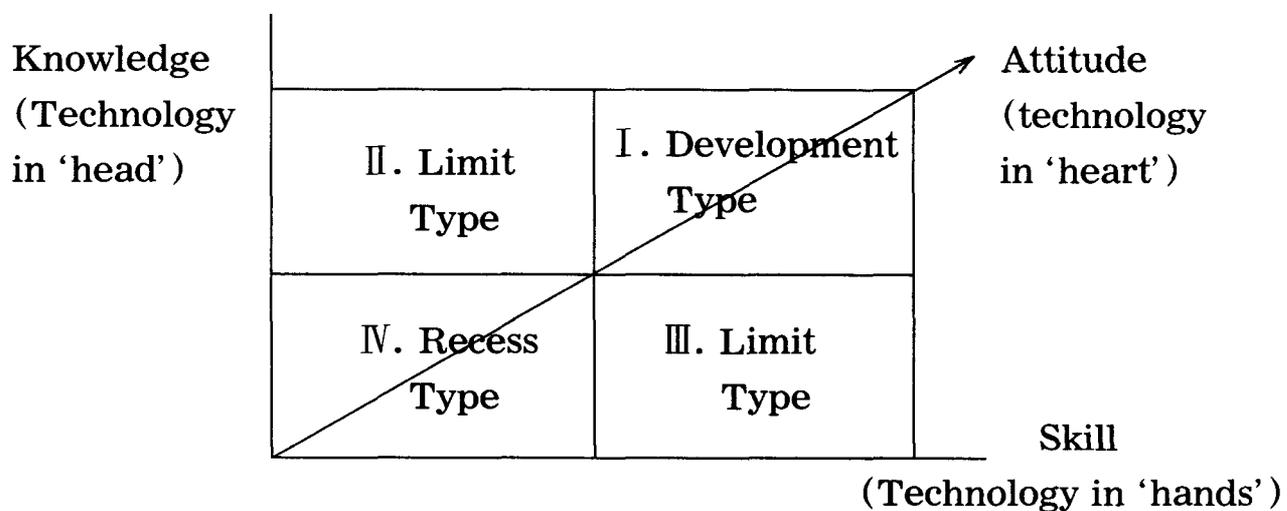
I suppose that technology is embodied with equipment or facilities, and embodied with people. The former is referred to as hardware technology, the latter as software technology. In general, when we refer to technology, it means the latter.

Again, the latter is divided into three aspects. One embodied in the 'hands', the other embodied in the 'head', and the last embodied in the

'heart'. These may be called skill technology, knowledge technology, and attitude technology respectively. This would be better written as: Attitude technology is the most valuable of the three, for it is the basis to acquiring the other two types of technology.

In summary, human resources development means innovation in the software technology. And human resources are developed through the three aspects ('hand', 'head', and 'heart') of software technology.

〈Figure 1〉 Three Aspects of Software Technology



B. Workplace-centered Competitive Strategy

To survive in this self-interest-oriented global environment, firms have to enhance the competitiveness of their products through consistent technology innovation based on human resources.

In this section, I will present two strategic choices (Young, 1992; Parthasarthy and Sethi, 1992; Dean and Snell, 1991; Well, Kamp, Jackson and Clegg, 1986; Zammuto and O'Connor, 1992) on innovation and development of technology in manufacturing firms. One is the 'R&D-centered' strategy, the other the 'workplace-centered' strategy. The former is focused on the development of machines, equipment, and facilities, the latter on human resource development. In this article, I emphasize the latter, while comparing the above mentioned strategic choices, in terms of their basic perspectives, processes, and results.

1. Perspective of Technology Innovation and Development

In its goal, the 'R&D-centered' type focuses on efficiency, and the 'workplace-centered' type focuses on flexibility. In its process, the former focuses on the top-down method, the latter on the bottom-up method.

The 'R&D-centered' type is focused on efficient production following product development. Its goal is maximum production at minimum cost. This logic is based on the principle of economy of scale. Thus it takes the top-down method, where the most important issue is product innovation.

The 'workplace-centered' type is focused on a dynamic adaptation to the changing environment. Its goal is to quickly solve problems of those related by work or those in a connected sphere. This logic is based on the principle of the economy of scope. The most important issue is to solve problems in the workplace. Therefore, it approaches technology innovation in a bottom-up way.

2. Process of Technology Innovation and Development

The two strategic choices differ in process in terms of the organizational structure for technology innovation, and its emphasis on major personnel. In terms of organizational structure, the 'R&D-centered' type focuses on a functional organization, whereas the 'workplace-centered' type focuses on team organization. In terms of its major personnel, the 'R&D-centered' type focuses on basic scientists or system engineers, whereas the 'workplace-centered' type places emphasis on laborers or technicians.

The 'R&D-centered' type emphasizes specialized and segmented jobs. R&D division plays an important role by undertaking product and process innovation. Thus scientists or system engineers play major roles in technology innovation. The 'workplace-centered' type focuses on the job with multiple tasks. Thus an organization has a team form enabling interaction among laborers. Also operators or technicians try to resolve problems without the help of scientists or system engineers. Thus the operators or technicians play major roles in technology innovation.

3. Result of Technology Innovation and Development

The 'R&D-centered' type's results are accumulated on tangible assets. Thus technology innovation takes much time. But in the 'workplace-centered'

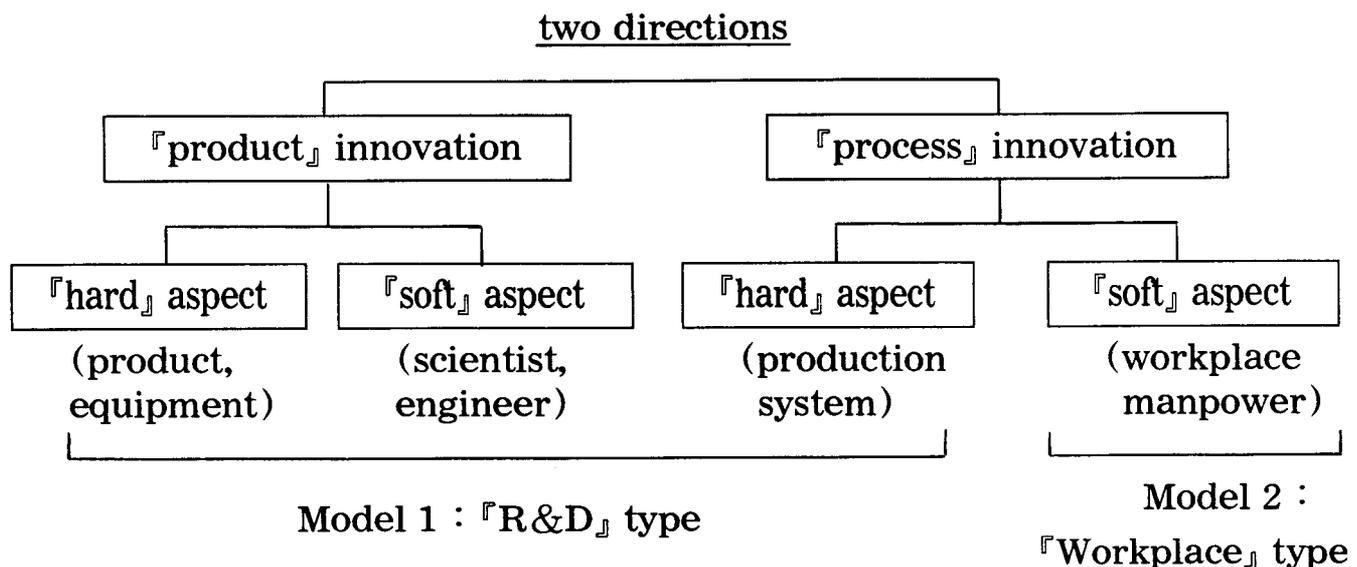
type, the results are accumulated through human beings, who capitalize on it via interaction. Thus its impact on the organization is on a small scale, but is persistent. <Table 1> summarizes the issues discussed so far.

<Table 1> Comparison of Two Strategic Types of Technology Innovation

aspect	dimension	『R&D-centered』 type	『workplace-centered』 type
perspectives	goal	efficiency	flexibility
	method	top-down	bottom-up
processes	organization form	functional organization	team organization
	major personnel	scientist, system engineer	operator, technician
results	accumulated reality	tangible assets	human being, interaction

I believe that ‘R&D-centered’ type fits in with long term strategies, and ‘workplace-centered’ with short or intermediate strategies. I emphasize that manufacturing firms should pursue the ‘workplace-centered’ strategy since R&D-centered strategy takes much capital and time while workplace-centered strategy ensures firms a speedy and flexible adaptation with little capital and time. Workplace-centered strategy develops and acquires workplace manpower.

<Figure 2> Technology Innovation Strategies



III. Present Situations and The Issue of Human Resource Development in Korean Manufacturing Firms

To acquire an in-depth knowledge of the situations and issues of human resources development in Korean manufacturing firms, I have examined five firms in the steel industry, auto industry, and shipbuilding industry through a questionnaire survey, a case study, and a literature review; I use both subjective surveys and objective materials. The overall situation of human resources development is examined by the former, detailed situations (such as promotions, wages and others) were examined by the latter.

One thing that was clear was that employees were dissatisfied with both the overall and detailed practices of human resources development.

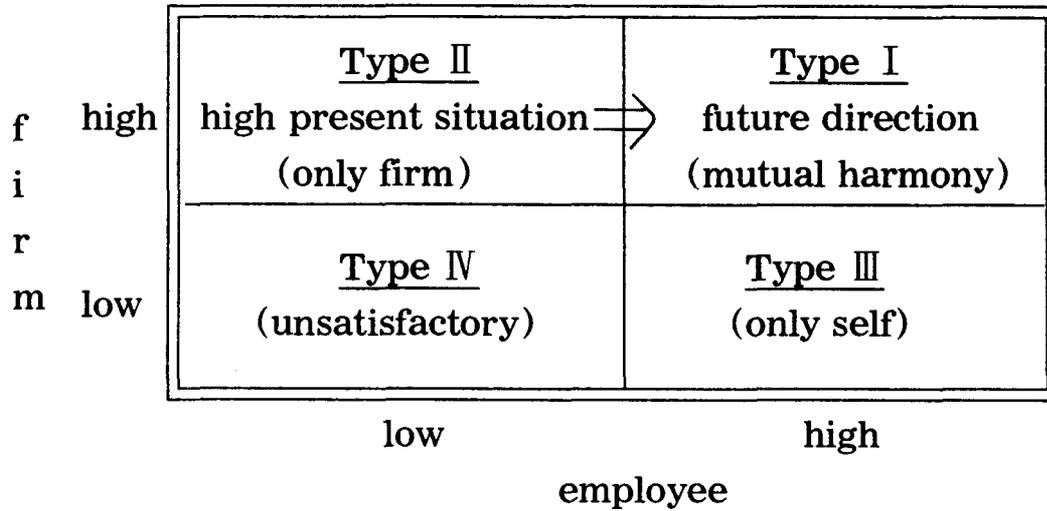
A. Gap Between Employee and Firm Growth

To look at the overall situations and issues of human resources development in Korean manufacturing firms, survey items were made considering employee satisfaction and other factors such as major human resource management practices like job characteristics, promotions, and wages.

The sample size from the five firms was 8,418 employees. Among them, 7,276 were direct production workers, and the other 1,142 employees were indirect workers employed in quality management or maintenance divisions.

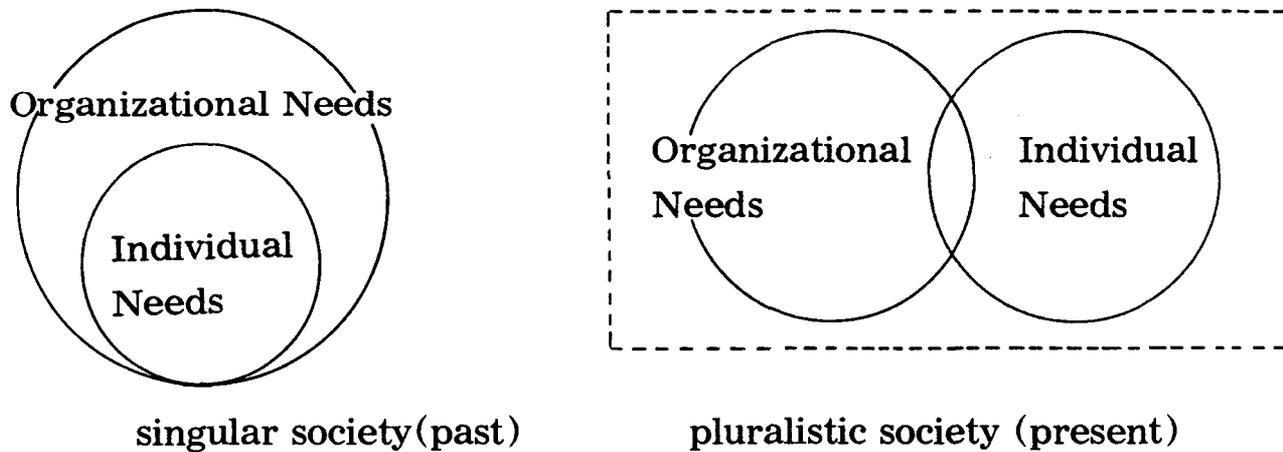
With factor and reliability analysis of the items, detailed analyses were done. I found a gap between employees' and the firm's growth. The degree of employees' expectations of self-growth was low, but the degree of expectation of firm's growth was high. As you can see in <Figure 3>, employees recognized only firm-growth (type II). Thus an alternative strategy shifting present situations to mutual growth (type I) is needed.

〈Figure 3〉 Degree of Employees' Expectations to Self and Firm Growth

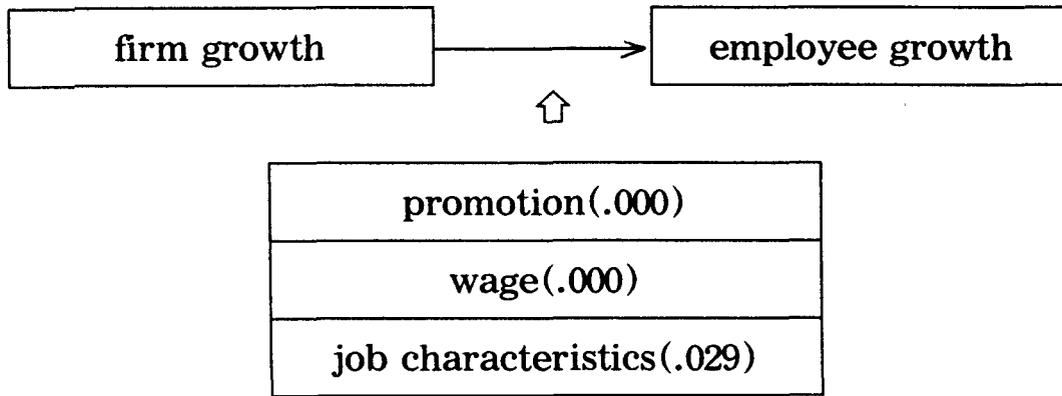


This gap between employees' and the firm's growth shows a sign of potential conflict between the two. It also means that Korean firms have the characteristics of a pluralistic society.

〈Figure 4〉 Comparison of Organizational and Individual Needs of a Singular Society and a Pluralistic Society



Major factors for a firm's growth were the introduction of technical innovation, value creation to the client, etc. But the firms' growth was not compatible with the employees' self-growth. It was discovered that practices of human resources management did not satisfy employees' needs of self-growth. In detail, promotions, compensation, and job characteristics were moderating factors by which expectations of self-growth was decreased.

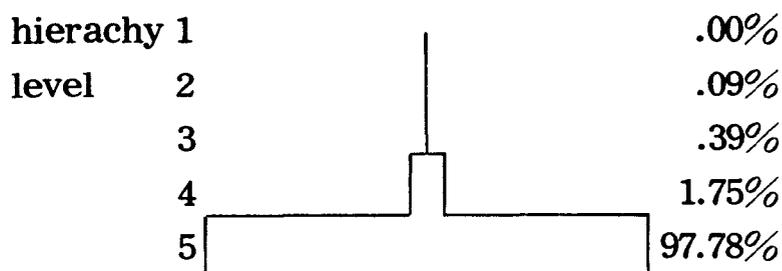


* () moderating effect coefficient

B. 'Pin' Type Production Organization and Single-skilled Employee

The structure of production organization in Korean manufacturing firms may be referred to as the 'pin' type, which obstructs both human resources development and the systematic technology formation of the firms. Especially, it reduces the motivation of production workers. According to a hierarchical level analysis, more than 90% of production workers belong to the lowest hierarchical level.

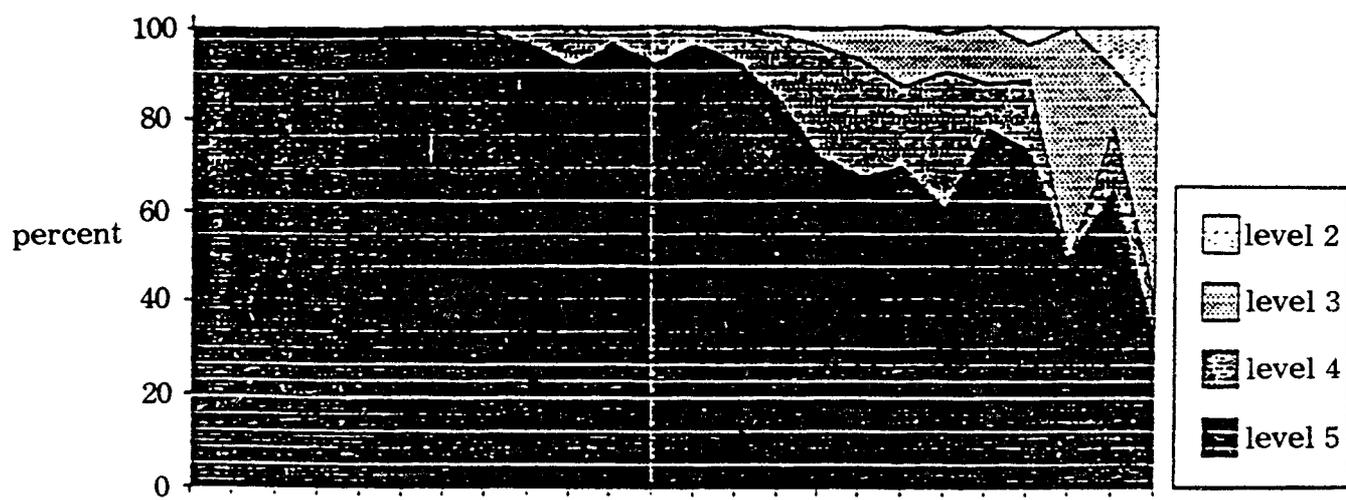
<Figure 6> 'Pin' Type Production Organization (in the case of steel industry)



For an in-depth study, I have used the Camera Diagram (Bartholomew and Forbes, 1979; Bennison and Casson, 1983) which interprets promotions compared with seniority.

The present situations of Korean manufacturing firms are presented in <Figure 7>. It shows that production workers have stayed at the bottom level of the hierarchy ever since joining the firm despite the increase in seniority.

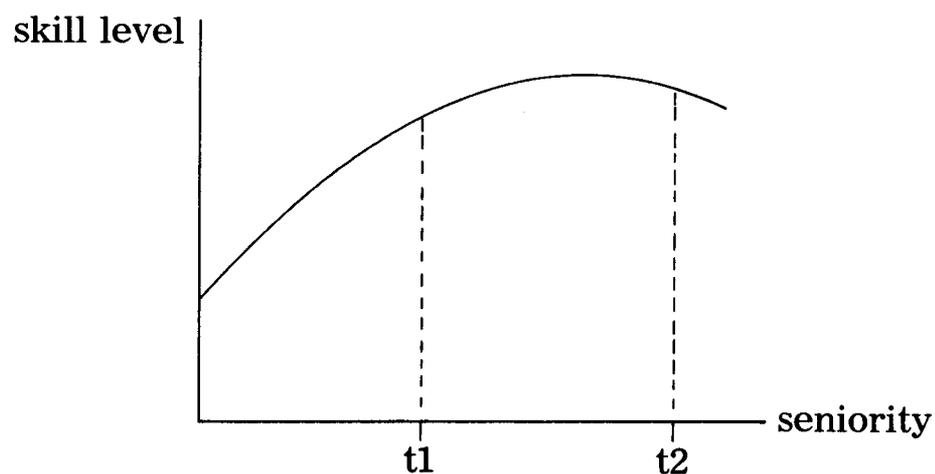
<Figure 7> Camera Diagram(in the case of auto industry)



This situation has produced the following problems.

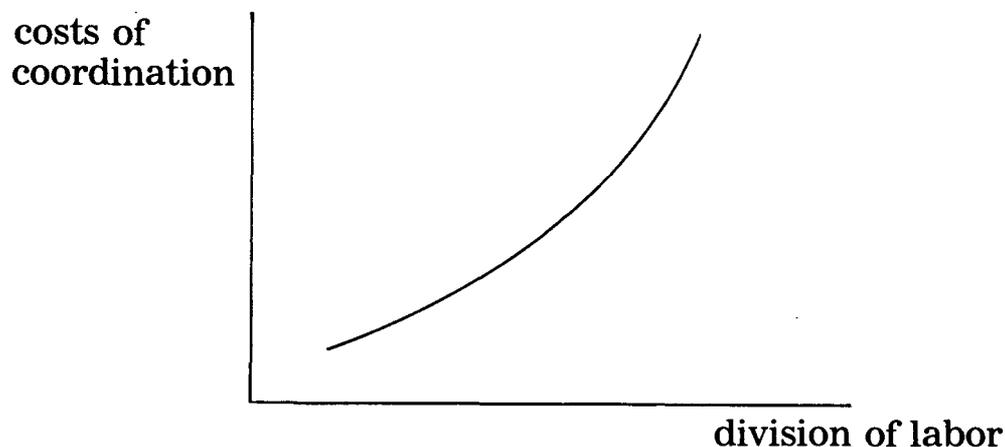
First, from the standpoint of the firms, it has generated single skilled workers without systematic skill formation. Because of limitations to promotion or job rotation, as can be seen in <Figure 8>, the skill of production workers has stagnated (from t_1 to t_2) or decreased (after t_2).

<Figure 8> Skill(efficiency) Curve



Due to the single skilled workers, operation functions are not connected with maintenance, quality control, and design functions. Thus, the costs of coordination are increased when integrating these specialized functions.

〈Figure 9〉 Relationship between the Cost of Coordination and the Division of Labor



Second, from the viewpoint of the employees, because they are not provided with visions for a career path and self-growth, their motivation and quality of working life has decreased.

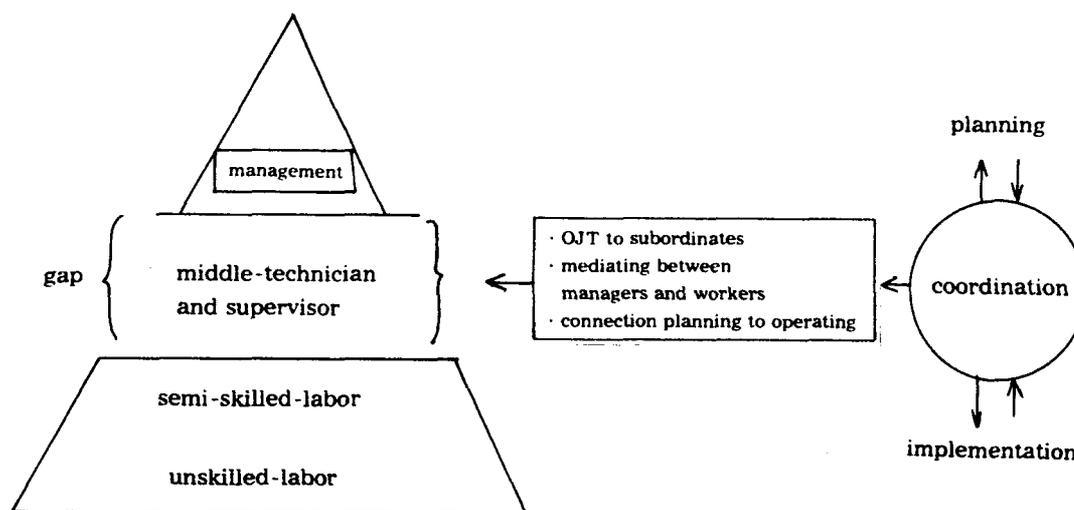
C. Supervisor-level Weakness and Shrinking Organizational Control

The 'pin' type of production organization is also weak in middle-technicians and supervisors, such as foremen, mini-engineers, and multi-skilled workers. Due to the absence of a career path to these workers, the actual number of these mid-level personnel is very limited. This, in turn, causes a limitation of coordination between managers and workers.

In most manufacturing firms, training and career paths for promotion to middle-technician and supervisor have been insufficient. This situation has placed limits on skill / technology formation in firms, and the motivation of employees.

Korean manufacturing firms have not emphasized human resources development and the hierarchy of middle-technicians and supervisors in their organizations. Now it is time that we should acquire and develop middle-technicians and supervisors who can coach, guide, and direct subordinates, with their professional knowledge and skill.

〈Figure 10〉 Roles of Middle-Technicians and Supervisor



D. Productivity-independent Wage Structure and Diminishing Competitiveness

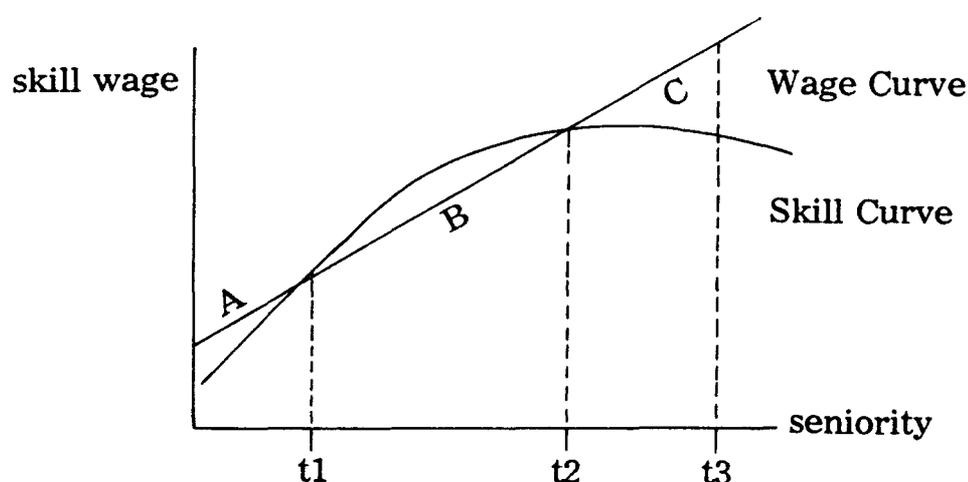
Because wages in most Korean manufacturing firms are determined by a fixed rate according to seniority or working hours, they are not directly related with productivity. In addition to this, unions negotiate wages with employers not by labor productivity or the competitiveness of their own firms, but by comparison with other firms in the same or a similar industry.

Among the many problems of Korean manufacturing firms in relation to their wage administration methods, is its productivity-independent wage structure.

They have administered wages using the same methods as those in low-wage and high-growth economic conditions. The present wage structure is based on seniority. This wage administration had been very efficient in low-wage and high-growth economic conditions. But it has produced problems in high-wage and low-growth economic conditions.

Because the Korean employment structure is based on an internal labor market, it limits the hiring and firing of employees. As mentioned before, the skills of production workers decrease with an increase in seniority. By connecting this skill curve with the wage curve, we have <Figure 11>. In <Figure 11>, after passing point t_2 , firms pay wages more than the efficiency (contribution) of employee. And after passing point t_3 ($\Delta B = \Delta A + \Delta C$), the firms eventually make a loss, as they pay the employees more than they contribute to the firm during their lifetime of employment.

<Figure 11> Combination of Skill and Wage Curve(present)



Because the Korean economy was based on low wages and high growth until the mid-1980s, manufacturing firms simply paid wages based on seniority. In other words, because the wage curve in those days had been located at a lower level than that of the present, the sphere of B was larger than that of A plus C [$\Delta B > (\Delta A + \Delta C)$]. Firms thus faced few problems in wage administration.

Also because Korean firms grew rapidly until the mid-1980s (in other words, because the rate of firms had been higher than that of the increases in wages), they had the ability to pay wages based on seniority

But after the mid-1980s, when there were many labor disputes, wage levels increased and the growth of firms decreased. Under those conditions, firms not only lost the advantages of low wage and high growth, but saw a drop in their competitiveness.

In order to deal with these situations, firms should not pursue wage administration based on seniority but based on labor productivity. Thus to accomplish goals and increase their ability to pay wages, firms should develop a wage structure based on skill or technology.

IV. New Directions of Human Resource Development

Competitive strategy based on workplace-centered human resources development should be pursued in order to enhance competitiveness. A definite program must be implemented to develop the skills of workers. This program should use the 'Objectives-Means' approach for the direct development of human resources in the workplace. The objectives approach emphasizes skill formation and the means approach stresses processes of skill implementation.

Skill formation must become the objective of human resource development by manufacturing firms. Skill formation is embodied by horizontally setting up a domain of skill formation and by vertically fixing stages of skill formation.

To achieve these objectives effectively, the following three means should be implemented. First, a compensation systems consisting of wage and promotion system should be established. Second, an appraisal system consisting of performance and skills appraisal should be set up. Third, a training and development system should be established.

A. Objectives of Skill Formation

1. Meaning of Skill and Domain of Competence

What are the skills which are needed to enhance the competitiveness of a manufacturing firm? Skill written in Chinese characters(熟練) has two meanings. The first character originated from 'ripe', 'mature', 'boll', 'acquaintance', etc. The second character originated from 'temper', 'forge', and 'train'. That is, skill to the Chinese means 'melt the metal and erase impurities'.

〈Figure 13〉 Conventional and Recent Concept of Skill

Conventional concept of skill	Recent concept of skill
Operation centered concept	Composite concept with Maintenance, Design, R&D, Management as well as Operation

Skill are not formed simply by the transfer of production technology from developed countries. Despite the transfer of production technology between countries, production technology does not really transform without the transfer of skills. Therefore, skill means the abilities of the workers to understand the essence of technology and to transform the technology as is appropriate to the given situation.

The real skill of a firm will not be realized until the proper attitudes towards vocation and the company are added to the accumulation of high-level skill. Skill formation is the result of both human resource and production management.

Recent changes in the economy and technology have caused management style to shift from Taylorism to teamwork. Management based on teamwork demands social competence such as an ability to cooperate with members of the team. Therefore, skill formation enlarges the domain of competence to social competence for work group formation, instrumental competence for analysis and understanding as well as professional competence for enrichment of job skills.

〈Figure 14〉 Domain of Competence to Skill Formation



Source : Faix, W. G., Buchwald, C., and Wetzler, R., *Skill Management*, Gabler, Wiesbaden, 1991

The domain of skill formation is explained in more detail in <Table 2>.

<Table 2> The Definitions of Competence

professional competence	the competence needed for the effective implementation of a specific job in relation to job performance, which is the basis of skill in practice
instrumental competence	the basic competence needed for the job performance in relation to the performance which can be represented by PC operation and languages
social competence	the competence to facilitate relations with others (superiors, peers, subordinates) or other departments with regard to human relation
attitude	the mental attitude required which includes the observance of discipline, responsibility, and the practical mind

2. Stages of Skill Formation

Concrete stages of skill formation or career development are required to develop competence. Generally there are 5 stages as follows.

First the one-skill stage of simple skill in that it includes the knowledge of fundamental principles and of other persons' machines.

Second, the multi-skill stage, in which the quality of the job is superior and other machines which do not require high accuracy (for example, lathe, press, CNC machine etc.) can be used and the knowledge of these machines are mastered. In addition, this stage involves work preparation including basic maintenance.

Third, the basic-skilled stage, in which many skills are accumulated to perform a job requiring high accuracy. Although the scope of the machines used is similar, this stage is a more intensified form which includes competence of supervision and basic betterment.

Fourth, the technical-skilled stage, in which knowledges of the parts of the machines and the principle of their operations can be used. So when problems arise they are easily handled. This stage includes broad knowledge of other areas, and therefore, decisions are possible.

Fifth, the managerial-skilled stage, which includes all of the skills above, plus production processes, cost control, the means of achieving goals and the administration of subordinates.

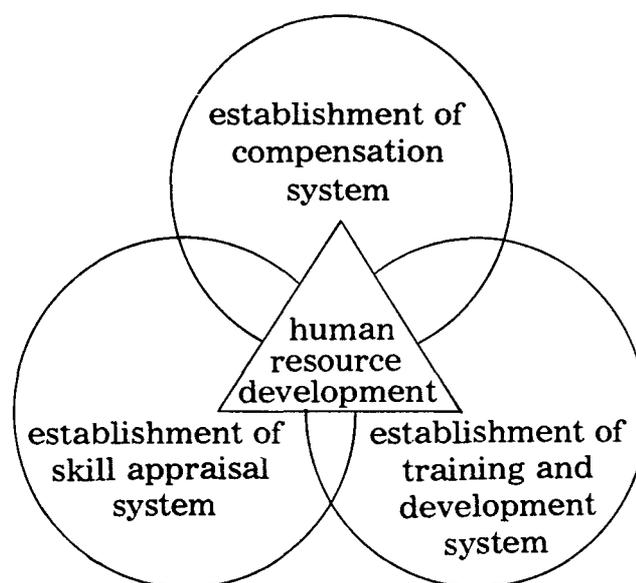
The concrete competence development stage has to be set according to the stages above. This study presents the five stages of the competence model as follows. The mastery of operation is the goal of stage 1, the mastery of work preparation, stage 2, the mastery of betterment, inspection, instruction, stage 3, the establishment of supervision, stage 4, the overall managerial function, stage 5. Stage 1 and 2 are mastery stage 5 for jobs in the workplace, stage 2 and 4, for multi-skills mastery and supervision, stage 5, skilled stage.

B. Means to Support Skill Formation

To develop human resources according to the stage of competence, the following three areas should be systematically established. In other words, the means come as a result of achieving the goals of skill formation.

- the establishment of a compensation system
- the establishment of a skill appraisal system
- the establishment of a training and development system

〈Figure 15〉 Means to Support Skill Formation



1. The Establishment of the Compensation System

The compensation system for skill formation and competence should be established through a promotion management system on status and pay management system on rewards.

1) Establishment of the Promotion System

It is very important to establish a promotion system which presents a vision to workers of the development of human resource management. Internal labor market development through promotions has been mainly for non-production workers. Though production workers are the core of manufacturing firms, there are few systems in place for skill development and vision. Generally, promotion involves position classification, seniority and qualification. The position classification system puts competence first based on a 'job', seniority system based on 'human', and qualification system as a compromise between 'job' and 'human'.

Developmental promotion is based on qualification promotion. Qualification promotion promotes the worker who has acquired the necessary qualifications. Regardless of job content, the worker is promoted to higher status and recognized in formal qualification according to his human resource requirement. This promotion system can be divided into two parts. The first part considers the properties which belong to the individual such as career, time of service, conduct, basic pay, etc. The second part considers the potential usefulness and growth of the individual as assessed by his knowledge, skill, attitude etc. The former is called status qualification promotion, the latter competence qualification promotion.

The framework of the promotion system in this article is based on status qualification. Qualification promotion system is designed to give promotion to workers in line with their job performance whose evaluation is based on job classification and workers' rank. Therefore, it is important above all to design ranks for promotion qualification, in which, the determination of the number of ranks and the requirements of each rank are the essential tasks.

First of all in the design of promotion ranks, the number of ranks have to be determined. This greatly influences the utility and the success of qualification promotion. If the number is too large, it is difficult to define the ranks or to set job requirements. And it is possible that the operation in practice would be based on seniority. To the contrary, if the number is too small, the

nature of the ranks would be ambiguous in that very different levels of competence would be mixed in the same rank.

The design has to fit the content of human resource management to be operated properly and to be effective. This study divides the rank into five parts, though these might differ for each firm, considering the present rank system and human resources development practices of general manufacturing firms. Qualifications are classified by job requirements (job characteristics, job scope, competence level) as shown in <Table 3>

<Table 3> Functions and characteristics in each Qualification Ranks

rank	functions		characteristics
1	manager	senior expert	general
2	supervisor	junior expert	inspection
3			betterment
4	worker	worker	maintenance
5			operation

The general manager has the function of job betterment or unstructured problem-solving; the supervisor, the function of inspection, betterment, subordinate direction; the worker, the function of work preparation and operation.

2) Establishment of Pay System

A pay system forms the grounds for a compensation system and promotion system. A development qualification pay system has to be designed to fit the competence qualification in order to facilitate the competence and the skill of the workers according to their seniority. <Table 4> shows the patterns of the development qualification pay system.

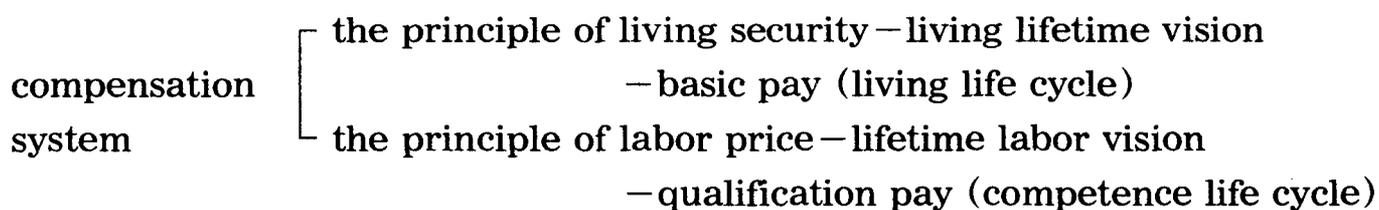
<Table 4> Two Patterns of The Qualification Pay System.

form of added pay	form of basic pay
Vögele model(Germay) Merit-Rating model(Sweden)	AC Rochester Austria Model Skill-based-Pay Model Skill Qualification(Japan) Occupation Qualification(Germany)

Korea has a longitudinal labor market and a history of seniority pay. Therefore, the pay system consists of basic pay according to service length and qualification pay according to the degree of competence. For example, under the employment structure of the longitudinal labor market in which the mobility of labor is not easy, it is difficult to expect competence development of members unless the members think of the firm as the ground of his / her labors and a field of self-growth.

It is necessary to link life labor and life pay in the pay structure under circumstances such as these. The compensation system model of basic pay and qualification pay as the pay structure is presented to help develop competence.

<Figure 16> The Principle of Construction of The Development Compensation system



A new pay system should consist of the principle of living security and labor price. The developmental compensation system has to determine the pay in view of 'service length+competence+job=pay' which is the core of personnel management in order that the firm may be the life time employer.

So a desirable compensation system establishes a system in which workers can be developed according to service length, job allocation, and competence. The basic pay and qualification pay that are the base of the

developmental compensation system have different sides in that the former is determined by the principle of living security as compensation for living and the latter by the principle of labor price as compensation for behavior (labor).

Therefore, compensation for behavior by the principle of labor price is the qualification in which the skill and skill value of the provider (job performance ability) are assessed and the pay is determined by the qualification rank set according to competence. The living basic pay segment of basic pay in a broad sense has to be designed and managed to present a lifetime living vision to members by the principle of living security according to the realization of 'life community', and qualification pay, to present lifetime labor by the principle of labor price according to the idea of 'performance community'. But the core area of the development compensation system is qualification pay, which assesses the skill value, sets the qualification standards and determines the pay according to rank.

The qualification system sets the standards with the development stage of competence. It is the qualification pay that is determined according to the system. The qualification rank will be upgraded if a growth in ability is recognized. Therefore, job position does not have a direct relation with the job contents and rank and the functions are operated separately.

In establishing the compensation system, it is required to designate position pay as well as the basic pay plus qualification pay. But the establishment of the basic pay plus qualification pay system is an essential part of the design.

2. Establishment of Competence Appraisal

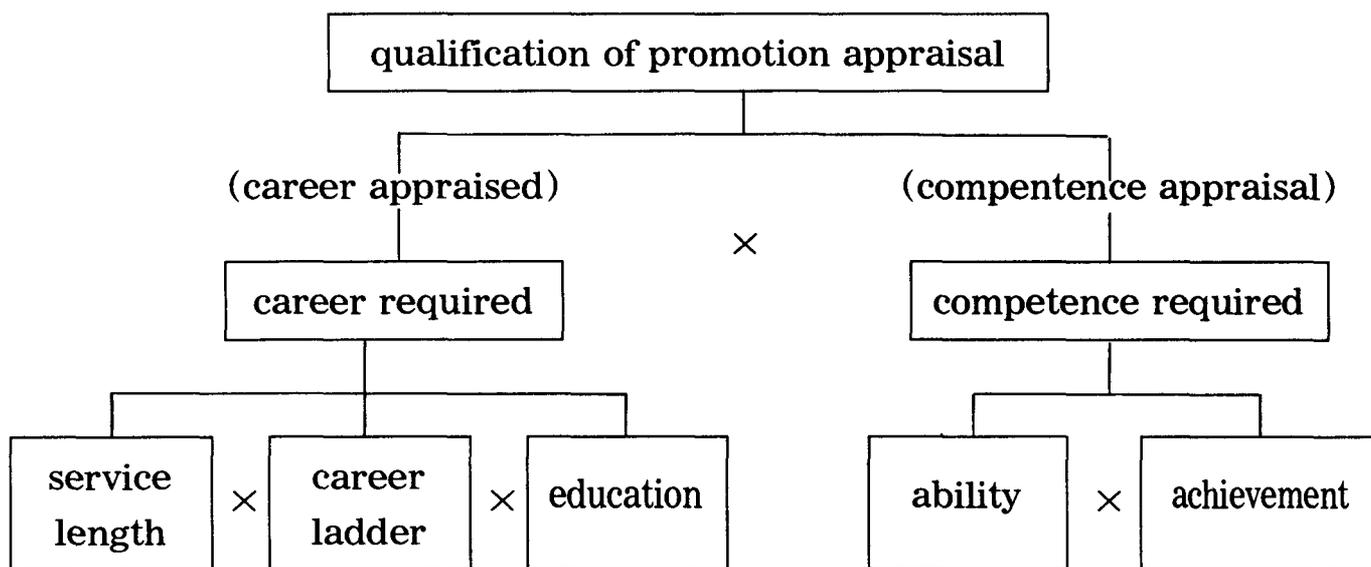
The appraisal system which measures the degree of competence is based on standards and facilitates the development of competence. Though past appraisal systems were mainly for reward and punishment, the development appraisal system exists for the development of members. So standards, appraisal and promotion qualification acquisition should be established.

1) Establishment of Standards of Competence

Competence standards consist of career appraisal and competence appraisal. The former assesses the basic career including the service length for qualification acquisition and the latter competence for a specific job. The ca-

reer ladder and education are the major targets for career appraisal, whereas the present and potential competence are for competence appraisal. The present competence includes professional, instrumental, social and attitude competence.

〈Figure 17〉 Establishment of Appraisal Standards



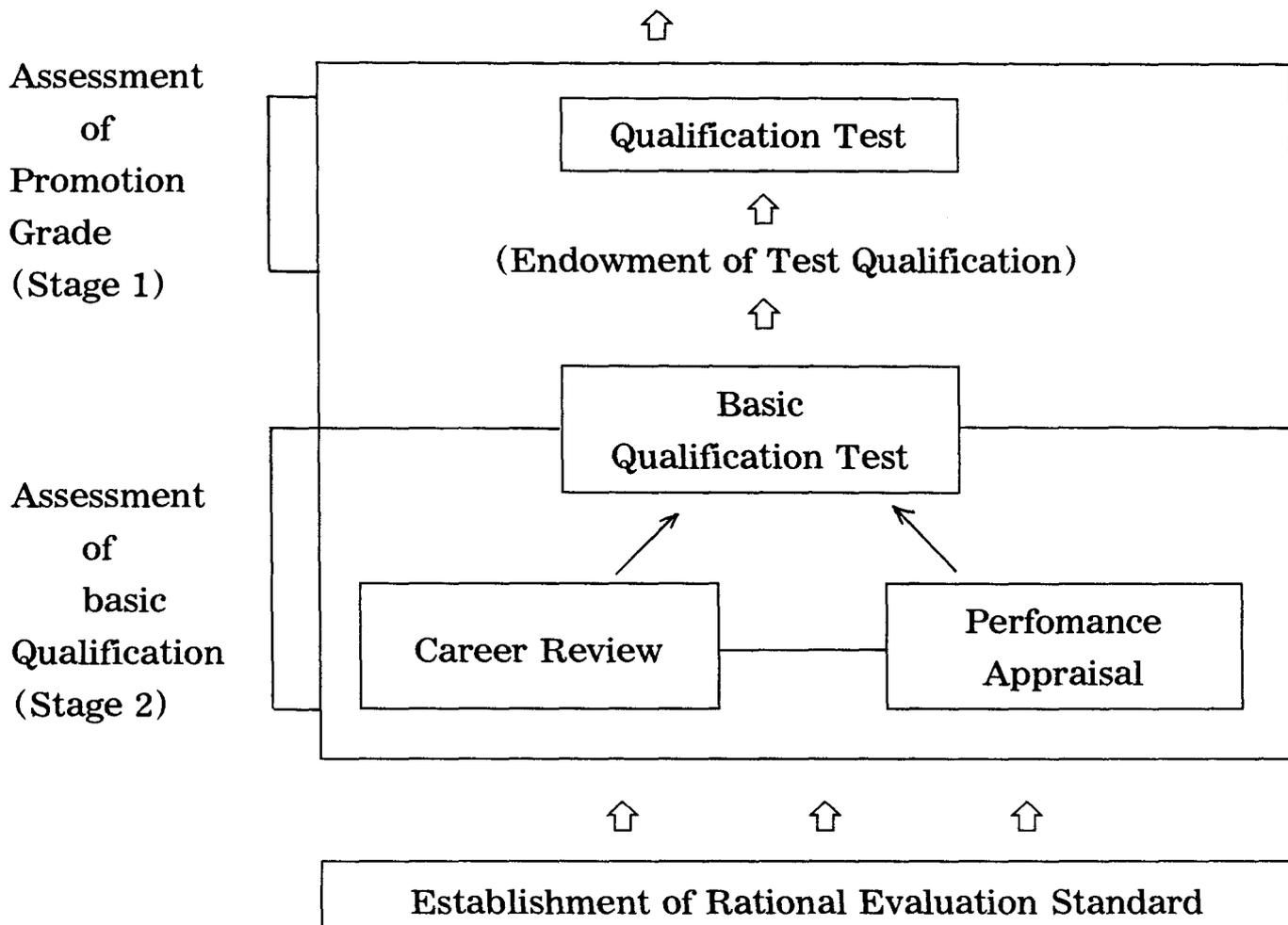
2) Establishment of Standards for Qualification Acquisition

The establishment of standard qualification acquisition is also needed. The standard is the promotion qualification requirement for the objective appraisal of promotion and compensation.

This study is comprised of two stages. In the first stage of qualification promotion, the fundamental qualification would be assessed; and in the second stage, those who have the qualification are selected.

The first stage consists of career, performance appraisal, and basic qualification examination. The second stage consists of either the test or the sum of the grade and performance appraisal. So the standards of promotion qualification acquisition can be presented as 〈Figure 18〉.

〈Figure 18〉 The Acquisition Process of Promotion Qualification
Acquisition of Qualification



3. Establishment of Training and Education System

Company education and training emerges as the source of development and the major strategic means of management. To make the firm a learning organization and to establish a developmental training and education system, the structural dimension and the functional dimension have to be in harmony with a focus on what, who and, how in particular.

'What' means the contents of training and education. This considers the improvement of professional competence and work levels. Systematic training and education at each level and function are required.

'Who' means line-centered or staff-centered. According to it OJT and Off-JT should be in harmony.

'How' means the methods for training and education. It includes discussion, seminars, case studies, lectures, etc.

Here it is important to apply the proper method according to the object and content of training and education. Therefore 'what' is for the developmental and structural side in that 'what' precedes 'who' and 'how', which is the practical and functional side. 'What' of the structure mainly determines the curriculum, 'who' of the function of the personnel in charge and 'how' medium of training and education. So the training and education consists of the development part and the practical part. These two parts have to be in harmony and interrelated.

In the development training and education, 'what' is the development of professional, social and instrumental competence and 'who' and 'how' are the hand-on practice and discussion through OJT and SD(self-development).

V. Conclusion

Korean manufacturing firms should develop an internal labor market that supports the development of human resources who possess workplace-centered skill / technology. As described so far, internal labor markets of Korean firms are not efficient. Again, not only are wage and promotion systems formulated based on seniority, but also evaluation and training systems are not developed systematically. Thus these systems do not support the efficient development of the competence and careers of employees, especially those who supply workplace manpower. These patterns of human resource management had not been problematic under low-wage and high-growth economic conditions. But they have produced problems from the mid-1980s when high-wage and low-economic growth conditions began to prevail.

Now, Korean manufacturing firms should choose strategies to deal with these changes in the economic environment. To accomplish these strategies, innovations are needed in human resources management, and innovations should focus on the development of human resources.

Present human resources management based on seniority has limits in supporting both the development of employees competence and motivation. Thus to satisfy the growth needs of employees and support the technology

accumulation of firms, human resources management systems should be built around a competitive internal labor market which promotes the skill / technology formation of employees.

Through formation of a competitive internal labor market, firms will achieve both the rationalization of work in the view of the management and humanization of work in the view of employees. After all, technology accumulation and the competitiveness of Korean firms may only be achieved through the development of their human resources.

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