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Siengthai, S. & Bechter, C. (2001). Strategic Human Resource Management and Firm Innovation, *Research and Practice in Human Resource Management*, 9(1), 35-57.

Volume 9: Issue 1

Editorial

Invited Papers

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Strategic Human Resource Management and Firm Innovation

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ABSTRACT

This exploratory research investigates factors influencing the level of firm innovation. It examines, in particular, the relationship between strategic human resource management and firm innovation. This issue is important for developing countries as most of them lack financial capital and technology. Only human capital seems abundant.

In this study, a questionnaire survey was undertaken in which about 168 firms participated. In the data analysis, Cronbach's alpha is used to test the reliability of the questionnaire items and regression analysis was done. The results confirm the hypotheses that factors, namely, leadership support for innovation, organizational structure, human resource management practices, firm performance and size of firm are significantly related to firm innovation within industry.

I. INTRODUCTION

It has been asserted that firms compete to gain competitive advantage through total quality management in the 1970s, through time-based management in the 1980s, through efficiency in the 1990s, and through innovation to the 2000s (Afuah, 1998; Kuczmarski, 1996; Gupta, 1993). We are in the 21st century and it is evident that with the free flow of capital due to the GATT and GATS, firms in both manufacturing and services will be faced with more fierce competition. Without continuous and relentless innovation, it would be difficult for any firm to be able to keep their market share in this borderless world. Peters (1997) reiterates the view that the world of business is now in a permanent state of flux where constant innovation is the only strategy for survival for both individual and organization.

The purpose of this exploratory study is to investigate in particular, the role of strategic human resource management in enhancing firm's capability to innovate. It will examine the organizational culture, organizational structure, the top management or leadership's support for innovation as well as human resource management practices and processes in different stages of organizational life cycles (defined by number of years of establishment) that affect the firm innovation.

II. TYPES OF INNOVATION

Innovation is not limited to the notion of high technology but it also includes new services.

Innovation in its broadest sense implies both organizational and economic changes (Afuah, 1998). It generally entails dealing with new knowledge, such as collecting information and turning it into new products or services on time to the market and thus keeping the organization ' s market share and profits. Innovation therefore refers to the use of new technological and market knowledge to offer a new product or service to customers. The novelty can be in terms of lower cost, improved or new product attributes or simply new product. Two factors that determine a firm ' s ability to offer lower cost or differentiated products are the company ' s competencies and its endowments [1].

A distinction has been made between technical and administrative innovation. Technical innovation is about improved products, services, or processes or completely new ones. This is in contrast to administrative innovation, which pertains to organizational structure and administrative processes and may or may not affect technical innovation. In short, there are two kinds of innovation: production and process innovation. Product innovations are new products or services introduced to meet an external and market need whereas process innovations are new elements introduced into an organization ' s production or service operations (Afuah, 1998:14).

When we consider the level of innovation, it can be said that there are two main levels, that is, innovation based on technological breakthroughs and innovation based on the integration of technologies (Ito, 1995). The former is carried out under the leadership of the pre-eminent firms in their respective fields, while the latter is made possible through the cooperation of firms in related fields.

Essential Characteristics of Innovation:

Research-based literature about innovation and diffusion processes sets forth the essential characteristics of innovation processes that need to be considered and managed in all strategies for continual innovation. Successful company and government innovation practices intimately mirror the way classic studies have suggested that innovation, knowledge, and technology tend to develop over long periods of time. This certainly has an implication for employment practices for firm in order to recuperate from its investment in training for its employees.

2.1 Organizational Culture and Innovation

In the study of most admired companies undertaken by Nemeth (1997), it has been asserted that creativity and innovation may require a " culture " that is very different and, in a sense, diametrically opposed to that which encourages cohesion, loyalty, and clear norms or appropriate attitudes and behavior. According to Nemeth (1997),

> " Some of the admired companies – those reputed to have not only good management and financial success, but also innovation – appear to be those whose leader had the creative idea. Under these conditions, a strong corporate culture emphasizing uniformity, loyalty, and adherence to company expectations would be advantageous. It is advantageous precisely because it can operate in a relatively monolithic way - full of energy, morale, and a tendency not to consider alternatives or problems. This is not the same as promoting creativity from within the organization. Cohesion, convergent thought, and loyalty help to implement idea but tend not to enhance the production of a creative idea. Rather, flexibility, openness, and the welcoming of dissent are especially useful for stimulating creative thought. " (Nemeth, 1997: 66)

For companies that attempt to foster innovation from within the ranks, many recognize the importance of dissent or of being a " maverick. " They often try to limit the fear of failure and promote risk taking (Nemeth, 1997: 67). It is not surprising to find that most employees are concerned about defying management. Thus, it was suggested that concrete mechanisms will be more effective in limiting the control of upper management or inhibitions to creativity.

We therefore hypothesize that:

> *Hypothesis I: Organizational (work) culture (WC) that encourages risk-taking behavior and initiatives of employees as well as giving sufficient autonomy to the employees, encourages the exchanges of information and teamwork and generous reward for innovator will lead to more firm innovation.*

2.2 Leadership and Innovation

Morgan (1991) has asserted that leadership at all levels will be needed to generate innovation and change in the organization. The European Commission (Commission of the European Communities, 1995) and the UK government (DTI and CBI, 1994) state that in nine out of ten "winning" UK companies studied, one of the characteristics of innovation best practice include leadership by vision and the unlocking of the potential of people by good communications, team work and training, flattening the organizational pyramid (Commission of European Community, 1995; Morgan, 1991) and creating a customer focused culture.

In the study undertaken by Quinn, Baruch and Zien (1997), it was found that the most critical single factor in stimulating innovation is top management leadership. Only top managers can establish the tangible visions, focused strategies, and challenging, rewarding, support environments that most encourage innovation. In all their sample which are most innovative companies, top managers clearly expect, appreciate, and actively support innovation. They personally stimulate and champion with many essentials including the following: (Quinn, Baruch and Zien, 1997:163-164)

- a truly exciting corporate vision built around challenging strategic goals.
- A set of figure-of-merit performance targets that crisply define what winning competitively means in each critical arena.
- Highly disaggregated, self-directed, non-bureaucratic organizational structures that both leverage interactive innovation and maintain strategic focus.
- High-profile risk-taking and entrepreneurial incentives to reward those who take on the struggles and ambiguity of innovation.

Therefore, we hypothesize that:

> *Hypothesis II: Leadership (LEAD) that supports innovation is positively related to firm innovation.*

2.3 Organizational Structure

Kanter (1984) proposes that several important elements are necessary to reduce the segmentalism apparent in many non-innovative enterprises; the encouragement of a culture of pride in the firm's own achievements; reductions of layers in the hierarchy; but also the improvement of lateral communication and giving increased information about company plans. Organizational structures that discourage the communication of ideas and flexibility impede innovation, since access to other ideas and other innovators is very important. Large organizations are trying to capture the flexibility of smaller ones especially the strong emphasis on lateral communications and cross-functional teams and task forces (Drucker, 1992).

Quinn, Baruch and Zien (1997) examines certain key relationships, determining how various aspects of knowledge, intellect, science, innovation, and technology interrelate to create value, and how successful enterprises can best leverage and organize around these processes for competitive advantage. All of these forms share certain characteristics. All tend to push responsibility outward to the customer contact point. All flatten the organization and remove layers of hierarchy. All seek faster, more responsive action to deal with the customization and personalization that affluent and complex marketplaces demand. All require breaking away from traditional thinking about chains of command, one-person-one-boss structures, the center as a directing force.

It is therefore our hypothesis that:

> *Hypothesis III: Organizational structure (ORGST) is inversely related to firm innovation.*

2.4 Human Resource Management Practices

In all organization, human resource management can play a significant role through its processes which refer to the deeply-embedded, firm-specific and dynamic functions. These become somewhat routines by which a firm attracts, socializes, trains, motivates, evaluates, and compensates its human resources in such a way that firm will achieve its organizational goals through their competencies.

Amit and Belcourt (1999) introduce a new perspective on the contribution of HRM to a firm's financial performance. The 'process' perspective of HRM which is anchored in both the resource-based view of the firm and in institutional theory, links the human-capital and best-practices paradigms. It focuses on the unique ways in which organizations draw on past experiences, current culture and social norms to marshal its human resources to execute market strategies (Amit and Belcourt, 1999:174-175). Moreover, it builds on the organizational capital perspective, which views systems as ways to capture and deploy human-capital. Rumelt (1984) observed that the strategic firm is epitomized by a bundle of linked and idiosyncratic resources and resource-transformation activities. Huselid (1995) also demonstrated that organizations that bundle HRM practices achieve superior returns.

In order for a company to remain competitive, innovation must become a way of life. Sustained innovation requires both stability and change. The stability permits scale economies and incremental learning, whereas change and experimentation produce changes in products, processes, and technologies. In his empirical study, Ito (1995) finds that the development of a specific new product or service is often a result of the practice to form teams at the initial stages and staff them with personnel selected from a range of departments. In another study by Gupta and Singhal (1993), it has been found that effective human resource management can make an organization become innovative and creative.

Many researchers have asserted that the key to organizational success lies in developing intellectual capital and acquiring a new set of thinking: creativity to yield an idea and innovation to translate the idea into a novel result (Roffe, 1999; Morgan, 1991), developing human resource to develop intelligence, knowledge and creative potential at level of organization (Morgan, 1991). Developing managers to understand how technology can change both the structure of organizations and the nature and lifecycles of their products. Organizations without proper employee competencies cannot pursue competitive advantage by using organic behaviour management.

In sum, management for creativity and innovation include the ability to constitute effective work groups that represent a diversity of skills, and are made up of individuals who trust and communicate well with each other, challenge each other's ideas in constructive ways, are mutually supportive, and are committed to the work they are doing (Amabile, 1997:54).

Our hypothesis with respect to human resource management policies is therefore as follows:

> *Hypothesis IV: HR practices (HRM) that encourage hiring of creative employees; risk-taking behavior of employees, broad job description, promotion from within, provide continuous training for employees, and various career opportunities for employees and performance-based compensation and group performance is positively related to firm's innovation.*

2.5 Size and Innovation

In the expected severe competitive environment, firms which continuously innovate will most likely win. However, for the multinationals or the joint-venture firms which are on the average

larger firms, it has been found that innovativeness is much more difficult to find (Doz, 1990). Yet, large firms contribute more than their share of new discoveries, new products, and expenditure on research and development when compared to smaller companies. Furthermore, larger firms have more opportunities not available to smaller enterprises. They can draw on a whole range of internally available technologies, combine them, and exploit them in multiple application areas.

But turning their potential strength into reality is all too often not achieved in large companies. This failure has frequently been put down to technological problems, the solution being greater investment in research and development. But in fact the challenge for large companies is of a different nature. In order to foster innovation, large firms need a different concept of organization and different attitudes and behaviors in top management. Doz (1990) concluded that innovation itself is not the problem. The problems are organization and management. This, therefore, points to the significant role of HRM in firms. The human resource management practices of the firms can facilitate or hinder the ability of middle level executives and technical specialists to sustain multiple perspectives and appropriate channels for resource allocation, as well as the flexibility of organization. Organizational resistance to changes and innovation processes in production and services can also be reduced or enhanced by effective HRM practices.

Hypothesis V: Organization's size (SIZE) is positively related to firm innovation.

2.6 Type of Industry and Innovation

It is expected that the manufacturing industries are more innovative than other types of industries. This is because the borderless of production has been initiated long before that in services. In the context of Thailand, it is more evident that manufacturing industries are well developed into systems of practices. Concern of product development to serve needs of customers at a larger scale of operation to survive and grow in the global market has been long evidenced, while service industries of the similar scale are of more recent phenomena. We therefore hypothesize that:

Hypothesis VI: Type of industry (manufacturing) is positively related to firm innovation.

2.7 Other Factors Influencing Innovation

However, it is also expected that organizations in the same industry which have been established longer will be less innovative than the newcomers. The development of firm innovation tends to shift from the product to the process in its later stage of industry life cycle when the organization is mature and experiences price competition based on declining costs of production of the standardized product (Strebel, 1987). According to Strebel (1987:118) the innovation at this stage is incremental rather than fundamental in nature. The decline in growth generates enormous pressure. At this stage, firms that survive are often those which are capable of rejuvenating the industry with rather fundamental product or process innovation. He then summarizes the dominant organizational forms and the type of innovation required during the four stylized phases of an industry's evolution. According to this typology, the industry evolution demand for innovation does not always equal the mainstream organizational supply of innovation. In particular, when the industry matures, the increasing demand for efficiency causes the mainstream organizational form to become increasingly mechanistic in nature and biased against innovation. Therefore, everything else equal, we hypothesize that:

Hypothesis VII: Years of establishment (AGE) of the organization is inversely related to firm innovation.

In many developing countries, new product development and innovation tends to come from the technological transfer process. In Thailand, in particular, the majority of the local firms are still of small size and are not engaged in product innovation. It is casually observed that they are mainly in service or trade. For those which are engaged in manufacturing, most of them operate as the subcontractors for larger joint-venture firms or multinational companies which outsource some parts of their manufacturing processes. Most of these local firms maybe simply producers of non-

durable basic consumers products. Thus, we hypothesize that:

Hypothesis VIII: Ownership of firm (OWNER, i.e. being local) is negatively related to firm innovation.

Furthermore, it has been found that companies that perform well tend to have more innovation than those that do not, assuming that they do not have the oligopolistic power. The justification is that firms that make profits will tend to be able to spend more capital into their R&D expenditures. In addition, because of the market competition, firms need to be more customer-oriented and hence more innovative in producing what the market needs. It is therefore our hypothesis that:

Hypothesis IX: Firm performance (COP) is positively related to firm innovation.

In many well-established firms, unions may be another factor that could contribute to firm innovation. Empirical research on union impact on wages and productivity has established that both are higher in unionized than in nonunionized firms (Freeman & Medoff, 1984).

The difference between the two kinds of workplaces is that in the unionized one, bargaining is explicit and results in an enforceable agreement, while it is implicit, informal, and diffuse in the nonunion workplace. Serious (in good faith), cooperative (integrative, problem-solving) bargaining would produce the most efficient outcome of these variables. The result is that the unionized workplace adopts innovations more conducive to productivity enhancement than what the nonunion workplace adopts.

Siengthai (1998) argues that union may first have a negative impact on the organization's performance but it would then lead to the management's initiatives to bring in new technology and hence innovation and productivity. Therefore, the direction of the relationship between unionization and firm innovation is not clear. However, we hypothesize that:

Hypothesis X: Unionization (UNION) is directly related to firm's innovation.

III. Context of the Study

Deyo (1995) discusses the implications for developing countries of the globalization of Fordist innovative flexibility in industrial manufacturing. In his discussion, one possibility is that many developing countries will be increasingly locked into stagnant, standardized production niches in the global division of labor, precluding continued movement toward advanced economic status. In his words:

(Deyo, 1995:26)

> "... This would follow as a result of the efforts of core industrial firms that are destandardizing production processes, enhancing manufacturing flexibility and innovating through more tightly integrated supplier production chains, the development of high quality, innovative suppliers, and the employment of more highly skilled workers..."

This statement clearly suggests that firms will need to be able to adapt to the rapidly changing competitive environment more efficiently and effectively. One of the most critical management functions that could help enhance firm's competitiveness then is human resource management.

3.1 Human Resource Management in Thai Local Firms

It can be said that virtually all the private Thai firms began as family-owned and controlled enterprises (Lawler and Siengthai, 1997). Up to date, some of the Thai largest corporations are still managed by the wealthy families. Historically, most of the Thai firms also were established by Chinese immigrants. Hence, it is not surprising to find that the ideology of the "Chinese management system" is one of the social control. These organizations tend to be hierarchical and autocratic, but formal systems of control, such as standard operating procedures and well-defined

organizational structures, are generally absent (Lawler and Siengthai, 1997:75). The control mechanism reflects the status differences in Thai society rather than any intentionally imposed system. Thus, even though Thailand is a Buddhist society, the entrepreneurial Chinese families have introduced some degree of Confucian ideology into the workplace. These practices for Chinese family-owned enterprises are however complemented by traditional Thai cultural practices at the workplace (Siengthai and Vadhanasindhu, 1991). Some of the cultural norms that are now well recognized among expatriates include the following: ‘ kreng jai ’ (Siengthai and Vadhanasindhu, 1991); ‘ bunkhun ’ (reciprocity of goodness; exchange of favors); ‘ jai yen yen ’ (take it easy); ‘ mai pen rai ’ (never mind); and ‘ sanuk ’ (fun). Certainly, these norms are social values emphasizing harmonious social relations and consideration for others (Kamoche, 2000: 455). They tend to reinforce the hierarchical structure in the society as well as in the workplace. It, therefore, can be expected that in the small to medium-sized family enterprises which are still run by the first generation of founders, the human resource management practices will tend to be reactive rather than proactive and systematic compared to the more developed and large-sized family enterprises where professional staffs are more prevalent.

However, the past decade, the economic boom before the financial crisis had led to the development and growth of the private sector of the economy as evidenced by the local firms becoming public companies and listed in the Securities Exchanges of Thailand (SET). The rapid growth of the economy also was brought about by foreign direct investment which came in the forms of multinational enterprises and joint ventures.

3.2 Human Resource Management in the Multinational Enterprises

There are many MNCs and joint ventures in Thailand. But the major investor MNCs are those from Japan and the U.S. In the earlier days of the foreign investment in Thailand, most investments were in the form of foreign direct investment whereas nowadays, a substantial proportion of investment is also in the form of equity. The U.S. firms were among the first group of investors who came to Thailand and in fact had established a special treaty with the country to have 100% ownership [2].

We observed that in terms of recruiting, the American-related firms on the average, prefer to buy skills from outside to fill in the existing openings. This means that there is an opening bid for the positions available, whereas there will be internal promotion in the Japanese joint-venture firms. This is supported by the observation that Japanese management tends to invest heavily in on-the-job training for their employees at all levels, while in the American firms, there tends to be more training and development for mainly managerial and professional levels. Therefore, an implication to this finding is that while there is a broad career path for the employees in Japanese firms, there is a narrower career path in the American firms. For example, a worker in the Japanese firm can be trained on the job and eventually get to the supervisory level and in rare case particularly in earlier days, that employee with most outstanding supervisory skills can climb up to lower level managerial position. This however was evidenced in the days when Japanese joint-venture companies were not so much favored by the Thai workers. On the average, we will never find this case in the American firms. This is because, American firms tend to prefer specialization more than general skills that are preferred by Japanese firms. This ties to the fact that in Japanese firms, compensation is linked to the seniority or length-of-service with the company. It is simply because of the on-the-job training the company has invested in the person and the broad range of skills that the company can tab on later in their length of service to the company. It is also a means to maintain these employees with the company. On the contrary, seniority or length-of-service within firm does not play a great role in the U.S. joint ventures in Thailand. This again is understood by the fact that firms do not generally invest much in training for the lower levels but more so for the higher level employees. So, we can expect to see seniority factor plays a great role for the higher level of managers where firms have invested in training but not the lower level. This created a dual structure of wages or pay in the American firms obviously determined by a different policy on training or investment in human capital by firms. But again, it can also be explained that it is usually harder to find the right experiences in the labor market compared to the lower level skills

and experiences where the number is more plentiful. In terms of evaluation or appraisal, there is a different approach as well. In the U.S. - based firms, there is a tendency to have an evaluation for short term results of one ' s performance while in the Japan-based, the evaluation is more for the long-term outcomes. So, even though, there is a periodical evaluation, it is meant to be a feedback mechanism for individuals to improve their performance rather than to use as a determinant of continuation of contract.

There is another point about compensation or wage as a strategy of these MNCs. For the U.S. – based firms, wages or compensation are usually higher than the market wage rates. Therefore, the U.S. – based firms generally do not experience difficulty in acquiring the best of skills available in the market at any time. This is different from the Japanese firms which pay less than the American firms on the average but a little higher than small and medium-sized Thai local firms. But as job security is also preferred for many Thais, they can attract the Thai staff from that aspect. However, overtime, there also have been improvements in the management practices of the Japan-based firms in Thailand.

IV. Research Methodology and Data Collection

4.1 Model Specification:

From the discussion above, our model specification is as follows:

INDINNOV = f{ WC, LEAD, ORGST, FIRM, SIZE, INDTYPE, AGE, OWNER, COP, UNION}

Where:

Dependent Variable:

INDINNOV = Firm ' s average innovation compared with its industry innovation level.

Independent Variables:

WC = Organizational work culture defined by the sum of all the 23 items under the dimension of ' organizational culture ' divided by 23.
LEAD = Top management or leadership ' s support defined by the sum of all the 20 items under the dimension of ' Top management support ' divided by 20.
ORGST = Organizational structure defined by the sum of all the 18 items under the dimension of ' organizational structure ' divided by 18.
HRM = Human resource management policies and practices defined by the sum of all the items under the dimension of ' human resource policies and practices ' divided by 28.
SIZE = Number of full-time employees of the firm.
TYPE = Type of industry where 1 = manufacturing 2 = other
AGE = Number of years firm has been established.
OWNER = Type of ownership where: 1 = local 2 = non-local
COP = Firm performance defined by the sum of 7 items under the dimension of ' firm performance ' divided by 7. [3]
UNION = Percentage of unionized employees within the firm.

In this study, primary data as well as secondary sources of data are used. Primary data have been generated by the questionnaire survey [4] [also Appendix 1]. The sampling frame of the study are firms with the employment of 200 persons and more [5]. This is because it is considered that the firms will be formalized enough in its management systems.

About 1,150 questionnaires were sent in late December 1999 to the managing directors of the firms [6]. A total of 149 questionnaires were returned which was about 13% response rate. The reason for low response rate may be due to the fact that the questionnaire is long. The questionnaire has both the Likert-scale type and the fact-and-figure type of questions. In the first-round survey, the cover letters were addressed to both the Managing Director and the Human Resource Managers of the firms explaining the purpose of the study.

The follow-up was done in February 2000. Two hundred (200) companies that did not return the questionnaires in the first round were systematically randomized. The respondents were requested to send back the questionnaires at their earliest convenience.

About 20 questionnaires returned in the second round which is about 10% response rate. Altogether with the first round questionnaires that were returned, it totals up to 168 usable questionnaires.

4.2 The Data Analysis:

The questionnaire was developed in English and translated into Thai to be self-administered by respondents. The questionnaire has 6 main sections. The first section contains items measuring the organizational work culture dimension. The second section has 20 items measuring the top management or leadership support on innovation. The third section has 18 items measuring the organizational structure dimension. The fourth section has 28 items measuring human resource management policies and practices. All four sections use a 5-point Likert scale (where 1 = strongly disagree; 5 = strongly agree). The fifth section measures the company performance. The reliability of the items asked in the questionnaire was tested using Cronbach's alpha (See Table 7, Appendix). For some items, reverse scale was made to make them consistent. Then, multiple regression analysis was performed to ascertain the relationship between innovation level and various independent variables.

4.3 Findings:

4.3.1 Profile of the sample firms:

In this study, firms of over 200 employees were screened from the directory of business firms for the survey. Since it is of exploratory stage, we did not specify any specific industry. A few firms were actually found to have reduced the number of employees which is most likely due to financial crisis. Mail follow-up was done to encourage the respondents to complete and return the questionnaires.

The majority of firms, i.e., about 63.4% in this sampling frame are of 200-999 persons which is considered large size by Thai labor statistics standard. (See Table 1 in Appendix). The majority of them do not have part-time employees. In 1999, many of them, i.e., 33.9% have about 100-499 million baht of sales value and many others, i.e., 33.1% have about 1000- 4999 million baht of sales value (See Table 2 in Appendix). For the last 3 years, of all the sample firms about 63.8% are manufacturing firms. In addition, about 22.7% and 20.3% of them have earned about 1%-5% and 11%-15% respectively for their average annual percentage of sales/revenue contributed by new products and processes in the last 3 years (See Table 3 Appendix). In 1999, many said that they experience about 1 -3 new product or process innovation (Table 4 in Appendix). With respect to innovation, quite a proportion of them say that they have about 1-3 new product and process innovation within the last 3 years (Table 5 in Appendix). In general, it would seem that this figure is rather low when in fact the global market calls for more competition and competitive advantage would be gained from innovation. Most of these sample firms have been established over 10 years and are in the manufacturing industry (See Table 6 in Appendix). It is also found in this study that about more than half of the sample firms are local firms while the others are composed of joint-venture firms among which Japan-related firms are dominant.

4.3.2 Findings

The Cronbach's alpha reliability is high, i.e., over 0.80 for the scales in all sections (See Table 7 in Appendix). We, therefore, summed up the items in each dimension and weighted by the number of items. In the regression analysis, we used the values for variable, namely, UNION, SIZE and AGE without transforming them into category or dummy variables.

The regression analysis results are as follows:

INDINNOV =	.294 a	-.211 WC	+ .536 LEAD**	- .8100 RGST**	+ .902 HRM***	+ .269 COP**	+ .0002 AGE	+ .0036 TYPE	+ (-.003) OWN	+ .00002 SIZE***	+ .00027 UNION
	(.353)	(-.964)	(2.302)	(-2.541)	(3.404)	(2.190)	(.444)	(.705)	(-.387)	(3.196)	(.688)

(with t-statistics in parentheses)

R Square = .342
R Square Adjusted = .272
N = 105

Where: * = significant at .10
**= significant at .05
*** = significant at .001

V. Discussion of Findings

It is found in this study that factors that are significantly related to firm ' s level of innovation compared to its industry ' s innovation are namely top management ' s or leadership ' s support for innovation (LEAD), organizational structure (ORGST), human resource policies and practices (HRM), firm performance (COP) and size of firm (SIZE).

All these variables have the sign of direction as expected. However, it can be noted that the net coefficient for HRM is the highest among these variables. This certainly suggests that HRM policies and practices play a significant role in enhancing the capability of these sample firms to be innovative and more distinctive within their own industry. This finding supports the hypothesis or assertion made by Doz (1990) that the organization and management has a significant impact on organization ' s innovation.

With respect to size, the direction of the relationship is positive as expected. However, it can be further discussed that the result is not surprising even though many might have expected that small size firms might suggest a higher level of innovation. This is due to the fact that this sample size has already been randomly selected by size of over 200 employees and over from the beginning. Hence, it is understandable that all of them are of rather large size. But the criterion for doing so is that we believe that with 200 employees, the firm will have to a certain extent formal human resource management which is our focus of investigation.

This, however, does not mean that we will not find small firms innovative should our sample size include firms such as the " dot.com " companies. With the boom of e-commerce and information technology, it is very likely that innovation of such firms will be even more critical for their survival and growth. However, in this context of study, most of our sample firms fall into the manufacturing sector. For firms of large size, we can well expect that there is an economy of scale for their production and R &D activities. Their new products will be distributed to the market easier as they already hold some significant market share. This is of course linked to the idea that larger firms tend to have a higher concentration ratio (or market share) than smaller firms.

Organizational work culture is found to be negative but not significant. This is however possibly due to the fact that most firms do not have any distinct organizational culture that encourage initiatives of employees or enhance firm innovation [7].

VI. Conclusions and Managerial Implications

This study investigates, in particular, the relationship between strategic human resource management and firm innovation. A questionnaire survey is undertaken with firms having 200 employees and over. Using regression analysis, it is found that human resource management policies and practices are significantly and positively related to firm ' s level of innovation within its industry. Top management support, organizational structure, firm performance and size of firm

are also found to be significantly and positively related to firm's level of innovation. Organizational structure is found to be inversely related to firm's level of innovation. This implies that the more mechanistic a firm becomes, the less innovative the firm will be. In this study, this factor is evident because most of the firms are of large size. They have also been established many years ago. It is most likely that for many of them, the mechanistic type of organization may be prevalent.

The findings of this study also confirm those of the previous studies undertaken by researchers such as Nemeth (1994) which find that leadership is a critical success factor of firm innovation. The empirical evidence obtained in this study certainly suggests that most firms' innovation is dependent on the innovativeness of their leadership.

Managerial Implications

The results of this study suggest clearly that firm innovation in Thailand will depend very much on the support and belief in innovation as a source of competitive advantage of the top management or organizational leadership. As found in Quinn, Baruch and Zien (1997), top management are the ones who can set the mission, vision and focused strategies for firm's growth. Top management's beliefs and values will also help shape the desired organizational culture that nurture innovation. Hence, in accordance with the findings by other researchers, the organization will need to nurture its managerial talents and hence its management development programs be provided to them.

In addition, it is clear from the regression results that organizational structure is inversely related to firm innovation. Thus, if a firm would like to enhance its innovation level, it should try to reduce the hierarchy and departmentalism within the organization. It is expected that with the availability of information technology, e.g. intranet and internet, the barrier to communicate both upward, downward and laterally will be greatly reduced. However, it still depends on how the organization manages its own knowledge creation to induce more innovation.

In this study, it is also evident that HRM practices have a significant impact on firm performance in term of its innovation. The results suggest that within the industry, these sample firms have higher level of innovation due to their better human resource policies. It is our assertion that culturally, many traditional practices in Thai firms will have to give way to modern management concepts which encourage more participation and involvement from employees. Practices such as high performance work systems may well be another recommendations for the Thai firms to bring into their companies.

Footnotes

Associate Professor of Industrial Relations and Human Resource Management and Associate Professor of Marketing, Asian Institute of Technology respectively. We are grateful to the Asian Institute of Technology for providing us with the initiation research grant for this project. We thank in particular David Wan of the National University of Singapore for his collaboration in developing the research instrument which is used for this project as well as for the parallel study undertaken in Singapore and Barbara Igel of the Asian Institute of Technology for her comments on the questionnaire design. Our appreciation is extended to Sirikarn Boonyakiet; Napassaporn Bhronitnawan; Shehid Mehmuod; Nadir Zeb and Vu thi Chau Giang for their research assistance. Any remaining errors are solely our responsibilities.

[1] A firm's core competencies or skills are its ability to perform the activities that underlie the offering of low-cost or differentiated products or services to customers. Endowments are attributes other than skills, such as brand names, patents, reputation, geographic location, client relations, and distribution channels, which allow a firm to leverage its competencies and get more out of them.

[2] During the early stage of the financial crisis, Thailand had also offered the foreign companies to have 100% of ownership depending on the category according to the now Foreign Business Law (formerly: Alien Business Law) again as to salvage the joint-venture firms in financial difficulties.

[3] From Cronbach ' s alpha test, one item was deleted and hence only 7 items are used to define the variable ' COP ' or firm ' s financial performance.

[4] The instrument used in this study was developed in collaboration with David Wan and other colleagues at the National University of Singapore and a parallel survey had been undertaken in Singapore as well.

[5] The directory of firms prepared by the Advanced Research Co. was used to generate a sampling frame of firms with 200 employees and over. About 1,150 firms were sorted out as a result. These firms are in various industries.

[6] The survey started in late December 1999 and was completed in February 2000.

[7] It is observed that under the organizational (work) culture dimension, with respect to risk-taking behavior, many respondents, i.e. about 49.1% are not sure and only about 22.5% agree with the statement.

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APPENDIX 1

Summary Characteristics of Sample Firms

Table 1
Number of Employees (SIZE) By Type of Industry

Number of Employee	Type of Industry		Total (%)
	Manufacturing (%)	Other (%)	
Less than 200 persons	10 (6.1)	13 (7.9)	23 (14.0)
200-499 persons	41 (25.0)	21 (12.8)	62 (37.8)
500-999 persons	23 (14.0)	19 (11.6)	42 (25.6)
1,000 persons and over	31(18.9)	6 (3.7)	37 (22.6)
Total	105 (64.0)	59 (36.0)	164(100.0)

Table 2
Sales Revenues of the Sample Firm in 1999

Sales Revenues	Frequency (%)
Less than 100 million baht	6 (4.8)
100-499 million baht	42 (33.9)
500-999 million baht	25 (20.2)
1000-4999 million baht	41 (33.1)
5000 million baht and over	10 (8.1)
Total	124 (100.0)

Table 3
Sales 1997-1999 by Type of Industry

Sales 1997-1999	Type of Industry		Total (%)
	Manufacturing (%)	Other (%)	
Less than 1%	4 (3.1)	2 (1.6)	6 (4.7)
1% - 5%	29 (22.7)	13 (10.2)	42 (32.8)
6% - 10%	12 (9.4)	13 (10.2)	25 (19.5)

11% - 15%	26 (20.3)	15 (11.7)	41 (32.0)
More than 15%	10 (7.8)	4 (3.1)	14 (10.9)
Total	81 (63.8)	47 (36.7)	128 (100.0)

Table 4
Product and Process Innovation Within the Last 12 Months (1999)

Number	Product (%)	Process (%)
None	11 (7.1)	10 (6.3)
1 - 3	52 (33.8)	61 (38.1)
4 - 6	30 (19.5)	37 (23.1)
7 - 10	20 (13.0)	27 (16.9)
More than 10	41 (26.6)	25 (15.6)
Total	154 (100.0)	160 (100.0)

Table 5
Product and Process Innovation Within the Last 3 Years (1997-1999)

Number	Product (%)	Process (%)
None	24 (15.6)	18 (11.3)
1 - 3	64 (41.6)	87 (54.7)
4 - 6	33 (21.4)	29 (18.2)
7 - 10	13 (8.4)	14 (8.8)
More than 10	20 (13.0)	11 (6.9)
Total	154 (100.0)	159 (100.0)

Table 6
Years of Establishment (AGE) by Industry Type

Year of Establishment	Type of Industry		Total (%)
	Manufacturing (%)	Other (%)	
Less than 5 years	12 (6.7)	4 (2.5)	16 (9.8)
5 - 9 years	11 (6.7)	11 (6.7)	22 (13.5)
10 - 19 years	45 (27.6)	20 (12.3)	65 (39.9)
20 years and over	35 (21.5)	25 (15.3)	60 (36.8)
Total	103 (63.2)	60 (36.8)	163 (100.0)

Table 7
Cronbach ' s Alpha Reliability Test Results of Selected Variables

Variable	No. of Cases	No. of Item	Cronbach ' s Alpha Value
OC	156	23	.9119
MGT	159	20	.8620