Employee Relations

The link between high performance work practices and organizational performance: Empirically validating the conceptualization of HPWP according to the AMO model

Shatha M. Obeidat Rebecca Mitchell Mark Bray

Received 19 August 2015
Revised 27 January 2016
Accepted 1 March 2016

The link between high performance work practices and organizational performance

Empirically validating the conceptualization of HPWP according to the AMO model

Shatha M. Obeidat
Qatar University, Doha, Qatar, and
Rebecca Mitchell and Mark Bray
Faculty of Business and Law, University of Newcastle, Newcastle, Australia

Abstract

Purpose – The purpose of this paper is to better understand the relationship between high-performance work practices (HPWP) and organizational performance through a multi-dimensional model of the relationship between HPWP and performance, which conceptualizes HPWP according to the ability, motivation and opportunity (AMO) framework. HPWP are conceptualized as HR practices capable of enhancing the AMO of employees to contribute to organizational performance.

Design/methodology/approach – Data were collected from 118 Jordanian firms operating in the financial and manufacturing sectors. A questionnaire completed by the HR director in each firm assessed HPWP adoption and their influence on organizational performance.

Findings – The findings generate support for the link between HPWP and organizational performance and confirm the utility of the AMO model for conceptualizing HPWP and their impact on organizational performance.

Research limitations/implications – While this study relies on cross-sectional data, it confirms the utility of the AMO framework as an appropriate conceptual basis for HPWP and provides substantial support for the relevance of HPWP in increasing organizational performance.

Originality/value – The findings provide a basis for more consistent empirical investigation and better theory building for HPWP, and also provide a more robust basis for practical prescription. The empirical contribution is also significant as one of the few studies to investigate the link between HPWP and organizational performance in the Middle East.

Keywords Middle East, Organizational performance, High-performance work practices, AMO model
Paper type Research paper

Introduction

Substantial research on the link between high-performance work practices (HPWP) and organizational performance has occurred worldwide since pioneering work in the mid-1990s (Arthur, 1994; Becker and Gerhart, 1996; Delery, 1998; Huselid, 1995). Empirical research on HPWP and performance has demonstrated that HR practices are related to a set of organizational performance measures (Wright and Kehoe, 2008) and this has provided a basis for many authors to promote the practical benefits from adopting HPWP compared with the more control-based personnel approach which emphasizes close monitoring and management of employees and their performance (Tsai, 2006).

Despite extensive research and generally positive findings, many theoretical challenges remain in understanding HPWP. This paper addresses one challenge – the most appropriate conceptualization of HPWP and the introduction of an appropriate

Employee Relations
Vol. 38 No. 4, 2016
pp. 578-595

0142-5455
DOI 10.1108/ER-08-2015-0163

model to identify the HR practices encompassed by this concept. There has been little agreement on the appropriate conceptualization of HPWP (Becker and Gerhart, 1996; Boselie *et al.*, 2005; Guest, 1997; Lu *et al.*, 2015) and, as Wood (1999) suggested, little consistency regarding individual HR practices across empirical studies. More recent research argues that inconsistency in the conceptualization of HPWP constrains efforts to explore the impact of HPWP on organizational performance (Purcell and Kinnie, 2007), which limits researchers' capacity to undertake comparative studies and cogently build on previous findings (Boxall, 1995). Moreover, recent research in HPWP suggests examining mediating relationships of employee-related outcomes to explore the "black box" in the relationship between HPWP and performance (Chang and Chen, 2011; Chuang and Liao, 2010; Takeuchi *et al.*, 2009) Achieving this research aim requires a well-evidenced understanding of the components of HPWP to assess to what extent each component influences employee and organizational performance.

This study contributes to the literature by developing and testing a multi-dimensional model of the relationship between HPWP and performance that conceptualizes HPWP according to the ability, motivation and opportunity (AMO) framework. HPWP are defined as HR practices that enhance the AMO of employees to contribute to organizational performance. The study aims to validate the conceptualization of HPWP based on the AMO model through an empirical study conducted in a Middle Eastern country, which is a relatively under-explored context (e.g. Darwish *et al.*, 2013).

The following sections develop the study hypotheses through a review of the literature. Study methods and measures are then outlined, before an analysis of results and conclusions.

Theoretical background

The emergence of the strategic human resource management field has been associated with a shift in scholarly interest from control-based personnel management to more commitment-based HRM practices termed high performance (such as Kintana *et al.*, 2006; Martin-Tapia *et al.*, 2009), high involvement (Camps and Luna-Arocas, 2009; Guest and Hoque, 1994) and high commitment (Arthur, 1994; Pfeffer, 1994; Wood and De Menezes, 1998) work practices. As well as the diverse labels used to describe HR practices, there has been little consistency in the way researchers have conceptualized HPWP and determined the HR practices to be included (Boselie *et al.*, 2005; Purcell and Kinnie, 2007). This lack of conceptual clarity, let alone consensus, is challenging because, as Guest (1997, p. 274) concluded in his review of the HRM and performance link, "only when we make progress in measuring the independent and dependent variables can we begin to give full attention to the way in which they are linked."

Researchers have conceptualized HPWP through various means. Some scholars view HPWP as a collection of multiple and discrete practices with no explicit linkages. This perspective holds that HPWP, as individual HR practices, are more likely to lead to superior performance. In a review of 104 empirical research articles into the link between HRM and firm performance Boselie *et al.* (2005) found that 58 of the articles applied a "single practice" approach (e.g. Guest and Hoque, 1994). However, others (e.g. Delery and Shaw, 2001) suggest that single superior practices are inadequate to produce higher performance if they are viewed as without interdependence on other practices. Rather, HR practices complement each other to support sustainable success. Following this argument, HPWP are conceptualized as a set or bundle of HR practices, which are mutually reinforcing and synergistic (Wright and Kehoe, 2008). However,

which HR practices should be bundled together to form an HPWP system remains unresolved (Lepak and Snell, 2002; Jiang *et al.*, 2012). Efforts to address this issue have conceived HPWP as a set of common dimensions, grouping practices into distinct but related categories (Jiang *et al.*, 2012). For example, Huselid (1995) factor analyzed a large group of HR practices to identify a set of underlying dimensions, labeled "employee skills and organizational structures" and "employee motivation." This approach has been replicated in more recent studies (see, e.g. Shih *et al.*, 2006; Luna-Arocas and Camps, 2008; Jiang *et al.*, 2012, 2013). The grouping of HPWP into encompassing categories has received support. Wright and Kehoe (2008), for example, note that assigning different HR practices into categories and considering their impact on a variety of outcomes can lead to better understanding of the impact that each category can have on different performance measures. Moreover, Jiang *et al.* (2012) found that HR dimensions are better viewed as three distinct but related components of HR systems. The categorization approach to conceptualize HPWP has occurred without a strong theoretical rationale. With the exception of Jiang *et al.* (2012), there has been no empirical investigation to clarify a conceptual model to best reflect the components of HPWP.

The influential work of Appelbaum *et al.* (2000) provides a basis for a stronger conceptualization of HPWP through their AMO framework. According to Appelbaum *et al.* (2000), HR practices influence performance through their impact on employee AMO to participate. Boxall and Purcell (2003) argue that according to the AMO framework employees will perform well when they are able to do so (i.e. abilities); they have the motivation to do so (i.e. motivation); and when their work environment provides the necessary support for them to express themselves (i.e. opportunity to participate). Following this, the AMO model suggests that HPWP enhance the three main components of the model and can be described along three dimensions: ability-enhancing practices, motivation-enhancing practices and opportunity-enhancing practices. In this study, we argue that these three dimensions broadly represent the domain of HPWP.

The ability-enhancing dimension reflects the degree of investment in HR practices intended to improve the knowledge, skills and abilities (KSA) of employees (Wright and Kehoe, 2008). HR practices of staffing and training directly influence employees' ability to perform by affecting their KSA inventory (Katou and Budhwar, 2010). This is well evident in Delery and Doty (1996) when they propose two HRM systems which aim to enhance employees' abilities: the buy-oriented and the make-oriented systems. The buy-oriented system aims to enhance employees' abilities by implementing a set of HR practices like rigorous selection and sophisticated recruitment methods that bring new skills required to perform the requisite tasks to the company. The make-oriented system, on the other hand, focusses on imparting skills to existing employees through training and development. Ability-enhancing practices are intended to buy skills and/or enhance the existing skills of employees (Ma Prieto and Pérez-Santana, 2014).

The second dimension, motivation-enhancing, is the degree of investment in HR practices functioning to motivate employee behavior (Wright and Kehoe, 2008). Motivation of employees could be increased through practices such as formal performance appraisal and rigorous compensation systems (Boxall and Purcell, 2003). The literature suggests that, with the provision of incentives, employees will feel they are treated fairly and they tend to respond positively toward their company by enhancing their performance (Ur Rahman and Ahmad, 2015). Performance appraisal also serves as a feedback mechanism for employees, which increases the motivation (Meadows and Pike, 2010).

The final dimension, opportunity-enhancing, relates to HR practices that provide employees with opportunities to participate in substantive decision-making on work and organizational outcomes (Tsai, 2006; Wright and Kehoe, 2008). The provision of opportunities to employees tends to increase their confidence as they use more autonomy in task performance (Jiang *et al.*, 2012). This aspect of HPWP could be achieved through such practices as information sharing, quality circles, flexible work assignment and effective communication tools. In particular, information sharing practices tend to assist employees to align their behavior with important company policies, regulations, which may help them better perform requisite tasks (Marks *et al.*, 1986; Meadows and Pike, 2010). Employees' participation in quality circles programs also enhances the morale, team spirit and participative partnership of employees in the organization (Maheshwari, 1987). Job design in the form of flexible work arrangements increases employees' learning and collaboration (Jiang *et al.*, 2012).

The use of the AMO framework as a model for conceptualizing HPWP is theoretically plausible (Purcell and Kinnie, 2007; Jiang *et al.*, 2012, 2013) and it offers the basis for understanding the strategic value of HPWP (Luna-Arocas and Camps, 2008). In particular, the AMO framework provides a detailed account of how HR practices can affect organizational performance by influencing employees' ability (e.g. formal staffing and training), motivation (e.g. formal performance appraisal and appropriate compensation) and opportunity to participate (e.g. the use of attitude surveys).

The AMO conceptualization of HPWP has also been implicitly used by scholars in empirical research since its emergence in 2000. Boselie *et al.* (2005) found that more than half of 104 empirical research papers reviewed made use of the AMO framework. Paauwe (2009, p. 136) confirmed the increased use of the AMO framework: "So gradually we are witnessing the birth of at least a certain commonality around how HRM is operationalised when exploring the relationship between HRM and performance." In a more recent meta-analysis study, Jiang *et al.* (2012) confirmed frequent use the three-dimension model of skill-enhancing, motivation-enhancing and opportunity-enhancing HR practices as a basis for conceptualizing HRM systems. While Jiang *et al.* (2012) provide preliminary support for the use of the AMO model to better conceptualize HPWP based on their meta-analytic review, their findings require empirical confirmation. The limitation of previous literature remains the lack of empirical investigation explicitly aimed at validating the AMO framework. This study develops a series of hypotheses on the basis that HPWP are a comprehensive set of HR practices designed to enhance employees' skills, motivation and opportunity to participate, all of which aim to improve organizational performance.

Impact of HPWP on organizational performance

Previous research provides evidence of the link between HPWP and organizational performance, with HPWP influencing a range of indicators of organizational performance including financial performance (Guest *et al.*, 2003; Huselid, 1995; Shih *et al.*, 2006), employee productivity (Guthrie, 2001; Huselid, 1995), turnover rate (Arthur, 1994; Vandeberg *et al.*, 1999) and absence rate (Marks *et al.*, 1986; Wood and De Menezes, 1998).

Despite these general findings, there has been little research into the individual contributions of each of the AMO dimensions of HPWP to organizational performance, and no attempt to investigate the impact of all three dimensions in a single study, particularly in Jordan.

Previous literature has shown that the use of ability-enhancing practices, such as formal selection process and comprehensive training programs, can lead to enhanced financial performance and employee productivity (Huselid, 1995; Singh, 2004). In addition, motivation-enhancing practices are more likely to lead to enhanced productivity (Huselid, 1995) and financial performance (Singh, 2004). Finally, opportunity-enhancing practices, such as employee participatory programs and extensive communication and feedback activities, are found to enhance performance (Huselid, 1995). These patterns are confirmed in a recent meta-analysis (Jiang *et al.*, 2012).

Following these discrete findings, this study hypothesizes that ability-enhancing, motivation-enhancing and opportunity-enhancing HR practices positively influence organizational performance. Therefore, the proposed theoretical model (see Figure 1) focusses on the impact of these three underlying dimensions of HPWP on organizational performance, operationalized as perceived financial performance, summarized in the following three hypotheses:

H1. There is a positive relationship between ability-enhancing practices and organizational performance.

H2. There is a positive relationship between motivation-enhancing practices and organizational performance.

H3. There is a positive relationship between opportunity-enhancing practices and organizational performance.

Method

Sample and data collection

Data were collected through a large self-administered survey in the manufacturing and financial sectors in Jordan between May 2009 and February 2010. Participants were recruited from 176 organizations, which each employ at least 100 employees. The decision to exclude organizations employing less than 100 employees was based on results of previous research in HRM, which indicates that the larger the firm the more likely it is to have a formal organizational unit dealing with human resources as well as more formalized HR practices (Guthrie, 2001; Huang, 2000). Questionnaires were completed by the most senior manager responsible for the HR function. Of the

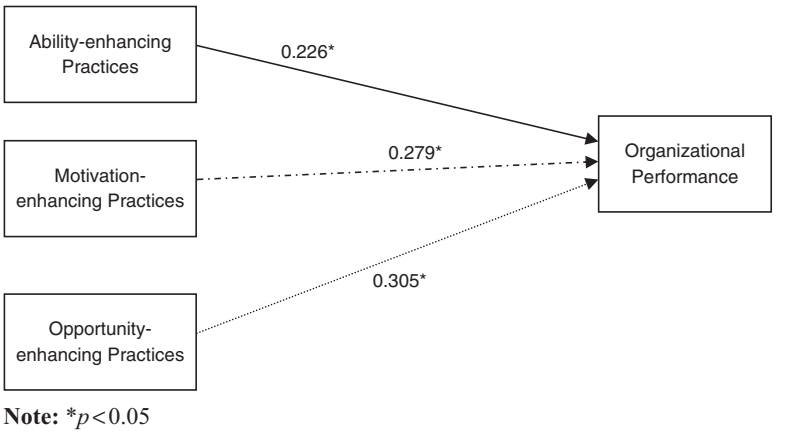

Figure 1.
An illustration of the relationship between HPWP and organizational performance

176 questionnaires distributed, 121 questionnaires were returned. In total, 118 completed and usable questionnaires were used in the analysis, with a 44 percent response rate.

The majority of organizations (74.5 percent) employed between 100 and 300 employees, over half of the organizations (59 percent) operated in the manufacturing sector and most of the organizations (88 percent) were locally owned. The majority of respondents were male (82 percent), and had less than 10 years of experience (92 percent) in their current organization.

Studies that collect data from a single respondent using the same method may be subject to potential common method bias (Gardner and Wright, 2009; Wright *et al.*, 2001). To reduce the potential for common method bias, three steps were undertaken. First, this study used a self-administered questionnaire, which has the potential to reduce social desirability bias (Furnham, 1986). Second, respondents were asked to stipulate the source of information on performance indicator data, with 71 percent using an objective source to inform their responses. Finally, a one factor analysis was performed in this study, which indicated that no single factor accounted for more than 50 percent of variance in the constructs, indicating discriminant validity and supporting the claim that common method variance is unlikely to invalidate the results of the current study (Carr and Kaynak, 2007).

Measures

The survey was initially developed in English. The double-back translation method was then used for the survey items, whereby the questionnaire was developed in English language and then translated into Arabic by a certified translator, and then back-translated into English. The questionnaire was then evaluated by a number of independent researchers in human resource management to assess content validity.

Scales were developed to measure the three dimensions: ability-enhancing, motivation-enhancing and opportunity-enhancing practices based on previous empirical studies (Flood *et al.*, 2008; Huselid, 1995; Snell and Dean, 1992). Multiple sources were used to develop the HPWP scale items because of the lack of agreement in the literature on the HR practices that comprise HPWP. Classifying HPWP into three dimensions enables the research to include the practices that are considered, on the basis of theory, to lead to enhanced performance. All items were measured on a seven-point scale. For example, respondents are asked to score the following statement: "how much importance is placed in the staffing process in this company?", with the scale anchored from 1 "very little" to 7 "great deal."

A nine-item scale was used to measure ability-enhancing practices, including staffing (i.e. formal job analysis, recruitment and selection) and training and development practices, with items such as "How much importance is placed on the staffing process in this company?" and "What proportion of employees have received training in generic skills (e.g. problem solving, communication skills, etc.)?"

Questions on motivation-enhancing practices were designed to measure both performance management and compensation practices. Three scale items were used to measure performance management practices, for example, "What proportion of employees receive formal performance appraisals and feedback each 12 months?" These items were adopted from Huselid (1995) and Flood *et al.* (2008). Three items were used to measure compensation practices, taken from Flood *et al.* (2008) and Snell and Dean (1992), including, for example, "How would you rate pay level in this company relative to other companies?"

Finally, to measure the opportunity-enhancing practices dimension, which reflects communication and participation practices, six items were used, taken from previous work by Flood *et al.* (2008), for example, "What proportion of employees are routinely administered attitude surveys to investigate employee morale?" and "What proportion of employees are involved in programmes designed to elicit participation and employee input (e.g. quality circles, problem-solving and/or consultative committees)?"

Perceived overall organizational performance measures were used in this study. This study adopted quasi-perceptual measures of performance, which evaluate performance in objective terms (such as return on equity, sales growth and profitability) through the perception of managers (Ketkar and Sett, 2009). Self-perception based measures of performance are widely used (e.g. Macky and Boxall, 2008; Shih *et al.*, 2006). The use of actual artifacts minimizes the need for participants to rely on subjective assessments and situational cues (Doty and Glick, 1998). Measures of organizational performance were obtained by asking respondents to compare their company's performance with that of similar companies operating in the same sector over the past one to three years, with responses on a seven-point Likert scale ranging from 1 (0 percent) to 7 (100 percent).

Consistent with previous studies on the effect of HPWP on performance (Arthur, 1994; Guthrie, 2001; Huselid, 1995), the following organizational variables were included as potential control variables indicating their influence on organizational performance: company size, company age, company ownership, the sector within which the company operated, employee turnover rate, employee absence rate, and line managers' HR-related responsibility. Company size reflected the number of working employees. The control variable for company age was the number of years the company has been in operation in Jordan. Company ownership reflects whether the company is foreign or locally owned. Employee turnover and employee absence were statistically controlled for based on research connecting these two variables to organizational financial performance. For example, Shaw *et al.* (2005) found that turnover has a complex and significant relationship with financial performance while absenteeism has been consistently linked to increased turnover and decreased performance across decades of organizational research (Ivancevich, 1985; Muchinsky, 1977). Line management responsibility for human resource practices and decisions was also controlled for as line management responsibility for HR has been recently linked to the outcomes of high-performance HR practices (Mitchell *et al.*, 2013).

Results

Confirmatory factor analysis (CFA) using AMOS was used to specify the relations of the observed measures to their posited underlying constructs, with the constructs allowed to intercorrelate freely (Anderson and Gerbing, 1988). CFA was conducted to identify whether the proposed three-dimension AMO model of HPWP best fits the data in comparison with a series of alternative nested models.

Assessment of model fit was based on multiple criteria, which reflect theoretical and statistical considerations (Byrne, 2001). We adopted the following indices to assess model fit: the χ^2), root-mean-square error of approximation (RMSEA), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI) and comparative fit index (CFI) (Hox, 2002; Kline, 2005). If the GFI is below the acceptable range of model fit, model modification is necessary to achieve a better fitting model (Schumacker and Lomax, 2004). The initial measurement model for ability-enhancing practices did not fit the data well ($\chi^2 = 64.57$, df = 27, $p = 0.00$, GFI = 0.89, AGFI = 0.81, RMSEA = 0.11, CFI = 0.93).

To achieve better fit, item 3, which intended to measure "extent of extensive recruiting efforts," was removed. The provision of extensive recruitment within organizations may not be a necessary condition to achieve high performance as organizations can depend on internal recruitment to fill vacant positions. Moreover, many scholars (e.g. Huselid, 1995; Macky and Boxall, 2007) have not included "extensive recruitment" as part of HPWP when they examined their link with organizational performance.

The improved CFA model for ability-enhancing practices parameter showed better fit ($\chi^2 = 26.52$, df = 20, $p = 0.14$, GFI = 0.95, AGFI = 0.91, RMSEA = 0.05, CFI = 0.98). The improved CFA models for both motivation-enhancing practices ($\chi^2 = 10.70$, df = 5, $p = 0.06$, GFI = 0.96, AGFI = 0.89, RMSEA = 0.09, CFI = 0.98) and opportunity-enhancing practices ($\chi^2 = 5.14$, df = 5, $p = 0.40$, GFI = 0.98, AGFI = 0.95, RMSEA = 0.02, CFI = 0.99) provided good fit. Finally, the CFA model of organizational performance measures achieved model fit ($\chi^2 = 3.57$, df = 4, $p = 0.47$, GFI = 0.99, AGFI = 0.96, RMSEA = 0.00, CFI = 1.00).

Following this assessment, reliability and validity assessments of the underlying constructs were undertaken. Values of composite reliability, average variance extracted and Cronbach's α were calculated to measure construct reliability. Researchers proposed 0.8 as a threshold for composite reliability, 0.7 for Cronbach's α and 0.5 for the average variance extracted (Hulland, 1999). The measurements demonstrate that constructs are internally consistent and reliable, as shown in Table I.

To illustrate the relationships between measures, Table I also shows the descriptive statistics with the means, standard deviation and correlations for all variables. High correlations exist between independent variables as well as between independent variables and dependent variables. The former reflects the multi-dimensional operationalization of HPWP, and the latter provides preliminary support for the impact of HPWP on performance indicators.

To identify any multicollinearity problem, variance inflation factor, tolerance value and condition index were calculated. The general cutoff point for the variance inflation factor is that the value should not exceed 10, tolerance value should not be less than 0.10, while condition index values that exceed 30 may be considered as indicating moderate collinearity among constructs (Pallant, 2005). Results of multicollinearity diagnosis among the dependent variables showed that multicollinearity is not a problem, as shown in Table II. Values of tolerance and variance inflation factor are within the acceptable level. The slightly high values for condition index for motivation-enhancing and opportunity-enhancing constructs are acceptable since they do not account for a substantial proportion of variance (i.e. 0.90 or above for two or more coefficients).

The three-factor CFA model fit indices were computed. This model consisted of three first-order latent factors with each indicator loading into one of the three interrelated latent factors. As shown in Table III, results indicated an acceptable fit for the model. The proposed HPWP three-factor model was then compared with alternative models through the nested model comparison method (Steiger *et al.*, 1985). The nested models included parameter restrictions compared to a full model. χ^2 difference tests were used to measure the significance of the difference between nested and full models (Kumar and Sharma, 1999). As shown in Table II, the χ^2 difference tests indicated that the proposed three-factor model showed the best fit indices compared with the alternative models ($\chi^2 = 183.40$, df = 132, $p = 0.00$, CFI = 0.96, RMSEA = 0.06, GFI = 0.85, AGFI = 0.81). This provides support for the previous assumption made, indicating that HPWP are constructed according to the AMO framework.

Table I.
Means, standard deviations, average variance extracted (AVE), composite reliability (CR), Cronbach's (α), and correlation coefficients

	M	SD	AVE	CR	α	1	2	3	4	5	6	7	8	9
1 Company age[a]	3.21	0.77	1.00	1.00	1.00	1								
2 Ownership[a]	2.15	0.50	1.00	1.00	1.00	−0.107	1							
3 Sector[a]	1.42	0.49	1.00	1.00	1.00	0.148	0.191*	1						
4 Turnover	0.080	0.050	1.00	1.00	1.00	−0.092	−0.058	−0.055	1					
4 Absence	0.081	0.47	1.00	1.00	1.00	0.002	0.034	−0.030	0.711**	1				
5 LM responsibility	4.52	0.92	1.00	1.00	1.00	0.001	0.106	−0.044	−0.179	−0.246**	1			
6 Ability-enhancing	4.42	0.86	0.584	0.918	0.898	0.327**	0.047	−0.015	−0.192*	−0.219*	0.626**	1		
7 Motivation-enhancing	4.18	0.92	0.654	0.904	0.868	0.211*	0.145	0.061	−0.155	−0.182*	0.635**	0.744**	1	
8 Opportunity-enhancing	4.16	0.88	0.638	0.897	0.856	0.124	0.107	−0.057	−0.157	−0.225*	0.773**	0.738**	0.783**.	1
9 Organizational performance	3.98	0.96	0.629	0.894	0.852	0.385**	0.005	0.069	−0.215	−0.270	0.425**	0.618**	0.602**	0.641**

Notes: $n = 118$. [a]Natural logarithm of company age, ownership and sector. *,**Correlations are significant at the 0.05 and 0.01 levels, $p < 0.05$; $p < 0.01$, respectively (two-tailed)

The study hypotheses were tested using structural equation modeling through SMART PLS software. In particular, direct relationships were tested between ability-enhancing, motivation-enhancing and opportunity-enhancing practices and organizational performance, while controlling for company age, company ownership, sector, turnover, absence and line managers' responsibility. Results showed significant positive relationships between ability-enhancing practices ($t = 2.090$, $p = 0.037$), motivation-enhancing practices ($t = 2.053$, $p = 0.040$), opportunity-enhancing practices ($t = 2.111$, $p = 0.035$) and organizational performance. Thus, all study hypotheses were supported, as shown in Figure 1.

Analysis of the predictive utility of the model using the R^2 statistic generated by PLS structural equation modeling revealed that the full model explained 68 percent of the variance in organizational performance, which can be interpreted as indicating good fit (Chin, 1998a, b). In addition, the Stone-Geisser criterion (Q^2) was used to further assess the capacity of the model to predict organizational performance. The Stone-Geisser Q^2 statistic is generated using a blindfolding technique in which a segment of data is hidden during parameter estimation then re-estimated using the generated parameters. This process is replicated until all data have been hidden and estimated (Hair *et al.*, 2011). The smaller the difference between the original and predicted values, the better the model's predictive capability and higher the Q^2. The analysis resulted in a Stone-Geisser criterion Q^2 value of 0.42, which exceeds the threshold value of zero and supports the model's predictive relevance (Sarstedt *et al.*, 2014). Finally, PLS structural equation modeling generates the standardized root mean square residual (SRMR) to enable assessment of model fit. The SRMR represents the difference between the observed and predicted correlation and a value less than 0.08 indicates good model fit (Hu and Bentler, 1999). The data generated a SRMR of 0.07, providing further support for the utility of the model.

Discussion

The purpose of this study is to extend understanding of the relationship between HPWP and organizational performance. In particular, the study develops and empirically investigates a multi-dimensional model of the relationship between HPWP and organizational performance, which conceptualizes HPWP according to the AMO framework. The analyses were extended by examining the direct relationship between the multi-dimensional model of HPWP (with ability-enhancing, motivation-enhancing and opportunity-enhancing practices) and perceived financial measures of organizational performance. This study was conducted in the Middle East where few studies have been undertaken to examine the link between HPWP and performance.

Theoretical implications

The results of this study contribute to the literature in a number of ways. First, at their most general, the results show significant and positive relationships between HPWP

Table II. Values of tolerance, variance inflation factors (VIF) and condition indices (CI)

Construct	Tolerance	VIF	Condition indices (CI)
Ability-enhancing	0.495	2.02	29.84
Motivation-enhancing	0.539	1.86	32.09
Opportunity-enhancing	0.381	2.62	36.04

Table III.
Model comparison between proposed and alternative HPWP models

Model	χ^2	df	p	CFI	RMSEA	GFI	AGFI	Model comparison $\Delta\chi^2$	Δdf	p
Proposed HPWP three-factor model (combined ability-enhancing, motivation-enhancing and opportunity-enhancing)	183.400	132	0.002	0.960	0.058	0.854	0.810	–	–	–
Single factor model	211.040	135	0.000	0.940	0.069	0.838	0.795	27.646	3	0.000
Two factor (combined ability-enhancing and motivation-enhancing)	209.710	133	0.000	0.940	0.070	0.838	0.791	26.314	1	0.000
Two factor (combined motivation-enhancing and opportunity-enhancing)	193.830	133	0.000	0.952	0.063	0.844	0.800	10.428	1	0.001
Two factor (combined ability-enhancing and opportunity-enhancing)	200.504	133	0.000	0.947	0.066	0.842	0.797	17.107	1	0.000

Notes: $\Delta\chi^2$ is the difference in χ^2 between the proposed model and the alternative model; Δdf is the difference in degrees of freedom between the proposed and the alternative model. Three decimal places were used in this table rather than only two in order to account for the differences for comparing between models and deciding which model provides better fit

and organizational performance. which is in line with the results of previous studies (e.g. Delery and Doty, 1996; Huselid, 1995; Katou and Budhwar, 2010; Vandeberg *et al.*, 1999). The positive influence of HPWP on organizational performance indicates that organizational investment in HR practices to acquire, maintain and develop highly qualified employees has potential to generate financial gains. The findings confirm the utility of each AMO dimension in achieving financial gains and show the role of HPWP in enhancing company benefits. In particular, the results suggest that adoption of formal staffing and training practices, formal performance appraisal and compensation based on group performance are positively linked to organizational performance.

Second, while these general findings largely confirm a growing body of existing research that has found empirical support for the relationship between HPWP and organizational performance (Guest *et al.*, 2003; Guthrie, 2001; Huselid, 1995; Shih *et al.*, 2006), there has previously been limited specification of the roles of different types of practices in this relationship. Even studies that have used similar categories of HR practices based on the AMO framework (Huselid, 1995; Shih *et al.*, 2006; Wood and De Menezes, 2008), and whose results are consistent with ours, have not provided empirical verification of this categorization. By empirically investigating competing models, and demonstrating strong support for each of the three HPWP dimensions on organizational performance, this paper provides unique verification of the AMO-based multi-dimensional HPWP model. This finding supports Jiang *et al.*'s (2012) claim for multi-dimensional rather than unidimensional models of HRM and contributes to clarity in conceptualization and operationalization, which underpins a cogent and cumulative research trajectory in study of the relationship between HPWP and performance.

The AMO-based HPWP architecture enables a better theoretical understanding of the relationship between HPWP and performance and has methodological and empirical implications. In previous studies, measurement issues on the choice of HR practices have posed barriers to the comparison of results and interpretations of findings across studies (Dyer and Reeves, 1995). Greater confidence in the adoption of the AMO framework by researchers will facilitate comparative research and enable easier evaluation of practices, potentially solving one of the problems experienced in assessing the extent to which HPWP impact organizational performance (Purcell and Kinnie, 2007).

Third, the findings of this study provide support for the relationship between HPWP and organizational performance in a non-Western context, namely Jordan. The study produced results in Jordan that are broadly similar to results in Western developed countries which is of interest and deserves discussion, although the study did not specifically investigate the impact of contextual variables on the relationship between HPWP and performance. Because of recent trends in management practice in Jordan, the results are not unexpected. Over the last few decades, Jordan has invested in human resources as part of an extensive reform initiative to promote privatization and become a knowledge-based economy (World Bank, 2009). Importing Western HR practices to Jordanian companies was part of the structural reforms that encompassed many aspects of modern Western policies and practices (Al-Husan and Brennan, 2009). It is of interest that, despite the obvious religious and cultural differences, employees in Jordan seem to have responded to these practices in similar ways to employees in Western countries.

Managerial implications

HR managers can have more confidence in focussing on policies and practices that develop employees' AMO to participate when considering human resource development. The use of the AMO framework can assist managers to develop a

comprehensive approach to HR practices by promoting strategies in each "practice" area, that is, skill-enhancing, motivation-enhancing and opportunity-enhancing HR practices. The findings suggest that practices in each of the HR dimensions have the potential to contribute to financial performance. Managers are therefore advised to ensure that their approach to HR encompasses comprehensive recruitment, selection and training to ensure skilled employees; opportunity for development and career advancement and competitive compensations and rewards to ensure motivated employees; and initiatives such as flexible work design and employee involvement strategies to ensure opportunity for employee empowerment. Investment in all three of these areas, rather than one or two HR dimensions, is recommended as there is empirical evidence to support the belief that investing in HPWP will generate financial gains.

Conclusion and limitations

This study contributes to the HPWP literature, with several limitations. First, this study examines the relationship between HPWP and organization performance based on cross-sectional research, which limits claims of causality. Longitudinal research is usually suggested in empirical HR research (Boselie, 2010). Unfortunately, longitudinal studies may be hard to implement due to lack of long-term cooperation from companies, particularly in Jordan. Second, like many earlier studies such as Huselid (1995) and Shih *et al.* (2006), this study collected data on HPWP and organizational performance from the same respondent which raises the possibility of common method variance (Podsakoff *et al.*, 2003). While the analysis provided support for discriminant validity, future research using objective measures of performance would provide stronger support for the relationships investigated. Third, while the verification of the HPWP conceptualization was based on the AMO framework, the framework itself has limitations. For example, Lepak *et al.* (2005) note that the framework does not preclude overlap among HR practices. Formal training programs, which are designed to improve employees' skills and knowledge, may also be used to communicate a commitment to employees that elicits motivation as well (Wright and Kehoe, 2008). Boxall and Macky (2009) argued that HPWP are only one component of the employment relationship. Work systems, for example, are linked to the way jobs are organized within companies. Future research could investigate the interaction between each of the AMO dimensions to enable a clearer specification of possible moderator and mediator effects in the model. Future research should further explore components of HPWP based on the AMO model with two broad types of practices: work practices and employment practices (Boselie, 2010).

The last limitation is linked to the participants in this study. This study relies on senior HR managers' perception on HPWP implemented in their companies and on their view of the overall organizational performance, particularly financial performance. The AMO framework, as proposed by Appelbaum *et al.* (2000), describes work practices which enhance employees' ability, motivation, and opportunity and research conducted so far focussed on the utility of these practices at the company level. However, little is known about employees' view of the utility of these practices at the individual level. Boselie (2010) concludes that future research should further explore the HPWP and performance link from different groups of employees.

Despite these limitations, this study emphasizes the relevance of HPWP in increasing organizational performance. In particular, the findings of this study provided verification for the AMO framework as an appropriate structure for the

conceptualization of HPWP, confirming the AMO model's ability to explain the relationship between HPWP and organizational performance. This verification lends support to the AMO model as an appropriate model for examining the "black box" in the link between HPWP and performance. The HR practices included in this model are focussing on increasing employees' ability, enhancing their motivation to perform, as well as improving the opportunity for them to participate and be involved in the company. The results of this study also lend support to the direct relationship between ability-enhancing, motivation-enhancing and opportunity-enhancing practices and organizational performance.

References

Al-Husan, F. and Brennan, R. (2009), "Transferring Western HRM practices to developing countries", *Personnel Review*, Vol. 38 No. 2, pp. 104-123.

Anderson, J.C. and Gerbing, D.W. (1988), "Structural equation modeling in practice: a review and recommended two-step approach", *Psychological Bulletin*, Vol. 103 No. 3, pp. 411-423.

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

Arthur, J. (1994), "Effects of human resource systems on manufacturing performance and turnover", *Academy of Management Journal*, Vol. 37 No. 3, pp. 670-687.

Becker, B. and Gerhart, B. (1996), "The impact of human resource management on organizational performance: progress and prospects", *Academy of Management Journal*, Vol. 39 No. 4, pp. 779-798.

Boselie, P. (2010), "High performance work practices in the health care sector: a Dutch case study", *International Journal of Manpower*, Vol. 31 No. 1, pp. 42-58.

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.

Boxall, P. (1995), "Building the theory of comparative HRM", *Human Resource Management Journal*, Vol. 5 No. 5, pp. 5-17.

Boxall, P. and Macky, K. (2009), "Research and theory on high-performance work systems: progressing the high-involvement stream", *Human Resource Management Journal*, Vol. 19 No. 1, pp. 3-23.

Boxall, P. and Purcell, J. (2003), *Strategy and Human Resource Management*, Palgrave Macmillan, Basingstoke.

Byrne, B.M. (2001), *Structural Equation Modeling with AMOS: Basic Concepts, Applications, and Programming*, Lawrence Erlbaum Associates Publishers, Mahwah, NJ.

Camps, J. and Luna-Arocas, R. (2009), "High involvement work practices and firm performance", *The International Journal of Human Resource Management*, Vol. 20 No. 5, pp. 1056-1077.

Carr, A. and Kaynak, H. (2007), "Communication methods, information sharing, supplier development and performance: an empirical study of their relationships", *International Journal of Operations & Production Management*, Vol. 27 No. 4, pp. 346-370.

Chang, P. and Chen, S. (2011), "Crossing the level of employee's performance: HPWS, affective commitment, human capital, and employee job performance in professional service organizations", *The International Journal of Human Resource Management*, Vol. 22 No. 4, pp. 883-901.

Chin, W.W. (1998a), "Commentary: issues and opinion on structural equation modeling", *MIS Quarterly*, Vol. 22 No. 1, pp. vii-xvi.

Chin, W.W. (1998b), "The partial least squares approach for structural equation modeling", in Marcoulides, G.A. (Ed.), *Modern Methods for Business Research*, Lawrence Erlbaum Associates, Mahwah, NJ, pp. 295-336.

Chuang, C.-H. and Liao, H. (2010), "Strategic human resource management in service context: taking care of business by taking care of employees and customers", *Personnel Psychology*, Vol. 63 No. 1, pp. 153-196.

Darwish, T., Singh, S. and Mohammed, A. (2013), "The role of strategic HR practices in organisational effectiveness: an empirical investigation in the country of Jordan", *The International Journal of Human Resource Management*, Vol. 24 No. 17, pp. 3343-3362.

Delery, J. (1998), "Issues of fit in strategic human resource management", *Human Resource Management Review*, Vol. 8 No. 3, pp. 289-309.

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

Delery, J.E. and Shaw, J.D. (2001), "The strategic management of people in work organizations: review, synthesis, and extension", in Ferris, G.R. (Ed.), *Research in Personnel and Human Resources Management*, Vol. 20, Emerald Group Publishing Limited, Greenwich, pp. 165-197.

Doty, D.H. and Glick, W.H. (1998), "Common method bias: does common method variance really bias results?", *Organizational Research Methods*, Vol. 1 No. 4, pp. 374-406.

Dyer, L. and Reeves, T. (1995), "Human resource strategies and firm performance: what do we know, where do we need to go?", *The International Journal of Human Resource Management*, Vol. 6 No. 3, pp. 657-667.

Flood, P., Kamwa, T., O'Regan, C., Guthrie, J., Liu, W., Armstrong, C. and MacCurtain, S. (2008), "New models of high performance work system: the business case for strategic HRM, partnership and diversity and equality system", National Centre for Partnership and Performance, Dublin, available at: www.ihrec.ie/download/pdf/new_models_of_high_performance_work_systems.pdf (accessed April 16, 2014).

Furnham, A. (1986), "Response bias, social desirability and dissimulation", *Personality and Individual Differences*, Vol. 7 No. 3, pp. 385-400.

Gardner, T. and Wright, P. (2009), "Implicit human resource management theory: a potential threat to the internal validity of human resource practices measures", *The International Journal of Human Resource Management*, Vol. 20 No. 1, pp. 57-74.

Guest, D. (1997), "Human resource management and performance: a review and research agenda", *The International Journal of Human Resource Management*, Vol. 8 No. 3, pp. 263-276.

Guest, D. and Hoque, K. (1994), "The good, the bad and the ugly: employee relations in new non-union workplaces", *Human Resource Management Journal*, Vol. 15 No. 1, pp. 1-14.

Guest, D., 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.

Guthrie, J.P. (2001), "High-involvement work practices, turnover, and productivity: evidence from New Zealand", *Academy of Management Journal*, Vol. 44 No. 1, pp. 180-191.

Hair, J.F., Ringle, C.M. and Sarstedt, M. (2011), "PLS-SEM: indeed a silver bullet", *The Journal of Marketing Theory and Practice*, Vol. 19 No. 2, pp. 139-152.

Hox, J. (2002), *Multilevel Analysis: Techniques and Applications*, Lawrence Erlbaum Associates, Inc, Mahwah, NJ.

Hu, L. and Bentler, P.M. (1999), "Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives", *Structural Equation Modeling*, Vol. 6 No. 1, pp. 1-55.

Huang, T. (2000), "Are the human resource practices of effective firms distinctly different from those of poorly performing ones? Evidence from Taiwanese enterprises", *The International Journal of Human Resource Management*, Vol. 11 No. 2, pp. 436-451.

Hulland, J.S. (1999), "Use of partial least squares (PLS) in strategic management research: a review of four recent studies", *Strategic Management Journal*, Vol. 20 No. 4, pp. 195-204.

Huselid, M. (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.

Ivancevich, J.M. (1985), "Predicting absenteeism from prior absence and work attitudes", *Academy of Management Journal*, Vol. 28 No. 1, pp. 219-228.

Jiang, K., Hu, J. and Baer, J. (2012), "How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms", *Academy of Management Journal*, Vol. 55 No. 6, pp. 1264-1294.

Jiang, K., Takeuchi, R. and Lepak, D. (2013), "Where do we go from here? New perspectives on the black box in strategic human resource management research", *Journal of Management Studies*, Vol. 50 No. 8, pp. 1448-1480.

Katou, A.A. and Budhwar, P.S. (2010), "Causal relationship between HRM policies and organizational performance: evidence from the Greek manufacturing sector", *European Management Journal*, Vol. 28 No. 1, pp. 25-39.

Ketkar, S. and Sett, P.K. (2009), "HR flexibility and firm performance: analysis of a multi-level causal model", *The International Journal of Human Resource Management*, Vol. 20 No. 5, pp. 1009-1038.

Kintana, M., Alonso, A. and Olaverri, C. (2006), "High-performance work systems and firms' operational performance: the moderating role of technology", *The International Journal of Human Resource Management*, Vol. 17 No. 1, pp. 70-85.

Kline, R. (2005), *Principles and Practice of Structural Equation Modelling*, The Guilford Press, New York, NY.

Kumar, A. and Sharma, S. (1999), "A metric measure for direct comparison of competing models in covariance structure analysis", *Structural Equation Modeling: A Multidisciplinary Journal*, Vol. 6 No. 2, pp. 169-197.

Lepak, D.P. and Snell, S.A. (2002), "Examining the human resource architecture: the relationships among human capital, employment, and human resource configurations", *Journal of Management*, Vol. 28 No. 4, pp. 517-543.

Lepak, D.P., Bartol, K.M. and Erhardt, N.L. (2005), "A contingency framework for the delivery of HR practices", *Human Resource Management Review*, Vol. 15 No. 2, pp. 139-159.

Lu, K., Zhu, J. and Bao, H. (2015), "High-performance human resource management and firm performance", *Industrial Management and Data Systems*, Vol. 115 No. 2, pp. 353-382.

Luna-Arocas, R. and Camps, J. (2008), "A model of high performance work practices and turnover intentions", *Personnel Review*, Vol. 37 No. 1, pp. 26-46.

Ma Prieto, I. and Pérez-Santana, M.P. (2014), "Managing innovative work behavior: the role of human resource practices", *Personnel Review*, Vol. 43 No. 2, pp. 184-208.

Macky, K. and Boxall, P. (2007), "The relationship between 'high-performance work practices' and employee attitudes: an investigation of additive and interaction effects", *The International Journal of Human Resource Management*, Vol. 18 No. 4, pp. 537-567.

Macky, K. and Boxall, P. (2008), "High-involvement work processes, work intensification and employee well-being: a study of New Zealand worker experiences", *Asia Pacific Journal of Human Resources*, Vol. 46 No. 38, pp. 38-55.

Maheshwari, B.L. (1987), *Quality Circles*, Oxford & IBH Publishing, New Delhi.

Marks, M., Mirvis, P., Hackett, E. and Grady, J. (1986), "Employee participation in a quality circle programs: impact on quality of work life, productivity, and absenteeism", *Journal of Applied Psychology*, Vol. 71 No. 1, pp. 61-69.

Martin-Tapia, I., Aragon-Correa, A. and Guthrie, J. (2009), "High performance work system and export performance", *The International Journal of Human Resource Management*, Vol. 20 No. 3, pp. 633-653.

Meadows, M. and Pike, M. (2010), "Performance management for social enterprises", *Systemic Practice and Action Research*, Vol. 23 No. 2, pp. 127-141.

Mitchell, R., Obeidat, S. and Bray, M. (2013), "The effect of strategic human resource management on organizational performance: the mediating role of high performance human resource practices", *Human Resource Management*, Vol. 52 No. 6, pp. 899-921.

Muchinsky, P.M. (1977), "Employee absenteeism: a review of the literature", *Journal of Vocational Behavior*, Vol. 10 No. 3, pp. 316-340.

Paauwe, J. (2009), "HRM and performance: achievements, methodological issues and prospects", *Journal of Management Studies*, Vol. 46 No. 1, pp. 129-142.

Pallant, J. (2005), *SPSS Survival Manual: A Step by Step Guide to Data Analysis Using SPSS Version 12*, 2nd ed., Allen & Unwin, Crows Nest.

Pfeffer, J. (1994), *Competitive Advantage Through People: Unleashing the Power of the Work Force*, Harvard Business School Press, Boston, MA.

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

Purcell, J. and Kinnie, N. (2007), "HRM and business performance", in Boxall, P., Purcell, J. and Wright, P. (Eds), *The Oxford Handbook of Human Resource Management*, Oxford University Press, Oxford, pp. 533-551.

Sarstedt, M., Ringle, C.M., Smith, D., Reams, R. and Hair, J.F. Jr (2014), "Partial least squares structural equation modeling (PLS-SEM): a useful tool for family business researchers", *Journal of Family Business Strategy*, Vol. 5 No. 1, pp. 105-115.

Schumacker, R.E. and Lomax, R.G. (2004), *A Beginner's Guide to Structural Equation Modeling*, Lawrence Erlbaum Associates, Mahwah, NJ.

Shaw, J.D., Gupta, N. and Delery, J.E. (2005), "Alternative conceptualizations of the relationship between voluntary turnover and organizational performance", *Academy of Management Journal*, Vol. 48 No. 1, pp. 50-68.

Shih, H.A., Chiang, Y.H. and Hsu, C.C. (2006), "Can high performance work systems really lead to better performance", *International Journal of Manpower*, Vol. 27 No. 8, pp. 741-763.

Singh, K. (2004), "Impact of HR practices on perceived firm performance in India", *Asia Pacific Journal of Human Resources*, Vol. 42 No. 3, pp. 301-317.

Snell, S. and Dean, J. (1992), "Integrated manufacturing and human resource management: a human capital perspective", *Academy of Management Journal*, Vol. 35 No. 3, pp. 467-504.

Steiger, J.H., Shapiro, A. and Browne, M.W. (1985), "On the multivariate asymptotic distribution of sequential Chi-Square statistics", *Psychometrika*, Vol. 50 No. 3, pp. 253-264.

Takeuchi, R., Chen, G. and Lepak, D.P. (2009), "Through the looking glass of a social system: cross-level effects of high performance work systems on employees' attitudes", *Personnel Psychology*, Vol. 62 No. 1, pp. 1-29.

Tsai, C. (2006), "High performance work systems and organizational performance: an empirical study of Taiwan's semiconductor design firms", *The International Journal of Human Resource Management*, Vol. 17 No. 9, pp. 1512-1530.

Ur Rahman, W. and Ahmad, M. (2015), "AMO framework and psychological empowerment: conceptual model decoding the black box between harm and innovative work behavior", *Business Review*, Vol. 10 No. 1, pp. 86-101.

Vandeberg, R.J., Richardson, H.A. and Eastman, L.J. (1999), "The impact of high involvement work processes on organizational effectiveness: a second order latent variable approach", *Group & Organization Management*, Vol. 24 No. 3, pp. 300-339.

Wood, S. (1999), "Human resource management and performance", *International Journal of Management Reviews*, Vol. 1 No. 4, pp. 367-413.

Wood, S. and De Menezes, L. (1998), "High commitment management in the UK: evidence from the workplace industrial relations survey, and employers' manpower and skills practices survey", *Human Relations*, Vol. 51 No. 4, pp. 485-515.

Wood, S. and De Menezes, L. (2008), "Comparing perspectives on high involvement management and organizational performance across the British economy", *The International Journal of Human Resource Management*, Vol. 19 No. 4, pp. 639-683.

World Bank (2009), *Country Assistance Strategy Progress Report for the Hashemite Kingdom of Jordan for the Period FY06-10*, World Bank, Washington, DC.

Wright, P. and Kehoe, R. (2008), "Human resource practices and organizational commitment: a deeper understanding", *Asia Pacific Journal of Human Resources*, Vol. 46 No. 1, pp. 6-20.

Wright, P., Dunford, B.B. and Snell, S.A. (2001), "Human resources and the resource based view of the firm", *Journal of Management*, Vol. 27 No. 6, pp. 701-721.

Further reading

Hair, J.F., Anderson, R.E., Tatham, R.L. and Black, W.C. (1998), *Multivariate Data Analysis*, 5th ed., Prentice Hall, Upper Saddle River, NJ.

Hu, L. and Bentler, P.M. (1998), "Fit indices in covariance structure modeling: sensitivity to underparameterixed model misspecification", *Psychological Methods*, Vol. 3 No. 4, pp. 424-453.

Corresponding author

Shatha M. Obeidat can be contacted at: sobeidat@qu.edu.qa