

# Impact of HRD Practices on Business Performance : *An empirical analysis of manufacturing SMEs in Japan*

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## Abstract

There is a growing body of evidence supporting the relationship between Human Resource Development (HRD) practices and perceived benefits in organizations. However, most of these studies have been limited only to large enterprises and carried out in western societies. Although some studies have tried to rectify this situation, serious inadequacies in these studies have questioned the validity of their findings. To rectify this situation, an attempt was made to examine the impact of HRD practices on business performance having taken a sample of manufacturing SMEs in Japan.

A mail survey was developed and distributed to owner(s)/manager(s) in manufacturing SMEs in Aichi Prefecture in Japan. An electronic data file maintained by the Nagoya Chamber of Commerce was used to draw the sample. Three hundred twenty-six (326) questionnaires were distributed to a randomly selected sample of manufacturing SMEs in Nagoya in Aichi Prefecture. One hundred five (105), equivalent to thirty two percent (32%), positively responded to the survey.

The owner(s)/manager(s) was (were) asked the level of adaptation of eight (8) HRD related practices, employed during the past three years. In relation to these practices they were asked to reveal their perception about the operational and financial performance during the same period. The results of the analysis indicate that there exists a strong relationship between HRD practices and operational performance. Specifically, workforce training and development have led to the increased skills, attitudes and motivation of employees in manufacturing SMEs in Japan. On the other hand, these increased HRD outcomes have been translated into the increased financial performance. Besides this indirect relationship, it was found a positive direct relationship between HRD interventions and financial performance in Japanese manufacturing SMEs.

**Keywords :** SMEs, HR, HRM, HRD, operational and financial performance.

## 1 Introduction

Small and Medium-sized Enterprises (SMEs) have been playing a major role in every area of the national economy in Japan. Their importance is indicated by the very large share of the economy that they occupy. In 2001, SMEs numbered 4.7 million and accounted for 99.7% of all

firms (excluding the primary sector). It employed 30 million persons which is 70.2% of total employment. SMEs accounted for 51.2% of total manufacturing shipment volume, 64.4% of wholesale sales and 72.1% of retail sales in 2001 (METI, 2006). However, the firm exit rate has trended upward in recent years, and rose by a record annual average of 6.1% (based on the number of enterprises) between 2001 and 2004. As a consequence, the firm exit rate has considerably exceeded the firm entry rate despite the slight upward swing in the entry rate and the gap has widened further to 2.2% in terms of number of establishments and 2.6% in terms of number of enterprises. This is the largest gap on record since statistics were first compiled in 1947 (METI, 2006).

Nevertheless, successful business management of SMEs largely depends on the quality of human resource that supports companies (JASMEC, 2001). Securing and training high-quality personnel are, therefore, key factors for the growth of SMEs, which often have limited opportunities to utilize managerial resources. These needs for training were clearly recognized in Japan for the first time in 1960s when the country was entering a period of high economic growth (OECD, 2002). "... the balance of evidence indicates that formal training and development cuts failure rates by half- all other things being equal" (SFEDI, 1999) and "... failure rates could fall from one in three in the first three years to one in ten where training was undertaken" (Story, 1994).

However, it is disheartening to note that scant attention in the SME research is given to the study of human resource management (HRM) practices, particularly training provisions for workforce development. The lack of research in HRM in SMEs has resulted in lack of information about human resource (HR) in SMEs which is essential for theory, research and practice. Current HR theory has been developed and tested in large organizations. As a result, little is known about the extent to which the theory extends to smaller entrepreneurial organizations.

Despite the growing importance of SME research during the last decade, Pettigrew *et al* (1990) claims that, little attention has been paid to the study of training and development practices in SMEs. Not only do SMEs themselves pay less attention to training, but the issue of training and development in SMEs has also been relatively neglected by academics. Cosh, Duncan, and Hughes (1998), Marshall *et al.* (1993, 1995), and Westhead and Storey (1997) have attempted to rectify this situation. However, their studies are inconclusive and their focus is strictly limited to western society. Most of these studies have used a binary indicator as their measure of training (e.g. Westhead and Story 1997; Cosh et al. 1998) – whether training is provided or not – but this fails to distinguish adequately the quantity or quality of such training (Kitching & Blackburn, 2002).

The recent attempt by Cosh *et al.* (2000) to provide a more sensitive measure of the quantity or quality of training uses training costs as a percentage of total sales. This measure, however, seems most appropriate to training which has a measurable money costs as in the case of external courses. Training which do not incur a direct or easily measurable money cost, such as that provided in-house by employers or other members of the workforce would not appear in this type of calculation. In deed, informal learning at the work place, despite its pervasiveness, may be

impossible to cost because of its diffuse character. Unfortunately, this is a serious omission because small business owners often rely heavily on in-house training (Kitching & Blackburn, 2002).

Therefore, the prime objective of this study is to develop and test a conceptual model linking HRD to firm performance that fit for SMEs. Specifically, this study attempts to examine the impact of HRD practices on firm performance shedding some lights on the process through which these impacts are taking place.

## 2. Literature Review

An educated and well-trained work force is considered to be essential to the maintenance of a business firm's competitive advantage in a global economy. It is also believed that HRD can and should be a powerful agent to facilitate a firm's expansion and the development of capabilities, thus enhancing profitability (Cosh, Duncan, and Hughes, 1998). However, Westhead and Storey (1997) suggest that employees in SMEs are much less likely to receive training than their counterparts in larger organizations. They offer two possible explanations to account for this phenomenon. One is "ignorance", which suggest that small business owners are not aware of the benefits of HRD and consequently provides less than an optimal amount of it to their employees. Another is the "market forces" explanation, according to which business owners provide a less than optimal level of HRD because they anticipate that the costs associated with HRD may exceed the benefits (return) to be derived from it.

Much of research has, however, been rather narrow in its focus. Studies have often limited themselves to formal training (Westhead and Story, 1997; Cosh *et al.*, 1998; Patton *et al.*, 2000), thereby ignoring informal types of training. Recent studies show that many small employers rely heavily on in-house, on-the-job training (Johnson and Gubbins, 1992; Curren *et al.*, 1993, 1996). Other studies have confined their scope to particular occupational groups, particularly managers (or aspiring managers), neglecting the training experiences of other categories of workers (Westhead and Storey, 1996; Loan-Clark *et al.*, 1999; Patton *et al.*, 2000). Other researchers have conducted evaluations of particular training initiatives, which though often insightful may not be typical of most small business (Cushion, 1995; Marshall *et al.*, 1995; Westhead, 1997). It is questionable, whether the findings of these studies ought to be generalized to the broader small business population. These restrictions on the scope of studies may limit our understanding of the motives for, process of, and consequences of HRD provisions for small employers and their workforce (Kitching and Blackburn, 2002).

To determine whether HRD programs produce real benefits for SMEs, we must investigate the relationship between those programs and their effects on the business performance of SMEs. Although a number of previous studies have attempted to accomplish this task, serious inadequacies in theses studies have questioned the validity of their findings. To rectify this situation, an attempt was made to examine the impact of HRD practices and perceived financial performance in

manufacturing SMEs in Japan.

### 3. Conceptual Framework and Hypotheses

This section attempts to presents the theory behind a model of HRD practices contributing to organizational performance that is partly mediated by development of employee skills, shaping of employee attitudes, and employee motivation. The proposed HRD practices lead to higher levels of employee skills, attitudes and motivation which lead to higher organizational performance. There are many theories surrounding the concept of HRD which are useful for the study. Specifically, human capital theory, resource-based theory, and behavioral perspective will be discussed here.

#### 3.1 Human capital theory

Gary Becker's (1964) human capital theory represents an attempt to modify the basic neo-classical model of supply and demand in the labor market, which is based on wage levels (i.e, employer costs vs. worker earnings), and the relative benefits of work compared with non-work.

It recognizes that differential education, training, and experience levels produce differential costs/earnings in many different labor markets. Wage levels are directly related to the profitability of the products in those markets and to the level of skills, which are developed through training and experience in order to produce those products.

Training can be seen as an investment in human capital and the decision to undergo training and acquire skills is seen as a rational choice in time-preference, deferring current gratification in exchange for anticipated future earnings. Supply in each labor market is rationed by the time (which also reflects individual ability and the quality of training) and other costs involved in acquiring skills. According to Becker, there is a tendency for growth and economic development to impel a shift towards labor-saving production methods and techniques. Industries and firms, which recognize these trends, need the necessary skills for producing the latest goods and services through new labor-saving and time-saving technologies. These SMEs are in the core sectors of the economy while older industries, less amenable to these transformations, are in the precarious, unstable and more poorly paid secondary sector.

The most successful companies and the most successful countries will be those that manage human capital in the most effective and efficient fashion by investing in their workers, encouraging workers to invest in themselves, providing a good learning environment including social capital as well as skills and training (Becker, 2002).

Human capital theory, introduced in 1964 by Gary Becker, makes a very simple argument: investments in education – either formal or informal – increase an individual's level of productivity and therefore improve their earning's potential (Gattiker, 1995). Although we may not know it, nearly every individual and organization has or will make a decision based on this theory. Clearly,

this argument raises several questions. For example how does this impact the organization ? Can organizations calculate their potential return on investment for a particular on-the-job training program ? What type of training produces the highest return on investment - general or firm specific ? As we might expect, there is not unanimous agreement on the answers to these questions.

However, the relationship between education and productivity is very important to the employer. For example, the director of human resource wants to know if an expensive, company funded training program will increase employee productivity and, in turn, increase profits.

Employee training can be divided into two types: firm-specific and general training. Firm-specific training is nontransferable. This type of training is usually of little or no value outside the organization. An example of firm-specific training is learning to operate specially designed machinery not used elsewhere. General training, on the other hand, is useful beyond the current firm. Computer knowledge, typing or even learning to operate a forklift etc. are all examples of general training. All of these skills could be of some value to other employers.

### 3.2 Resource-based theory

The resource-based perspective is based on the assumption that differences in physical, organizational and HR between firms cause a fundamental heterogeneity in their productive potential. Given this heterogeneity, the long-term competitiveness of a company depends upon the resources that not only differentiate it from its competitors, but are also durable and difficult to imitate and substitute (Hansen and Wernerfelt, 1989; Mahoney and Pandian, 1992; Barney, 1991; Prahalad and Hamel, 1990; Rangone, 1999). HR is an important source to generate sustained competitive advantage: "human resource systems can contribute to sustained competitive advantage through facilitating the development of competencies that are firm-specific and generate tacit organizational knowledge" (Lado and Wilson, 1994). Maintaining a competitive advantage based on HR requires a management of those HR that ascertains that these resources stay competitive, difficult to imitate and to substitute.

The resource-based approach stresses the need for a specific HRM strategy, which seeks to achieve competitive advantage by increasing commitment and competence of the workforce. This would require a set of internally consistent HRM practices, or, in other words, an internal fit of HRM practices. Obtaining internal fit is often associated with a best-practice approach to HRM practices (Huselid, 1995; Legge, 1995). The "best practices" or "high-commitment" theory of HRM suggests that universally, certain HRM practices are associated with improved organizational performance. For instance, well-paid, well-motivated workers, working in an atmosphere of mutuality and trust, should generate higher productivity gains and lower unit costs (Boxall, 1996; Lowe and Oliver, 1991; Pfeffer, 1994; Walton, 1991).

Nevertheless, best practices are not a necessary consequence of the resource-based approach. A specific HRM strategy is suggested, but the strategy discussed by Koch and McGrath (1996)

can call for different HRM practices for different firms: different needs regarding individual employees may result in different hiring, selection, training and compensation practices. For example, employee development may include formal training programs for some firms, while for other firms training on-the-job may be a more appropriate way to obtain the required skills. Some authors assert that the source of sustained competitive advantage lies in the HR themselves, and not in the practices used to attract, utilize or retain them (Ferligoj *et al.*, 1997; Wright *et al.*, 1994). By contrast, other scholars argue that HRM practices themselves can be viewed as organizational competencies, such as the ability to motivate employees, handle internal politics and so forth (Barney, 1991; Narasimha, 2000; Oinas and Van Gils, 2001; Paauwe, 1998). Using either interpretation, HR is viewed as important contributors to the success of the firm.

### 3.3 Behavioral perspective

The behavioral perspective on HRD can be defined as the use of personnel practices as tools for shaping patterns of behavior that help to achieve organizational goals and objectives (Naylor *et al.*, 1980). Different goals and objectives require different strategies and behaviors, and therefore, different HRD practices (Snell, 1992). This leads to a focus on an external fit, resulting in contingency theories on HRM (Huselid, 1995; Legge, 1995). Size, technology, ownership, sector and location are examples of contingency variables that have been included in previous studies (Delery and Doty, 1996). Building on this perspective, Schuler and Jackson (1987) test the notion that each of Porter's three generic strategies (Porter, 1985) fits a certain constellation of HRM practices. Like contingency theories, configurational theories assume that the usefulness of specific HRM practices will depend on the context in which they are applied. In contrast with contingency theories, however, configurational theories are usually based on typologies of ideal types of HRM systems, and are concerned with specific patterns of HRM practices (Delery and Doty, 1996). Thus, they posit that companies pursuing a quality strategy should have explicit job descriptions and high employee participation. Those with a cost minimization strategy should use tight narrow policies and those pursuing an innovation strategy should reward longer-term goals and broad career paths. In a review of this research, Barney and Hesterley (1996) note that empirical support of the hypotheses laid out by the behavioral perspective is relatively weak. Nevertheless, the argument of fitting strategy and HRM practices is compelling. Rather than look at generic strategies and HRM practices, a different group of researchers posit a link between growth-oriented strategies and greater emphasis on HRD. For instance, Lengnick-Hall and Lengnick-Hall (1988) posit a reciprocal interdependence between a firm's business strategy and its HRM strategy. In their model, demand for skilled employees may be dictated by competitive strategy. In turn, organizational readiness (the availability of necessary human resources) may affect competitive strategy. They further argue that high corporate growth expectations coupled with organizational readiness can lead to expansion. On the other hand, low human resource readiness and low growth expectations may lead to redirection of strategy to more attainable goals. Thakur

(1998) and Matthews and Scott (1995) find empirical support for the proposed linkage between a growth-oriented strategy and HRM strategies to improve human resource readiness. In sum, although it is not clear that the generic strategies as defined by Porter require different sets of HRM practices, there may well be some correlation between aspects of strategy such as growth orientation and the HRM practices that evolve.

Based on human capital theory, resources-based theory, and behavioral perspective, the link between HRD and business performance can be shown in a model as in Figure 1.

### *Firm Performance*

Firms can establish a sustainable competitive advantage through the implementation of a value or a competitive advantage creating strategy, which is not being carried out by any current or potential competitors. Under the resource-based view of the firm, successful firms can achieve sustainable competitive advantage by acquiring and maintaining valuable idiosyncratic resources, which are rare, imperfectly imitable and non-sustainable, and a firm's HR can be a source of this sustainable competitive advantage (Barney, 1991 ; Wright *et al.*, 1994).

Recently, research has begun to examine the relationship of high performance HRD “bundles” or configuration of practices (Miller and Shamsie, 1996) with sales, profitability and turnover. Empirical evidence has been found for ‘bundling’ practices due to added synergies gained from the conglomeration of practices, which leads to additive or multiplicative higher returns than indi-

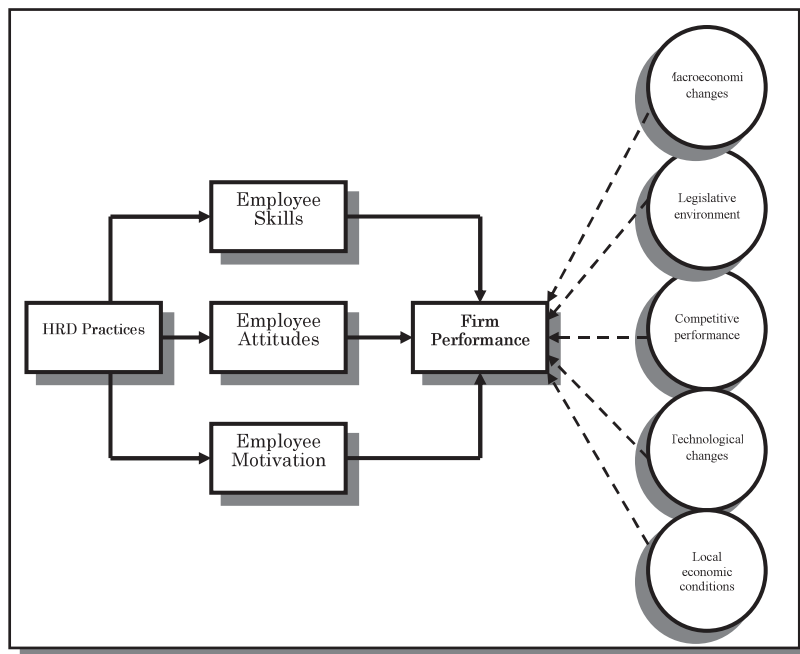


Figure 1 Impact of HRD practices on firm performance in SMEs

Source : Adapted from Paauwe and Richardson (1997) and Arthur and Hendry (1990)

vidual components. MacDuffie (1995) note that, implicit in the notion of a “bundle” is the idea that practices within bundles are interrelated and internally consistent, and that “more is better”. His study of automotive assembly plants found that plants with “high commitment” HRD bundles of practices, consisting measures of employee skills, training, performance-based compensation and the existence of status barriers, outperform mass production plants. Youndt *et al.*, (1996) determined the extent to which HRD systems directly enhance operational performance. The authors propose that different firm strategies will require different attitudes, roles and behaviors of employees, which can be elicited from employees via different HRD practices. Youndt *et al.* (1996) tested the relationship between human capital enhancing HRD system and operational performance and found significant results.

Past research has found that performance-oriented and employee skills developing practices have a positive effect on firm performance. Empirical evidence points to the effectiveness of incentive systems that tie individual and group rewards to organizational performance. According to expectancy theory (Vroom, 1964), when pay is tied to some measure of individual or group performance, employees are more like to work harder to increase the individual's, group's, or the organization's performance, and an increase in the performance in any of these areas will lead to an overall improvement in firms performance.

Practices whose aims are to develop the skills of human capital of employees (Wright, *et al.*, 1999; Delaney and Huselid, 1996; Huselid, 1995; MacDuffie, 1995) impact positively on firm outcomes. Delery and Doty (1996) found that training program increased the return on equity of firms. Youndt *et al.* (1996) found that ‘human capital enhancing’ practices were positively related to employee productivity and customer alignment. Welbourne and Andrews (1996) found that HR as a source of competitive advantage leads to better stock performance and the survival of the organization. MacDuffie (1995) and Huselid (1995) examined the amount of training provided to new and existing employees in their examination of effective HR bundles, and found that building employee skills increase firm performance.

Therefore, it is hypothesized the following relationship between a synergistic HRD system consisting of performance-oriented, skill-developing and strategically aligned HRD practices and firm performance :

*Hypothesis1 : A positive relationship exists between synergistic HRD practices and firm performance*

### *Employee skills*

Human capital theory focuses on the effects of the variance in employee skills on performance (Becker, 1964). Human resource is defined as the pool of human capital under the firm's control in a direct employment relationship (Wright and McHahan, 1992). Application of human capital theory focuses directly on the skills or competencies of human beings in organizations. Wright *et al.* (1994) recognize that the characteristics of individuals do not provide value to the firm unless



they are channeled through employee behaviors, but employees must have the competencies necessary to exhibit these desired behaviors.

Wright *et al.* (1994) propose that higher levels of human capital (or employee skills) lead to greater capabilities to develop more efficient means of accomplishing tasks requirements and greater capability to respond to environmental changes, leading to sustained competitive advantage. HRD practices are the levers or mechanism through which employee skills can be developed. Firms may do this by implementing practices that place an emphasis on investment in HR to build the skills of employees. For instance, performance-oriented practices, such as performance based-compensation practices, encourage employees to gain skills that will enhance their job performance. Strategically aligned practices, which emphasize the alignment of HR practices with the business strategy, determine which skills are necessary for the successful implementation of organizational strategies.

Therefore, it is believed that employee skills are a key antecedent to firm performance. Thus, it is proposed that one of the primary mediating process by which the effects of HRD practices are converted to firm performance is through changes in the skill level of employees. Therefore the following hypotheses are proposed :

*Hypothesis 2 : Synergistic system of HRD practices will increase the level of skills of employees*

*Hypothesis 3 : Increase in the skills of employees will mediate the relationship between a synergistic system of HRD practices and firm performance*

#### *Employee attitude*

As stated above, Wright *et al.* (1994) point out that characteristics such as the skills of individuals do not provide value to a firm unless they are channeled through the proper employee behaviors and attitudes. Employee's behavior or attitude will determine if and to what extent employees will use their capabilities within the organization (Jackson *et al.*, 1989; Schuler and Jackson, 1987). If an employee has good attitudes and behaviors such as high job satisfaction and high job commitment, they are more likely to work for the benefits of the organization, thereby positively affecting firm performance.

Job satisfaction deals with how people feel (satisfied or dissatisfied) about different aspects of their jobs. Factors associated with the job such as the organization, and policies and procedures, can positively influence job satisfaction while organizational constraints that interfere with job performance such as task preparation (whether or not the employee has the skills necessary for the job) can negatively influence job satisfaction. Thus, an HRD system with procedures to identify and select the best talent may have employees with higher job satisfaction. High job satisfaction is important for organizations as it affect such employee outcomes as job performance and organizational citizenship behaviors (Spector, 1997).

Organizational commitments represent identification with an affective attachment to the organization (Porter *et al.*, 1974). Organizational commitment is defined in terms of the strength of an

individual's identification with and involvement in a particular organization (Porter *et al.*, 1974). When commitment is high, it means that an employee's values are aligned with the organization and that he or she wants to do what is best for the organization (Mowday *et al.*, 1982).

A large body of literature supports the notion that the work practices of an organization influence perceptions of commitment and other attitudes about the organization (Vroom, 1964; Arthur, 1994). In a study of multiple business units, Gardner *et al.* (2000, 2001) found positive results for an employee-attitudes-mediated model of HRD practices leading to decreased turnover and absenteeism.

Firms may influence employee attitudes by implementing practices that place an emphasis on HRD, which shows employees that firms care about building their skills and view employee capabilities as being important to the company. Performance-oriented practices show that the organization will evaluate employees objectively and fairly on performance criteria, including, that employees who perform well can succeed in the organization. For example, Price (1977) presented a model of the determinants and intervening variables of turnover, defined the primary determinants of turnover as job satisfaction, which is determined by pay levels, integration, instrumental communication and centralization of power. Strategically aligned practices indicate that HRD practices are aligned with business strategies so that employees will feel the organization is well managed and has a great potential for success leading to positive attitudes about the organization.

Therefore it is proposed the following hypotheses :

*Hypothesis 4 : Synergistic system of HRD practices will increase the positive attitude of employees*

*Hypothesis 5 : Increase in the positive attitudes of employees will mediate the relationship between a synergistic system of HRD practices and firm performance*

### *Employee motivation*

Pinder (1998) describes work motivation as the set of internal and external forces that initiate work related behavior and determine its form, direction, intensity and duration. This definition recognizes the impact of environmental factors, such as organizational incentives and the nature of work, as influencing the motivation of employees.

HRD practices are the means through which firms seek to motivate employees to engage in the discretionary behavior that contribute to the achievement of firm goals. Firms may influence employee motivation by implementing practices which place an emphasis on investment in HR, such as through training programs which allow firms to communicate proper behaviors to employees and to socialize employees into the cultures and norms of the organization (Wright *et al.*, 1994). Huselid (1995) found that motivational high performance work systems decreased turnover and increased productivity and sales. The fact that the firm places an emphasis on building up employee skills may motivate employees to work harder in order to participate in the training

**Table 1** The Impact of HRD practices on firm performance in SMEs : Hypothesized relationship

<i>Variable</i>	<i>Definition/ description</i>	<i>Hypothesized relationship</i>	<i>Statistical test used in the analysis</i>
HRDINTE	HRD intensity	+	Pearson Product-movement correlation
COMPETE	Employee skills	+	Pearson Product-movement correlation
ATTITUD	Employee attitude	+	Pearson Product-movement correlation
MOTIVAT	Employee motivation	+	Pearson Product-movement correlation

*Source : Developed by the author, 2005*

opportunities. One of the key outcomes of the work that motivates employees is wages (Vroom, 1964). Performance-oriented practices tie rewards to performance so that employees are encouraged to engage in behaviors that align with the interests of the organization. As indicated above strategically aligned practices, which indicate to employees that HR practices are aligned with the business strategies of the organization, may motivate employees to work harder and more efficiently since they know that the organization that they are working for is being strategically managed. Therefore, it is hypothesized the followings :

*Hypothesis 6 : Synergistic system of HRD practices will increase the motivation of employees*

*Hypothesis 7 : Increases in employee motivation will mediate the relationship between a synergistic system of HRD practices and firm performance.*

The above discussion leads to seven hypotheses, which can be summarized as in Table 1.

#### 4. Sample and Procedure

The organizations included in this research were selected from a random sample of 326 Manufacturing SMEs in Nagoya, Aichi Prefecture in Japan. Nagoya is the fourth largest city in terms of the industrial contribution to the GDP and plays a crucial role in the economic development in Japan. A list of Manufacturing SMEs whose employees are less than 300 but more than 10 was compiled from the Nagoya Chamber of Commerce. Enterprises whose employees are more than 300 were not included in the sample as they are considered to be large enterprises according to the defining of SMEs in Japan. Enterprises whose total employees are less than 10 were not included as they do not have a formal unit dealing with HRM.

There were 2691 manufacturing SMEs in Nagoya in the mid 2004 whose total employees are in between 10-300. Out of this, there were 71 enterprises that have been registered out side Nagoya city. So it was deducted from the total population, as it does not fall within the population frame. On the other hand, there were 328 enterprises who were carrying out their operations out of the Nagoya city limit but have been registered in with in Nagoya. So, these enterprises were included

in our total population which results in 2948 enterprises as our total population. From this population, a sample of 326 enterprises was selected randomly.

A self administered questionnaire was sent to the owner/manager of 326 organizations at the end of the 2004 fiscal year. The questionnaires were sent to the owner/manager for two main reasons. First and foremost, they have the greatest access to the data related to HRD activities. Second, they have the largest storehouse of knowledge about the overall activities of the organization at the macro level, as opposed to the narrow departmental level. Nevertheless, there was a fear that respondents who have direct responsibility for the implementation of HRD activities will make a subjective evaluation. In an attempt to minimize the respondents' subjectivity as much as possible, most of our questions dealt only with raw data regarding HRD practices.

An extensive telephone follow-up was made two weeks after the questionnaires were sent. A total of one hundred twenty firms (120) participated in this survey resulting thirty-seven percent (37%) response rate. However, due to the incompleteness of data, fifteen (15) questionnaires have to be abandoned. So, the remaining one hundred-five firms (105) considered as the usable response rate which is thirty-two percent (32%). This rate can be considered as "considerably high response rate" due to the inherent nature of low response rate attached to the mail questionnaire surveys.

## 5. Measures

The objective of this study is to examine the impact of HRD practices on firm performance and thereby shedding some lights on the mediating effects through which HRD practices are translated into business performance in SMEs. Both dependent and independent variables were constructed from Likert-scale survey responses. Here, HRD practices are considered as independent variable while firm performance is considered as dependent variable. As noted above, it is presumed that HRD practices influence on firm performance through three major aspects by developing: (1) employee skills (2) employee attitudes, and (3) employee motivation. These three facets are crucial components of HRD practices found in previous studies, and are considered as mediatory variables which impact on firm performance.

Previously validated measures were used for all variables. The dependent variable, firm performance (PERFORMANCE) has been widely measured by using growth in sales revenue and growth in profits. The reliability of the measure for PERFORMANCE was evaluated and found to be acceptable with a Cronbach alpha of 0.91. The independent variable, HRD intensity (HRDINTEN) was measured by using a cumulative index comprising eight dimensions; formal and informal training, team-based work, job rotation, educational assistance, performance-based pay, quality circles, TQM practices, and learning by doing. Factor analysis indicated that the eight measurement items represented one factor, HRD intensity, and that all items contributed significantly to explain the HRD concept. The mediating variables; employee skills (SKILLS) was

measured by using three (3) items and found to be acceptable with a Cronbach alpha of 0.83. Employee attitudes (ATTITUDES) were measured by two (2) items and employee motivation (MOTIVATION) was measured by using three (3) items concerning HRD outcomes. The reliability of the measure for ATTITUDE and MOTIVATION were found to be 0.74 and 0.73 respectively.

The relationship between HRD intensity and firm performance was investigated using Pearson product-moment correlation coefficient. Preliminary analysis was performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity.

The independent variables were then tested in the second level analysis with multivariate regression models to explain the process through which HRD intensity influences on firm performance. The regression models were all rigorously tested to avoid multi-co-linearity and auto-correlation.

The key concepts and variables used in the conceptual model were operationally defined as follows :

- *HRD* : refers to the provision of learning, development and training opportunities in order to improve individual, team, and organizational performance during the last three years
- *Skill of the employees* : is a task an employee can perform to satisfactory level (or higher)
- *Attitude of the employees* : is defined as a settled mode of thinking of employees
- *Motivation of the employees* : refers to the propensity of the employees to expend effort in work
- *Firm performance* : is the level of achievement by the firm in terms of growth in sales and growth in profits during the last three years

## 6. Results

### 6.1 Sample Characteristics

A total of one hundred twenty (120) or thirty seven percent (37%) SMEs responded to the survey. Due to the incompleteness of data, fifteen questionnaires had to be discarded. The remaining one hundred five (105) or thirty two percent (32%) was considered for the data analysis. The demographic characteristics of the sample are presented in the following sections.

#### 6.1.1 Age of the firm

SMEs in the sample can be categorized according to the age of the business. Accordingly, four (4) age categories were identified ; firms with age less than 4 years, 5-10 years, 11-20 years and more than 20 years. The age characteristic of the sample is given in the Table 2

According to the Table 2, most of SMEs in the sample are older firms. It shows that more than ninety five percent (95%) SMEs are more than ten (10) years old.

Table 2 Analysis of the sample by the age of the business

Ageband	Frequency	Percent	Valid percent	Cumulative percent
Less than 4 years	2	1.9	1.9	1.9
5 – 10 years	3	2.9	2.9	4.8
11 – 20 years	14	13.3	13.3	18.1
Morethan 20 years	86	81.9	81.9	100.0
Total	105	100.0	100.0	

Source : Survey data, 2005

### 6.1.2 Total employees

The size of the SMEs in the sample can be categorized according to the number of employees. Accordingly, four (4) size bands were identified ; firms with employees 10–19, 20–49, 50–99, and 100–299. The breakdown of the sample according to the number of employees is given in Table 3.

Table 3 Analysis of the sample by the number of employees

Sizeband	Frequency	Percent	Valid percent	Cumulative percent
10 – 19 employees	43	41.0	41.0	41.0
20 – 49 employees	36	34.3	34.3	75.3
50 – 99 employees	18	17.1	17.1	92.4
100 – 299 employees	8	7.6	7.6	100.0
Total	105	100.0	100.0	

Source : Survey data, 2005

According to table 3, more than forty percent (41.0%) SMEs are having employees in between 10 to 19 employees and nearly seventy five percent (75%) are having less than fifty (50) employees.

### 6.1.3 Nature of control

Sample SMEs were classified based on the nature of control of the firm. Accordingly, two (2) categories were identified. i.e SMEs managed by the owner(s) and SMEs managed by paid manager(s). The classification is shown in Table 4.

Table 4 shows that, slightly less than ninety five percent (94.3%) SMEs are controlled and managed by the owner(s) and only five percent (5.7%) are controlled and managed by paid-manager(s).

**Table 4** Analysis of the sample by the nature of control

Nature of control	Frequency	Percent	Valid percent	Cumulative percent
Managed by owner(s)	99	94.3	94.3	94.3
Managed by paid manager(s)	6	5.7	5.7	100
Total	105	100.0	100.0	

*Source : Survey data, 2005*

#### 6.1.4 Total capital employed

The size of SMEs can be defined in terms of total capital employed. Accordingly five (5) categories were identified. They are ; firms with total capital employed less than one (1) million, 1-5 million, 5-10 million, 10-50 million, and more than 50 million yen. The total capital characteristic of the sample is given in Table 5.

There was no firm with total capital less than one (1) million yen in the sample (see Table 5). More than fifty percent (58%) SMEs have invested ten to fifty (10-50) million yen and there were slightly less than ten percent (8.6%) SMEs, who have employed more than fifty million yen.

#### 6.1.5 Total annual sales

Depending on the total annual sales, SMEs in the sample were categorized into five (5) categories. They are ; firms with annual sales less than 10 million, 10-50 million, 50-100 million, 100-500 million, and more than 500 million yen. The breakdown of the sample, based on total sales is given in table 6.

According to Table 6, slightly less than sixty percent (59.0%) firms are having annual sales amounting to 50 to 100 million yen. There were three (3) firms who are having an annual turnover more than 500 million yen.

**Table 5** Analysis of the sample by the total capital employed

Total capital	Frequency	Percent	Valid percent	Cumulative percent
Less than 1 million yen	0.0	0.0	0.0	0.0
1 – 5 million yen	11	10.5	10.5	10.5
5 – 10 million yen	27	25.7	25.7	36.2
10 – 50 million yen	58	55.2	55.2	91.4
More than 50 million yen	9	8.6	8.6	100.0
Total	105	100.0	100.0	

*Source : Survey data, 2005*

Table 6 Analysis of the sample by the total annual sales

Total annual sales	Frequency	Percent	Valid percent	Cumulative percent
Less than 10 million yen	4	3.8	3.8	3.8
10–50 million yen	16	15.2	15.2	19.0
50–100 million yen	62	59.0	59.0	78.1
100–500 million yen	20	19.0	19.0	97.1
More than 500 million yen	3	2.9	2.9	100.0
Total	105	100.0	100.0	

Source : Survey data, 2005

## 6.2 Factor analysis of HRD practices

HRD was operationally defined as the provision of learning, development and training opportunities in order to improve individual, team and organizational performance during the last three years. In order to look at the different aspect of HRD, eight different HRD practices were identified: formal and informal training, team-based work, job rotation, education assistance, performance-based pay, quality circles (QC), total quality management (TQM), and learning by doing. These eight (8) practices represent various aspects of HRD in SMEs and can be used to measure the HRD intensity in firms. Factor analysis indicated that the eight measurement items represented one factor, HRD, and that all items contributed significantly to explain the HRD concept (see Table 7). It suggests that all eight practices load together on one factor, HRD (Cronbach alpha 0.88) and SMEs adopt these practices simultaneously. So, it is reasonable to combine these eight items into one index, HRD intensity.

## 6.3 The results of the correlation analysis

Table 8 presents descriptive statistics and correlations among all the research variables. For this exercise, the Pearson product-movement correlation coefficient analysis was used. In this analysis, it is ascertained the direct relationships among all the variables. This pair analysis provides a direct picture of the relationship between HRD intensity and firm performance (refer to Table 8).

The correlation between HRD intensity and firm performance has significantly high correlations. The correlation coefficient between HRD intensity and firm performance is 0.495 ( $p < .01$ ,  $n = 105$ ). This result indicates that organizations that invest more in HRD have significantly higher firm performance.

According to Table 8, it is clear that the mediating variables are highly correlated to firm performance. It is 0.842 ( $p < .01$ ,  $n = 105$ ) in between employee skills and firm performance, 0.809 ( $p < .01$ ,  $n = 105$ ) in between employee attitude and firm performance, and 0.820 ( $p < .01$ ,  $n = 105$ ) in between employee motivation and firm performance. These results indicate that these



Table 7 Factor analysis of the HRD practices (n = 105)

HRD practices	HRD Intensity
Quality circles	.778
Team-based work	.773
Total quality management (TQM)	.751
Learning by doing	.738
Formal and informal training	.736
Educational assistance	.731
Job rotation	.727
Performance-based pay	.696
Reliability analysis(Cronbach alpha)	.882

Source : Survey data, 2005

Table 8 Means, standard deviations, and correlations for all variables

Variables	Mean	S.D	1	2	3	4	5
1 Firm performance	2.63	1.00	1				
2 HRD intensity	2.53	0.98	.495**	1			
3 Employee skills	2.98	0.67	.842**	.490**	1		
4 Employee attitudes	2.90	0.71	.809**	.553**	.851**	1	
5 Employee motivation	2.87	0.65	.820**	.481**	.857**	.819**	1
**p<0.01							

Source : Survey data, 2005

mediating variables influence on firm performance in a positive way. On the other hand, HRD intensity is positively correlated with all mediating variables indicating that HRD intensity influences on all the mediating variables mentioned above. It is 0.490 ( $p < .01$ ,  $n = 105$ ) in between HRD intensity and employee skills, 0.553 ( $p < .01$ ,  $n = 105$ ) in between HRD intensity and employee attitude and 0.481 ( $p < .01$ ,  $n = 105$ ) in between HRD intensity and employee motivation.

The above preliminary results support all the hypotheses in our model (H1, H2, H3, H4, H5, H6, and H7). In order to conduct higher-level analysis, standardized multiple regression analysis was employed. However, according to the Table 8, it was found that the variables used as mediators in the model are highly correlated with each other (e.g.  $R$  (employee skills, employee attitudes) = 0.815. In order to alleviate the possible problem of multi-co-linearity, it was conducted separate regression analysis for each of the predicted mediators.

#### 6.4 The results of the regression analysis

Table 9 presents the results of the regression analysis for testing the effect of the HRD intensity on firm performance and also the role of the mediators in these processes. The mediating effect is tested through the following procedure: (1) It was conducted separate regression to test

Table 9 Results of standardized regression model for firm performance

	I	II	III	IV
HRD intensity	.495**	.108	.068	.030
Employee skills		.789**		
Employee attitudes			.771**	
Employee motivation				.757**
Constant	1.349**	-1.178**	.710*	-1.012**
F	33.34**	129.57**	97.99**	111.024
Rsquare	.245	.718	.658	.655
Adjusted R square	.237	.712	.651	.649
Note : **p<.001, *p<.005				

Source : Survey data, 2004

whether or not there exists statistically significant association between HRD intensity and firm performance (Model I) ; and then (2) it was added each mediator to these regression models (Model II, II, and IV). The following conditions must be met simultaneously for a mediating effect to be present : (1) the coefficient of the HRD intensity variable must be significant in the models without the mediators (i.e. the nested model) and non-significant in the models including the mediators (i.e. the full model) and (2) the coefficient of the mediators must be significant when the mediators are included in the regression models of HRD intensity leading to firm performance. In principle, mediation effect exists when the significance of the main variables (HRD intensity) disappears due to the addition of the mediators (i.e. employee skills, attitudes, and motivation) to the nested models (Baron and Kenny, 1986 ; James and Brett, 1984).

Regression results shown in Table 9 lend full support to our all hypotheses. Hypothesis 1, stating the positive effects of the HRD intensity on firm performance, was supported (Model I), consistence with previous studies (e.g. Huselid, 1995). The consistence of this findings with past research results lends some credence to the quality of our data. While the number of observations in the sample is relatively limited, the subjects were not biased in any particular direction.

Although HRD intensity positively and significantly accounts for variation in the dependent variable, firm performance, in Model I in which no mediating variable is included, this variable losses its significant explanatory power as each mediator variable (i.e. *Employee skills, attitudes, motivation*) is included in the regression models (Models II, II, IV). Moreover, all three mediator variables are significant at  $\alpha = .005$  or lower. These results not only suggest a direct positive relation of HRD intensity on firm performance but also the partial mediating effect of employee skills, attitudes, and motivation on firm performance, lending support to all the hypotheses. This conveys the idea that HRD practices contribute to an increase in firm performance by helping employees develop their skills for performing jobs, shaping their attitudes in the workplace and motivating them to achieve organizational goals.

## 7. Discussion of Findings

The primary purpose of the study was to examine the relationship between HRD activities and firm performance, and thereby shedding some lights on the process through which HRD influences on firm performance. It was hypothesized that organizations that viewed employees as potential partners and important assets would train and develop them in the hope that it would lead to higher organizational and financial performance. The results of the correlation analysis (see Table 8) shows that a positive correlations between HRD practices and firm performance in existence indicating that HRD practices impact on firms performance in a positive way. Also, according to the Table 8, HRD practices are highly correlated with mediating variables (HRD outcomes), and mediating variables are highly correlated with firm performance giving some evidence for the presumed association between HRD practices and firms performance through mediating variables. Thus, the results of this preliminary analysis support all the hypotheses in the study (H1, H2, H3, H4, H5, H6, and H7).

A general explanation is that increased HRD activities are reflected through the increased skills, attitudes, and motivation of employees (mediating variables). This increased skills, attitudes, and motivation are translated into increased productivity of employees. Higher productivity will directly contribute to the financial health of the organization reflected by growth in sales and profits.

In the second stage of the analysis, the model was regressed rigorously by using the standardized regression analyses. Table 9 presented the results of the regression analysis for testing the effect of the HRD practices on firm performance and also the role of the mediators in these processes.

Regression results shown in Table 9 lend full support to all the hypotheses. Hypothesis 1, stating the positive effects of the HRD intensity on firm performance, was supported (Model I of Table 9), consistence with previous studies (e.g. Huselid, 1995).

Although HRD intensity positively and significantly accounts for variation in the dependent variable, firm performance, in Model I in which no mediating variable is included, this variable lost its significant explanatory power as each mediator variable (i.e. *Employee skills, attitudes, motivation*) was included in the regression models (Models II, II, IV). Moreover, all three mediator variables were significant at  $\alpha = .005$  or lower. These results not only suggest a direct positive relation of HRD intensity on firm performance but also show the partial mediating effect of employee skills, attitudes, and motivation on firm performance, lending support to hypotheses 2, 3, 4, 5, 6, and 7. This gives the idea that HRD practices contribute to an increase in firm performance by helping employees develop their skills for performing jobs, shaping their attitudes in the workplace and motivating them to achieve organizational goals.

Organizations that place greater emphasis on HRD increase the human capital of individual employees (employee skills), their attitudes, and motivation which then argues the overall ability

of the organization. One general explanation is that the introduction of training practices achieved an improved fit between the individual and job and between individual and organization. This can result in higher competence of employees, employee job satisfaction, greater motivation, and close involvement with the job and organization. This can lead to the benefit of productivity. HRD can also be a mechanism for better aligning the skills offered by employees to the required skills. This fit will probably be translated into higher productivity (Bartel, 1994).

Finally, it is noteworthy to shed some light on the reverse causality of firm performance and HRD practices. It is a general observation that the increased financial performances of the organization give rise to increased HRD activities. Thus a positive relation seems to exist between these two variables. Measuring the reverse causality was beyond the scope of this study, however.

## 8. Implications of the Study

This research provided an insight into the HRD practices in manufacturing SMEs in Japan. It tried to examine the impact of HRD practices on firm performance in SMEs. Although some empirical research exists that provides evidence that HRD practices impact on performance, little empirical attention had been paid to exploring the process or so-called “*black box*” through which this impact takes place. HRD research had been highly criticized by numerous authors for its lack of theoretical and empirical work specifying the mediating process by which HRD policies and practices lead to outcomes (McMahan *et al.*, 1999; Becker and Gerhart, 1996). Through which mechanism, do HRD practices affect performance? Thus the purpose of this study was to examine not only whether or not but also how HRD practices influence firm performance in the context of Japanese manufacturing SMEs. Therefore, the findings of this study have very important implications for SME owner(s)/manager(s), SME support agencies, policy makers and academic researchers in general.

The results found in this study established a clear positive relationship between HRD practices and a firm performance in SMEs. Although most previous studies have not able to establish a strong relation between HRD practices and firm performance in SMEs, this study, based on Japanese manufacturing SMEs, found a highly significant positive relation between the above two variables. Practically, this should encourage all SMEs to begin HRD programs, no matter how small that program may be. Accordingly, owner(s)/manager(s) in SMEs should give special attention to the HRD practices in order to get better performance through their increased skills, attitudes and motivation.

Moreover, this study was able to uncover the process through which HRD practices influence on business performance in SMEs. This is very much useful for SME supportive agencies and policy makers. As policy makers and SME supportive agencies, the results of this survey can be used to map out strategies to make HRD more attractive to owner(s)/manager(s) in SMEs.

The present research design presumed the simultaneous effect of HRD practices on employee skills, attitudes and motivation. It is more reasonable, however, to presume that there is a time lag in this casual mechanism. For example, there should be a time lag between an implementation of HRD practices and the resulting change in employee skills, attitudes and motivation. Future research will be more accurate if it employs an alternative research designed that adequately addresses the timing of the effects.

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