The HRM-Performance Link: A Longitudinal, Business-Unit Investigation

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ABSTRACT

Using longitudinal data from over 10,000 employees and 123 business units, this paper investigates the relative correlation of 16 human resource (HR) practices with employee engagement and organisational performance. The research addresses limitations levelled at previous research (such as being cross-sectional, using single raters, and analysing at the organisational level) by analysing longitudinal data from multiple raters and analysing at the business-unit level. All HR practices showed positive correlations with engagement and performance, with the strongest correlations for ethics, leadership, involvement, safety and cross-unit cooperation, and weakest correlations for work-life balance, in-group teamwork and supervision. These results may help researchers and practitioners channel limited resources into improving practices that have the strongest impact on organisational outcomes.

Keywords: human resource management and organisational performance; strategic human resource management; voice.

The last two decades have seen an influx of research examining the link between human resource (HR) practices and organisational performance. A recent review of the literature identified 104 articles published in 27 high-profile scholarly journals between 1994 and 2003 investigating this association (Boselie, Dietz & Boon 2005). This type of research has arisen from the need for HR practitioners to justify the worth of HR initiatives, as well as a desire to verify a common claim 'that people are the pre-eminent organisational resource and the key to achieving outstanding performance' (Delaney & Huselid 1996: 964).

The Importance of Human Resources Practices for Organisational Performance

The growing consensus among researchers and practitioners is that progressive HRM practices have a positive effect on organisational performance (Becker, Huselid, Pickus & Spratt 1997; Delery & Doty 1996; Guest 1997; Huselid 1995; Wright, Gardner & Moynihan 2003). In their review of the literature, Boselie, Dietz and Boon (2005) identified 26 different practices that have been used by researchers investigating the association between HRM and performance. The most common practices examined include training and development, contingent pay and reward schemes, performance management and appraisal, and recruitment and selection (Boselie, Dietz & Boon 2005). Practices such as these make up much of what have been termed 'high performance work systems' (e.g., Appelbaum, Bailey, Berg & Kallegerg 2000; Huselid 1995), 'high-commitment managament' (Pfeffer 1998; Wood and de Menezes 1998) or 'high-involvement management' (Delery & Doty 1996; Guthrie 2001).

Throughout the literature on the HRM-performance link, the concept of organisational performance has been addressed in a variety of ways. Researchers such as Paauwe and Boselie (2005) and Dyer and Reeves (1995) have defined performance in terms of financial outcomes (e.g., profits, sales, market share), organisational outcomes (e.g., productivity, quality, efficiencies), and HR-related outcomes (e.g., turnover, absenteeism, and employee attitudes such as satisfaction, commitment and intention to quit). Given that HR practices are causally closer to HR-related outcomes than either organisational or financial outcomes, it is to be expected that weaker relationships would be found when exploring the HRM-performance link using organisational and financial outcomes. Nevertheless, seminal research by Huselid (1995) found significant relationships (r = .01 to .20) between what he termed 'high performance work systems' (including, among others, recruitment and selection, reward and recognition, and training) and financial outcomes (such as profitability and market value) and organisational outcomes (such as productivity). The association remained after controlling for a myriad of potentially confounding variables. Delery and Doty (1996) also investigated the relationship between HR practices and profitability. Their findings suggested that HR practices (including results-oriented appraisals, profit sharing, job security, internal career opportunities, and training) were related to higher profitability.

As expected, however, stronger HRM-performance correlations are observed when using HR-related outcomes. For example, research by Wright et al. (2003) found a strong relationship between HR practices (using an aggregated score made up of selection and staffing, training, pay for performance and participation) and the HR-related outcome of organisational commitment (r = .55).

But Which Human Resource Practices Are Most Effective?

Based on research such as that described above, it can be confidently concluded that there is a link between HR practices and HR-related, organisational, and financial outcomes. Unfortunately, there is less certainty regarding which HR practices are more effective than others. Many prominent researchers have used an aggregate HR-practices score to assess the impact of HR practices on outcomes (e.g., Batt 2002; Guest, Michie, Conway & Sheehan 2003; Huselid 1995; Wright et al. 2003). This approach, however, prevents us from uncovering the *relative* effectiveness of HR practices. Unfortunately, the range of research providing insight into relative effectiveness is limited.

Using case-study research, Pfeffer (1994, 1995) suggested organisational performance was closely associated with HR practices including employment security, selective recruiting, high wages, incentive pay, wage compression, employee ownership, information sharing, participation, empowerment, self-managed teams, training and skill development, job rotation, egalitarianism, and internal promotion. Pfeffer's work deserves considerable recognition for providing insight into management practices in successful organisations. Nevertheless, Pfeffer's work is conceptual and based on anecdote and observation, and hence requires firmer empirical confirmation.

Using a more detailed quantitative approach, Paul and Anantharaman (2003) studied 34 Indian software companies, measuring a variety of HR practices. They found the strongest relationships to financial performance were with the practices of induction, training, employee ownership, compensation and selection. Their results showed weaker relationships between financial performance and job design, performance appraisal, career development, competence and teamwork. Unfortunately, understanding of the specific practices is limited because their paper does not include content and psychometric properties for their survey tool.

Exploring the determinants of staff commitment, Kinnie, Hutchinson, Purcell, Rayton and Swart (2005) found strongest correlations for career opportunities, performance appraisal, rewards and recognition, involvement, communication, and openness. They found teamworking, training, and work-life balance to be less important across all three employee groups investigated in their study. In Den Harthog and Verburg's (2004) research the strongest relationships were found between organisational performance and their 'employee skill and direction' factor (determined through factor analysis and comprised of strict selection, training, an obligation to update skills, internal promotion, management development, having a mission, and HRM strategy). Other practices (performance evaluation, team performance, and information sharing) showed no significant relationship with the organisational outcomes.

Recent papers by researchers at Voice Project, Macquarie University, report survey-based studies involving over 10,000 employees (Langford in press; Langford, Parkes & Metcalf 2006; Parkes & Langford in press). The researchers investigated the correlation between 25 distinct management practices and the outcomes of employee engagement, turnover, absenteeism, and manager reports of

organisational performance. They found that the organisational outcomes were most strongly predicted by practices associated with clear organisation direction, strong results focus, belief in the organisation's mission and values, promoting organisational successes, managing change well, ethics, trust in senior management, recruitment and selection, learning and development, involvement in decision-making, rewards and recognition, performance appraisal, career opportunities, resources and processes. Those practices showing only weak relationships with outcomes included in-group teamwork, team competence, work-life balance, supervision, facilities, safety, technology, diversity management, and role clarity.

As the above review has suggested, there is only a limited amount of research that investigates the relative effectiveness of HR practices. From the existing research, although there is not a completely clear pattern of results, there are some practices that tended to be rated as stronger predictors of organisational outcomes. Together the research suggests stronger relationship between outcomes and practices relating to the following: rewards and recognition of staff; providing training, development and career opportunities; careful selection processes; encouraging the participation and involvement of staff; and strong organisational direction, mission and values. Practices relating to in-group teamwork, team competence, and work-life balance have tended to show weaker relationships with outcomes.

Limitations of Previous Research

Cross-sectional rather than longitudinal data

The overwhelming majority of research investigating the HRM-performance association has been cross-sectional in nature. The use of cross-sectional data prevents us from making strong casual inferences. Of the 104 articles in Boselie et al.'s (2005) review they identified only 15 examples of longitudinal designs and suggest that further research of this nature will help towards discovering the true nature of causality.

The message from the available longitudinal research is mixed. Cappelli and Neumark (2001) were unable to find convincing evidence linking high-performance work practices to increased productivity, and their data suggested little net overall improvement on overall efficiency. There are however, some limitations in the design of their study as it was conducted at the level of the

organisation and they make use of a single-rater of HR practices from each organisation (see further discussion below about these limitations).

In contrast, there have been positive findings in longitudinal research by Guest et al. (2003) who explored the HR-performance link in a sample of 366 predominantly manufacturing companies in the UK, using both objective and subjective measures of performance. They measured HR practices using an aggregate score of a range of practices including recruitment and selection, training and development, appraisal, 'financial flexibility' (pay incentives), job design, two-way communication, employment security, 'single status and harmonization' (equity of employee entitlements), and quality. While measuring HR practices at only one point in time, the authors correlated these practices with organisational outcomes collected at two points in time. Their results showed a relationship between greater use of HR practices, lower turnover and higher profit per employee, although the relationship with profitability was not replicated when controlling for the previous year's profitability. There was, however, no relationship between HR practices and productivity.

An alternative study by Patterson, Warr, and West (2004) used a UK sample of 4,503 employees representative of 39 companies within the manufacturing sector. They developed a new measure of HR practices which included 17 factors and used existing measures of HR-related outcomes (job satisfaction and organisational commitment). As was the case with Guest et al. (2003), HR practices were only assessed at one point in time. The design was part-longitudinal, however, because multiple years of productivity and profitability figures were measured, HR practices were only assessed at a single point in time. Patterson et al. (2004) showed about half of the HR practices studied were predictive of future productivity. These included supervisory support, concern for employee welfare, skill development, 'effort' (how hard people work towards achieving goals), innovation and flexibility, quality, performance feedback, and 'formalization' (concern with formal rules and procedures).

Studies such as those discussed above provide important early steps towards more sophisticated longitudinal designs. However, these researchers and others have called for more longitudinal research. A clear step forward would be to measure not only outcomes at multiple points in time, but also assess HR practices at multiple times – such research would answer the important practical

question of how changes in HR practices are associated with changes in organisational outcomes. However, the difficulty of obtaining such longitudinal data is a significant methodological constraint.

Organisational rather than business-unit level of analysis

With the exception of the work by Wright et al. (2003) mentioned previously, to date much of the available research has been conducted at the organisation level. Some authors have questioned the validity of this type of research due to the potential for large variations in management practices across different business units within a single organisation (e.g., Wright, Gardner, Moynihan, Park, Gerhart & Delery 2001). Wright et al.'s research also raises concerns in relation to gaining valid and reliable measures of HR practices. In particular their results suggest an inability of individuals to accurately rate management practices across different business units and sites. As noted by Rogers and Wright (1998), research investigating the HR-performance link at the business unit level has been almost entirely ignored, but such a design offers the potential to capture more accuracy and variation in both practices and outcomes.

Single-person rather than multi-person ratings of HR practices

A significant proportion of research has been conducted using single manager reports of HR practices (e.g., Huselid 1995; Ichniowski, Shaw & Prennushi 1997; MacDuffie 1995), which have been shown to have low reliability and validity (Bowen & Ostroff 2004; Gehart, Wright, McMahan & Snell 2000; Wright et al. 2001). Kinnie et al. (2005) also criticised the use of manager ratings of HR practices due to the fact that there is often a dissonance between a company's espoused practices and HR practices that are actually implemented. As a solution to this single-rater problem, Gerhart et al. (2000) suggested that employees' perceptions of management practices would be a more accurate measure of HR practices than a single measure from an HR manager.

The Current Study and Hypothesis

The current research measures a range of HR practices with the aim of assessing the relative effectiveness of these practices for predicting HR-related and organisational outcomes. Previous research has made noticeable progress to identifying the most effective HR practices, but is nevertheless constrained by several limitations which the current research addresses by: 1) using longitudinal data for both independent and dependent variables (i.e., HR practices and organisational

outcomes); 2) collecting and analysing data at the business-unit level; and 3) using employee surveys to collect multi-rater assessments of HR practices.

To facilitate direct comparison with previous research, the current study uses the survey previously developed and used by researchers at Voice Project (e.g., Langford in press; Langford et al. 2006; Parkes & Langford in press). It is expected that the pattern of results will be similar to the 7-P's model proposed by the Voice Project researchers. Their model suggests that the 31 management practices measured in the full Voice Climate Survey group into five higher order work *systems* of 'Purpose', 'Property', 'Participation', 'People' and 'Peace', which impact on the two outcomes of 'Passion' (commonly referred to as engagement) and 'Progress'. Using the language of this model, and based on the research discussed earlier in this paper, the following hypothesis is made:

Hypothesis 1: The HR practices associated with Purpose (in particular, the practices of organisation direction and ethics) and Participation (in particular, leadership, recruitment and selection, cross-unit cooperation, learning and development, involvement, and rewards and recognition) will have stronger associations with the outcomes than do the practices within the systems of People (in particular, in-group teamwork) and Peace (in particular, work-life Balance).

METHOD

Participants

The data analysed in this paper comes from archival results from organisations that completed employee surveys as part of consulting projects run by the researchers and their colleagues. Thirty-six organisations were identified who had: 1) had completed two or more employee surveys, 2) had used the standard or slightly tailored version of the Voice Climate Survey, and 3) had collected results for the same business-units at both time periods. All 36 organisations were contacted and consent was granted by 21 of the organisations to use their survey results for the current project. Of the participating organisations, 10 were non-government not-for-profit organisations (contributing 61 business units), 4 were universities (contributing 28 business units), and 7 were private sector health and medical products manufacturers (contributing the remaining 34 business units).

Survey results from two time periods were obtained for all organisations; where organisations had completed more than two surveys, the results from the first and most recent surveys were used. The

average gap between time 1 and time 2 surveys was 2 years and 8 months. Time 1 survey results represented responses from 10,058 employees and results for 123 business-units; Time 2 survey results represented responses from 10,867 employees from the same set of business units. Surveys were anonymous, so while results could be compared over time for business units, the same could not be done for employees. On average 85 employees per business unit responded to the surveys at each time period, with a strong average response rates for each business unit of 64%.

Measure

The Voice Climate Survey was used, enabling direct comparison to previous cross-sectional research using the same survey (Langford in press; Langford et al. 2006; Parkes & Langford in press). The standard version of the survey comprises 102 questions that measure 31 lower-level factors (25 HR practices and 6 outcomes) that group into 7 higher-order factors (the "7-P's"). Previous research has demonstrated an average alpha across lower-order factors of .81, strong lower and higher-order factor structures, and the survey has been previously demonstrated to predict outcome measures such as turnover, absenteeism, and manager reports of financial performance and achieving objectives. In the current study, the lower-order factors showed an average time 1-time 2 reliability of .53 which is satisfactory given there was an average difference of 2 years and 8 months between time periods and also given the survey is designed to track changes in practices and outcomes over time. All answers were provided on a 5-point rating scale ranging from 1 = "Strongly Disagree" to 5 = "Strongly Agree", with an additional option of "Don't Know/Not Applicable".

The survey was designed to measure HR practices as well as HR-related outcomes (organisation commitment, job satisfaction and intention to stay, aggregated to form the higher-order outcome of Passion) and employee perceptions of organisational outcomes (achieving objectives, change and innovation, and customer satisfaction, aggregated to form the higher-order outcome of Progress). It is acknowledged that it is not common to use employee surveys to measure organisational outcomes. Nevertheless, Mason, Chang and Griffin (2005) have used and argued for the efficiency and utility of collecting employee self-report measures of organisational outcomes, labeling such a process as *quasi-linking*. Moreover, using the Voice Climate Survey, Langford (in press) found a correlation of

.44 between employees' ratings and managers' ratings of organisational performance. While the original survey uses the term Passion to represent the aggregate of commitment, satisfaction and intention to stay, the current paper will use the equivalent and currently more popular term 'Engagement'.

Organisations were given the option of modifying some of the content to suit their specific needs. The current study only analyses results for practices and outcomes where data was available from at least half of the participating business units (Table 1 lists the n's for each practice and outcome).

RESULTS

A common method of analysing longitudinal data is to calculate difference scores for the independent and dependent variables, and then correlate these difference scores. There are, however, criticisms of such an approach (e.g., Toby & Wall 1973; Zuckerman, Gagne, Nafshi, Knee & Kieffer 2002), and an alternative method is to apply partial correlations, using the time 2 independent variable to predict the time 2 dependent variable, controlling for the matching time 1 independent and dependent variables. Taking a conservative approach, both methods of analysis were used in this research, but no practically important differences were observed in the results, so only the results from the partial correlations will be presented here. Table 1 presents the lower-order practices sorted into their higher-order factors, showing the number of business units that measured each practice, the mean score on the 1-5 scale for each practice at time 1 (a higher score indicates stronger performance), the mean change in scores between time 1 and time 2, the standard deviation of the change scores, and the partial correlations between the practices and the outcomes of Engagement and Progress. The strongest partial correlations with engagement and progress were found between HR practices associated with Purpose (ethics r=.70 with Engagement and .84 with Progress) and Participation (leadership r=.65 and .86, involvement r=.56 and .72, cross-unit cooperation r=.58 and .84, and learning and development r=.67 and .77). Unexpected strong relationships with outcomes were also found for practices associated with Property (resources r=.49 and .73, processes r=.54 and .78, and safety r=.61 and .73). The lowest correlations were found for practices associated with Peace (work-life balance r=.14 and .35) and People (teamwork r=.28 and .33).

DISCUSSION AND IMPLICATIONS

Which Outcomes Were Important?

While noticeably progressing our understanding of the importance of HR practices, past research has been constrained by limitations such as 1) using cross-sectional or part-longitudinal design, 2) conducting analyses at the organisational level, and 3) using single raters of HR practices. The current research instead used longitudinal data for both independent and dependent variables, conducted analyses at the business-unit level, and used employee surveys that provided multiple raters of HR practices.

Nevertheless, and as hypothesised, the results of the current research largely supported the pattern of results found in previous research. As shown by the partial correlations in Table 1, of the higher-order factors previously identified by Voice Project researchers, the strongest relationships with outcomes were found for HR practices associated with Purpose (in particular, ethics) and Participation (in particular, trust in leadership, involvement in decision-making, cross-unit cooperation, and learning and development). While not specifically hypothesised, and not included in much previous research, strong correlations with outcomes were also found for practices associated with Property (resources, processes, and safety). The lowest correlations were found for practices associated with Peace (in particular, work-life balance) and People (in-group teamwork). Such results largely support previous findings of Den Hartog and Verburg (2004), Guest et al. (2003), Kinnie et al. (2005), Langford (in press), Langford et al. (2006), Parkes and Langford (in press), Patterson et al. (2004), and Paul and Anantharaman (2003).

Was Change Able to be Achieved?

Of the 16 HR practices and 6 outcomes assessed, all showed substantial variance indicating that change (for better or worse) was observed on all practices and outcomes in most business units. Examining the mean changes, 11 of the practices and 4 of the outcomes showed significant improvement between time 1 and time 2, and none showed a significant decline. The positive mean change scores in Table 1 show that all of the outcomes associated with engagement (organisation commitment, job satisfaction and intention to stay) showed significant improvement. Similarly, many

practices traditionally associated with HR improved, including recruitment and selection, learning and development, rewards and recognition, supervision, teamwork and work-life balance.

Encouragingly, improvements were also seen in staff perceptions of their organisation achieving its objectives, knowledge of the direction of their organisation, leadership, diversity and safety. These improvements may reflect a preference of managers to act on feedback from surveys that is most relevant to them (i.e., improving staff perceptions of their leadership ability, understanding of the direction of the organisation, and perception of the performance of their organisation) or which may pose a large risk to the organisation (e.g., safety and diversity issues). The finding that the mean change for the outcome of achieving organisational objectives was higher than for HR-related outcomes (organisational commitment, job satisfaction and intention to stay) may suggest a predisposition for management to invest resources into improving practices which they feel will have a greater impact on organisational outcomes rather than HR-related outcomes.

The practices not showing significant mean changes were associated with ethics, wellness, resources, processes, and involvement. In addition, two of the scales that make up the outcome of Progress (change and innovation, and customer satisfaction) did not display significant change across time.

Limitations and Directions for Future Research

A limitation of the current research comes from the restricted range of industries represented in the sample. Almost half of the business units came from non-government, not-for-profit organisations, approximately a quarter came from universities, and the remaining quarter came from private sector health and medical products manufacturers. Perhaps the over representation of not-for-profit organisations and universities within the sample could explain the particularly strong association between ethics and outcomes; although it should be noted that a similar result has been observed in previous cross-sectional research across a far greater variety of industries (Langford in press; Parkes & Langford in press).

Also associated with the nature of the sample, there is a possibility for selectivity bias. It could be argued that organisations that are willing to initiate a survey process, repeat the survey process at a later time, and give consent for their data to be used for research may already have a more progressive

attitude towards HR practices, and may be more likely to act on survey results. Despite this possible bias, the results showed large variability in survey results between business units and across time, with variance in change scores being far greater than the mean change scores indicating that scores on many of the HR practices declined in many of the business units.

The focus of the current research was investigating differences in practices and their relationships with outcomes at the business-unit level. A possible criticism of this study may be that although analyses were conducted at a business-unit level, much of the survey content focused on practices and outcomes at the level of the organisation (e.g., practices associated with leadership and organisation direction, and outcomes such as achieving organisation objectives). Supporting the use of such survey content, however, is that there was considerable variation between business units within organisations, suggesting ratings of organisation-level practices are influenced by business-unit-specific experiences.

An important difference between the current research and some previous research was that the measures of organisational outcomes were gathered through employee surveys. It is, of course, sensible to use employee surveys to gather information about HR-related outcomes such as engagement, commitment, satisfaction and intention to stay. However, using employee surveys to collect information about organisational outcomes (e.g., achieving organisation objectives, innovation, and customer satisfaction) is less common. As previously discussed, Mason et al. (2005) have used and argued for employee self-report measures of organisational outcomes and Langford (in press) found employees' ratings and managers' ratings of organisational performance were similar. Nevertheless, this approach is still relatively new and validation of these findings using more objective outcome measures would be helpful.

Finally, as with much of the previous research into the HRM-performance link, the focus in the present study has been on the direct effects of practices on outcomes. The study is, however, unable to explain the mechanism by which practices are associated with outcomes. As evidence of the HRM-performance link continues to strengthen, future research could focus on the mechanisms through which HR impacts performance, the so called 'black-box' problem (Purcell, Hutchinson, Kinnie, Rayton & Swart 2003).

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Table 1: Partial Correlations Between HR Practices and Outcomes

Higher Order Factors	Lower Order Scales	N	Mean T1	Mean Change[#]	SD Change	$R_{Partial}$ Engagement	$R_{Partial}$ Progress
Purpose	Organisation Direction	110	3.73	0.20**	0.42	.53**	..63**
	Ethics	78	4.13	0.04	0.36	.70**	.84**
	Diversity	119	4.06	0.11**	0.27	.51**	.65**
Property	Resources	105	3.70	0.05	0.36	.49**	.73**
	Processes	123	3.59	-0.01	0.36	.54**	.78**
	Safety	112	3.90	0.14**	0.34	.61**	.73**
Participation	Leadership	123	3.45	0.21**	0.44	.65**	.86**
	Recruitment & Selection	73	3.45	0.11**	0.32	.57**	.57**
	Cross-Unit Cooperation	123	3.15	0.08*	0.47	.58**	.84**
	Learning & Development	121	3.56	0.12**	0.36	.56**	.72**
	Involvement	78	3.47	0.04	0.48	.67**	.77**
	Rewards & Recognition	123	3.42	0.15**	0.29	.53**	.61**
	Supervision	122	4.04	0.08*	0.42	.49**	.46**
People	Teamwork	119	4.28	0.10**	0.24	.28**	.33**
Peace	Wellness	91	3.65	0.03	0.36	.49**	.68**
	Work/Life Balance	67	3.83	0.08*	0.30	.14	.35*
Engagement (Passion)	Organisational Commitment	93	4.12	0.06*	0.25	.88**	.76**
	Job Satisfaction	93	4.11	0.09**	0.31	.77**	.60**
	Intention to Stay	93	3.73	0.07*	0.33	.87**	.43**
Progress	Organisation Objectives	116	3.91	0.13**	0.33	.57**	.90**
	Change & Innovation	123	3.47	0.01	0.40	.62**	.95**
	Customer Satisfaction	123	4.00	0.02	0.38	.59**	.91**

*p <.05; **p < .01

Positive changes represent improvements in scores across time.