

High Performance Work Practices (HPWP) in Malaysian R&D Organizations

Arnifa Asmawi and Kok-Wai Chew

Faculty of Management, Multimedia University, Cyberjaya, Malaysia

Email: arnifa.asmawi@mmu.edu.my, kwchew@mmu.edu.my

Abstract—There is a critical need to enhance the quality of R&D workforce in Malaysia. To address this problem, the 10th Malaysia Plan (2011-2015) and the New Economic Model (NEM) both stress the need to enhance human capital development in the country's innovation capacity. Managing R&D is a different experience compared to other industries due to its distinct set of people and culture. Thus, R&D organizations need to implement high performance work practices (HPWP) to increase productivity and effectiveness. Studies have shown that there is a positive link between HPWP and innovation. Nevertheless, there exists a knowledge gap in the area of HPWP in Malaysia. Hence, this paper intends to examine the concept of HPWP within the context of R&D organizations. A review of literature will be used to theorize about how HPWP will influence R&D performance.

Index Terms—high performance work practices, HPWP, innovation, R&D

I. INTRODUCTION

Malaysia is aggressively migrating from a production-based to a knowledge-based economy (K-economy). In a K-economy, knowledge, creativity and innovation play a vital role in generating and sustaining growth. K-economy is notably characterized by high investment in R&D and highly skilled knowledge workers. While traditional factors of production such as labor, land and raw materials remain essential, knowledge is the crucial factor that will provide Malaysia the competitive edge.

II. DISCUSSED PROBLEMS

Currently, there is a steady increase in the number of Malaysian R&D workforce from 31,442 headcount in year 2008 to 75,257 in year 2012 [1]. In addition, the number of scientific publications from Malaysia is also growing. In year 2011, the total number of scientific publications from Malaysia was 6673 compared to 2972 papers published in year 2008 [2]. Despite these encouraging figures, we observe a declining trend in other R&D indicators. There is a significant reduction in the total number of paper citations. The total number of citations from Malaysian published papers has remarkably fallen from 14,369 in year 2009 to 1859 in year 2011 [2]. Number of patents is also a measure of

R&D success. In Fig. 1 below, the percentage of local patent applications in year 2013 is only 17% compared to 83% coming from foreign applications [3] (MyIPO, 2013). As a result, Malaysia is paying more for the usage of foreign intellectual property than generating revenue from the exploitation of their homegrown intellectual property. In year 2014 alone, Malaysia had to pay 1, 419 million (USD) for the usage of intellectual property compared to 101 million (USD) in terms of receipts [4].

IPR	YEAR	LOCAL GRANTS	%	FOREIGN GRANTS	%	TOTAL
PATENTS	2003	31	2%	1,547	98%	1,578
	2004	24	1%	2,323	99%	2,347
	2005	37	1%	2,471	99%	2,508
	2006	187	3%	6,582	97%	6,749
	2007	338	5%	6,645	95%	6,983
	2008	198	9%	2,044	91%	2,242
	2009	270	8%	3,198	92%	3,468
	2010	204	9%	1,973	91%	2,177
	2011	335	14%	2,057	86%	2,392
	2012	308	12%	2,193	88%	2,501
	2013	305	11%	2,386	89%	2,691

Figure 1. Profile of patent granted in Malaysia.

Based on the scenario above, there is a critical need to enhance the quality of R&D workforce in Malaysia. While R&D organizations can have state-of-the-art laboratories and scientific equipment, it is the R&D professionals who will push the knowledge frontiers and turn new ideas into innovative products and services. To address this problem, the 10th Malaysia Plan (2011-2015) and the New Economic Model (NEM) both stress human capital development and improvements in the country's innovation capacity [5].

R&D activities in Malaysia are carried out by R&D professionals in three sectors: government research institutions, private R&D companies and universities. In Malaysia unlike in most advanced scientific countries, the majority of R&D professionals work in universities (45%) or government research institutions (17%) rather than the industrial sectors (38%) [5]. R&D professionals are also called scientists and engineers who conduct research within their areas of expertise. Many authors argue that R&D professionals have a very unique nature in their career orientations, value systems and reward preferences [6] and [7]. In addition, managing R&D is a totally different experience compared to other industries. The challenge in managing R&D is attributed to the unique culture of the R&D environment namely, risk-taking and experimenting, team working, autonomy and knowledge-

centricity. Based on this distinct nature of R&D activities, high performance work practices (HPWP) can become a promising managerial tool to build an innovative R&D workforce.

From the theoretical standpoint, there is currently a vacuum of knowledge in the area of HPWP in Malaysia. While there exists a huge body of knowledge on human resource management (HRM) and organizational performance within the Malaysian context, studies that focus specifically on HPWP is still insufficient. Reported studies on the implementation of HPWP in R&D sector in Malaysia are also very limited. Hence, this paper intends to examine the concept of HPWP within the context of R&D organizations. A review of literature will be used to theorize about how HPWP will influence R&D performance.

III. HIGH PERFORMANCE WORK PRACTICES (HPWP)

High performance work practices (HPWP) is a concept largely rooted in the area of strategic human resource management (SHRM). HPWP is also known as high performance work systems (HPWS), high involvement work systems or high commitment work systems. HPWP is a set or a bundle of human resource management practices aimed at stimulating employee and organizational performance [8]. What makes HPWP different from the standard transactional human resource (HR) practices is that HPWP is a specific combination of complementary HR practices that are implemented in order to achieve specific organizational goals. HPWP practices are mainly geared toward increasing employee skills and motivation through a combination of participative decision-making, organization-wide information sharing, access to training, and specific rewards and incentives to enhance organizational performance [9]. In other words, the potential of HPWP lies in their emphasis on worker participation, skill development and high job satisfaction. These aspects will then lead to greater employee commitment, empowerment and discretionary effort [10] - all of which are naturally inherent in an R&D environment. It is claimed that increased implementation of HPWP results in better performing organizations in terms of financial and employee outcomes [11].

What are suitable HRM practices that form HPWP? It is found that practices relating to employee development and training, participation and empowerment, information sharing, and incentive plans are most often combined [12]. Ashton and Sung (2002) identified four dimensions of HPWP [13]. First, employee involvement and autonomy through practices such as self-managed work teams, cross-functional teams, quality circles and multi skilling. Secondly, organizational support for employee performance through appraisal systems and mentoring/coaching programs. Thirdly, rewards for individual and team-based performance. Fourthly, knowledge-sharing practices through open communication channels. It is observed that these practices are necessary to build a conducive and healthy R&D environment.

IV. THEORETICAL PERSPECTIVES

At present, there are two established views on the types of practices that form HPWP which are the universalist and contingent views [14]. The universalist school of thoughts argues that there are a number of HRM practices that, when deployed, will consistently lead to improved performance regardless of organizational context and environment. In contrast, the contingency perspective suggests that HRM practices need to be 'bundled' into relevant sets of practices. Here, it is not the practices themselves that contribute to better performance, but the extent to which they fit with each other to create effective 'bundles' of practice. Studies have shown that deployment of single practices do not deliver the same performance improvement compared to 'bundled' practices [15] and [16].

The contingency model further stipulate that this 'bundle' of HRM practices is effective only under specific circumstances or with a particular group of employees. The same set of practices might not be applicable in different contexts or types of employees. Similarly, it is proposed that the link between HPWP and firm performance relies on the firm's ability to configure value-adding resource bundles that differentiate the firm from their competitors [17]. This proposition is rooted on the resource-based view (RBV) of the firm which posits that firms can achieve sustainable competitive edge as they are able to leverage on rare, inimitable and non-substitutable resources [18]. Compared to tangible resources (land, money and capital), intangible resources such as knowledge, skills and abilities that reside in human resources are the most valuable competitive edge, particularly for R&D organizations.

V. HPWP IN R&D ORGANIZATIONS

In line with the RBV, HPWP can be a potential tool to harness human capital in R&D organizations. HPWP is seen as an instrument to boost R&D firm's capability in improving the quality of its products, processes and services [19]. It is argued that above-market compensation, which is often bundled in HPWP, is an important incentive in innovation, as researchers must be induced to take risks in R&D projects [20]. In addition, firms adopting HPWP combinations such as innovative incentive plans, teamwork, employment security, job assignment flexibility, and information sharing tended to produce more new products and processes than their counterparts [21]. Innovative incentive plans can be in various forms such as personal grants for talented researchers and royalty payments for successful intellectual property rights (IPR) obtained. There are also companies that allow researchers to the flexibly switch from research roles to project management roles or even commercialisation jobs.

HPWP proponents argue that this type of work method allows employees to nurture their creative potentials, sharpen their skills and assume various responsibilities. Through a proper knowledge management mechanism, the organization becomes a place for learning, where the

people get to tinker, analyse, share ideas and solve problems- all of which are activities that are pertinent in an R&D environment.

Many studies have shown direct relationship between HPWP and organizational performances. However, in reality, organizations must be viewed as an open system- a dynamic system which is perpetually influenced by various environmental (or contextual) factors within and outside the organization. Hence, research in R&D organizations (which are inherently people-centric) must also consider internal contextual factors such as organizational culture which has effect on the relationship between HPWP and organizational performance [22].

VI. RESEARCH PROPOSITIONS

Due to the immense potential in HPWP to boost R&D and innovation, further exploratory study to investigate HPWP implementation in Malaysian R&D organizations is necessary. This paper is intended to lay the foundation for further empirical research. As studies on HPWP in Malaysia are limited, we identify the need for future studies to investigate the existence of HPWP currently being implemented in Malaysian R&D organizations.

As R&D is being carried out in government research institutions, private R&D companies and universities, we want to explore the differences in the implementation of HPWP in these three sectors. This is important because these three R&D sectors might have different business models, competitive strategies as well as unique organizational cultures. Due to these different contextual factors, we propose the adoption of the theoretical model by Lau and Ngo (2004) which was originally focused on leading companies from various industries in Hong Kong [23]. This study examined the critical role of organizational culture in mediating the relationship between HPWP and the development of new products and services. Organizational culture, manifested in the form of share values and norms, is the vehicle through which organizations can shape acceptable behaviors and conducts of the employees. Through strategically aligned HPWP, organizations are able to develop a culture of innovation such as team work, empowerment, risk-taking and knowledge-sharing among R&D professionals. A work culture steep in innovative behaviors will eventually lead to superior R&D performance.

Based on this Hong Kong study, we would like to put forward the following propositions:

- *P1: Different types of R&D organizations (government research institutions, private R&D companies or universities) will have unique sets of HPWP being implemented in the respective organizations.*
- *P2: The implementation of strategically aligned HPWP bundles will lead to a creation of innovative organizational culture among R&D professionals.*
- *P3: HPWP bundles will lead to a better R&D performance, through the mediating effect of organizational culture.*

As prior knowledge on HPWP in Malaysia is still limited, we propose the adoption of mixed method approach for future empirical investigation. Semi-structured interviews with R&D and HR managers will be very useful to explore the current sets of HPWP being implemented in different types of R&D organizations. This can then be followed by a survey questionnaire to collect the data on HPWP, R&D performance and organizational culture. The appropriate respondents for the survey will be the researchers themselves as they are able to describe the actual extent of HPWP implementation and organizational culture imbued in the R&D organizations.

VII. CONCLUSION

For companies to excel in any R&D endeavours, increasing technological capacity alone is not enough. As R&D efforts tap on the knowledge and creative skills of the R&D professionals, organizations must introduced HPWP to boost innovative behaviors and subsequently, employee performance. As studies on HPWP in Malaysia are scarce, there is a critical need for future studies to investigate the existence of HPWP currently being implemented in Malaysian R&D organizations. By understanding the existing HPWP in these organizations, we will be able to learn how successful firms develop their human capital. Specifically, the knowledge gained from HPWP research will assist Malaysian policy makers in their effort to nurture exceptional talents in the R&D industry.

ACKNOWLEDGMENT

The research work is supported by the Fundamental Research Grant Scheme (FRGS) Cycle 2/2013 by the Malaysian Ministry of Higher Education.

REFERENCES

- [1] The Malaysian Science and Technology Information Centre (MASTIC). (2015). National Survey of Research and Development. (2000–2012). [Online] Available: <http://www.mastic.gov.my/en/web/guest/kajianmdkebangsaan>
- [2] The Malaysian Science and Technology Information Centre [MASTIC]. (2012). National Bibliometric Study 2012. [Online]. Available: <http://www.mastic.gov.my/en/web/guest/national-bibliometrics-study>
- [3] The Intellectual Property Corporation of Malaysia (MyIPO). (2013). MyIPO Statistical Booklet 2013. [Online]. Available: <http://www.myipo.gov.my/penerbitan>.
- [4] The World Bank. (July 2015). 2015 World Development Indicators. [Online]. Available: <http://wdi.worldbank.org/table/5.13>
- [5] Organisation for Economic Co-operation and Development. (April 2013). Innovation in Southeast Asia. [Online]. Available: http://www.oecd-ilibrary.org/science-and-technology/innovation-in-southeast-asia-2012_9789264128712-en;jsessionid=51rbctfj3ip5sa.x-oecd-live-03
- [6] A. Petroni, "Strategic career development for R&D staff: A field research," *Team Performance Management: An International Journal*, vol. 6, no. 3/4, pp. 52-62, 2000.
- [7] M. Mallon, D. Duberly, and L. Cohen, "Careers in public sector science: Orientations and implications," *R&D Management*, vol. 35, no. 4, pp. 395-407, September 2005.
- [8] B. Kroon, K. Van De Voorde, and J. Timmers, "High performance work practices in small firms: A resource-poverty and strategic

- decision-making perspective," *Small Business Economics*, vol. 41, no. 1, pp. 71-91, June 2013.
- [9] O. A. O'Neill, D. C. Feldman, R. J. Vandenberg, D. M. DeJoy, and M. G. Wilson, "Organizational achievement values, high-involvement work practices, and business unit performance," *Human Resource Management*, vol. 50, no. 4, pp. 541-558, July/August 2011.
- [10] A. Danford, M. Richardson, P. Stewart, S. Tailby, and M. Upchurch, "Partnership, high performance work systems and quality of working life," *New Technology, Work and Employment*, vol. 23, no. 3, pp. 151-166, November 2008.
- [11] J. Combs, Y. M. Liu, A. Hall, and D. Ketchen, "How much do high-performance work practices matter? A meta-analysis of their effects on organizational performance," *Personnel Psychology*, vol. 59, no. 3, pp. 501-528, Autumn 2006.
- [12] P. Boselie, G. Dietz, and C. Boon, "Commonalities and contradictions in research on human resource management and performance," *Human Resource Management*, vol. 15, no. 3, pp. 67-94, July 2005.
- [13] D. N. Ashton and J. Sung, *Supporting Workplace Learning for High Performance Working*, International Labour Organization, 2002.
- [14] P. Tamkin, *High Performance Work Practices*, Institute for Employment Studies, Brighton, 2004.
- [15] H. C. Katz, T. A. Kochan, and J. H. Keefe. (1987). Industrial relations and productivity in the U.S automobile industry. Brookings Papers on Economic Activity. [Online]. Available: <http://digitalcommons.ilr.cornell.edu/articles/12/>
- [16] S. Wood, "Human resource management and performance," *International Journal of Management Reviews*, vol. 1, no. 4, pp. 367-413, December 1999.
- [17] J. G. Massersmith and J. P. Guthrie, "High performance work systems in emergent organizations: Implications for firm performance," *Human Resource Management*, vol. 49, no. 2, pp. 241-264, March/April 2010.
- [18] J. Barney, "Firm resources and sustained competitive advantage," *Journal of Management*, vol. 17, no. 1 pp. 99-120, March 1991.
- [19] A. Arundel, E. Lorenz, B. Lundvall, and A. Valeyre, "The organization of work and innovative performance a comparison of the EU-15," DRUID Working Papers 06-14, DRUID, Copenhagen Business School, Department of Industrial Economics and Strategy/Aalborg University, Department of Business Studies, 2006.
- [20] J. C. Hayton, "Promoting corporate entrepreneurship through human resource management practices: A review of empirical research," *Human Resource Management Review*, vol. 15, no. 1, pp. 21-41, March 2005.
- [21] J. Michie and M. Sheehan, "HRM Practices, R&D expenditure and innovative investment: Evidence from the UK's 1990

workplace industrial relations survey," *Industrial and Corporate Change*, vol. 8, no. 2, pp. 211-234, June 1999.

- [22] L. L. M. Chan, M. A. Shaffer, and E. Snape, "In search of sustained competitive advantage: The impact of organizational culture, competitive strategy, and human resource management practices on firm performance," *International Journal of Human Resource Management*, vol. 15, no. 1, pp. 17-35, 2004.

- [23] C. M. Lau and H. Y. Ngo, "The HR system, organizational culture, and product innovation," *International Business Review*, vol. 13, no. 6, pp. 685-703, December 2004.



Dr Arnifa Asmawi is a Senior Lecturer at the Faculty of Management, Multimedia University, Malaysia. She received her B.A (Hons) Industrial Relations and Human Resource Management from the University of Kent, UK. She then completed her Master of Philosophy and PhD from Multimedia University. Prior to her academic career, she was a strategy analyst at Telekom Research & Development (TMR&D), the R&D arm of Telekom Malaysia

Berhad. Her research interest is on the organizational issues in R&D management such as R&D work culture, effective R&D leadership and high performance work practices (HPWP). She has written and published various articles in international refereed journals and conferences.



Dr. Chew Kok Wai is an Associate Professor, Faculty of Management, Multimedia University, Malaysia. He has more than 80 research publications and conference presentations. He adopts a multi-disciplinary approach to his research topics. As Principal Investigator, he has completed two e-commerce research projects funded by the Ministry of Science, Technology and Innovation, Malaysia and leadership effectiveness and Generation Y employees' research project funded by Multimedia University Foundation. As a Co-Principal Investigator, he has completed a human resource management research project funded by the Ministry of Education, Malaysia. He is currently a Co-Principal Investigator for a high performance work practices, a Malaysian aged-friendly community index, an Internet use, addiction and job productivity, and creativity indicators in cultural businesses research projects funded by the Ministry of Education, Malaysia.