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The Moderating Effect of ‘Green’ HRM on the Association between Proactive Environmental Management and Financial Performance in Small Firms

Research has shown an association between proactive adoption of environmental management practices and firm performance; however little of this research, particularly in the small firm context, has examined the impact of human resources management practices on that association. Using data drawn from a sample of 158 small firms in the Australian machinery and equipment manufacturing sector, this paper contributes an empirical test of the moderating effect of human resource management on the association between proactive environmental management and firm financial performance. In so doing, we draw on the concept of ‘Green’ HRM; that is to say, practices aligned with environmental sustainability goals and which aim at developing employees’ abilities, motivation and commitment, and involvement in support of those goals at the firm level. The findings reveal that Green HRM positively moderates the association between proactive environmental management and financial performance, such that a high level of Green HRM increases the financial benefits of proactive environmental management compared to low levels of Green HRM. The findings show the added value that Green HRM provides when used as an enabler of proactive environmental management; this study should help allay concerns of small firms about the potential cost burden they may face from increasing governmental and social demands for environmental sustainability.

Keywords: Green HRM, Environmental management, Environmental sustainability, Small firms, Human resources

Introduction

Today, many firms recognise that a reactive approach to environmental regulation that aims only at compliance is no longer a competitive option, and are adopting a proactive approach to environmental management; an approach characterised by future-oriented management practices initiated voluntarily with a strategic purpose that extends beyond compliance and mitigation to enhance firm performance through emphasis on prevention of waste, reduction in energy consumption, and product and process innovation to minimise environmental impact across a product's life cycle as a competitive priority (Aragon-Correa 1998; Lannelongue *et al.* 2015; Primc & Cater 2015). In addition to the achievement of environmental sustainability, adoption of a proactive approach can have the strategic motivation of achieving competitive advantage and superior performance through improved revenue flows and reduced costs (e.g. Aragon-Correa *et al.* 2008; Dixon-Fowler *et al.* 2013; Torugsa *et al.* 2012, 2013b).

Research has also shown an association between human resources and their sustainable management and the proactive adoption of environmental management practices (Paille *et al.* 2014; Renwick *et al.* 2013; Wagner, 2011; Wehrmeyer, 1996). However, within this body of theoretical and empirical research, studies linking the three variables – human resource management, proactive environmental management and financial performance – have most commonly been conducted in the large firm context (Jackson & Seo 2010; Millard 2011); and, there is no published research exploring the moderating effect of a firm's human resource management practices on the association between a proactive approach to environmental management and financial performance in the small firm context.

This study seeks to address that research gap by contributing an empirical test of the moderating effect of human resource management on the association between proactive environmental management and financial performance in small firms in the Australian

machinery and equipment manufacturing sector; a sector faced with substantial challenges in addressing government and community concerns regarding environmental sustainability (Williamson *et al.* 2006).¹ In doing so, we will draw on the concept of ‘Green HRM’; that is to say, those human resource management practices aligned with environmental sustainability goals and which aim at developing employees’ abilities, commitment and motivation, and involvement of staff in support of those goals at the firm level (Jackson *et al.* 2011; Renwick *et al.* 2013).

We believe the present study makes a number of valuable contributions to the literature. Firstly, there has been little empirical research published on the engagement of Australian SMEs in proactive environmental management practices. The significance of the Australian context as a focus of study is reflected in its status as one of 17 mega-biodiverse countries accounting for almost 70% of the planet’s species (Australian Government Department of Foreign Affairs and Trade, 2015); and its ranking as 2nd on the United Nations’ ‘Human Development Index’ ahead of the US (5th) and UK (14th) with their much larger economies (United Nations 2014). On this latter point, it is notable that currently the major share of the literature presents empirical evidence collected in the US and UK economies (Horváthová 2010).

Secondly, in respect to small firms as a focus of study, most of the research into human resource management, proactive environmental management and financial performance has been conducted in the large firm context (Millard 2011); it has also tended to focus either on the link between human resource management and proactive environmental management (e.g. Paille *et al.* 2014; Zibarras & Coan 2015), or the link between firm performance and

¹ In this study, a small firm is defined as having less than 200 employees. This is in line with Bartram (2005) and the established practice of using the number of employees to determine firm size. It is also appropriate in the Australian context where 99.8 percent of all firms are in this category (Commonwealth Department of Industry, Innovation, Science, Research and Tertiary Education 2012), and the scale of firm size is generally well below that of firms in larger developed economies, such as the U.S. where firms with less than 500 employees are usually categorised as ‘small’ (Barrett & Mayson 2007).

proactive environmental management (e.g. Hall & Wagner 2012), or between firm performance and human resource management (e.g. Coombs *et al.* 2006). There is little published empirical research generally, and no published empirical research in the Australian small firm context, that examines the inter-relationship between Green HRM practices, proactive environmental management practices, and firm performance. This absence is notable given that in many countries SMEs form the very large majority of firms and as such have substantial economic and environmental impacts. Thirdly, building on the work of Redman *et al.* (2013) and other Green HRM scholars (e.g. Daily & Huang 2001; Fernandez *et al.* 2003), the study develops a theoretical framework for how Green HRM might be examined in small firms. It recognises the diversity of informal approaches, and simple and unsophisticated routines and systems for managing people utilised by small firms (Rutherford *et al.* 2000; Zibarras & Coan 2015)

The paper is structured as follows: first, we present an overview of the literature in relation to the links between Green HRM, proactive environmental management, and financial performance in the small firm context; before presenting the hypotheses to be tested. We then outline the study method, which is followed by discussion of the analysis and results. The paper concludes with discussion of the study findings, limitations and future research directions.

Literature review and hypotheses

Green HRM and Proactive Environmental Management in Small Firms

The strategic management of human resources is well established in the literature as a fundamental contributor to a firm's competitive advantage (Coombs *et al.* 2006), and those human resource management practices considered to be synergistic and performance enhancing, for example those related to developing skills, enhancing motivation and

commitment, and employee participation, have been labelled ‘high-performance work practices’ (HPWPs) (Huselid, 1995). The value of HPWPs, measured in terms of a positive impact on employee knowledge and skills, sense of empowerment and motivation to perform, has been demonstrated in the literature generally, and particularly for manufacturing firms. This consequent beneficial effect on operational and financial performance at the organizational level is amplified when such practices are informed by organisational strategic objectives (Coombs *et al.* 2006); and as indicated earlier, there is increasing evidence in the literature that firms are adopting a proactive approach to environmental management, with the improved revenue flows and reduced costs such an approach can generate, to achieve strategically important environmentally-related business objectives.

Hence, in line with persuasive evidence supporting a positive association between HPWPs and performance as measured by financial and a variety of other indicators (e.g. Ivars & Martinez 2015), and that which supports an association between human resource management and the proactive adoption of environmental management practices (Paille *et al.* 2014; Renwick *et al.* 2013; Wehrmeyer, 1996), for the purposes of this study we consider HPWPs and Green HRM to be one and the same thing; in that, those human resource management work practices which facilitate proactive environmental management will also contribute to high performance outcomes for the firm.

The literature presents a variety of views about which aspects of human resource management can be considered ‘green’ in the sense that they contribute most to a proactive approach to environmental management. Daily and Huang (2001), for example, theorise four factors – the role of senior management, training, empowerment, and rewards – as being key to effective proactive environmental management and delivery of the twin business outcomes of environmental sustainability and enhanced financial performance. Fernandez *et al.* (2003) offer a different perspective focussing on the importance of creating a supportive

organisational culture through environmental training, motivation and incentives, employee involvement and participation, leadership and innovation. More recently: Muster and Schrader (2014) highlight the notion of a ‘green work-life balance’ that recognises the reciprocal interactions between work and non-work-related activities that can facilitate an employee’s environmentally friendly behaviour; Aragón-Correa *et al.* (2013) draw out the importance of Green HRM practices that facilitate information sharing and collaboration with employees for the development of a proactive natural environmental strategy. Related to this sharing aspect, other research (Torugsa *et al.* 2012, 2013b) highlights the important role of three specific organisational capabilities – ‘shared vision’, ‘stakeholder management’ and ‘strategic proactivity’ – in enabling proactive environmental management practices, and to which a firm’s human resource management practices can make a significant formative contribution.

The concept of Green HRM is perhaps articulated most coherently by Renwick *et al.* (2013) in their review of published empirical and theoretical studies covering sustainable human resource management practices in small, medium sized and large firms. Citing Becker and Huselid (1998), Renwick and colleagues draw on the concept of high performance work practices (HPWPs) and define Green HRM as a set of specific human resource management practices that enable and sustain a proactive approach to environmental management and the achievement of high performance outcomes in relation to environmental sustainability and other types of business objectives. In line with the tenet that performance is best understood as a function of ability + motivation + opportunity (Vroom 1964), Renwick *et al.* (2013) group the specified human resource management practices under one of three broad aims: ‘Developing Green abilities’ – practices associated with employing and developing the requisite human capital; ‘Motivating Green employees’ – practices associated with enhancing

employee motivation and commitment; and, ‘Providing Green opportunities’ – practices associated with involving, empowering, and engaging staff.

Many of the 35 specific practices listed by Renwick *et al.* (2013) – for example, ‘Green issues specified in job descriptions’, ‘Green performance indicators included in PM [*Performance Management*] system and appraisals’, ‘Including Green targets as part of PRP [*Performance Review and Planning*] for senior staff’, ‘Joint management/union training programmes in EM [*Environmental Management*]’– imply a level of formalisation, complexity and sophistication of human resource management understanding and practice, as well as resourcing, most likely to be found in large firms. Such conditions are not characteristic of small firms generally, in which the distinctive structural attributes of small firms, and the lack of resources and professional human resource management expertise characteristic of small firms, can often combine in effect to create a diversity of informal approaches with simple and unsophisticated routines and systems for managing people (Rutherford *et al.* 2000; Williamson & Lynch-Wood 2001; Zibarras & Coan, 2015). A more general and less-prescriptive approach to what constitutes human resource management practice in small firms is therefore necessary to allow for a diversity of people-oriented practices to be captured under a single environment management-related aim while lessening the possibility that informal and idiosyncratic, but nonetheless, effective practices for managing people might be excluded by definition.

For these reasons, we believe the application of the full Green HRM framework (Renwick *et al.* 2013), with its large firm, specialist and formal orientation, would prove problematic in the small firm context of this study; therefore, in the absence of an alternative small firm-specific framework, for this study we use the following modified version of the full framework (see Table 1).

Table 1. Green HRM in small firms

<i>Aim 1: To develop Green abilities</i>	<i>Aim 2: To motivate Green employees</i>	<i>Aim 3: To provide Green opportunities</i>
Practice Category 1: Enhancing employees skills and knowledge	Practice Category 2: Investing in employees, encouraging commitment, and caring for employees	Practice Category 3: Involving employees in decision-making
<i>Based on:</i> Shared understanding of Green business goals and objectives		

(Source: adapted from Renwick et al. 2013)

Consistent with the positive people-orientation of Green HRM as conceptualised by Renwick *et al.* (2013), our modified framework for small firms retains the three specified broad aims; that is to say, ‘To develop Green abilities’, ‘To motivate Green employees’, and ‘To provide Green opportunities’. However, for the reasons outlined above, rather than include the 35 practices identified by Renwick *et al.* (2013), we use three single broad practice descriptions – (i) ‘Enhancing employees skills and knowledge’, (ii) ‘Investing in employees, encouraging commitment, and caring for employees’, and (iii) ‘Involving employees in decision-making’ – to include the range of practices that might be expected to accompany a proactive environmental management approach. These broad descriptions also recognise that, because of the characteristic resource limitations and associated need for a small firm to maximise return on investment, human resource management practices are likely to be undertaken for the purpose of simultaneously contributing to multiple performance objectives, of which environmental objectives would form but one type. To limit our practice definition, and hence study focus, to those specific human resource management activities which have a single explicit purpose of supporting environmental goals (a situation more likely to be found in large firms with sufficient resources to allow such specialisation), we believe would be inappropriate in a small firm context.

Another important aspect of our simplified framework is the recognition of the role of an organisation-wide ‘shared vision’ capability (a common understanding of a small firm’s business goals and objectives, to which all members of the firm contribute) as a foundation component and key management control variable. In line with absorptive capacity theory (Cohen & Levinthal 1990), and the resource-based view of the small firm (Aragon-Correa *et al.* 2008), the inclusion of this aspect in our framework is consistent with research showing that such a capability can contribute significantly to a firm’s financial performance and competitive advantage (Wright *et al.* 2001). Hence, in accord with other research in the small firm context (e.g. Alt *et al.* 2014; Torugsa & O’Donohue 2013a, 2013b), a firm-wide understanding at the individual level of the firm’s environmentally-related business goals, that is to say a ‘shared vision’ capability, is a significant contributing element in the influential role that Green HRM practices have on both proactive environmental management and firm performance.

Proactive Environmental Management and Financial Performance in Small Firms

Ambec and Lanois (2008) explain why adoption of a proactive approach to environmental management makes strategic business sense. In essence, according to these researchers, such an approach offers the potential of enhanced financial performance through two mechanisms: (i) increased revenue via improved access to existing and new markets based on enhanced products and services differentiated by their ‘greenness’; and, (ii) improved cost management via better risk management, and reductions in cost of production, materials and services, labor and capital.

Notwithstanding these potential benefits, Hahn *et al.* (2010) discuss the possibility that ‘trade-offs’ may be necessary in order to acquire them has been raised by who suggest that much of the extant research into the relationship between financial performance and

environmental management has been based on an unquestioning acceptance of a ‘win-win’ sustainability paradigm in which simultaneous and maximum achievement of all a firm’s economic and environmental goals is possible, and thus overlooks the degree to which concurrent activities directed towards achievement of such goals may conflict. For example, investment of slack financial resources (e.g. replacement of out-dated but nevertheless functional production technology with environmentally friendly technology) on the promise of a return through enhanced performance outcomes (e.g. improved pollution control and reduced costs) may entail opportunity costs that result from the need to ‘trade-off’ alternative benefits that might be gained through using some or all of the slack financial resources for other purposes (e.g. market development directed at short-term profit maximisation).

According to Hahn *et al.* (2010) this type of compromise-based decision-making situation, rather than one of ‘win-win’, is more realistic and thus the norm for firms, and particularly in the case of small firms where the availability of slack resources is likely to be limited. While Hahn *et al.* (2010) do illustrate the complex and paradoxical nature of decision-making in relation to economic and environmental management, and raise the questions of how firms might best risk manage this complexity in order to optimise if not maximise outcomes, the majority of research across a range of industries has nevertheless demonstrated a positive association between proactive environmental management and financial performance (e.g. Horváthová 2010). It also suggests it is possible for firms to resolve the paradoxical tension associated with the simultaneous pursuit of business goals in the economic and environmental domains (Guerci & Carollo 2015), through adoption of complementary management practices in both domains that are consistent with the broader principles of sustainability.

Consistent with much of the published theoretical and empirical research, this paper assumes that management practices directed towards simultaneous achievement of

environmental and economic goals need not always be mutually exclusive in implementation or contrary in effect. It does however recognise, by the very nature of the phenomena it addresses (i.e., the moderating effect of Green HRM on the association between proactive environmental management and financial performance), that decisions involving trade-offs can often be required, and particularly in small firms. Using our previous example to illustrate, allocation of resources to enable Green HRM could entail a consequent reduction in the total resources available for the purchase of environmentally friendly technology, thus necessitating a trade-off in favour of optimising, rather than maximising, the benefits a purely technologically-driven solution to environmental management might provide for firm financial performance.

Hypotheses

Research studies examining the proactive environmental management–financial performance link in the small-firm context (e.g. Aragon-Correa *et al.* 2008; Hoogendoorn *et al.* 2014; Jenkins 2006) are few compared to the sizable number of large-firm based studies. However there is an established view that small firms face greater obstacles than large firms in pursuing a proactive approach to environmental management; often because they generally lack the necessary slack resources and the significant and sometimes sophisticated environmental knowledge and management skills that are required, and because they often lack sufficient environmental awareness and commitment to sustainability principles. As a consequence of the barriers they face, and notwithstanding the possible influence of altruistic motives, small firms are considered less likely than large firms to be proactive in environmental management in the absence of a strong possibility of a return on investment and improved financial performance in the short to medium term (Lepoutre & Heene 2006; Perez-Sanchez *et al.* 2003; Rutherford *et al.* 2000; Williamson & Lynch-Wood 2001).

At the same time, however, some researchers contend it is possible for small firms to pursue superior performance strategically by deploying distinctive organisational resources and capabilities associated with their size (such as closer interaction between employer and employees, flexibility to respond more rapidly to changes in the business environment, and entrepreneurial orientation and innovativeness) that serve as enablers for the adoption of a proactive approach to environmental management (Perez-Sanchez *et al.* 2003; Rangone 1999). This suggestion is supported by several research studies reporting evidence showing that small firms can successfully adopt a proactive approach in environmental management in support of long-term strategic goals (e.g. Aragon-Correa *et al.* 2008; Carlson-Skalak 2000). Hence, in line with the established view, which supports a positive association between proactive environmental management and financial performance for small- and large-firms, and to confirm if this association is evident in our study sample, we hypothesise:

H1: Proactive environmental management (ProEM) is positively associated with financial performance in small firms in the Australian machinery and equipment manufacturing sector.

In relation to the influence of those human resource management practices covered by the concept of Green HRM described above, there is a substantial body of accumulated research showing they are fundamental to the achievement of effective long term environmental sustainability (Paille *et al.* 2014; Wehrmeyer, 1996). Such research covers a diverse set of topics at a number of levels (employee, group/team, organisation, and system), ranging from the importance of individual green initiatives in the workplace (e.g. Daily *et al.* 2012), and the role of environmental training and organisational learning (e.g. Vidal-Salazar *et al.* 2012) to the link between the sustainable management of a firm's human resources and the effective implementation of International Standards Organisation-compliant (ISO) integrated environmental management systems (Jabbour & Santos 2008). Employees with

'green' environmental values, technical capabilities, and managerial skills, and who feel valued, are highly motivated and engaged in their work, are fundamental to proactive adoption and enactment of the principles of environmental sustainability and the enhancement of firm performance (e.g. Paille *et al.* 2014; Tariq *et al.*, 2014; Ramus & Steger 2000).

Overall, this research highlights the important contribution to effective proactive environmental management that Green HRM practices can make in terms of: (i) managing organisational culture, learning and development, so as to integrate environmental sustainability into the firm's shared values, norms, knowledge systems, business goals and objectives; and, (ii) demonstrating a credible commitment by the firm to shared environmental values, organisational learning, and continuous improvement of employee skills and knowledge of environmental management (e.g. Millard 2011; Renwick *et al.* 2013; Vidal-Salazar *et al.* 2012). Moreover, as argued by Jackson and Seo (2010) positive financial outcomes are more likely to accrue in firms, that enhance the ability and motivation of employees and provide them with the opportunity to contribute to the achievement of the firm's shared vision of environmental sustainability; thereby enabling a firm to grasp more fully the revenue raising and better cost management opportunities that proactive environmental management can generate.

While most of the research explicitly linking human resource management, proactive environmental management and financial performance has been conducted in the large firm context (Jackson & Seo 2010; Millard 2011), there is no published research, in either the large or small firm context, that tests the moderating effect of Green HRM specifically on the association between a proactive approach to environmental management and financial performance. Accordingly, in order to address this research gap, and in line with the above discussion, we propose the following hypothesis for testing:

H2: The association between proactive environmental management (ProEM) and financial performance in small firms is positively moderated by Green HRM, such that high levels of Green HRM increase the financial benefits of a proactive approach to environmental management (ProEM) compared to low levels of Green HRM.

Method

Sample and procedure

Small firms in the Australian machinery and equipment manufacturing sector face highly competitive business conditions as well as strong government and social pressures to reduce and/or manage more effectively the harmful environmental impacts of their activities (Williamson *et al.* 2006). For example, the carbon pollution regulatory approach in Australia, and the rising costs of pollution emissions have combined to make a ‘business as usual’ approach increasingly expensive, and therefore a significant threat to small firm performance. Thus, there is an incentive for Australian small manufacturing firms which, by dint of their more flexible managerial structures and greater responsiveness to innovation can be well-placed to engage in proactive environmental management practices which have the potential benefit of enabling generation of extra revenue associated with waste and energy control (e.g. Torugsa *et al.* 2013b).

The sample of firms for this study was drawn from a population of small machinery and equipment manufacturing firms listed in the Dun & Bradstreet (Australia) database. In line with cautionary recommendations by Muurlink *et al.* (2011), the database was first cleaned extensively for accuracy of content. Specifically, businesses with more than one branch listed were identified and only the headquarters included. Firms found to be ineligible – such as being distributors rather than manufacturers, duplicates, out of business, or having been

acquired by large firms – were identified and removed. This process resulted in a final population of 1,278 small firms.

A survey questionnaire, based on the extant literature, existing published questionnaire items, as well as discussion with several small firm owner-managers, senior public servants and academic researchers in the field, was developed for this study. The content validity and clarity of the questionnaire were pre-tested by trialling it with owner-managers of three small firms.² As many Australian small firms do not employ professional human resource management on staff (Wiesner & Innes 2010), a senior manager central to the development of environmental business practices and management of the firm's human resources (the business owner and/or CEO or managing director) was invited to act as the informant for each firm. The use of this type of non-professional HR managerial respondent also minimised the likelihood of pro-HR bias in researching Green HRM. A single informant per firm was employed for this study in line with previous research suggesting a single well-qualified senior manager in a small firm is more likely to provide a better informed account of a firm's approach than several lower level, less informed managers (Lyon *et al.* 2000).

The survey was administered twice by mail in 2009 with a six-month time lag in data collection, between the measurements of predictor/moderator (ProEM/Green HRM – Time 1, April) and the outcome variable (financial performance – Time 2, November). The staging of data collection allowed temporal ordering of variables and helped diminish a respondent's motivation to use previous responses to answer subsequent questions. All respondents were asked to report their firm's financial performance in Time 1 and their ProEM and Green HRM in Time 2, to enable the reliability of the reported data to be evaluated through testing of the correlation between the same variable at the different time points (*r_{xx}*). Two weeks

² While the sample for our pre-test is small, given the high level of survey fatigue found in Australian firms (Birch 2002) and the accepted practices in survey research (adopted in this study) of excluding pre-test responses from the final analysis, we believe it to be sufficient for our purpose.

after the initial mailing in Time 1, an intensive follow-up process (via telephone, fax and email contact) was conducted, with 183 from a possible 1,278 responses being received.

All of the 183 respondents at Time 1 signified their consent to participate at Time 2 and provided the researchers with their personal email address to allow the researchers to contact them regarding the completion of the Time 2 survey questionnaire. Of the 183 completed responses received at Time 2, 158 were valid with no missing data and with the data being supplied by the same respondent who completed the Time 1 questionnaire³. This left a final sample of 158 firms for the analysis, a response rate of 12.4%. This response rate, though somewhat low, is similar to (or better than) that in other management studies (e.g. Galbreath & Galvin 2008; Maignan & Ferrell 2001). Australia has also been considered a country with substantial ‘survey fatigue’, particularly for the ‘repeated’ surveys that are directed to time-poor small business owner-managers for whom managing day-to-day business operations is first priority and thus have no time to respond to any research surveys, thereby depressing response rates (Birch 2002).

Due to the small sample size, a ‘power analysis’ (MacCallum *et al.* 1996) was completed with an estimated power at 0.9327⁴; with a sample of 158 firms this result indicates that if the model did not have close fit in the population then the chance of rejecting this incorrect model was 92.37%. Such a result indicates the sample size was adequate for statistical analysis. Non-response bias was also evaluated through Armstrong and Overton’s (1997) time-trend extrapolation procedure, with the result showing no significant differences between early and late respondents in terms of their demographic characteristics. Of all firms

³ In the Time 2 survey questionnaire, all respondents were asked “Did you complete the previous Stage 1 survey form?”

⁴ Using the STATISTICA software, ‘power calculation for structural equation modelling’ was based on: sample size (N = 158); Type I error rate or significant criteria ($\alpha = 0.05$); the model degrees of freedom shown in Figure 1 (df = 167); the population RMSEA under the alternative hypothesis shown in Figure 1 (R1 = 0.001); and the null hypothesized RMSEA (R0 = 0.05).

that responded to our survey, the majority employed between 10 and 49 employees (75.3%) and had annual turnover below \$10 million (66.5%).

Furthermore, given that the data were self-reported, common method bias was tested using Harman's single-factor test with both exploratory and confirmatory factor analyses (Podsakoff *et al.* 2003). A total of 13 indicators of all latent constructs (except interaction or product indicators) were entered into an exploratory factor analysis using principal axis factoring with the unrotated solution to determine the number of factors that are necessary to account for the variance in the variables. The analysis showed the presence of four factors with eigenvalues greater than 1, all collectively accounting for 62% of the total variance (Factor 1 accounting for 36.3%, Factor 2 for 14%, Factor 3 for 7%, and Factor 4 for 4.7%). Additionally, confirmatory factor analysis was performed by loading all 13 indicators on one factor, with the result indicating a poor fit of the single-factor model to the data: $\chi^2 = 840.31$, $p < 0.001$; $df = 65$; RMSEA = 0.276; CFI = 0.67; IFI = 0.67; NNFI = 0.60; and RFI = 0.57. The results of the two factor analyses – coupled with survey procedures designed to protect respondent anonymity and encourage respondents to answer the survey questions as honestly as possible (Podsakoff *et al.* 2003) – provides confidence that common method bias was not a major concern in this study.

Measures

Proactive environmental management

There is no publicly available data on environmental management practices (proactive or otherwise) for small manufacturing firms in Australia. Therefore, consistent with the recent finding by Dixon-Fowler *et al.* (2013) that no significant difference in financial outcomes are likely when using self-reported measures of environmental performance as compared to archival data, proactive environmental management (ProEM) was measured in terms of the

perceptions of managers. The 13 survey items for ProEM, shown in Table 2, were drawn from the extant literature (e.g. Aragon-Correa *et al.* 2008; European Commission 2003; Sharma *et al.* 2007). Respondents were asked to indicate the extent to which their firms voluntarily engaged in ProEM compared to similar firms in their industry sector, using a five-point scale (1 = ‘not addressed issue at all’ to 5 = ‘we are leaders on this issue’).

As a point to note, feedback received from pre-test trial participants confirmed the suitability for inclusion of three specific survey items (‘differentiate product/process by marketing of the environmental performance of the product/process’; ‘sell waste products for revenue’; and ‘reduce costs of inputs for the same level of outputs’) relating to specific practices which contribute directly and explicitly to the revenue generation, cost management and product differentiation opportunities that ProEM has the potential to deliver (Ambec and Lanois 2008). The inclusion of the three items (covering process efficiencies and product design) also aligns with prior research (see Christmann 2000; Shrivastava 1995; Stead & Stead 1995) suggesting that competitive advantage can be gained through ProEM that facilitates: (i) cost management (e.g., reducing input and waste disposal costs and increasing process efficiency) and/or (ii) design goods and services of differentiated as environmentally-friendly and for which a price premium may be applied leading to increased revenue (e.g., redesigning products to incorporate more environmentally responsible features and marketing the environmental benefits). Moreover, inclusion of the three items is also in line with Torugsa *et al.* (2013b) where, in their study of proactive corporate social responsibility, error covariance did not preclude correlation of these items because of overlap in the economic and environmental dimensions.

In order to reduce the number of indicators of ProEM and thereby make our structural equation model less complicated, we performed an exploratory maximum likelihood factor analysis with varimax rotation to identify the main factors. Results showed that the 13 items

(code E) formed three main factors with eigenvalues greater than 1 – labelled E1, E2 and E3 (see Table 2). Each of the 13 items had a significant factor loading on its identified factor with the value above of 0.50, and Cronbach’s α ranged from 0.813 to 0.832 for each factor, results suggesting the establishment of convergent validity and internal reliability. The final score of each factor (E1, E2 and E3) was an average of all of its underlying items, with a high score being indicative of a high level of ProEM. The high correlations obtained for each set of three main factors ($r_{xx} = 0.823$ for E1, $r_{xx} = 0.854$ for E2, and $r_{xx} = 0.838$ for E3; all significance at $p < 0.001$) between Time 1 and Time 2 surveys further confirmed our confidence in the reliability of the ProEM scale.

Table 2. Result of exploratory factor analysis of ProEM items

<i>Factor</i>	<i>Underlying item</i>	<i>Factor loading (λ)</i>	<i>Cronbach’s α</i>
E1	- Periodic natural environment audits.	0.868	0.813
	- Purchasing criteria including ecological requirement.	0.669	
	- Differentiate product/process by marketing of the environmental performance of the product/process.	0.582	
E2	- Filters and controls on emissions and discharges.	0.649	0.828
	- Program of waste recycling/reuse.	0.850	
	- Reduction/replacement of hazardous chemicals or materials.	0.567	
	- Systematically separate dangerous wastes.	0.679	
	- Sell waste products for revenue.	0.580	
E3	- Program for water recycling.	0.543	0.832
	- Increase energy efficiency.	0.653	
	- Use of certifications on environmental aspects (e.g. ISO 14000).	0.539	
	- Design products and manufacturing processes to minimize the ecological footprint along the entire product life cycle process.	0.693	
	- Reduce costs of inputs for the same level of outputs.	0.528	

Note: Using a maximum likelihood extraction method with varimax rotation; all of the factor loadings (λ) were significant at $p < 0.001$.

Green HRM

Consistent with the three specified broad aims and three single broad practice descriptions in our conceptual framework, as adapted from Renwick *et al.* (2013) to fit small firms, Green HRM was measured using five items (code H) based on the extant literature (e.g. European Commission 2003; Jenkins 2006). These items included: (i) environmental training for employees; (ii) investor in people; (iii) creation of good work-life balance and family friendly employment; (iv) improve employee health and safety; and (v) employee participation in decision-making process. For the purpose of this study, the first item was used as a proxy for ‘developing green abilities’ [H1]; the middle three items – due to having high factor loadings on one component (λ ranging from 0.730 to 0.787) and high correlations among them (r above 0.60) – were averaged and combined into a single item to represent ‘motivating green employees’ [H2]; and the last item was used as a proxy for ‘providing green opportunities’ [H3]. Respondents were asked to indicate, using a five-point scale (1 = ‘not addressed issue at all’ to 5 = ‘we are leaders on this issue’), the extent to which their firm voluntarily engaged in these activities compared to similar firms in their industry sector.

Consistent with earlier discussion of our conceptual framework for Green HRM in small firms, and the reasons for the use of broad descriptions of aims and practices, these items (except in one case) did not explicitly include the word ‘environmental’; however, the design of the survey instrument required the five items to be completed in conjunction with those items measuring the firm’s ProEM practices and its ‘shared vision’ capability (see below). In this way, respondents were required to consider each Green HRM item in the context provided by their responses to those items for ProEM practices and ‘shared vision’ capability.

A high score was indicative of a high level of Green HRM. The Cronbach's α for this broad three-item scale was 0.711, indicating an acceptable internal reliability level. The high correlations obtained for each set of three items ($r_{xx} = 0.782$ for H1, $r_{xx} = 0.832$ for H2, and $r_{xx} = 0.735$ for H3; all significance at $p < 0.001$) between Time 1 and Time 2 surveys further confirmed our confidence in the reliability of the Green HRM scale.

Financial performance

Strategy and environment scholars have used a combination of subjective data (e.g. Aragon-Correa *et al.* 2008) and objective data (e.g. Russo & Fouts 1997) to measure a firm's financial performance. Discussions with pre-test participants, however, indicated that respondents were more open to offering their general perceptions of their firm's financial performance rather than to providing precise quantitative data that were commercial-in-confidence in nature. Given that the literature has widely established that there is a high correlation and concurrent validity between objective and subjective data on performance, implying that both are valid when measuring a firm's financial performance (see Dess & Robinson 1984; Homburg *et al.* 1999), the respondents' perceptions on three financial performance items (code F) drawn from previous research (Ansoff 1965; Dess & Robinson 1984; Lin *et al.* 2011) – return on assets [F1], net profits to sales [F2] and liquidity [F3] – were collected. Respondents were asked to rate their firm's financial performance, over the preceding six-month period compared to similar firms in their industry sector, using a five-point scale (1 = 'much worse' to 5 = 'much better'). A high score was considered indicative of a high level of financial performance. The Cronbach's α for this three-item scale was 0.912, demonstrating a good internal reliability level. In the absence of publicly available objective data, our confidence in the reliability of the financial performance scale was further confirmed though the high correlations obtained for each set of three performance items (r_{xx}

= 0.703 for F1, $r_{xx} = 0.720$ for F2, and $r_{xx} = 0.639$ for F3; all significance at $p < 0.001$) between Time 1 and Time 2 surveys.

Control variables

Four control variables were used in this study. First, recognising the importance in the small firm context of a shared vision capability as an antecedent condition for the implementation of ProEM and consequent enhancement of financial performance (see Aragon-Correa *et al.* 2008; Torugsa *et al.* 2012, 2013b), we controlled for firm heterogeneity in relation to this attribute. We measured a shared vision capability using three items from Aragon-Correa *et al.* (2008)'s validated scale: 'the objectives of this firm are very well known to everybody working here'; 'everybody working in this firm influences the way to work and the objectives of the firm'; and 'everybody in this firm freely contributes his/her points of view about how to run it smoothly'. The respondents were asked to rate their level of agreement with each statement on a six-point scale (1 = 'strongly disagree' to 6 = 'strongly agree'). The average value of these three items (Cronbach's $\alpha = 0.701$) was then weighted by two rating scale items (adapted from Torugsa *et al.* 2012, 2013b) that represented an employee management capability for establishing trust-based collaborative relationships with employees; a high final score was indicative of a shared vision capability. These two items (rated 1 = 'very low' to 5 = 'very high') captured the level of attention the respondent's firm gave to employees in organizational decision making, and the importance of employees in helping them understand issues their firm was facing. The weighting recognises that an employee management capability can enhance a firm's capacity to create competitive advantage from ProEM.

Second, although analysis was restricted to the category of small firms, the range of sample firms within this category suggested the need to control for potential differences that may affect financial performance (Sharma *et al.* 2007). Therefore, the size of a firm,

measured by the number of employees employed on a regular basis, was controlled in this study. Third, because our study was undertaken in 2009, soon after the global financial crisis (GFC) of 2007-2008, and based on concerns expressed by pre-test participants, the potentially negative impact on firm financial performance of this external influence, which could distort the findings of the Green HRM/ProEM-performance relationship, was treated as another control variable. As no 'objective' firm-level data on the impact of the GFC that take into account firm-specificity and heterogeneity were publicly available, we measured this variable in terms of the respondents' perceptions of the extent to which general economic conditions had negatively impacted their business financial performance in the previous six-month period in relation to three financial indicators (return on assets, net profits to sales and liquidity) using a five-point scale (1 = 'no impact at all' and 5 = 'very high impact'), and a high average score was indicative of perceived high negative impact on a firm's financial performance (Cronbach's $\alpha = 0.881$). Finally, we controlled for the duration of the firm's experience in environmental management activity (ranging from 1 year to 9 years or more), given the theoretical possibility that the benefits from such activity may only become fully visible over the long term rather than the short term (Hart & Ahuja 1996).

Analysis and results

Structural equation modelling with LISREL 8.8, with its powerful capability of properly addressing the presence of measurement error within a statistical model in the study of multiplicative effects (Joreskog & Sorbom 2006), was used to test our hypotheses. Table 3 presents the means, standard deviations and correlations for all latent variables (except the interaction variable) analysed in this study. The estimated correlations between variables were well below the recommended threshold of 0.70 (Pallant 2007), suggesting that discriminant validity for our study constructs was achieved.

Table 3. Means, standard deviations and correlations

<i>Variable</i>	<i>Mean</i>	<i>SD</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
1. ProEM	2.75	0.82						
2. Green HRM	3.05	0.72	0.49***					
3. Financial Performance	3.38	0.95	0.42***	0.35***				
4. Shared vision	2.98	0.89	0.39***	0.47***	0.21**			
5. Firm size	2.57	0.86	0.20*	0.08	0.27**	-0.05		
6. Perceived GFC	2.75	0.86	-0.06	-0.03	-0.49***	0.04	-0.06	
7. Experience in EM	6.91	2.61	0.15	0.07	0.07	-0.04	-0.08	0.01

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

With the aim of testing the moderating effect of Green HRM (moderator, treated as a main-effect construct) on the association between ProEM (predictor, treated as a main-effect construct) and firm financial performance (outcome variable), the orthogonalising technique proposed by Little *et al.* (2006), which involves creating product indicators that are uncorrelated with the indicators of the main-effect constructs, was employed in this study. The benefit of this technique is that the main-effect parameter estimate is unaffected, and model fit is not degraded, when the interaction latent construct is entered into the model (Little *et al.* 2007). To prove moderation, the interaction latent construct must significantly affect the outcome variable. Significant main effects for the predictor and moderator variables can occur, but these effects are not directly relevant conceptually to testing the moderation hypothesis (Baron & Kenny 1986).

We began the orthogonalising process with the formation of all possible products of the corresponding indicators of the two constructs involved in the interaction. As ProEM

consisted of three indicators (E1, E2 and E3) and Green HRM had three indicators (H1, H2 and H3), the total of nine uncentered product terms (E1H1, E1H2, E1H3, E2H1, E2H2, E2H3, E3H1, E3H2, and E3H3) were calculated. Each of these nine product terms was then individually regressed onto the set of indicators representing the indicators of the main-effect constructs, for instance:

$$E1H1 = b_0 + b_1E1 + b_2E2 + b_3E3 + b_4H1 + b_5H2 + b_6H3 + e_{E1H1}$$

The residual for the above regression (e_{E1H1}) was saved as a new indicator in the dataset (R_E1H1). This procedure, which would allow any of the main-effect information contained on any of the indicators of the constructs to be removed or orthogonalised (Little *et al.* 2006), was repeated for each of the nine uncentered product terms. As a result of this procedure, a total of nine new orthogonalised indicators emerged (R_E1H1, R_E1H2, R_E1H3, R_E2H1, R_E2H2, R_E2H3, R_E3H1, R_E3H2, and R_E3H3). All of these nine new orthogonalised indicators were then brought into the structural equation model to serve as indicators for the single latent interaction construct (ProEM \times Green HRM). For the interaction effect to be estimated in an unbiased manner, eighteen pairs of orthogonalised product indicators that shared a common indicator in their composition were allowed to correlate.⁵ For example, R_E1H1, because it contained unique variance associated with E1 and H1, would have correlated residuals with R_E1H2 R_E1H3 R_E2H1 R_E3H1. In this study, the product indicators were not specified to be correlated with the corresponding main-effect indicators, because the linear information related to these main-effect indicators had already been removed through the orthogonalising process.

⁵ 18 pairs of orthonalised product indicators included: R_E1H1 and R_E1H2; R_E1H1 and R_E1H3; R_E1H1 and R_E2H1; R_E1H1 and; R_E3H1; R_E1H2 and R_E1H3; R_E1H2 and R_E2H2; R_E1H2 and R_E3H2; R_E1H3 and R_E2H3; R_E1H3 and R_E3H3; R_E2H1 and R_E2H2; R_E2H1 and R_E2H3; R_E2H1 and R_E3H1; R_E2H2 and R_E2H3; R_E2H2 and R_E3H2; R_E2H3 and R_E3H3; R_E3H1 and R_E3H2; R_E3H1 and R_E3H3; R_E3H2 and R_E3H3.

As a point to note, given that the latent interaction construct (ProEM \times Green HRM) is orthogonal to the main-effect constructs, the estimates for the main-effects of ProEM and Green HRM would not be changed, regardless of whether or not the latent interaction construct was included in the model (see Little *et al.* 2006; Marsh *et al.* 2004). Therefore, our moderation analysis was thus able to focus solely on the significance of the estimated effect of the interaction construct onto the outcome variable.

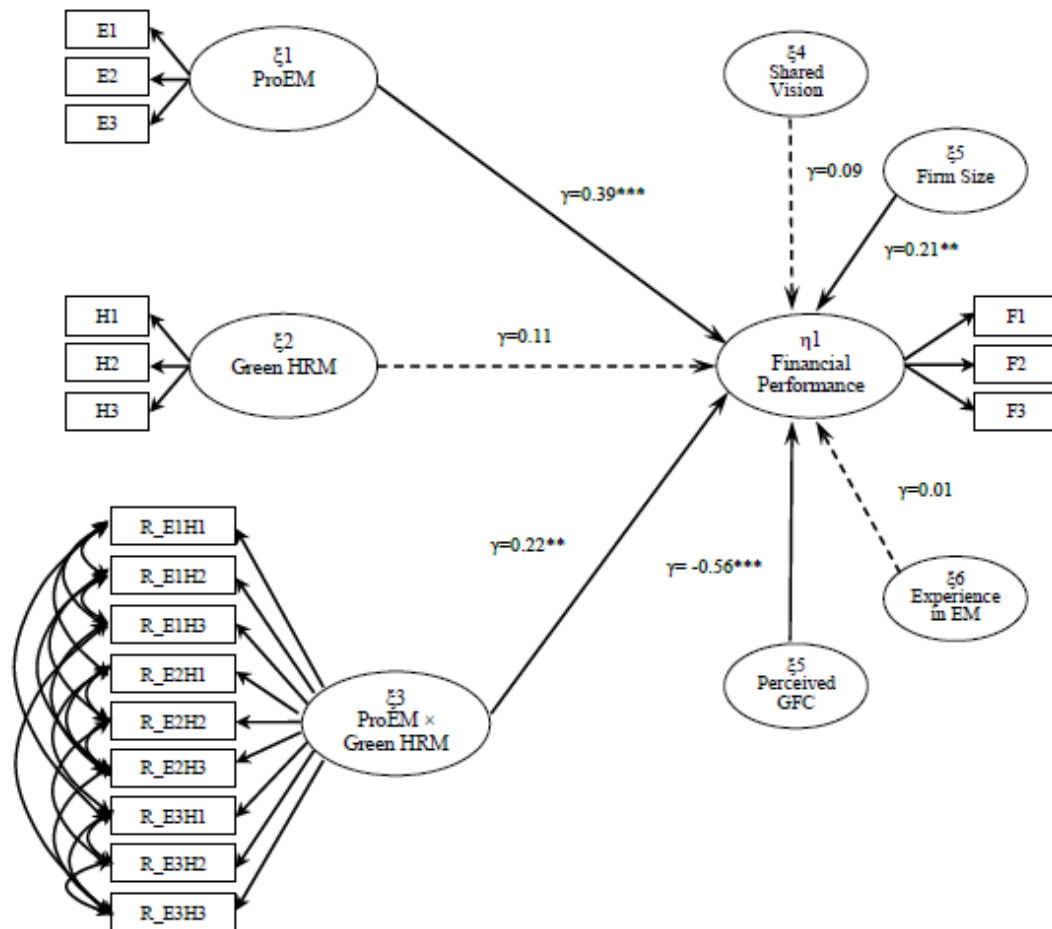
Figure 1 shows the results of the moderated structural equation modelling analysis using orthogonalised indicators. The structural model, with 8 latent variables and 22 factors, contained 86 parameters to be estimated (7 structural coefficients, 14 factor loadings⁶, 7 variances, 21 covariances, 18 error variances, 18 error covariances, and 1 equation predictor error variance⁷). The analysis showed that this model had a good fit to the data: $\chi^2 = 161.41$, $p = 0.61$; $df = 167$; RMSEA = 0.001; CFI = 0.99; IFI = 0.99; NNFI = 0.99; and RFI = 0.93 (see Hair *et al.*, 1998). As demonstrated in Table 4, all factors were significantly related to the latent variables ($p < 0.001$), and the factor loadings (λ) were all above the value of 0.50, suggesting that convergent validity was established. Convergent validity was further confirmed through assessment of the composite reliability (CR) and average variance extracted (AVE) of latent variables.⁸ The CR scores ranged from 0.77 to 0.92 and the AVE scores were all above 0.50, indicating no serious measurement concerns (see Hair *et al.* 1998).

⁶ With 8 other factor loadings fixed to 1.

⁷ See Schumacker and Lomax (2004, p.220) for the technical terms on model specification.

⁸ Since LISREL does not output the CR and AVE directly, their scores were computed based on the formulas provided by Anderson and Gerbing (1988): $CR = (\sum \text{factor loading})^2 / [(\sum \text{factor loading})^2 + (\sum \text{measurement error})]$; and $AVE = (\sum \text{factor loading}^2) / [(\sum \text{factor loading}^2) + (\sum \text{measurement error})]$.

Figure 1. Results of moderated structural equation modelling analysis using orthogonalised indicators



Notes: One factor loading of each of the eight latent variables was fixed to 1. Each control variable (shared vision, firm size, perceived GFC, and experience in EM) has one factor loaded. ** $p < 0.01$; *** $p < 0.001$

Based on the results shown in Figure 1, ProEM was significantly and positively associated with firm financial performance ($\gamma = 0.39, p < 0.001$), providing support for Hypothesis 1. The coefficient for the latent interaction construct (ProEM \times Green HRM) was positive and statistically significant ($\gamma = 0.22, p < 0.01$), which indicates that high levels of Green HRM increased the financial benefits of ProEM compared to low levels of Green HRM, thereby supporting Hypothesis 2.

Table 4. Factor loadings, composite reliability and average variance extracted – based on the results of moderated structural equation modelling analysis

<i>Latent variable and related indicators</i>	λ^*	<i>CR</i>	<i>AVE</i>
ProEM		0.92	0.79
E1	1.00 ^a		
E2	0.86		
E3	0.98		
Green HRM		0.83	0.62
H1	0.67		
H2	0.81		
H3	1.00 ^a		
Interaction: ProEM × Green HRM		0.77	0.58
R_E1H1	0.69		
R_E1H2	0.94		
R_E1H3	0.81		
R_E2H1	0.60		
R_E2H2	0.92		
R_E2H3	0.79		
R_E3H1	0.66		
R_E3H2	1.00 ^a		
R_E3H3	0.92		
Financial Performance		0.80	0.68
F1	0.93		
F2	1.00 ^a		
F3	0.75		

**All of the factor loadings were significant at $p < 0.001$.*

^aFactor loading (or variance) was fixed to 1.00 in order to eliminate the problem of scale indeterminacy.

Note: Four control variables (a shared vision capability, firm size, perceived GFC and experience in EM) were not included in this table, because they each had only one factor loading fixed to 1.00 and related error variance fixed to zero; in this case, the CR and AVE scores could not be computed.

With regard to the control variables, firm size was found to have a positive association with financial performance ($\gamma = 0.21, p < 0.01$). The GFC was found to be negatively associated with financial performance ($\gamma = -0.56, p < 0.001$). No significant effects on financial performance were observed, however, for a shared vision capability and the duration of a firm's experience with the management of ProEM.

Discussion

The aim of this research was to consider the nature of the relationships between Green HRM, proactive environmental management and financial performance in the small firm context. Our findings reveal that Green HRM is a positive and key moderating influence on the effective implementation and contribution of proactive environmental management to the financial performance of small firms comprising our sample.

Consistent with our first hypothesis, as expected we found that there is a positive association between proactive environmental management and financial performance in our sample. This supports extant research covering both large and small firms showing positive links between environmental management and firm performance (e.g. Aragon-Correa *et al.* 2008; Chavan 2005; Dixon-Fowler *et al.* 2013; Jenkins 2006). As Ambec and Lanoie (2008) suggest, based on the published evidence from a range of indicators including financial performance, it ‘pays to be green’.

In relation to our second hypothesis, our findings extend previous research by providing some of the first empirical evidence showing a positive tri-partite relationship between a proactive approach to environmental management, Green HRM and firm financial performance in small firms. Specifically, our findings show that the positive impact of proactive environmental management on financial performance is positively moderated by Green HRM, such that a high level of Green HRM increases the financial benefits of proactive environmental management compared to low levels of Green HRM.

This study presents empirical evidence that adoption of practices associated with Green HRM in the management of a small firm’s human resources (focussing on: developing and enhancing employees’ skills, knowledge and abilities; motivating employees by investing in them, encouraging commitment, and caring for employees; and providing opportunities for involving employees in decision-making), is a significant contributor to the enhancement of

the business and financial benefits a small firm can derive from the implementation of a proactive approach to environmental management. This finding supports suggestions in the literature that: (i) Green HRM can play a role ‘in improving not only the environmental performance, but also the financial performance of the organisation ... [and] ... employee well-being’ (Renwick *et al.* 2013: 11); and (ii) practices such as engaging employees, and providing values-oriented training and employee development opportunities, make a valuable contribution to not only building commitment to environmental values but also in developing the necessary higher level of technological skills that allows a firm to embrace proactive environmental management rather than remain reactive (e.g. Paille *et al.* 2014). In addition, proactively developing employees’ skills, knowledge and abilities, can help trigger the innovation and creativity necessary for the development of new and improved products and processes that provide eco-efficiency improvements and support the realisation of business (financial and environmental performance-oriented) goals that reflect the principles of environmental sustainability (Renwick *et al.* 2013).

Implications for practitioners

The findings reported here have practical management implications. For managers in small firms wishing to optimise the financial benefits of managing the environmental impacts of a firm’s activities, our findings clearly indicate the added value that flows from developing and applying Green HRM as an enabler of proactive environmental management. A shared understanding of the firm’s environmental management goals and broad employee involvement in the associated business processes, to the development of which all staff are able to contribute and committed, are also essential for optimising the benefits.

The positive association between proactive environmental management, Green HRM and financial performance reported in this study should also help allay concerns held by some

small firm owners and business commentators about the cost burden imposed on small firms by increasing governmental and social demands for environmental sustainability. The findings here suggest tangible long-term business and financial benefits, that derive from the acquisition and deployment of integrated proactive environmental management and Green HRM capabilities that pre-empt regulation, can outweigh the associated financial costs.

A consequent practical implication is that if small firms wish to pursue superior performance through proactive environmental management, then they will need also to give strategic priority in resource allocation to the development of Green HRM practices. Our findings also suggest that such strategic resource allocation is not incompatible with the pursuit of financial performance goals; in saying which, we do not ignore the resource and knowledge constraints many small firms face, nor understate the difficulties small firms can encounter in managing the paradoxical tensions entailed in the simultaneous pursuit of financial and environmental goals. Government agencies and environmental policymakers must recognise the constraints that such resource and knowledge limitations impose on the achievement of environmental performance targets regulated for small firms, and provide appropriate investment and training support programs that assist in the development of the capability for small firms to innovate and improve their environmental and financial performance.

Limitations and future research

As is the case with most research, our study has limitations. Firstly, the small sample size impacts on the reliability and stability of parameter estimates; for example Cohen (1992) suggests that the detection of moderating effects is often constrained by small sample size. However, given that both our hypotheses were supported, we have confidence in the robustness of our findings. Secondly, due to data limitations, we have not been able to

examine whether senior managers in firms with intensive proactive environmental management have higher levels of awareness of the contribution of Green HRM practices to financial performance than those in firms where environmental management is less intensively pursued. Thirdly, the difficulties presented by the particular nature of our study sample, for generalising results to other industry sectors and to other economies, should be acknowledged. Fourthly, the findings are limited by the self-reported nature of the data; in particular, due to the absence of publicly available objective data on financial performance of small firms, the correlation between subjective self-reported data and objective data could not be fully tested in this study. Finally, although we used a 6-month time lag in data collection to allow for temporal ordering of independent/moderating and dependent variables, this length of time was insufficient to confirm deterministic causation. Future research might include a quasi-experimental longitudinal study over a longer time period with a larger multi-industry sample; this would allow for broader generalisability in findings. Also, linking the model variables to multiple data sources that take into account objective measures would further extend our understanding of the links between Green HRM, proactive environmental management, and financial performance.

Conclusion

To conclude, the findings here highlight the significant moderating role of Green HRM in the implementation of a proactive approach to environmental management that successfully promotes financial performance of small firms. In particular, findings indicate the importance to small firm owner/managers, if they wish to gain the twin benefits of improved environmental and financial performance, of avoiding a directive people-management approach that neglects to recognise the fundamental role that employees' have in maximising the effectiveness of proactive environmental management and the accrual of the associated

financial benefits. The findings also suggest that lack of professional human resource management expertise need not preclude small firm owner/managers from exploiting key organisational characteristics, namely the relative informality of small firm management practices, and the familial ties that help to engender trust and reciprocity in manager-employee interactions. In conclusion, we suggest that over the long haul being 'green' returns more to the small firm when the principles that underpin a proactive approach to environmental management and those that underpin Green HRM are congruent.

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