A study on management practices and manufacturing performance in India and Malaysia

Abstract

Purpose - The purpose of this study is to explore the relationship between management practices and manufacturing performance, based on evidence from India and Malaysia—two countries from the cultural area of Southern Asia.

Design/methodology/approach - We theorized by drawing not only on the strategic human resource management (SHRM) literature but also on cross-cultural research. A total of 233 leaders constituted this study's sample: 96 production leaders from 16 Indian companies and 137 production leaders from 16 Malaysian companies participated in the survey.

Findings – Some of the high performance work practices (HPWPs) were effective across India and Malaysia. The use of HPWPs in Indian culture led to better manufacturing performance than the use of HPWPs in Malaysian culture.

Research limitations/implications - This study did not measure national culture itself but instead used a dummy-coded variable of country as its proxy. Not only can national culture explain varieties in management practices including HPWPs, but it can also interact with these practices to affect performance.

Practical implications - Indian and Malaysian managers can learn about their management practices from this and they can learn about benefits they might bring to their workplaces if they manage through the use of HPWPs.

Originality/value - Our research provides insight into the capability of national culture to moderate the relationship between HPWPs and manufacturing performance, even among two countries situated in the same region of Southern Asia.

Keywords *Strategic human resource management, Business system, Institutions, India, Malaysia, National culture*

Paper type *Research paper*

An increasing volume of strategic human resource management (SHRM) research has examined the impact of human resource management (HRM) policies or practices on performance in Confucian (East Asian) as well as Anglo (Western) countries over the past decade or more (e.g. Chow *et al.,* 2008; Takeuchi, 2009). Comparatively less SHRM research has been conducted in other parts of Asia—that is to say, the region the GLOBE study called the cultural area of Southern Asia (House *et al.,* 2004)—even though that region is expected to have high-growth economies in the years to come (OECD, 2013).

In order to bridge this gap in the literature, the purpose of this paper is two-fold. First, we examine whether certain management practices, that is, high performance work practices (HPWPs) as proposed by the SHRM literature (e.g. Huselid, 1995; Pfeffer, 1998), can be effective in India and Malaysia—two countries situated in Southern Asia, and whether the practices will converge among those countries. Indian and Malaysian companies do not have a set of consistent management practices and there does not exist an Indian or Malaysian style of management (Budhwar, 2003; Kawabe, 1991). We will explore those countries' management practices in terms of the use of HPWPs. As suggested earlier, the amount of SHRM research in Southern Asia is smaller than that in the Anglo and East Asian cultural clusters. Among SHRM research in Southern Asian countries, the amount of SHRM research in Malaysia (e.g. Othman, 2009) is much lower than that in India (e.g. Azmi, 2011; Khandenkar and Sharma, 2005; Nagaraj and Kamalanabhan, 2005). Our research will enhance the understanding of management practices in India and Malaysia and of the relationship of these management practices to performance.

Second, we explore whether different national characteristics can affect the implementation and success of those practices and resultant performance even within the region, and whether management practices diverge between India and Malaysia. This is

because studies of national business systems have highlighted the role played by different institutional characteristics in various countries in explaining variation in the way organizations are managed (Whitley, 1999). We will focus our attention on national culture among other institutions for a specific reason: national culture is an important part of the informal or normative/cognitive institutions in the environment, and it underpins formal or regulative institutions (such as laws and regulations), as Peng *et al.* (2008) discussed.

This study mainly uses the term "management practices" rather than "HRM practices" because it looks at management practices centering not just on HRM functions in particular (such as training and reward systems) but also on other functions of people management, such as teamwork practices and improvement activities. We chose the two countries' manufacturing sectors as our research setting because the manufacturing sector is a key industry in India and Malaysia in terms of the sector's output to gross domestic product and its employment compared to that of other industrial sectors (OECD, 2013).

This study will make a contribution to SHRM research by focusing on two countries within Southern Asia and by examining those two countries' management practices and their relationship to manufacturing performance. The study will also contribute to national business system research by providing insight into the ability of national culture to moderate that relationship despite the fact that the national cultures we look at are both situated in Southern Asia.

Thus, responding to a call from the journal's special issue, we explore in this paper management practices—part of the business systems—in India and Malaysia, and their relationship to manufacturing performance. Our approach focuses on national culture among other institutions that could affect management practices. We draw on studies of SHRM and cross-culture (e.g. Baron and Kreps, 1999; Hofstede, 2001).

Literature review and hypotheses

The universalistic and contingent effects of management practices

In order to explore the relationship between management practices and performance, theoretical perspectives have been developed in the SHRM literature. The universalistic perspective is arguably the most popular. This perspective assumes that particular management practices can generate high performance across organizations (Delery and Doty, 1996); these practices have been called "high performance work practices (HPWPs)" or "best practices" (Huselid, 1995; Pfeffer, 1998). According to the universalistic perspective, HPWPs would be effective in India and Malaysia as they are elsewhere; prior research has found HPWPs to be effective in several countries, such as the United States, European countries, China, and Japan (e.g. Chow *et al.,* 2008; Guest *et al.,* 2003; Huselid, 1995; Takeuchi, 2009).

Scholars have designated certain management practices (for instance, job security or symbolic egalitarianism) as HPWPs or best practices (e.g. Baron and Kreps, 1999; Pfeffer, 1998). Meanwhile, they have selected management practices that are relevant to their own research framework or setting (Boselie *et al.,* 2005). In a similar vein, this study—with its focus on the manufacturing sector—centers on management practices relevant to that sector. More specifically, this study addresses skills-enhancement training, teamwork practices, improvement activities, and motivational practices. Prior research has found these practices to be effective in the manufacturing sector (Appelbaum *et al.,* 2000; MacDuffie, 1995; Sakikawa, 2012). These four practices would help workers, for instance, to carry out multiple work processes and attend teamwork activities to a greater extent than traditional practices at a time when mass production once dominated the manufacturing industry. It is expected that, as a result, these practices are more likely to improve productivity, quality, and other production outcomes. Thus, in our research framework, we regard these four management practices as HPWPs. Based on the universalistic perspective, we hypothesize the following:

H 1. Across India and Malaysia, management practices (skills-enhancement training and all other HPWPs) are positively related to manufacturing performance.

Another popular perspective used in SHRM studies is the contingency perspective. This perspective assumes that management practices should be consistent with a strategy, technology, and other organizational contingencies in order to improve performance. As Brewster (1999) argued, because the contingency perspective still lies within the paradigm of universalism, the perspective does not take into account the national environment or institutional context within which an organization operates.

The success of a specific production method—for instance, lean or flexible production—is known to be more dependent on the use of HPWPs than on that of other management practices (MacDuffie, 1995). Thus, we employ the production method as a contingency variable in our research framework. We conceptualize the production method on a spectrum, with flexible production at one end and traditional, mass production at the opposite end (MacDuffie, 1995). Based on the contingency perspective, we hypothesize the following:

H 2. Across India and Malaysia, the production method moderates the relationship between management practices (skills-enhancement training and all other HPWPs) and manufacturing performance. Across India and Malaysia, this relationship is positive and stronger for flexible production than it is for traditional, mass production.

The impact of national culture

Despite numerous claims of growing convergence to such management practices as HPWPs or best practices, the way firms are organized and managed varies between market economies (Whitley, 1999). Employment and work systems—including management

practices—and other forms of business subsystems such as ownership control and supply chain are structured by institutions: the role of the state, the financial system, skills development and control, and trust and authority relationships. This suggests that we need to conduct our research by taking into consideration different institutions in different national environments.

In this paper, we focus on national culture, which can be defined as the collective program of the mind (Hofstede, 2001). We explore whether national culture can affect the relationship between management practices and performance. It should be noted that trust and authority relationships, as discussed by Whitley (1999), represent an aspect of national culture; that is, a cultural dimension of power distance in Hofstede's (1980, 2001) cross-cultural studies.

Prior cross-cultural and comparative HRM research has shown that differences in national culture can explain differences in management practices; thus, there is a cultural fit or congruence between certain management practices and a cultural dimension (Aycan, 2005; Bae *et al.,* 1998; Hofstede, 2001; House *et al.,* 2004; Mendonca and Kanungo, 1994; Pudelko, 2007; Schuler and Rogovsky, 1998). Newman and Nollen (1996) found that national culture can also affect the relationship between management practices and performance. Cultural congruence and incongruence are expected to affect employee perceptions and behaviors (Newman and Nollen, 1996). When management practices are inconsistent with deeply held national cultural values, employees are likely to feel dissatisfied, distracted, uncomfortable, and uncommitted. As a result, they may be less able or less willing to perform well (Newman and Nollen, 1996). In contrast, management practices that are consistent with national cultural values are likely to yield desirable employee attitudes and high performance (Newman and Nollen, 1996). Therefore, the successful implementation of management practices and the resultant performance outcomes depend on a cultural fit. We postulate that national culture

affects and moderates the relationship between management practices and employee or organizational outcomes.

Given that national culture can affect management practices and, what is more, moderate their effect on performance, we need to understand the characteristics of the national cultures within our research setting—India and Malaysia. These two countries exist within a region that the GLOBE study called the cultural cluster of Southern Asia (House *et al.,* 2004). Thus, India and Malaysia should have some dimensions of national culture in common. Hofstede's (2001) cross-cultural research showed that India and Malaysia have almost the same score for uncertainty avoidance, with India ranking 45th and Malaysia ranking 46th out of 53 countries. In addition, India ranks 20th and Malaysia ranks 25th out of 53 countries on the cultural dimension of masculinity and femininity. However, the two countries are different from each other in terms of power distance (although they are still culturally similar), with Malaysia ranking the highest and India ranking 10th. The two countries are more different in terms of individualism versus collectivism, with India ranking 21st and Malaysia ranking 36th. Overall, India and Malaysia seem to have more cultural similarities than differences, according to Hofstede's cross-cultural research.

However, a close look at Indian and Malaysian managers and workers suggests that there are significant cultural differences between the two nations. For instance, although India and Malaysia are both characterized as high power-distance societies by Hofstede's research, Islam—on which the Malaysian culture is centered—is an egalitarian religion that recognizes no hierarchy between individuals. The acceptance of power distance in Malaysia is not as extreme as suggested by Hofstede's research (Kennedy, 2002). In addition, Malays or *Bumiputras* place a low importance on assertiveness and do not seek personal achievement at the cost of others (Kennedy, 2002; Westwood and Everett, 1995). Malays are more likely to be modest and sensitive to others than are Malaysian Chinese and Indians (Westwood and

Everett, 1995). Although, to the best of our knowledge, there are no comparative studies on management practices and national culture between India and Malaysia, Kennedy (2002), Westwood and Everett (1995), and other research (e.g. Budhwar, 2003; Smith, 2003) make us expect India and Malaysia to have significant cultural differences in some regards that can affect differences in the ways organizations are managed between the two countries. That is, Malays are more egalitarian, less assertive, and less performance-oriented, while Indians are less egalitarian, more assertive, and more performance-oriented.

Provided that Indians are more assertive and performance-oriented, on the one hand Indian culture would be congruent to skills-enhancement training and motivational practices. This is because assertive and performance-oriented societies stress training in skills and abilities to carry out work tasks; these societies reward skills attainment and the achievement of work tasks (Aycan, 2005; House *et al.* 2004). Thus, Indian culture is expected to help the success of skills-enhancement training and motivational practices among other HPWPs. Provided that Malays are more egalitarian, less assertive, and less performance-oriented, on the other hand Malaysian culture would be congruent to improvement activities and teamwork practices among other HPWPs. This is because egalitarian societies would promote decision participations such as improvement activities; less assertive and less performance-oriented societies would value harmony over personal achievement in working with colleagues (Aycan, 2005; House *et al.* 2004). Thus, Malaysian culture is expected to promote the success of teamwork practices and improvement activities. Our arguments above lead to two hypotheses:

H 3a. National culture moderates the relationship between management practices (skills-enhancement training and motivational practices) and manufacturing performance. The relationship is positive and stronger in Indian culture than in Malaysian culture.

H 3b. National culture moderates the relationship between management practices (teamwork practices and improvement practices) and manufacturing performance. The relationship is positive and stronger in Malaysian culture than in Indian culture.

Methods

Research design and sample

In order to test the hypotheses, we asked manufacturing companies in India and Malaysia to participate in our survey. Through our personal network, we had been introduced to managers at various companies. It was these managers we contacted directly to participate in our survey. We recognized that a non-random sampling method might cause a response bias. Nevertheless, we took this approach, rather than a less personal approach of distributing questionnaires by mail, because we were concerned that without direct contact and networking, busy company managers might ignore our request for information, or not take the time to respond fully to our questions.

We developed our questionnaire items based on survey research by Sakikawa (2012), who attempted to measure manufacturing organizations and their management practices in Japan and China. First, we developed questionnaire items written in English. Next, we translated the English version of the questionnaire into the Malay language. In our Malaysian survey, we used both the English and the Malay versions of the questionnaire. In our Indian survey, we used the English version. In addition, one of the authors, an Indian researcher, translated the English version into Hindi and other local languages of India and explained the questionnaire items to Indian respondents on site at their workplaces.

Production group leaders or team leaders were asked to fill out the questionnaires. We selected these respondents because those employees in leadership roles were what Huselid and Becker (2000) called “key informants” in that they were more knowledgeable about the

management practices that were actually implemented than any other people at the company—more so even than the operators who were actually engaged in production operations under the group leaders. Production leaders responded to the questionnaire items for both the independent variables (management practices) and the dependent variables (manufacturing performance). It should be noted that the unit of analysis in this study was a production team in charge of manufacturing operations—so, a team within a company, not an entire company.

We collected data from India-based and Malaysia-based manufacturing companies from the spring of 2013 through to the summer of 2014. We gathered data from Indian companies located in and around the nation's capital, Delhi, and the nation's seventh largest city, Pune. We collected data from Malaysia-based companies throughout the country.

A total of 96 production leaders from 16 manufacturing companies responded to the Indian survey. Most of those companies were automobile, automobile parts, and metal-processing operations. Seven out of the 16 companies were Japanese affiliates. On average, six people from each Indian company responded to the questionnaire. One question captured the tenure of the respondent on a five-point Likert scale ranging from "less than one year" to "more than four years." The average value was 4.11, meaning the respondents' length of employment at their companies was longer than four years on average. The average number of operators on production lines was 81.57.

A total of 137 production leaders from 16 manufacturing companies responded to the Malaysian survey. Most of those companies were electronics, electronic parts, automobile, automobile parts, and metal-processing operations. Five out of the 16 companies were Japanese subsidiaries. On average, nine people from each Malaysian company responded to the questionnaire. The average tenure on the five-point Likert scale was 4.62, meaning that

the respondents' length of employment at their companies was longer than four years on average. The average number of operators on production lines was 23.75. We did not provide a question item asking respondents about their ethnicities. However, as we suspected that Malaysia's cultural diversity could affect our survey, we attempted to detect respondents' ethnicities by guessing them from respondents' names written on the completed questionnaires. In our estimation, the ethnicities of our respondents were as follows: 104 Malays, seven Malaysian Chinese, seven Malaysian Indian, two indigenous minorities, and four of unknown ethnicity (respondents who gave no names).

The total number of responses from the manufacturing companies in India and Malaysia was 233. This constituted our sample.

Variables

Dependent variables. We developed four items as our dependent variables: productivity, work-in-process inventory, lead time, and quality. The appendix shows these items. For several reasons, we used the five-point Likert scale to measure these performance indicators as well as the predictors, mediators, and controls. One reason was that the participating companies manufactured many different categories of products and parts components (e.g. automobiles, automobile parts, electronic products, and electronic components), and this made it difficult to apply the same benchmarking criteria (e.g. the absolute number of products made) to all the production teams.

We performed confirmatory factor analysis (CFA) using the maximum likelihood (ML) method in order to establish construct validity. As prior research (Ahmad and Schroeder, 2003; Wiengarten *et al.,* 2011) showed that manufacturing performance items can form a single latent variable (a factor), we specified one factor model with all items loading on to it.

However, our index of manufacturing performance was not acceptable in terms of internal consistency reliability according to its standard recommended by Nunnally and Bernstein (1994). Then, by making no specifications in advance with regard to the number of latent factors and the relationship among indicator items, we performed exploratory factor analysis (EFA) to explore the factor structure of manufacturing performance items using varimax rotation. As Table I shows, our analysis indicated that three items, namely, work-in-process inventory, lead time, and quality, formed a factor; productivity, however, did not constitute the latent factor. The eigenvalue for the factor was 1.67; the proportion of the total variance accounted for by the factor was .41. Internal consistency reliability among the three items was .60. We decided to use the average value of the three manufacturing performance items as our index of manufacturing performance.

Insert Table I here

Independent variables. We developed and used four items of skills-enhancement training, five items of teamwork practices, five items of improvement activities, and five items of motivational practices. The leaders assessed management practice items on a five-point Likert scale. The appendix shows these items of management practices. We performed CFA for each of the management practices so that we could test the one-factor model and test for convergent and discriminant validity. All the results of the one-factor model were favorable: skills-enhancement training ($\chi^2 = 0.17$, $df = 2$, $p < .91$, GFI = .99, RMSEA = .00); teamwork practices ($\chi^2 = 6.98$, $df = 5$, $p < .22$, GFI = .98, RMSEA = .04); improvement activities ($\chi^2 = 11.81$, $df = 5$, $p < .03$, GFI = .98, RMSEA = .07); and motivational practices ($\chi^2 = 15.79$, $df = 5$, $p < .00$, GFI = .97, RMSEA = .09). The respective internal consistency reliabilities were .62 for skills-enhancement training, .75 for teamwork practices, .78 for improvement

activities, and .70 for motivational practices. We aggregated and averaged the values on the questionnaire items by each of the four management practices.

Moderators. We used the production method as a moderating variable by which to explore its interactive effects along with management practices. Production leaders assessed the production line under their supervision in terms of its lot size, product variety, and frequency of changes both in production volume and items, as shown on the appendix. We performed CFA with the ML estimation. However, our measurement was not superior in terms of internal consistency reliability according to its cut-off level proposed by Nunnally and Bernstein (1994). Then, by making no specifications in advance with regard to the number of latent factors and the relationship among indicator items, we performed EFA to explore the factor structure of the production method items using varimax rotation. As Table Ⅱ shows, our analysis indicated that two items, namely, product variety and frequency of changes in production items, formed a factor; other two items, however, did not constitute the latent factor. The eigenvalue for the factor was 1.52 and its proportion was .38. Internal consistency reliability among the two items was .69. We decided to use the average value of the two production method items as our index of production method. A production method with higher values can be thought of as being more similar to a flexible production line, while lower values represent something closer to a traditional, mass production line. To analyze the interactive effects between management practices and the production method, we used product terms between these two variables.

Insert Table II here

We also used the country in which the manufacturer operated as a moderator variable. We categorized the variable and employed a dummy-coded variable (Malaysia = 1, India = 0).

The dummy-coded variable of country is a proxy for national culture. We then used product terms between management practices and the country variable to examine the interactive effects between management practices and national culture.

Control variables. We used three control variables that were expected to affect manufacturing activities. These controls were assessed on a five-point Likert scale by the production leaders. Production volume or capacity level was used as a control variable. A higher value for production volume means that the current weekly production volume is larger than that of previous weeks, meaning that productivity is likely to be high.

We selected the ability of parts procurement workers as another control variable in our models. Replenishment workers are expected to correctly and promptly pick up a variety of parts components and supply them to the production teams on time. Thus, they are supposed to be key enablers in shortening lead time, thereby reducing work-in-process inventory. A higher value for this control variable means that the leaders who participated in the survey felt more satisfied with the timely and appropriate supply of parts components or materials by the replenishment workers.

We also selected error-proof tools, sometimes called *pokayoke* among manufacturers in Japan, as another control variable. *Pokayoke* tools or equipment can prevent product defects on production lines and consequently improve quality by taking such measures as halting incorrect operations or activating an alarm if a minor human error occurs on a production line.

Results

To test the hypotheses, we performed hierarchical moderated regression analysis using ordinary least squares (OLS). We entered the control and the moderator variables in the first

step. The model in the first step was the baseline model for subsequent analyses. To examine the effect of management practices, we entered each set of the management practices (e.g. skills-enhancement training) in the second step in different models. This was because the four areas of management practices in this study were correlated, so including all of them in a model at the same time could cause suppression among the variables and bias the result (Cohen *et al.,* 2003). To test the moderating hypotheses and to estimate the interactive effects of the country variable and production method with management practices, we entered each of the product terms between the management practices and the production method in the third step and each of the product terms between the management practices and the country in the fourth step.

When conducting our analyses of the moderation effects, we followed the advice of Cohen *et al.* (2003) and used mean-centered predictors (management practices) and a moderator (the production method), but not controls, country, or the criterion. Thus, we subtracted from these variables their mean values in order to avoid multicollinearity between the predictors and the moderator and the product terms between them. Given that the sample size was not large, we considered regression coefficients at a probability level of less than .1 to be significant.

Table Ⅲ presents the descriptive statistics including means, standard deviations, correlations, and reliabilities. The country variable did not have statistically significant correlations with management practices. This might be because India and Malaysia are situated in the same cultural group of Southern Asia. Following prior research, whose authors assessed the associations or interactions between the nominal or ordinal scales of management practices and of national culture (Schuler and Rogovsky, 1998; Newman and Nollen, 1996), we dichotomized the mean value of manufacturing practices. Then, we examined the

relationship between the categorized variables of management practices and of country. Skills-enhancement training had a significant, negative relationship with country ($\varphi = -.13$, $\chi^2 = 4.35$, $df = 1$, $p < .05$). Improvement activities also had a significant, negative relationship with country ($\varphi = -.11$, $\chi^2 = 2.29$, $df = 1$, $p < .1$). Teamwork practices were not significantly related to country ($\varphi = -.02$, $\chi^2 = 0.19$, $df = 1$, n.s.). Motivational practices were not significantly related to country either ($\varphi = -.04$, $\chi^2 = 0.48$, $df = 1$, n.s.). These results suggest that national culture is related to some, if not all, management practices in our research setting of India and Malaysia. The negative signs of phi (φ) coefficients mean India or its culture is more congruent with skills-enhancement training and improvement activities than is Malaysia or its culture.

Insert Table Ⅲ here

Table Ⅳ shows the regression results of the hypothesis tests. Hypothesis 1 predicts positive effects of management practices on manufacturing performance. As the second step in model 1 shows, skills-enhancement training was related to manufacturing performance ($\beta = 0.19$, $p < .01$, $\Delta R^2 = .03^{**}$). As the second step in model 3 shows, improvement activities were also related to manufacturing performance ($\beta = 0.14$, $p < .05$, $\Delta R^2 = .02^{*}$). Meanwhile, the second step in each of model 2 and 4 shows, teamwork and motivational practices were not related to manufacturing performance. Thus, our regression analyses yielded the mixed results.

Insert Table Ⅳ here

In order to test Hypothesis 2 (that is, the moderation between management practices and the production method), we entered each of the product terms between the two variables in

the third step in each model. The third step from each of model 1 to model 4 shows that none of these interactions was significant. Thus, the results did not support Hypothesis 2.

In order to test Hypotheses 3a and 3b (the moderation between management practices and country), we entered each of the product terms between the two variables in the fourth and final step in each model. All models except model 4 were significant (skills-enhancement training × country, $\beta = -0.40$, $p < .01$, $\Delta R^2 = .03^{**}$; teamwork practices × country, $\beta = -0.32$, $p < .05$, $\Delta R^2 = .02^{*}$; improvement activities × country, $\beta = -0.48$, $p < .01$, $\Delta R^2 = .03^{**}$). Coefficients of management practices (final coefficients or *b*'s after all variables have been entered into a model) corresponded to those of Indian manufacturing teams as the dummy variable of country was scored as 1 = Malaysia and 0 = India (Jaccard and Turrisi, 2003). To understand these interactions, we plotted the interactive effects of management practices with country. Figure 1 shows that skills-enhancement training had a stronger positive relationship with manufacturing performance for Indian manufacturing groups than for Malaysian ones. This indicates that Hypothesis 3a is supported. As the country variable did not interact with motivational practices, Hypothesis 3a was partially supported. Although we do not depict interactions between the country variable and teamwork practices and improvement activities using figures (due to space limitations), the plotted interactions were similar to the interaction shown in Figure 1. These results suggest that although the country variable as a proxy for national culture interacted with teamwork practices and improvement activities, the directions were opposed to our prediction. Thus, Hypothesis 3b was not supported.

Insert Figure 1 here

Discussion

As Hypothesis 1 predicts, skill-enhancement training and improvement activities were positively related to manufacturing performance. The results show the efficacy of the universalistic perspective in SHRM research. Meanwhile, teamwork and motivational practices were not related to manufacturing performance. We might be able to resolve the mixed results by looking at the role played by the country variable or national culture in moderating the relations between management practices and manufacturing performance, as demonstrated later.

Hypothesis 2 was not supported. Even though this research did not confirm the interactions between management practices and the production method, it found the interactions between management practices and the country variable to be significant regardless of their directions, as discussed below. This finding suggests that national culture can play a greater role in moderating the relationship between management practices and performance than can internal contingencies within a company (such as the production method used).

As Hypothesis 3a predicts, the relationship between skills-enhancement training and manufacturing performance was positive and stronger among Indian production teams, yet the interaction between motivational practices and the country variable was not significant. Provided that Indian workers are assertive and performance-oriented, they would prefer to be rewarded for their results or outcomes rather than for their work process (House *et al.,* 2004). As our motivational practice items included reward for work process, it might be that the country variable did not interact with motivational practices.

In opposition to Hypothesis 3b, the relationship between management practices (teamwork practices and improvement activities) and manufacturing performance was significant, but positive and stronger among Indian production teams. One reason for this might be that the Malaysian sample included not only Malays but also Malaysian Chinese and

Indians—a composition that reflects cultural pluralism in the nation. Another and more important reason might be that HPWPs are more effective in assertive and performance-oriented cultures such as India than in other societies such as Malaysia. This is because organizations introduce these practices into their workplaces in order to compete with rivals and improve performance in the first place. We did not correctly predict the directions in the interactions between HPWPs and manufacturing performance. Yet, our research revealed that national culture can moderate the relationship between the two variables—in whichever direction the interactions may go—even though India and Malaysia are situated in the same cultural cluster of Southern Asia.

Theoretical contributions

Our research contributes to SHRM research by (1) focusing on India and Malaysia, and by (2) examining the two countries' management practices and the relationship of those practices to manufacturing performance. Compared to East Asian and Western countries, the amount of SHRM research on Southern Asia is small. Thus, we chose to conduct our SHRM surveys in India and Malaysia, two countries within this cultural region. Our research also contributes to comparative HRM research in that it attempts to compare management practices and their effects on manufacturing performance between India and Malaysia. Prior to our study, there were, to the best of our knowledge, no comparative studies on management practices and national culture between these two Southern Asian countries. India and Malaysia do not have Indian and Malaysian styles of management, respectively (Budhwar, 2003; Kawabe, 1991). We attempted to capture management practices in those countries in terms of the use of HPWPs. Our correlations between categorized variables of management practices and national culture suggested that although teamwork practices and motivational practices did not differ between the two countries, skills-enhancement training and

improvement activities were more common in India than in Malaysia. By combining data from the two countries, in addition to those correlation analyses, we carried out regression analyses and found that some of the HPWPs (i.e. skill-enhancement training and improvement activities) are effective in India and Malaysia just as they are in East Asian and Western countries. Our analyses show the efficacy of the universalistic perspective in SHRM research.

Our research also makes a contribution to national business system studies by providing insight into the ability of national culture to moderate the relationship between HPWPs and manufacturing performance even in Southern Asia. National business system studies claim that the national business system is affected by different institutions in different national environments (Whitley, 1999). The business system or its components, such as management practices, differ and diverge among nations. Accordingly, in this study we highlighted national culture among other institutions and explored its role in explaining differences in management practices and in determining the relationship between these practices and manufacturing performance. Our research found that national culture can moderate that relationship—in whichever directions the interactions may go—even though India and Malaysia are both situated in Southern Asia.

Theoretical and practical implications

Our research has implications for cross-cultural and comparative HRM studies. Management practices can be affected by different countries and cultures (e.g. Hofstede, 2001). This research implies that not only can differences in national culture explain varieties in management practices including HPWPs, but they can also determine the relationship between management practices and performance. Schuler and Rogovsky (1998), who explored the relationship between national culture and compensation practices, expected that there would not only be a relationship between the dimensions of national culture and

management practices but also that there would be a greater impact of these practices on performance on a cultural dimension. Our research found such an interactive effect of national culture along with HPWPs on performance.

This research also has implications for business system research. Our research suggests that some parts of the work and employment system—a subsystem of the business system—might be more likely to be bound by institutional contexts than other parts might be. Our statistical results showed that although teamwork practices were not related to manufacturing performance, the country variable moderated the relationship between these practices and performance. This means that teamwork practices are more likely to be bound by national culture than skill-enhancement training and improvement activities—which are free from as well as bound by national culture because these practices were found to be effective across countries; they also interacted with the country variable. We need to conduct additional research in order to prove that this argument is plausible and explain why it is plausible.

One of the practical implications of this research is that our study offers Indian and Malaysian managers a chance to consider the management practices they use and also consider the benefits that HPWPs can bring to the workplace. This is because, as suggested earlier, few studies have empirically tested the impact of management practices on performance in these two Southern Asian countries, in particular Malaysia. The manufacturing sectors in India and Malaysia are expected to be a key industry to facilitate the two nations' sustainable growth (OECD, 2013). The Indian government aspires to transform the nation into a global manufacturing hub under its "Make in India" campaign. We wish this research could help India and Malaysia to achieve a high standard of sustainable economic growth in years to come.

Limitations and directions for future research

This study has several limitations. First, we did not directly assess national culture. Instead, we used a dummy-coded country variable as a proxy for national culture because we assumed that a nation represents its culture intrinsically. In our effort to improve our research, we can invent a measurement of national culture by reviewing the latest studies as well as earlier studies that have proposed measurements of national culture (e.g. Caprar, 2015; van de Vijver and Leung, 1997). Then, we can research national culture using such a measurement. Still, it is difficult and costly to survey national culture throughout a county or countries; it is convenient to use a dummy-coded country variable as a proxy for national culture.

Second, we might not reach a credible, general conclusion in our research as we did not collect data from a large and varied group of countries beyond just India and Malaysia, including countries from other cultural regions outside Southern Asia. It is recommended that researchers collect data from a minimum of 7 to 10 countries so that they can draw a credible generalization in a comparative international business study (Tung and Verbeke, 2010).

Third, this study did not examine the possibility that organizational culture (in addition to national culture) affects management practices and interacts with these practices to impact performance. This is because some participating Indian and Malaysian companies were Japanese overseas subsidiaries. Our unit of analysis was a production team. We can cluster production teams by different companies and aggregate data at the company-level, which will allow us to conduct multi-level research and seek the effects of organizational culture.

Fourth, we used a cross-cultural perspective and tested our hypotheses by highlighting national culture. However, we cannot rule out the possibility that other institutions—such as

state institutions (through laws and regulations), the financial system, educational institutions (through skills development), and trade unions—affect management practices and their associations with manufacturing performance. We suppose management practices are affected by national culture more directly than by non-cultural institutions. This is because management practices are immediately performed by workers who embody national culture while company-wide management "policies" are formulated by HRM managers or high-profile executives who are constrained by numerous institutions such as laws and regulations and investors and other stakeholders. Nevertheless, we cannot ignore influences from non-cultural institutions in theorizing the effect of institutional contexts on management practices and in testing theories.

Fifth, our method of data collection might have caused a statistical problem of common method variance (Podsakoff *et al.,* 2003). We considered the pros and cons of surveying a dyad of persons versus a single person. Based on the first author's past survey experience, we were more concerned about the former method than the latter. When a dyad of persons—for example, a leader and a worker—responds to a set of questionnaire items, various problems can arise. A leader could tend to evaluate the team's workers uniformly; a leader could evaluate non-targeted workers; only one member of the dyad could participate in the responses; or a leader might be asked to respond to the same questionnaire items for multiple workers, taking too much time out of that leader's busy day. Due to these concerns, we decided to collect data from a single source; that is, from only the leaders. We recognize the limitation of that method of data collection.

The directions our research will take in the future include the following. First, we will add more countries to our sample so that we can draw a credible generalization and overcome one of our limitations suggested earlier. Second, we will develop our research by drawing not

only on cross-cultural research as we did in this paper, but also on other relevant theories, such as institutional theory. Third, we will explore whether organizational culture as well as national culture can affect management practices and their relationship with performance. Then, we will be able to determine which type of culture—organizational culture or national culture—has a greater impact.

Conclusion

We researched and determined the relationship of HPWPs to manufacturing performance in India and Malaysia—two countries from the cultural region of Southern Asia. We also explored whether national culture can moderate that relationship as we recognized the importance of national culture among other institutions. Our research showed that most of the relationships were positive and stronger in India than in Malaysia because of India's stronger cultural orientation toward assertiveness and high performance. Our research demonstrated the ability of national culture to play a significant moderating role despite the fact that the two countries studied are situated in the same cultural region.

References

Ahmad, S. and Schroeder, R. G. (2003), "The impact of human resource management practices on operational performance: recognizing country and industry difference", *Journal of Operations Management,* Vol. 21 No. 6, pp. 19-43.

Appelbaum, E., Bailey, T., Berg, P. and Kalleberg, A. L. (2000), *Manufacturing Advantage: Why High-Performance Work Systems Pay Off,* Cornell University Press, Ithaca, NY.

Aycan, Z. (2005), "The interplay between cultural and institutional/structural contingencies in human resource management practices", *The International Journal of Human Resource Management,* Vol. 16 No. 7, pp. 1083-1119.

Azmi, F. T. (2011), "Strategic human resource management and its linkage with HRM effectiveness and organizational performance: evidence from India," *The International Journal of Human Resource Management,* Vol. 22 No. 18, pp. 3888-3912.

Bae, J., Chen, S. J. and Lawler, J. J. (1998), "Variations in human resource management in Asian countries: MNC home-country and host-country effects", *International Journal of Human Resource Management,* Vol. 9 No. 4, pp. 653-670.

Baron, J. M. and Kreps, D. M. (1999), *Strategic Human Resources: Framework for General Managers,* John Wiley & Sons, New York, NY.

Boselie, P., Dietz, G. and Boon, C. (2005), "Commonalities and contradictions in HRM and performance research", *Human Resource Management Journal,* Vol. 15 No. 3, pp. 67-94.

Brewster, C. (1999), "Strategic human resource management: the value of different paradigms", *Management International Review,* Vol. 3, pp. 45-64.

Budhwar, P. S. (2003), "Culture and management in India", In Warner, M. (Ed.), *Culture and Management in Asia,* RoutledgeCurzon, London.

Caprar, D. V., Devinney, T. M., Kirkman, B. L. and Caligiuri, P. (2015), "Conceptualizing and measuring culture in international business and management: from challenges to potential solutions", *Journal of International Business Studies,* Vol. 46 No. 9, pp. 1011-1027.

Chow, I. H., Huang, J. C. and Liu, S. (2008), "Strategic HRM in China: configurations and competitive advantage", *Human Resource Management,* Vol. 47 No. 4, pp. 687-706.

Cohen, J., Cohen, P., West, S. G. and Aiken, L. S. (2003), *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences* (3rd ed.), Lawrence Erlbaum Associates, Mahwah, NJ.

Delery, J.E. and Doty, D. H. (1996), "Modes of theorizing in strategic human resource management: tests of universalistic, contingency, and configurational performance predictions", *Academy of Management Journal,* Vol. 39 No.4, pp. 802-835.

Guest, D. E., Michie, J., Conway, N. and Sheehan, M. (2003), "Human resource management and corporate performance in the UK", *British journal of industrial relations*, Vol. 41 No. 2, pp. 291-314.

Hofstede, G. (2001). *Culture's Consequences: Comparing Values, Behaviors, Institutions, and Organizations across Nations,* Sage Publications, Thousand Oaks, CA.

House, R. J., Hanges, P. J., Javidan, M., Dorfman, P. W. and Gupta, V. (2004), *Culture, Leadership, and Organizations: The GLOBE Study of 62 Societies,* Sage Publications, Thousand Oaks, CA.

Huselid, M. A. (1995), "The impact of human resource management practices on turnover, productivity, and corporate financial performance", *Academy of Management Journal,* Vol. 38 No. 3, pp. 635-672.

Huselid, M. A. and Becker, B. E. (2000), "Comment on "Measurement error in research on human resources and firm performance: how much error is there and how does it influence effectsize estimates?" by Gerhart, Wright, McMahan, and Snell", *Personnel Psychology,* Vol. 53 No. 4, pp. 835-854.

Jaccard, J. and Turrisi, R. (2003), *Interaction Effects in Multiple Regression* (2nd ed.), Sage Publications, Thousand Oaks, CA.

Kawabe, N. (1991), "Problems of and perspectives on Japanese management in Malaysia", In Yamashita, S. (Ed.), *Transfer of Japanese Technology and Management to the ASEAN Countries,* University of Tokyo Press, Tokyo, Japan.

Kennedy, J. C. (2002), "Leadership in Malaysia: traditional values, international outlook", *Academy of Management Executive,* Vol 16 No. 3, pp. 15-26.

Khandekar, A. and Sharma, A. (2005), "Managing human resource capabilities for sustainable competitive advantage: an empirical analysis for Indian global organizations", *Education+ Training,* Vol. 47 No. 8-9, pp. 628-639.

MacDuffie, J. P. (1995), "Human resource bundles and manufacturing performance: organizational logic and flexible production systems in the world auto industry", *Industrial and Labor Relations Review,* Vol. 48 No. 2, pp. 197-221.

Mendonca, M. and Kanungo, R. N. (1994), "Managing human resources the issue of cultural fit", *Journal of Management Inquiry,* Vol. 3 No. 2, pp. 189-205.

Nagaraj, I. R. and Kamalanabhan, T. J. (2005), "A study on the impact of strategic human resource practices on organizational performance", *Journal of Transnational Management,* Vol. 10 No. 4, pp. 73-97.

Newman, K. L. and Nollen, S. D. (1996), "Culture and congruence: the fit between management practices and national culture", *Journal of International Business Studies,* Vol. 27 No.4, pp. 753-779.

Nunally, J. C. and Bernstein, I. H. (1994), *Psychometric Theory* (3rd ed.), McGraw-Hill, New York, NY.

OECD. (2013), "Southeast Asian economic outlook 2013 with perspectives on China and India". doi: 10.1787/22253998 Retrieved from http://www.oecd-ilibrary.org/development/southeast-asian-economic-outlook-2013/structural-policy-challenges-for-southeast-asian-countries_saeo-2013-8-en

Othman, A. K. A. (2009), "Strategic integration of human resource management practices: perspectives of two major Japanese electrical and electronics companies in Malaysia", *Cross Cultural Management: An International Journal,* Vol. 16 No. 2, pp. 197-214.

Peng, M. W., Wang, D. Y. and Jiang, Y. (2008), "An institution-based view of international business strategy: a focus on emerging economies", *Journal of International Business Studies,* Vol. 39 No. 5, pp. 920-936.

Pfeffer, J. (1998), *Human Equation: Building Profits by Putting People First,* Harvard Business School Press, Boston, MA.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y. and Podsakoff, N. P. (2003), "Common method biases in behavioral research: a critical review of the literature and recommended remedies", *Journal of Applied Psychology,* Vol.88 No.5, pp. 879-903.

Pudelko, M. (2007), "Universalities, particularities, and singularities in cross-national management research", *International Studies of Management & Organization,* Vol. 36 No. 4, pp. 9-37.

Sakikawa, T. (2012), *Transforming Japanese Workplaces,* Palgrave-Macmillan, Hampshire, England.

Schuler, R. S. and Rogovsky, N. (1998), "Understanding compensation practice variations across firms: the impact of national culture", *Journal of International Business Studies,* Vol. 29 No.1, pp. 159-177.

Takeuchi, N. (2009), "How Japanese manufacturing firms align their human resource policies with business strategies: testing a contingency performance prediction in a Japanese context", *International Journal of Human Resource Management,* Vol. 20, No. 1, pp.34-56.

Tung, R. L. and Verbeke, A. (2010), "Beyond Hofstede and GLOBE: improving the quality of cross-cultural research", *Journal of International Business Studies,* Vol. 41 No.8, pp. 1259-1274.

Van de Vijver, F. J. and Leung, K. (1997), *Methods and Data Analysis for Cross-Cultural Research,* Sage Publications, Thousand Oaks, CA.

Westwood, R. I. and Everett, J. E. (1995), "Comparative managerial values: Malaysia and the West", *Journal of Asia-Pacific Business,* Vol. 1 No. 3, pp. 3-38.

Whitley, R. (1999), *Divergent Capitalisms: The Social Structuring and Change of Business Systems,* Oxford University Press, Oxford.

Wiengarten, F., Fynes, B., Pagell, M. and Burca. (2011), "Exploring the impact of national culture on investments in manufacturing practices and performance: an empirical

multi-country study", *International Journal of Operations & Production Management,* Vol.31, No. 5, pp. 554-578.

Appendix

The questionnaire items

The production method

Lot size. This item was evaluated on the five-point Likert scale from 1 "very large" to 5 "very small."

> How large is the production lot or batch size (i.e. units of a produced good) on your production line, compared to that of other lines that produce comparable products at the plant?

Frequency of changes in production volume. This item was evaluated on the five-point Likert scale from 1 "never" to 5 "very often."

> How often does change from a certain volume of production to another take place on your production line (e.g., in half a day or in one day), compared to that of other lines that produce similar products at the plant?

Product variety. This questionnaire item was evaluated on the five-point Likert scale from 1 "single or very limited" to 5 "very numerous."

> How many items of a product are made on your production line, compared to those of other lines that produce similar products at the plant?

Frequency of changes in production items. This item was evaluated on the five-point Likert scale from 1 "never" to 5 "very often."

How often does change from a product item to another take place on your production line (e.g., in half a day or in one day), compared to that of other lines that produce similar products at the plant?

Manufacturing performance

Productivity. The item was assessed on a five-point Likert scale ranging from 1 "very small" to 5 "very large."

To what extent is the number of products on your production line that are made per worker, that is to say, labor productivity, compared to that of other lines that produce comparable products at the plant?

Work-in-process inventory. The item was assessed on a five-point Liker scale ranging from 1 "very large" to 5 "very small."

To what extent is the work-in-process inventory (i.e. quantity of products on work process that have not been completed) on your production line, compared to that of other lines that produce comparable products at the plant?

Lead time. The item was assessed on the five-point Liker scale ranging from 1 "very long" to 5 "very short."

To what extent is lead time or throughput time (i.e. the time taken to complete all production work on the line) on your production line, compared to that of other lines that produce comparable products at the plant?

Quality. The item was assessed on a five-point Liker scale ranging from 1 "very high" to 5 "very small."

To what extent is the percentage of defective products in all products made on your production line, compared to that of other lines that produce comparable products at the plant?

Management practices

All the items below on management practices were evaluated on a five-point Liker scale ranging from 1 "strongly disagree" to 5 "strongly agree."

Skills-enhancement training.

1. Workers handle multiple work processes.
2. Workers acquire new skills and broaden the range of their skills while doing their jobs on the line.
3. Workers get more skillful senior colleagues to instruct them in new tasks whenever they need to do so.
4. By attending off-the-line job training (OffJT), workers gain and upgrade their skills.

Teamwork practices.

1. By performing their individual tasks either not too slow or too fast, workers harmonize with co-workers' work pace.
2. Workers help a co-worker with trouble on the line to resume her or his work.

3. Workers bear shared responsibility for their consequences, including quality and productivity outcomes, and accidents.

4. Workers gain an understanding of each other's tasks while working on the line.

5. The team of production workers competes against other production teams at the plant on manufacturing outcomes, such as quality and productivity.

Improvement activities.

1. Workers attempt to improve work environments by means of the suggestion system.

2. Workers regularly (e.g. once a week) hold, and participate in, a quality control (QC) circle or other off-the-line improvement activities.

3. Every worker, regardless of her or his contractual status (regular or non-regular worker) or tenure (senior or junior worker), participates in off-the-line improvement activities.

4. Workers on the line exchange know-how and solutions with people on other lines.

5. Workers are allowed to suggest ideas for improving products and work processes directly to technical staff members (such as manufacturing engineers).

Motivational practices.

1. Promotion of workers to a higher position is closely linked to their skill levels.

2. As a production leader or manager, you make a point of recognizing efforts and attempts made by workers on your production team to improve work, even if they failed.

3. In-house qualifications (as opposed to national ones) can motivate workers to upgrade their skill levels.

4. Workers find their manufacturing job to be challenging and/or creative.

5. Workers feel a sense of achievement by performing their manufacturing jobs.

Table Ⅰ EFA on manufacturing performance[a]

Manufacturing performance	Factor 1	Factor 2
1. Productivity	0.05	**0.94**
2. Work-in-process inventory	**0.69**	−0.40
3. Lead time	**0.75**	0.19
4. Quality	**0.78**	0.01
Eigenvalue	1.67	1.09
Proportion	0.41	0.27

[a]Values other than eigenvelues and proportions represent factor loadir

Table Ⅱ EFA on the production method[a]

Production method	Factor 1	Factor 2	Factor 3
1. Lot size	−0.15	**0.98**	−0.09
2. Frequency of changes in production volume	0.16	−0.09	**0.98**
3. Product variety	**0.86**	−0.06	0.14
4. Frequency of changes in production items	**0.85**	−0.17	0.10
Eigenvalue	1.52	1.00	1.00
Proportion	0.38	0.25	0.25

[a]Values other than eigenvelues and proportions represent factor loadings.

Table Ⅲ Means, standard deviations, correlations, and reliabilities[a]

Variables	Mean	S.D.	1	2	3	4	5	6	7	8	9	10
1 Production volume	4.23	0.83										
2 Replenishment workers	3.07	0.91	.16*									
3 *Pokayoke* erro-proof tools	3.50	0.96	.06	.43**								
4 Production method	3.24	0.90	.21**	−.18**	−.19**	(.69)						
5 Country	0.58	0.49	.01	−.46**	−.28**	.35**						
6 Manufacturing performance	3.42	0.64	.03	.21**	.35**	−.16*	−.25**	(.60)				
7 Skills-enhancement training	4.03	0.59	0.16*	.21**	0.36**	.06	−.06	.26**	(.62)			
8 Teamwork practices	4.00	0.62	.16*	0.20**	.24**	.12+	−.04	.16*	.64**	(.75)		
9 Improvement activities	4.11	0.59	.13*	.11+	.27**	.07	−.04	.20**	.54**	.63**	(.78)	
10 Motivational practices	4.09	0.50	−.02	.13*	.28**	.00	.02	.13*	.51**	.62**	.66**	(.70)

[a] $n = 233$. Internal consistency reliability coefficients (Cronbach's α) appear on the diagonal.
$^{+}p < .10$
$^{*}p < .05$
$^{**}p < .01$

Table IV Results of hierarchical moderated regression analyses[a]

	Model 1		*Model 2*		*Model 3*		*Model 4*	
Predictors	*Entry b*	*Final b*	*Entry b*	*Final b*	*Entry b*	*Final b*	*Entry b*	*Final b*
Step 1: Control and moderator variable								
Production volume	0.02 (0.04)	0.02 (0.04)	0.02 (0.04)	0.03 (0.04)	0.02 (0.04)	0.02 (0.04)	0.02 (0.04)	0.02 (0.05)
Replenishment workers	−0.00 (0.05)	−0.03 (0.05)	−0.00 (0.05)	−0.03 (0.05)	−0.00 (0.05)	−0.02 (0.05)	−0.00 (0.05)	0.00 (0.05)
Pokayoke error-proof tools	0.20** (0.04)	0.15** (0.04)	0.20** (0.04)	0.16** (0.04)	0.20** (0.04)	0.16** (0.04)	0.20** (0.04)	0.19** (0.04)
Production method	−0.04 (0.04)	−0.05 (0.04)	−0.04 (0.04)	−0.03 (0.04)	−0.04 (0.04)	−0.05 (0.04)	−0.04 (0.04)	−0.04 (0.04)
Country	−0.21* (0.09)	−0.25** (0.09)	−0.21* (0.09)	−0.28** (0.09)	−0.21* (0.09)	−0.24* (0.09)	−0.21* (0.09)	−0.21* (0.09)
F	9.00**		9.00**		9.00**		9.00**	
R^2	0.16		0.16		0.16		0.16	
Step 2: Management practices								
Skills-enhancement training	0.19** (0.07)	0.43** (0.11)						
Teamwork practices			0.10 (0.06)	0.33** (0.11)				
Improvement activities					0.14* (0.06)	0.41** (0.11)		
Motivational practices							0.07 (0.08)	0.04 (0.12)
ΔR^2	0.03		0.01		0.02		0.01	
F for ΔR^2	7.39**		2.56		4.08*		0.94	
R^2	0.19		0.17		0.18		0.17	
Step 3: Management practices × production method								
Skills-enhancement training × production method	−0.02 (0.07)	0.03 (0.07)						
Teamwork practices × production method			0.09 (0.06)	0.10+ (0.06)				
Improvement activities × production method					0.07 (0.07)	0.12 (0.07)		
Motivational practices × production method							0.08 (0.08)	0.07 (0.09)
ΔR^2	0		0.01		0		0	
F for ΔR^2	0.08		2.34		0.98		0.92	
R^2	0.19		0.18		0.18		0.17	
Step 4: Management practices × country								
Skills-enhancement training × country		−0.40** (0.14)						
Teamwork practices × country				−0.32* (0.13)				
Improvement activities × country						−0.48** (0.14)		
Motivational practices × country								0.08 (0.16)
ΔR^2	0.03		0.02		0.03		0	
F for ΔR^2	8.05**		5.43*		8.72**		0.28	
R^2	0.22		0.2		0.21		0.17	

[a] $n = 233$. Standard erros in parentheses.

+ $p < .10$

* $p < .05$

** $p < .01$

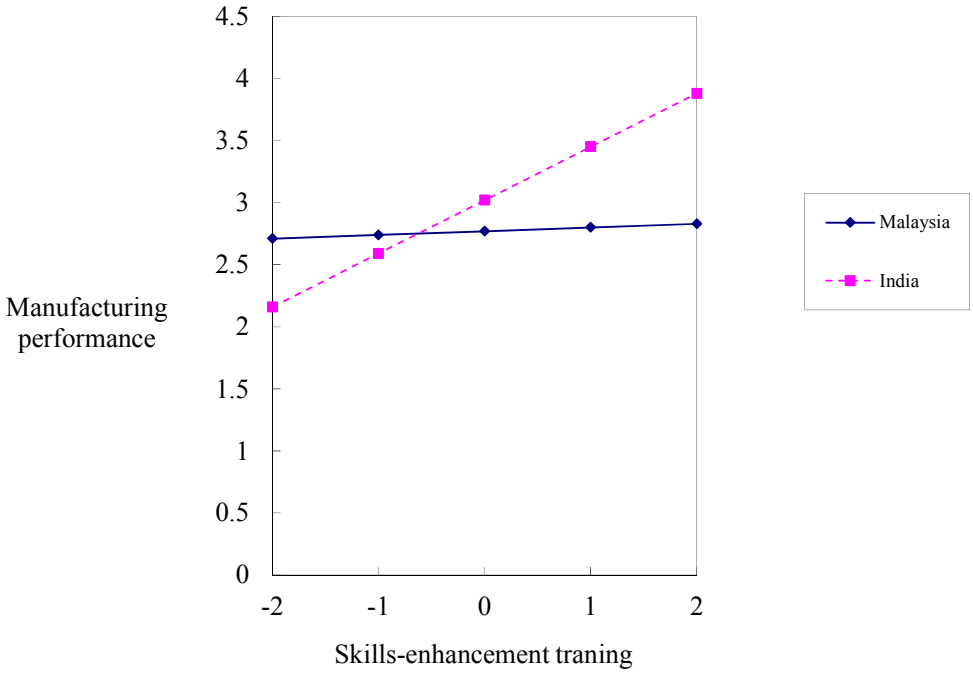

Figure I The relationship between skill-enhancement training and manufacturing performance as a function of country