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**Strategic Human Resource Management and Firm
Performance : A Study of R&D Companies in
Malaysia**

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Strategic Human Resource Management and Firm Performance: A Study of R&D Companies in Malaysia

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Abstract - This paper examines the effect of Human Resource Management (HRM) practices on performance in the Malaysian R&D industry. Using data from 64 R&D companies, the study found that compensation has positive and direct effect on firm performance while development has negative effect on performance. There is no interaction between the three HRM practices and inter-firm collaboration on performance. The results provide partial support of universalistic approach to strategic HRM.

Keywords: Human Resource Management, Organizational Performance, Inter-firm Collaboration and Research and Development Companies.

I. INTRODUCTION

Malaysia has since 1996 promoted innovation drive knowledge economy. The recently launched New Economic Model outlines the need for better innovation ecosystem to drive national income. The R&D sector has been given greater attention than ever before to support the innovation-led growth. Various types of fiscal and non-fiscal incentives have been provided to companies to promote their R&D activities [1]. Despite the efforts jumpstart this sector, the level of R&D measured in terms of R&D outputs (i.e. number of patent) is still low by world standards [2].

Despite the critical importance of the R&D sector to the innovation economy, not much is known about this sector. Many researchers have described the new environment for research; rapid new technological development, changing customer needs, shorter product life cycle, higher development cost and increased competition [3], [4], [5]. Hence, to be competitive, R & D firms need to be more aggressive and organised in improving their performance.

Many studies have investigated factors which influence the performance of organization. Strategy, structure, leadership, technology, knowledge management and human resource management are some of these factors [6], [7], [8], [9], [10], [11], [12]. Most SHRM scholars believe that organizations which aligned their

HRM practices to strategy tend to outperform their rivals [13], [14]. Given that limited research has explored the performance effects of HRM practices and strategies of R&D organizations in the country, this study seeks to examine the direct and interactive effects of the aforesaid relationship.

II. LITERATURE REVIEW

The role of HRM is critical in organizations where innovation or product development is the core strategy. This is because competitive innovation relies greatly on creative capability of the people. As asserted by Huang and Lin (2006) [15], the success of R&D organizations hinges on their ability to attract and retain appropriate human resources. However, the environment of R&D is quite different from those in other organizations such as manufacturing because the research activities are not repetitive work that can fit in to a routine or more standard job structure. Treen (2001) [16] noted that R&D professionals work with uncertainty, risk, change and job ambiguity. Recent studies have indicated that not all R&D professionals can be inspired by or respond to the same rewards and career paths [17], [18], [19]. Hence, R&D organizations face greater challenges than other organizations in engaging their talents in continual exploration and exploitation. Consequently, effective HRM practices must ensure people with the right talent to create, innovate and enhance organizational performance. Among the HRM bundle of practices that have attracted the attention of researchers in R&D field are compensation, development and teamwork practices.

Compensation is often defined as remuneration, pay, and/or reward system used to motivate employees. Through pay system firms can attract, retain and motivate competent employees to perform in ways that support organizational objectives [20], [21]. For k-workers, Scarbrough (2003) [22] argued that the reward system plays important role in motivating them to acquire and exchange knowledge at work place. However, not all types of employees can be motivated by the same rewards. For example, studies within R&D and high-tech firms'

context demonstrated that some scientists and engineers are motivated by intrinsic rewards such as opportunity to do high quality and curiosity driven research [18], freedom to work in one's own way [23], and recognition as appropriate response for encouraging creativity and research engagement [24]. Meanwhile, other R&D professionals are found to be more motivated by extrinsic rewards such as salary and bonus [25], [21]. In other studies, performance is expected to improve when team based rewards [26], [27] are offered. Finally, Chang and Chen (2002) [28] confirmed that providing a comprehensive package that includes both financial and non-financial rewards help to enhance high-tech firm performance in terms of employee productivity and also turnover.

Development practices aim to prepare employees for future work responsibilities as well as to provide them with the knowledge, skills and abilities to perform their current jobs [29]. In R&D companies where technologies are rapidly changing, training is an essential means to continuously updating employees' knowledge, skills and abilities [30]. Empirical studies have confirmed the positive effect of training on performance. For example, Wang and Horng (2002) [31] found that creative problem solving training improved R&D professionals' creative thinking abilities and work performance. A study by Parboteeah, Hoegl and Styborski (2005) [32] also produced similar solution regarding the relationship between professional development programs particularly attending conferences and making customer contacts, and organizational success. Studies have also shown negative relationship between professional training or development and performance [33], [32]. Given the mixed effects of training on performance within R&D context, more studies are needed to confirm the relationship.

Teamwork practices aim to encourage employees to work with more than one person in order to compensate the lack of knowledge and skills when they work alone. Proehl (1997) [34] defined a team as a group of people with complementary skills dedicated to achieving a common purpose. Team members may consist of people from different disciplines/ functional areas, organizations and/or geographical locations. According to Wing (2001) [35], the diversity that individuals bring to the teams may open up incredible opportunities for creative potential. A number of R&D related researches have supported the positive effect of teamwork on performance. For example, Mudambi, Mudambi and Navarra (2007) [36] found that teamwork had positive effect on knowledge creation measured in terms of patent citation in the Japanese Multinational Corporations R&D subsidiaries. Jassawalla, and Sashittal (2003) [27] noted that effective implementation of teamwork in product development process are expected to improve quality of the product as

well as reduce time and cost of the production. Similarly, Spain (1996) [37] suggested that R&D managers need to improve team work process if they were to improve quality in R&D. In an earlier study, Aram and Morgan (1976) [38] demonstrated that the relationship between team collaboration among R&D scientists and individual technical performance is not direct. Instead, the relationship is intervened by opportunities to fulfill personal needs.

The foregoing review of SHRM practices suggests direct impact on organizational outcomes. Universalistic HRM scholars argued that some HR practices are consistently better than others, thus all organizations should adopt these practices in order to enhance performance [39], [40]. Numerous studies have demonstrated direct positive impact of HRM practices on performance in manufacturing, banking and other services [41], [42], [43], [44], [45]. There is little, if any, studies on R & D firms about this relationship. Hence, the following hypothesis is posited.

H1: Compensation, development, and teamwork practices have positive effect on organizational performance.

Contingency HRM scholars, however, submit that firm performance is enhanced when HR practices are aligned with business or organisational strategy. Although there are studies that have examined the business strategy and SHRM practices fit with mixed results, collaboration as a strategy has not been the focus in the previous studies even though the potential contribution of HRM practices on collaboration efforts has been raised [46], [47], [48], [49].

Inter-firm collaboration has become one of the strategies to survive as well as to compete among many companies in today's business environment. Many companies are involved in such relationships to obtain marketing and manufacturing capabilities, to gain access to specific markets, to reduce financial and political risk, and to develop new capabilities. Besides that, collaboration helps firms to cope with rapid changes in technology through technological synergy with appropriate partners. Also, collaboration allows firms to fulfill customers' needs through diversification in product portfolios with different partners [50]. Based on this evidence, it is expected that effective HRM bundles will elicit appropriate R&D behaviors that can support collaborative efforts and ultimately help to improve organizational performance.

Therefore, the following composite hypothesis is postulated:

H2: Compensation, development, and teamwork practices and collaborative strategy interactively affect organizational profitability.

III. METHODOLOGY

The companies were selected through a systematic sampling method from a list of R&D companies provided by the Companies Commission of Malaysia (2007). Each company was given two sets of questionnaires; one set to be completed by the HR manager while the other by the R&D manager. This study received 64 responses giving a 36 percent response rate. The response rates for multiple informant studies are lower.

The predictor (SHRM practices) was defined as people related practices employed by an organization to attract, deploy, develop and reward their R&D professionals. Respondents were asked to state how accurately the statements described their company's HRM practices. The measurement items for SHRM practices were drawn from the existing literature [39], [51], [52], [53], [54], [55], [56], [57]. All together, the SHRM practices were measured using a 25 items with a seven-point Likert scale, ranging from 1 = "very inaccurate" to 7 = "very accurate". The moderating variable, collaboration with educational institution, was dummy-coded as 1 if the firm reported engagement in collaboration with educational institution, and 0 if no engagement was reported. The dependent variable, firm performance was examined using profitability as it is the primary reason for firms to collaborate [58].

In order to confirm the dimensionality of the SHRM practices, a principal component factor analysis with varimax rotation was used. The analysis produced three factors with eigenvalues greater than 1 and explained 76.77% of the variance. The factors supported the *a priori* formulation of the three SHRM practices. Cronbach's Alpha for the three SHRM practices were all above the suggested threshold of 0.7 [59], [60].

IV. RESULTS

Hierarchical regression analyses were conducted to assess the extent to which there is direct and the interaction effect (strategic fit) of SHRM practices on organizational performance. The regression model is significant ($p < .10$) with an R^2 of 18%, which is not an insubstantial effect size [61]. The results from the hierarchical regression analyses in Table 1 indicate that the main effect of compensation on the profitability is significant ($p < .05$) and positive ($\beta = .248$) while, development shows significant ($p < .05$) but negative effect ($\beta = -.278$) on profitability ($p < .05$). A one unit increase in compensation practices, other thing being constant, will

increase profitability by 25%. Perversely, a one unit increase in development will suppress profitability by about 28% of the margin. There is no significant main effect for teamwork practices on profitability. Thus, the universalistic perspective of SHRM as submitted by Delery and Doty (1996) [39] is modestly supported. The results also show that there are no significant interactions between compensation, development and teamwork, and collaboration strategy in affecting organizational performance. Therefore, the contingency perspective of SHRM i.e. strategic HRM aligned with strategy leads to higher performance of R&D companies in Malaysia is not supported.

Table 1: Effect of SHRM Practices and Collaboration Strategy on Profitability

Variables	β	R^2	F	P
Step 1: Controls		.022	.448	n.s
Age	-.188			
Small	-.056			
Medium	-.133			
Step 2: HRM Practices		.180	2.089	.069*
Compensation	.248**			
Development	-.278**			
Teamwork	.143			
Step 3: Strategy		.183	1.793	n.s
Collaboration	-.061			
Step 4: HRM Practices x Strategy		.216	1.457	n.s
Collaboration x Compensation	.158			
Collaboration x Development	-.083			
Collaboration x Teamwork	-.141			

$N = 64$, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$

V. DISCUSSIONS

The positive effect of compensation on performance is consistent with studies by Badawy (1988) [62], Farris and Cordero (2002) [26], and Jassawalla and Sashittal (2003) [27] which posited that compensation motivate scientists and engineers to perform better in their jobs and thus help to enhance organizational performance. In particular, the present finding highlights compensation that takes in both individual as well as group rewards are likely to motivate scientists and engineers in Malaysia. The negative effect of development practices on organizational performance is puzzling [31], [32]. Investment in training and development may have increased operational cost without commensurate increase in productivity of the companies. Alternatively, the development efforts may take time to be translated into sales. Therefore, it reduces the net profit of the company

in the short term. As argued by Woiceshyn and Hartel (1996) [63], often R&D companies take longer time than their counterparts to gain profit due to costly and lengthy product development process [64]. According to Lee, Wong and Chong (2005) [64], sometimes attending nontechnical training or project management training may interrupt R&D professionals from concentrating on their research works and this can cause negative impact to the actual R&D performance. The nonsignificance of teamwork as well as interaction effects between all HRM practices (compensation, development and teamwork) and collaboration on performance can be attributed to the lack of statistical power to detect a significant effect due to small sample size [65]. In addition, it could also be because these practices are not strategy sensitive especially when they exist in a growing sector such as R&D in which survival is more important than competition. This means that regardless of strategy, the utilization of human resource mainly through implementing effective compensation system is more crucial to facilitate in enhancing performance of R&D organization than trying to align the practice with the strategy that an organization wishes to follow.

VI. CONCLUSIONS

Overall, the present findings moderately support the positive effect of compensation practices on organizational performance but do not support any of the interaction effects between SHRM practices and collaboration on organizational performance. The competitive, progressive and equitable compensation practices appear to be the primary mechanisms to drive behaviour in R & D companies.

Findings are limited by the small sample size. Therefore, the generalization should be taken cautiously. Future research may involve a larger sample size.

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