Shut the Fridge Door! HRM Alignment, Job Redesign and Energy Performance

Running Head: HRM Alignment and Energy Performance

[1]Sian Christina   sianchristina@gmail.com

[1]Prof Andrew Dainty   A.R.J.Dainty@lboro.ac.uk

[2]Prof Kevin Daniels   Kevin.Daniels@uea.ac.uk

[2]Prof Olga Tregaskis   O.Tregaskis@uea.ac.uk

[1]Dr Patrick Waterson   P.Waterson@lboro.ac.uk

[1]Loughborough University, Loughborough, LE11 3TU

[2] University of East Anglia, Norwich, NR4 7TJ

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Abstract

Anchored within the strategic HRM and alignment literature, and drawing on efficiency and legitimacy perspectives of organisational behaviour, we investigated a Human Resource Management (HRM) intervention targeted at energy reduction goals in a large multinational retailer. The HRM intervention was focused on embedding the environmental and economic performance goals of the firm within the workplace through redesigning the job so that energy tasks were aligned with training and performance management systems, as well as organisational performance goals. Using a randomised control trial design, we tracked changes in energy behaviours and energy consumption in 769 retail stores (685 in the intervention condition, 84 in the control condition). The findings provide evidence that changing the alignment of HRM practices can influence both worker behaviour and organisational outcomes, including environmental outcomes. This work contributes to debates concerning the impact of HRM alignment to both the work and organisational performance context.

Keywords: Job design, strategic HRM, sustainable HRM, Organisational Performance.

Despite significant reductions in carbon emissions over the past 10 years in both the US and Europe, world energy consumption is currently expected to grow by 56 percent between 2010 and 2040 (European Environment Agency, 2013). The opportunity for commercial organisations to contribute to global energy efficiency is considerable (Howard-Grenville, Buckle, Hoskins & George, 2014). In addition to obvious economic benefits to reducing energy spend in times of volatile price and security issues, organisations are widely considered to have a social responsibility to environmental issues (Aguilera, Rupp, Williams, & Ganapathi, 2007). Understanding how firms can deliver economic and societal value has led calls for more contextually nuanced theory and scrutiny of the process of strategy implementation that takes account of a broader definition of performance (Beer, Boselie and Brewster, 2015).

The contribution of Human Resource Management (HRM) to the area of organisational sustainability has, to date, been deemed insufficient (Jackson & Seo, 2010; Dubois & Dubois, 2012). There are continuing theoretical and empirical questions concerning the strategic processes and implementation explaining whether and how HRM influences organisational outcomes (Guest & Conway, 2011). The field is further hampered by a lack of research using research designs with powers of strong causal inference (Boselie, Dietz, & Boon, 2005; Tregaskis, Daniels, Glover, Butler, & Meyer, 2013). The focus on organisational outcomes in terms of benefits to owners and shareholders has sharpened the research evidence on HRM and firm productivity and efficiencies (Becker, Huselid, Pickus, & Spratt, 1997), but it also places economic agency as the dominant explanation of organisational behaviour. More contextual approaches to HRM highlight the institutional systems firms operate within and the influence of values and norms of multiple stakeholders in legitimising, or not, organisational behaviour (Beer et al 2015; Paauwe and Boselie, 2003; Oliver, 1991; Scott, 1995). But legitimacy arguments have received less attention in the HRM implementation

literature. Contextual approaches in the HRM field have concentrated on theorisation and empirical studies comparing domestic HRM practices across national institutional contexts (Tregaskis and Brewster, 2006) or focusing on the configuration of HRM practices in multinational firms operating across a range of institutional environments (Edwards, Sanchez, Tregaskis, Levesque, McDonnell & Quintanilla, 2013). There is a gap in our understanding of how firms implement strategic goals that are both economic and environmental and in our theorisation of how pluralist performance outcomes might be accommodated. Thus, an examination of how an organisation implements it strategic goals for energy reduction through changes in its alignment of human resource management processes provides a useful context to address these gaps and further the evidence base on the HRM-performance relationship beyond economic organisational effectiveness (Beer, et al., 2015; Wright, Dunford, & Snell, 2001; Cohen, Taylor & Muller-Camen, 2012; Merriman & Sen, 2012).

The present study contributes to the literature in three ways. First, it is widely understood that it is the alignment of HRM practices that contribute to organisational outcomes (Guest, 1997; Boxall & Purcell, 2011). However, critics of the generalised 'best practice' approaches to HRM suggest there needs to be a greater nuancing of the theory of alignment with respect to both the link between HRM and the performance context (Edwards et al., 2013) and HRM and how work is organised (Boxall, 2012). Boxall and Macky (2009) point to the need for a more fine grained understanding of how internal alignment of HRM can impact organisational goals, while Beer et al (2015) identify the multidimensional nature of the performance context where societal and employee outcomes are considered alongside economic returns. In response to these theoretical weaknesses, we use strategic efficiency and legitimacy perspectives to explain how organisational goals on social and efficiency outcomes can be embedded in the workplace, through alignment of HRM processes (training and

performance management) and job redesign (how the work is organised), to change employee behaviour.   In so doing we unpack and provide evidence of, the causal process linking organisational outcomes to employee behaviours through HRM alignment; and consider how the dual logics of efficiency and social legitimacy are accommodated. Second, many studies examining the links between HRM and organisational outcomes are hampered by research designs with relatively weak powers of causal inference (see e.g., Boselie et al, 2005; Combs, Liu, Hall, & Ketchen, 2006; Paauwe, 2009 for reviews). By using a randomised control trial (RCT) design, we provide evidence that changes in HRM can lead to changes in worker behaviour and objectively measured indicators of organisational outcomes (metered energy consumption adjusted for climatic conditions). Third, we contribute to the debates around the contribution of HRM to sustainability issues in organisations (Taylor et al., 2012; Renwick Redman, & Maguire, 2013; Unsworth, Dmitrieva, & Adriasola, 2013) and specifically how firms can reflect wider stakeholder interests within organisational goals and implement these through integrated HRM systems (Beer et al 2015; Cohen et al., 2012; Merriman & Sen, 2012).

HRM policy, practice and outcomes

It is widely understood that human capabilities should influence organisational outcomes (Paauwe, 2009; Guest & Conway, 2011), and that HRM systems should focus on developing workers' abilities, workers' motivations and workers' opportunities to use their abilities (Appelbaum, Bailey, Berg, & Kalleberg, 2000; Purcell & Hutchinson, 2007). However, there is an important gap in the HRM literature concerning how HRM systems influence workers' behaviour (Paauwe, 2009). There are numerous factors that may determine whether management intentions and actions to effect change in HRM practices actually translate into changes in workers' behaviours and ultimately changes in organisational outcomes (Paauwe

et al., 2013). Vertical and horizontal integration of HRM practices are two important factors in the strategy process of converting management intention into changes in employee behaviour (Guest, 1997): Vertical integration refers to the alignment of HRM practices with the strategic performance goals of the firm; Horizontal integration refers to the internal alignment of HRM practices with each other and in a manner that supports the organisation's goals.

Vertical integration

As noted earlier, organisational goals are often very narrowly focused on efficiency. This means that the resulting HRM models are designed with efficiency goals as the primary focus. For example, the generalised single 'best practice' models of HRM prescribe a predetermined set of practices around skills, motivation and empowerment that are applicable across organisational contexts and performance environments (Wright and Boswell 2002; Boselie et al 2005). They are arguably constrained by their unitarist treatment of performance outcomes and the performance context because they underplay the role of other stakeholder interests such as policy groups, consumers, employees. This means the resulting HRM systems are only partially aligned with the performance context they operate in and as a result only partially effective in meeting organisational goals. For example, Unsworth et al., (2013) highlights that organisational sustainability goals create different types of demands on HRM. This has led many HRM researchers to call for a greater contextual examination of HRM systems to meet the specifics of the performance context of firms (Beer et al 2015; Boxall, 2012). This raises a theoretical question regarding how to capture a wider set of stakeholder interests within the HRM alignment process. We suggest that the concept of legitimacy has particular utility.

The concept of legitimacy, used within neo-institutional theory (Scott, 1995; Meyer, 1994), emphasises how the social systems in which businesses operate confer legitimacy on

the practices of firms; it is important that a firm's practices are perceived to be legitimate in terms of meeting rules, regulations, norms, expectations, values or standards set by key stakeholder groups (e.g. regulators, labour representatives, prosocial action groups, consumers etc.). Legitimacy validates firm behaviour as being 'proper' 'good practice' or even 'exemplary' and is seen as a critical means by which firms can create successful organisational performance. If organisational performance goals are defined more broadly in terms of societal and employee wellbeing outcomes, then stakeholder interests and standards for legitimate practice also become more varied and potentially conflictual. For example, international HRM research illustrates how multinational firms often have to accommodate divergent and conflictual local and global norms by creating a hybrid of practices that attend to legitimacy pressures from different national or supra-national sources or different cultural norms (Brewster et al., 2008; Edwards et al., 2013; Tregaskis and Brewster, 2006).

In the context this research, legitimacy perspectives are insightful because they potentially bridge environmental and economic organisational goals by considering their interdependency. This in turn requires vertical alignment of organisational goals with HRM in a way that attends to both the environmental and economic goals in tandem. For example, the interdependency is established through the relationship between sustainability policy levers and the employer brand. Global concerns on environmental issues drive transnational talks and co-operation, but they have also given rise to national level policy levers. In the UK, for example, the Climate Change Act 2008 set out emission target reductions of 34% by 2020 and 80% by 2050. Attending to the use of electric supplies for powering and heating commercial premises was identified as an important pathway to meeting these targets, and reflected the UK policy emphasis during fieldwork for this research. For organisations with a considerable carbon footprint, environmental goals are an important part of the strategic business response. This is because in addition to the rising costs associated with energy consumption, the

potential damage to a firm's brand for failure to establish CSR credentials comparable with other market leaders could impact negatively on their employer brand, which in turn could turn off a more socially aware consumer community and have a detrimental impact on their ability to attract the best human resource talent to the business. In management accounting terms this lack of alignment between external stakeholder expectations and firm behaviour is often referred to as a legitimacy gap (Deegan, 2007). Further, given many governments' concerns with environmental issues and the political nature of the domain of environmental policy, large firms and their strategic behaviours can come into the spotlight. The inter-dependency between financial and environmental goals on carbon reduction have, arguably, never been closer.

For the reasons given above, the legitimacy of carbon reduction as a critical organisational goal has gained greater momentum over the last decade. The early work of Beer and colleagues (1984) recognised the importance of societal wellbeing alongside economic and employee outcomes and thus the notion of firms' strategic alignment to wider stakeholder interests is not new. However, as Beer et al (2015) recognise, in practice firms and academic research has largely focused on defining firm performance in terms of organisational effectiveness (productivity and efficiency). Explicitly identifying organisational outcomes in terms of the stakeholder interests to which they attend would enable effective tailoring of the HRM system to create the relevant policy choices that support the necessary HRM outcomes. However, to assure a degree of parity between economic and social goals requires a conceptualisation and implementation of alignment that recognises mutuality between goals. Thus in the case of the present study, we suggest that the joint alignment of HRM with corporate responsibility targets of energy reduction and primary organisational performance targets of sales may be required in order to create a change in employee behaviour which subsequently translated into organisational outcomes.

Horizontal integration

The internal alignment of HRM practices (e.g. reward systems, training systems or work systems) is critical to the types of HRM outcomes that can be achieved with respect to employee commitment, behavioural changes, competence which in turn impact on the attainment of organisational goals (Beer et al 1984; Beer et al., 2015). There has been a long tradition of work examining internal alignment between employment practices such as performance management, training, recruitment, induction, delegation and staff turnover (Godard, 2004). By contrast, studies on work practices concerned with how work is organised and structured have received less attention within the HRM alignment literature. It has been argued that HRM could benefit from studies that consider how work and employment practices can be horizontally integrated (Boxall & Macky, 2009). For example, in the context of this current study alignment between work and employment practices would mean the alignment of job design with performance management and training. We would argue that employment practices concerned with performance management may provide motivation for workers, in terms of goals and targets. Employment practices concerned with training may provide the knowledge and abilities to perform tasks. However, work practices concerned with job design are perhaps the most proximal influence of the HRM system on workers' behaviour, because job design determines which workers perform which tasks, how those tasks are performed, and in what order the tasks are performed. The work practices provide employee voice into the attainment of organisational goals, whilst the employment practices provide management voice into the attainment of organisational goals. Thus through the design of jobs, workers have the opportunity to use their abilities which have been acquired through training and are motivated to target their abilities on specific performance goals through the performance management system. Therefore, we would argue that employment practices should be horizontally aligned with job design as this enables the duality of the

performance goals to be reflected by the employment practices and enables job design to capture the voice of employees alongside management in how goals are pursued.

The Present Study

There are relatively few studies that relate HRM systems to the experiences or behaviours of individual workers and to organisational outcomes (cf. Wood, van Veldhoven, Croon, & de Menezes, 2012, for an exception), and there are also relatively few studies that examine how HRM systems can be integrated horizontally or vertically (cf. Boxall et al., 2011 for an exception). Moreover, many studies that examine the relationships between HRM systems and organisational outcomes are characterised by designs with relatively weak powers of causal inference (e.g., cross-sectional studies, longitudinal studies of existing HRM practices, see e.g., Boselie et al, 2005; Wright & Haggerty, 2005; Combs et al., 2006; Paauwe, 2009). Cross-sectional studies, for example, can demonstrate relationships between HRM practices and organisational outcomes, but not whether changes in HRM practices preceded subsequent changes in organisational outcomes. Therefore, cross-sectional studies cannot demonstrate organisational outcomes are a consequence of HRM practices. Longitudinal studies can assess whether changes in HRM practices occurred before subsequent changes in organisational outcomes. However, such studies cannot demonstrate unequivocally changes in organisational outcomes were a consequence of changes in HRM practices, or whether changes in some unknown and unmeasured variable were a cause of changes both in HRM practices and organisational outcomes. Such methodological criticisms also apply to studies that attempt to demonstrate that HRM can influence organisational attainment of pro-environmental goals (Dubois & Dubois, 2012; Cohen et al., 2012).

Compared to other methods commonly used to assess relationships between HRM and organisational outcomes, studies of organisational interventions can provide a stronger basis

for inferring causal relationships (Grant & Wall, 2009). Intervention studies allow assessment of changes in outcome variables after the introduction of an intervention, knowledge that the intervention was predetermined and not the consequence of some unknown process, and knowledge of who received a particular intervention and when (Cook & Campbell, 1979). Causal inference can be enhanced if there is a control group that did not receive the intervention and especially if the allocation to control or intervention conditions is random (i.e., a randomised control trial design, RCT).

The present study was conducted in a large multinational retailer. The retailer introduced a HRM intervention which involved a job redesign to change its existing approach to managing energy behaviours. The intervention and its implementation was designed by the research team as part of a publicly funded research program concerned with investigating the viability of changing workers' behaviours in order to reduce energy consumption in commercial buildings. Energy reduction was seen as a key strategic goal of the firm, not only from an efficiency perspective, but because the firm wanted to establish itself as a market leader in energy management: there were also a number of competitor firms at the time making significant advances in their carbon reduction efforts which was seen as advancing the firm's environmental credentials with consumer and policy groups. The policy groups were particularly keen to support commercial firms given the potential size impact they would have on carbon reduction targets set out in the Climate Change Act 2008 (HM Government, 2010). At the same time the firm operated in a highly competitive domestic and global strategic environment, the result of which was that any changes arising from the HRM carbon reduction intervention could not be at the cost of sales. From the firms' perspective, if the intervention was successful it was because a win-win situation had been achieved. The study was carried out in the UK, as it offered a large number of stores to include in a single country study. By focusing on the UK, we were able to hold constant extraneous variance associated

with different national emissions strategies and ensure a relatively homogenous weather climate compared with much larger countries.

Energy efficiency technology systems manage most of the energy use in this organisation, with pre-set timers and other controls. A centralised Energy Team based in the Engineering/Maintenance function had responsibility for the technology systems and would provide ad hoc communications around seasonal events to store managers, for example, "summer is coming – de-frost the fridges". The main function of the Energy Team was installing technical equipment to support energy reduction. This automated energy management means that any behavioural change can only have a relatively small impact on energy consumption across the estate, compared to organisations where fewer technical interventions are in place. Even so, a small behavioural impact on energy consumption in a single store may be practically significant in terms of direct financial savings when multiplied across the estate, and make an important contribution to national carbon reduction targets.

The research distinguished between Voluntary and Required Employee Green Behaviours (EGBs) because it enabled us to differentiate the behavioural targets of the existing approach to energy reduction in the organisation and the behavioural targets of the intervention (Norton et al., 2015). Targeting voluntary EGBs reflects a strategy of encouraging employees to go beyond individual duties in the workplace to pursue personal environmental commitments at their own discretion (Norton et al., 2015). Voluntary EGBs are far more likely to be motivated autonomously through attitudinal factors such as pro-environmental commitment and be linked with personal choice, pro-social, or citizenship behaviours (Norton et al., 2015). Interventions aimed at voluntary EGBs may be consonant with commitment approaches to HRM systems, within which facilitating convergence of staff goals with business goals has more importance than using explicit performance management strategies to direct workers' behaviour (Hauff et al., 2014). However, because they are

discretionary behaviours that are not formally tailored to HRM employment practices or job design and because the organisational outcomes are unspecified there is a danger that voluntary EGB will get pushed out by more immediate formally recognised employee performance behaviours.

For example, commitment models depend on reciprocity in the exchange between organisations and workers. In the case of pro-environmental green behaviours, the reciprocity in terms of benefits to workers may be less tangible or explicit than high commitment practices that provide rewards in terms of interesting work, autonomy, job security, or enhanced pay. Reciprocity is also often underpinned by other horizontally aligned HRM practices in training or performance management (see Tregaskis et al., 2013). Therefore, an approach to energy reduction based on voluntary EGBs could fail if other parts of the existing HRM system were not compatible with commitment approaches to HRM. Moreover, competing priorities and a dominance of an efficiency logic embedded in the HRM system may mean that even those who express a pro-environmental attitude do not necessarily enact pro-environmental behaviours in practice (Kollmuss & Agyeman, 2002; Abrahamse et al., 2005; Shove, 2010). Therefore, targeting voluntary EGBs may be inappropriate if voluntary EGBs are not vertically aligned with explicit corporate goals on energy behaviours which are afforded parity in relevance by the firm due to their social legitimacy.

Required EGBs are performance-managed task behaviours that fulfil parts of a core business task or job (Norton et al., 2015). Required EGBs are managed as part of the employer/employee relationship through performance structures (Norton et al., 2015; Hauff et al., 2014). Interventions aimed at required EGBs may be consonant with organisational environments within which tasks can be prescribed, measured and managed, and where there is a strong task performance culture. The differentiation between voluntary and required EGBs indicates that there are potentially different approaches to promoting environmentally

sustainable outcomes through HRM systems. A voluntary approach places greater weight on organisational climate to reinforce discretionary behaviour. A required EGB approach places more emphasis on structural integration through formal processes and roles. In turn it creates explicit performance demands of employees and requires a set of knowledge and skills to be held by role holders or to be developed through training. Therefore an EGB approach is more consistent with a systems approach to HRM which can, intentionally, manage duality of performance outcomes and in so doing recognise the situational context the firm operates in. In this way an integrated HRM system has the potential to bring to the fore the voice of other key interest groups representing environment, employee and management goals.

Existing system

A few years prior to the present study, the organisation created an 'Energy Champions Network' to promote energy efficiency and influence worker behaviour. Energy Champions had generally volunteered due to personal environmental interest. Energy tasks (energy checks) were allocated to leader or manager-level staff within stores who volunteered for this responsibility in addition to their existing roles. This 'Energy Champion' system could be defined therefore as a Voluntary EGB, system, based on the definitions of 'going beyond' regular job duties and encouraging others to act (Norton et al., 2015). Communications and training around motivating Energy Champion task completion were based on promoting environmental awareness and individual commitments to carbon reduction.

An examination of the nature of the tasks indicated to researchers that a Required EGB system may be more appropriate as an organisational approach. Most of the energy tasks performed by Energy Champions were largely formal 'maintenance' behaviours (Thøgersen & Ölander, 2003): checking energy efficiency equipment, performing regular maintenance tasks, and fixing or reporting any faults. These were repetitive tasks that were strongly linked to the controlled day-to-day energy performance of the store. Moreover, the organisation used

an electronic task management system to deliver tasks to workers, and this system was also used to deliver energy tasks to be completed by the Energy Champions. Therefore, we felt it unlikely that completing energy tasks would be inspired by an autonomous pro-environmental intention at the individual's discretion (Norton et al., 2015). Moreover, Energy Champions were observed to prioritise other mandatory store tasks related to productivity and efficiency goals over discretionary energy tasks (Christina, Waterson, Dainty and Daniels, 2014).

The intervention

As outlined in the introduction, vertical integration of pro-environmental goals with HRM and operational practices can be problematic because they are rarely the organisation's primary performance goals and can therefore be potentially vulnerable to conflict or perceived conflict with other organisational goals (Unsworth et al., 2013). To reduce goal conflict, help establish a degree of mutuality between the energy goals and sales goals in practice and thus enable vertical integration with both organisational goals concerned with sales and those concerned with carbon reduction, we proposed that the person designated to perform energy tasks be changed from a store Energy Champion to Departmental Manager roles (e.g., bakery, deli, frozen produce). These Departmental Managers deal both with sales and energy consumption as part of their daily job tasks. These managers were required to meet both sales targets and energy targets. Thus our reasoning for moving the energy role to the departmental manager was based on the idea that the standardised nature and communication of the specific energy tasks were more closely aligned with the job-related duties of specific Departmental Managers than to the day-to-day and required tasks of Energy Champions. In this way energy goals, with the potential to yield organisational outcomes on carbon reduction and associated costs, were tied inter-dependently to organisational efficiency goals; and responsibilities for delivery tied to the role holders closest to the performance of efficiency and energy behaviours. In this way the employee had a stronger voice in not only the delivery of the

energy goals but in influencing how the work was organised to meet the demands of a pluralist performance context. We expected any perceived difficulty of completing energy tasks to be reduced because Departmental Managers would find energy tasks easier to perform in their own area than a general volunteer Energy Champion from a potentially unrelated area of the store. This is because Departmental Managers would be already working in that area of the store and have knowledge and skills relevant to solving problems in that area of the store.

Horizontal HRM alignment was thus tailored to reinforce the shift in organisational goals to the responsibility of department managers. For example, reassigning energy tasks to Departmental Managers provided a consistent means of selecting individuals to carry out the energy tasks and therefore helped to provide a sense of common practice across the intervention stores, in turn facilitating communication. We carried out work-load assessments through staff interviews and pilot tests to ensure the additional energy duties would not impact other role responsibilities and could be completed easily. Thus this allowed us to consider the impact of the change on employee's experiences of the changes and importantly use employee feedback to further inform HRM alignment. We designed training and performance measures for this new aspect of the Departmental Manager role. The training was simple, task-specific, and integrated into basic job training materials in the organisation. The performance measure was based on an aggregated rate of task completion, and incorporated into an existing series of performance metrics. The completion of energy tasks was also formalised through incorporation into Departmental Managers' job descriptions. In summary, the job redesign enabled energy tasks to be horizontally integrated into existing role, training, and performance management processes.

Outcomes

The intervention was targeted on two outcomes: increasing the completion of energy tasks and reduced energy consumption. The first outcome is the behavioural indicator of whether the HRM intervention is influential or not. Our first hypothesis is therefore based on our expectation that, by making it easier to complete energy tasks alongside sales demands through aligning horizontally and vertically the energy goals with the HRM response, the intervention will influence the completion of energy tasks:

Hypothesis 1 (H1): Post-intervention, there will be greater completion of energy tasks in stores that received the intervention compared to those that did not.

The second outcome is stores' energy consumption, which relates to the goal of the intervention to reduce energy consumption and associated costs, thus attending to the organisational objective for carbon reduction. This goal was assumed to be achievable through changes in assigned energy tasks. A greater completion of energy tasks should lead to a reduction in energy consumption. However, because of the organization's task management system, we expected any fall in energy consumption to accumulate over several months following the introduction of the intervention. This expectation is based on the learning curve effect, in which performance slowly increases over time (Adler & Clark, 1991; Argote, 2012). The effect is generally explained by either the cumulative effect of operator experience and learning on the efficiency of the task, or improved prevention and response to faults (Jarkas & Horner, 2011). Moreover, store staff were unable to repair faults themselves. Rather, repairs were made by specialists who were called out after a fault had been detected. Therefore, although the energy task would be completed through the report of a fault, the energy consumption benefit would lag behind until the faulty equipment was repaired or replaced. Moreover, as more faults were identified and rectified over time, we expected energy efficiency to accumulate in stores. Therefore, our second hypothesis was that there

will be a decrease in energy consumption following the intervention that is mediated by an increase in energy task completion.

Hypothesis 2 (H2): Post-intervention, there will be a reduction in energy consumption that is mediated by greater completion of energy tasks in stores that received the intervention compared to those that did not.

Methods

We implemented this intervention in randomly selected intervention stores. The remaining stores were unchanged and acted as controls, maintaining the existing 'Energy Champion' system. In the organisation, behavioural tasks were delivered to stores by means of an electronic task management system. This system was used as a primary communication tool for operational instruction in the organisation. The intervention design required the system to deliver the same energy tasks to the people who were assigned to deliver the energy efficiency tasks to the intervention (Departmental Managers) and control stores (Energy Champions).

A total of 810 selected stores from locations across the UK took part in the intervention. For reasons specific to this organisation's structure and communications system, cluster randomised selection took place at a regional level. Because the regions were chosen at random, the region is the unit of analysis for the test/control variable. Eighty six control stores were randomly selected to be excluded from the intervention (four regions), and 736 intervention stores were assigned to the intervention (forty two regions). Due to missing data caused by idiosyncrasies in organizational systems (e.g., incomplete metering of store energy consumption), only 769 stores were included in the analyses (685 in the intervention conditions and 84 in the control condition), but all regions were represented.

Because we used a randomized control design, there was minimal need for the use of control variables. Nevertheless, we did control for size of store and our analyses for energy consumption adjusted for changes in energy consumption prior to the intervention. The organisation has three categories of store size, and we coded store size as two dummy variables representing the largest and second largest categories with the smallest category as the reference variable.

Manipulation check

A manipulation check was used to determine whether or not the intervention had its intended effect on the participants. A pre-post survey with questions devised for this study was distributed eight weeks prior to and 10 months after the intervention to evaluate Store Managers' attitudes to energy management. Five items ("Managing energy is easy in stores?", "I think that the system in place to complete energy checks is the most efficient way to get them done" "The best thing that my store can do to improve energy performance is to complete the regular energy checks"; "The tools that I am given to help manage energy in my store are the best approach to driving energy savings"; "The feedback I get on my stores energy performance helps me to know how to improve") were rated on a 6-point Likert-type scale (1=*strongly disagree*, 6 = *strongly agree*). Some 548 questionnaires were returned with complete data pre- and post-intervention. Confirmatory factor analysis indicated good fit for one factor present at both pre- and post-intervention (Comparative Fit Index = 0.96, Root Mean Square Error of Approximation = 0.04, all free loading coefficients are in the hypothesised direction $p < .01$). Reliability of the scale was acceptable ($\alpha = .76$ pre-intervention, $\alpha = .74$ post-intervention).

The manipulation check was examined using a multilevel regression with organisations nested in regions. The intervention variable was regressed onto post-intervention attitudes to energy management, holding pre-intervention attitudes constant. The

analysis indicated that Store Managers perceived the intervention to be successful, with managers in regions that had received the intervention reporting better post-intervention attitudes than those in control stores ($B = .14$, $p < .06$). Although the difference is at marginal levels of significance, it should be remembered that the intervention targeted the behaviors of Departmental Managers not Store Managers, so any effect of the intervention on Store Managers' perceptions of the ease of energy management is transmitted through the behaviors and communications of their Departmental Managers.

Energy Task

The energy task was to complete energy checks of equipment in order to ensure correct functioning and to fix or report any faults. Energy check data were collected every month via an online system for one year post-intervention. Energy checks were completed by the Department Manager (intervention stores) or Energy Champion (control stores). Individuals tasked with energy checks were allowed a four week period to respond to the task and data were collected at the end of every month. Monthly energy task performance was coded as: 3 = good (80% or more of the checks completed), 2= adequate (51-79% of the checks completed), 1 = fail (50% or less of the checks completed). Because we expected the effects of the intervention to accumulate over time, we summed the first three months of energy task data to produce an overall energy task completion score, with high scores indicative of good energy task performance. We then used this task completion score to predict subsequent energy consumption.

Energy consumption

Energy consumption data were collected from both intervention and control stores over the course of one year pre-intervention and one year post-intervention via a metered network that was already in place within the organisation. Data were recorded as weekly kilowatt hours (kWh) consumed by each store. Because we were interested in changes that

occurred after changes in energy task completion and we used energy task completion in the first three months post intervention, we analysed energy consumption data from four through twelve months post intervention. This provided us with 29991 observations of weekly energy data across the 769 stores.

The energy consumption data were panel data and following recommendations for the analysis of panel data (Braun et al., 2013; Im et al., 2003), we applied Augmented Dickey-Fuller (ADF) tests to the dependent variables to test the assumption of stationarity in the data. Testing for stationarity allows researchers to examine whether changes in the dependent variables over time are due to other processes not associated with an intervention. A series should either be stationary or adjusted so it becomes stationary in order to then examine the effects of a specific intervention. For example in this case, a progressive fall in sales due to a shrinking economy might affect energy consumption week on week (i.e., the series of data is non-stationary). We assessed stationarity by examining changes between adjacent weeks. We adjusted for cross-sectional means to remove any dependence between units (Press, 2005). We tested stationarity in three ways: first, in the series for energy consumption in the entire sample prior to the intervention; second, for the series for the entire sample post intervention, and; third, for energy consumption in the control stores post-intervention. In all cases, there was evidence that the series was stationary (entire series prior to the intervention, -29.82, $p <$ .01; entire series prior to the intervention, -24.04, $p < .01$; control series only post-intervention, -9.50, $p < .01$).

Analytic strategy

Data were analysed using multilevel regression with weekly or monthly data, nested in stores, nested within regions. Given cluster randomisation at the regional level, the intervention was assessed at this level. To examine H1, we regressed the intervention variable onto energy task completion summed for the first three months post intervention, after

controlling for store size. To examine H2, we regressed energy task completion in the first

three months post intervention on energy consumption from four through twelve months post

intervention, after controlling for the intervention variable, store size and energy consumption

in the same week in the preceding year. This later control adjusts for both prior energy

consumption and accommodates seasonal fluctuations in energy consumption within stores.

Energy consumption for the same week in the previous year was centred at the grand mean

for the sample. Given cluster randomisation at the regional level, we entered both the regional

means for energy task completion and the values for each store, centred at the regional means.

H2 also implies mediation. To examine mediation, we first evaluated the significance

of the relationships from the intervention variable to regional means for energy task

completion (H1) and then from regional means for energy task completion to subsequent

energy consumption (H2). We also assessed the significance of the indirect effect of the

intervention with the prodclin-r program, which uses the distribution of the product of two

normally distributed random variables to compute confidence intervals for indirect effects and

therefore overcomes problems of assessing the significance of indirect effects through the

more traditional Sobel method (MacKinnon, Fritz, Williams, & Lockwood, 2007).

Results

Table 1 shows the means and standard deviations for energy task completion and energy

consumption for each store format. Table 1 shows that in the control group and across all

store formats, none of the stores achieved anything but the lowest levels of energy task

performance in three months following the intervention. This result does suggest that prior to

the intervention, energy task performance in the intervention group was also likely to be poor.

Table 2 shows the correlations between the variables. There is a significant correlation

between being in an intervention store and completed energy checks ($r = .44$, $p<.01$). This

result indicates support for H1. There is also a negative correlation between completed energy checks in the first three months post-intervention and energy consumption in the year following the intervention ($r = -.08$, $p<.05$), indicating some support for H2. There is a large correlation between store energy consumption pre- and post- intervention ($r = .97$, $p<.01$). This correlation indicates a substantial amount of variation in stores is attributable to the physical environment of the store and is not subject to behavioural change. Moreover, because of concerns over multicollinearity, we also ran the analyses without controlling for previous years' energy consumption.

INSERT TABLES 1, 2 AND 3 HERE

Table 3 shows the results of the multilevel regression analysis examining the Hypotheses. H1 is supported in that there is a relationship between being in a test store and completion of more energy checks in the first three months post intervention ($B = 3.13$, $p<.01$). The results also support H2, because there is a negative relationship between energy task completion at the regional level in the first three months post intervention and energy consumption from months four to twelve post intervention ($B = -1502.26$, $p<.01$). This result was replicated in analyses without controlling for energy consumption in the previous year ($B = -2502.17$, $p<.01$), indicating the result is not an artifact of multicollinearity. The indirect effect of the intervention through changes in energy task completion was also significant (-4702.07, $p<.01$), meaning that on average, the intervention was associated with regional reductions in weekly energy consumption of 4702.07 kWh from four months after the introduction of the intervention. This result supports H2. Table 3 also shows that there is no relationship between store level energy task completion and energy consumption after adjusting for the effects of average task completion with regions.

Table 3 also shows that, after adjusting for the effects of energy task completion, the intervention was associated with increased energy consumption four months after the

introduction of the intervention ($B = 6083.05$, $p<.01$). This result was replicated in analyses without controls for previous years' consumption ($B = 6365.80$, $p<.01$). However in analyses that omitted assessments of energy task completion, there was no association between the intervention and subsequent energy consumption (analyses with and without previous years' consumption controlled). Given the overall null effect of the intervention, the results indicate that failure to complete energy tasks is associated with increases in energy consumption in those regions that received the intervention, but in regions where the intervention led to improvements in task completion, subsequently there was a reduction in energy consumption. This finding would suggest that implementation of the intervention was critical, but that buy-in to the intervention was not uniform. Without further qualitative data we can be certain why such buy-in was variable, but it does underline the importance of implementation when new processes are being introduced.

Discussion

The results provide evidence of how a firm achieved the strategic implementation of pro-environmental goals embedding these alongside the organisation's primary performance goals (i.e. sales) through aligning with work design changes and supportive HRM processes in training and performance management. We hypothesised that the intervention would result in a change in employee behaviour i.e. greater completion of energy checks (H1): Results were supportive. We further hypothesised that energy consumption would fall post-intervention due to the change in employee behaviour i.e. energy consumption mediated by greater completion of energy task (H2): Results were again supportive. These findings are important because they underline the casual mechanism showing that a change in employee behaviour has a direct impact on the attainment of organisational goals. Our results have implications for how HRM influences (or does not) important organisational outcomes, our

confidence in conclusions concerning the impact of HRM on organisational outcomes, and the contribution of HRM to environmental sustainability.

Implications for theory and research

The results raise a number of implications. First, the lack of theoretical and empirical work that captures the contextual complexity of the environments firms operate within has arguably led to models that oversimplify how we define performance outcomes and in turn how we implement HRM, raising questions concerning whether the same HRM practices can be used in all circumstances (Edwards et al., 2013) or for all outcomes (Van De Voorde et al., 2012). The results of the present study attest to the importance of aligning HRM practices, and, in turn, to specific corporate goals in order to create a change in employee behaviour that impacts on specific organisational level goals (Clegg, 2000; Boxall et al., 2011). Conceptually therefore, the results of the present study indicate that existing "best practice" models of HRM need to delineate the boundary conditions within which they are more or less applicable. Introducing legitimacy logic into models of HRM may provide a means of identifying HRM configurations that more appropriately align with the specific performance context faced by firms (Beer et al 2015).

Second, the study further elaborates theoretically on the horizontal alignment mechanisms that reinforce strategic goals by teasing out the role of job redesign and two supporting employment practices (training and performance management). Studies of job design have tended to focus on individual level outcomes, with relatively few focused on organisational level outcomes. However, both the present study and Wood et al. (2012) indicate that job design may play a critical role in organisational outcomes. Wood et al. indicate that high quality job design may have an influence on organisational performance through enhancing the experience of work (e.g., improved job satisfaction). The behavioural focus of the intervention in the present study also indicates that organisational outcomes may

be influenced by HRM practices that directly influence behaviour rather than through indirectly influencing the quality of working life. Other processes linking job design to organisational outcomes are possible, for example through enhancing worker proactivity (Parker et al., 2006). However, even though the present study reinforces the importance of job design as a critical path between HRM and organisational outcomes, the present study does indicate the importance of horizontal alignment of job design with other HRM practices. Therefore, the present study indicates the importance for HRM and job design researchers to consider how job design in particular can be integrated with other HRM practices and the processes through which specific combinations of practices influence individual and collective performance.

Third, the results also indicate that the length of time between changes in HRM practices and outcomes varies between types of outcome: we found that behavioural outcomes changed before changes in organisational outcomes. Similarly, Tregaskis et al. (2013) found that safety outcomes in a HRM intervention in a heavy engineering manufacturer improved before productivity improved. Like energy behaviours in the present study, safety outcomes in an automated engineering plant have presumably a stronger behavioural component (e.g. wearing protective equipment, taking proper rest breaks) than productivity outcomes that are presumably strongly determined by proper functioning of technology. In the present study, we hypothesised that improvements in energy efficiency might accumulate through incremental improvements in technology (i.e., faulty equipment reported and repaired or replaced). But we also expected that there might be a lag between changes in the integration of HRM practices and observable organisational outcomes which the results confirmed. Researchers may need to generate understanding of both: a) how leading indicators of HRM changes (e.g., behaviours, the psychological experience of work) interact with and change the operation of

organisational and social systems; b) and the features of those systems that influence the time taken for different metrics of system performance to change.

Fourth, methodologically, these results indicate the importance of collecting data pre- and post-implementation of HRM interventions over a lengthy period. In the present study, the sustained improvement in energy improvement over several months mitigates against concerns that the results reflect simple motivational effects generated by experiencing a change in HRM practices which would presumably decay as employees acclimatised to the changes (i.e., Hawthorne effect). Moreover, we did find evidence that behavioural change was sustained in that the correlation between energy task completion in the first three months and the subsequent three months was $r = .62$ ($p < .01$).

Finally, in respect of debates concerning HRM and sustainability, the present study provides relatively strong evidence that HRM can contribute to both efficiency and societal performance goals (Wright et al., 2001; Cohen et al., 2012; Beer et al 2015). We have suggested that HRM alignment is implemented in a manner that creates mutual benefits for pluralist performance outcomes, helping to negate the dominance of one goal at the cost of another. This is achieved through structural integration by redesign jobs and directing HRM practices to reinforce the behaviours in line with organisational goals. Thus our approach moves away from relying on voluntary behaviours and prosocial attitudes alone as a means of creating an impact on organisational goals.

It may be argued that the impact in terms of energy changes observed were relatively small. The level of automation around energy consumption within the organisation did mean that any effects attributable to changes in behaviour would only be marginal. Although this context provided a stringent test of the effects of any HRM intervention, even marginal statistical effects multiplied across several hundred stores in the UK had commercially significant effects. Specially, managers in the company estimated the intervention saved

around £4,000,000 in the first year of operation. In addition, since completion of this work, the company has been recognised within its sector as one of the leading firms in carbon reduction. In this instance efficiency and societal outcomes might be considered as mutually reinforcing.

Although technological developments may have the greatest potential for increases in energy efficiency, the present study indicates the importance of workers' interactions with technology as a core complement to technical strategy because the intervention was focused on increasing the frequency with which workers checked equipment, maintained equipment or reported faults. The present study also indicates that there might be limitations in some or all commercial contexts to interventions focused on generalised awareness raising of environmental issues or enhancing environmental attitudes. The present study indicates the need for environmental targeted changes in HRM to have vertical and horizontal integration with other organisational systems and HRM practices. An important contribution of our research is to demonstrate that it is feasible for organisations to effect changes in their environmental impact through changes in HRM focused on behavioural change, and thus encourage organisational investment in the area.

Strengths and Limitations

A key strength of the present study is the randomised control trial design and its application to several hundred stores with objective measures of energy performance. The use of a randomised control trial design provides strong causal inference for field research and reduces the likelihood that extraneous factors could explain the pattern of results (Cook & Campbell, 1979). Moreover, the use of objective measures as opposed to manager reported data eliminates explanations based on reporting biases.

Nevertheless, there are limitations that should be acknowledged. First, we focused our analysis on energy behaviours and energy performance. We did not examine any other

consequences of the intervention (e.g., changes in job satisfaction), although we were careful to ensure that the intervention did not result in intensified working practices amongst Departmental Managers. Even so, comparing potential adverse consequences of vertical and horizontal alignment of HRM practices to suit prevailing organisational conditions with "best practice" approaches to HRM might prove revealing. Second, we were unable to collect data on the effects of store manager feedback to those engaging in energy behaviours. Thus the collection of additional data from store managers and employees would be beneficial in identifying additional reinforcing and motivating mechanisms. In the present study, for example, there is evidence that where the intervention did not result in improved energy behaviours, energy consumption actually increased. Moreover, we do not know why the intervention was implemented more successfully in some stores rather than in others. Linked to this, the collection of more qualitative data would provide much richer contextual analysis than is permitted through an RCT design, which by its nature is much more narrowly focused. Third, we collected data from just one organisation, limiting generalisability. Although we would argue that the present study provides a strong test of the principle of vertical and horizontal integration of HRM practices, the way in which HRM practices were aligned may be specific to this organisational context. Even so, the approach of integrating HRM practices targeted at non-complex and secondary goals with HRM practices targeted at primary production goals may be adaptable to many other contexts. Moreover, we would expect any such interventions targeted at energy efficiency to produce stronger effects in organisations less reliant on automated processes.

Future Research Directions

There are a number of future research directions that may be particularly beneficial to advancing our theoretical and practical understanding of how strategic HRM alignment can blend efficiency and social goals in organisations. First, theoretically, we suggest that using a

legitimacy framework in combination with more traditional strategic HRM efficiency frameworks offers the opportunity for the inter-dependencies between economic and social organisational performance goals to be considered. Specifically, the process of vertical alignment that allows diverse organisational goals to be jointly accommodated through how the HRM system is configured may act as a mechanism for managing the interdependencies in a mutually beneficially manner, or at least, minimizing dominance of one at the cost of another. In this way firms may be able to accommodate the incremental embedding of sustainability performance goals within how work is organised and supported through HRM employment practices (c.f. Wood et al., 2012). For example, through the pursuit of environmental and economic goals, a firm can build its reputation for delivering social value and providing employees with a worthwhile and enriching job opportunity alongside good quality employment returns (e.g. pay and conditions), thus in turn attracting the best talent with both the skills and attitudes consistent with the firm's social and economic goals. The HRM system's employment practices can act to reinforce employee behaviour and retain a high quality workforce, whilst high skilled employees have the abilities to continuously improve operational practices, working with management to redesign jobs and organisational learning from the bottom up.

Another further avenue for future work is employee wellbeing and efficiency which also brings into focus the dynamic between social and economic goals in organisations. Enhanced employee wellbeing can derive from a fit between firm and employee interests which have a motivating effect on employees increasing their satisfaction (individual wellbeing) which in turn can improve employee level performance outcomes such as quality, efficiency, innovation (efficiency objectives). Despite these mutually beneficial outcomes employee wellbeing receives less consideration in both theory and practice (Beer, Eisenstat, Foote, Fredbery and Norrgren, 2011). The work here would suggest that hybrid strategic

HRM alignment processes that create a degree of parity between financial and social outcomes help bridge the gap between theory and practice. Using a legitimacy and efficiency framework brings to the fore the range of stakeholders that may be influential and acknowledges the conflict and divergent interests inherent in organisational systems (Wright et al 2001). By using both efficiency and legitimacy logics to identify the inter-dependency between different organisational goals could help establish HRM processes that create mutual gains for stakeholders. One area that already yields promising results in this direction is the evidence on the benefits of designing stakeholder voice into implementation in order to realise reciprocal gains (Butler and Tregaskis 2015; Glover, Tregaskis and Butler, 2014).

Finally, we would suggest that intervention studies have an important contribution to make to understanding the implementation of HRM. RCT designs provide the best quality (i.e. reliable and robust) evidence of impact effects, but for complex interventions they often lack the additional qualitative data that helps explain the implementation process (Snape, Meads, Bagnall, Tregaskis and Mansfield, 2016). The intervention here was built on detailed interviews as a means of understanding the existing role of Energy Champions (Christina et al 2014) and these data where important in the subsequent design of the RCT. Additional qualitative during the implementation process would have helped explain further the results, specifically around the uneven implementation of the intervention. Building more contextual data collection into RCT designs and reporting of these data would further enhance sense making for practice and theory.

Conclusion

Within the context of investigating HRM's contribution to sustainability goals, the results of the present randomised control trial provide evidence that vertically integrating HRM practices with primary organisational goals and horizontally integrating HRM practices with each other can have effects on both worker behaviours and organisational outcomes. In so

doing, the present study suggests directions for conceptually integrating macro-, meso- and micro-aspects of HRM. The results indicate the importance of job design as a central component for influencing behavioural change and organisational outcomes, but that job design needs to be integrated with other HRM practices such as training and performance management. Therefore, suggesting directions for integrating micro- and meso-aspects of HRM, our exploration of alignment indicates that HRM models need to delineate how micro-HRM factors such as job design can be integrated with other specific HRM practices and the processes through which individual worker outcomes accumulate over time into organisational outcomes. The work also suggests that theoretical and empirical advances in strategic HRM and HRM implementation need to consider the complexity of the performance context faced by firms. The recognition of the multifaceted nature of organisational performance outcomes places an emphasis on ensuring the strategy implementation process captures and leverages alternative stakeholder interests in a mutually beneficial way, creating the motivational drivers for actors to engage with the full range of organisational goals. We suggest the use of legitimacy concepts from institutional theory provide a useful theoretical bridge for linking macro-level drivers of business activities with meso-level HRM systems.

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Table 1.   Means and standard deviations for energy task completion and energy consumption for each store type.

Largest store format	Control store		Intervention store	
	M	*SD*	*M*	*SD*
Average weekly energy consumption (kWh) in months 4-12 in year preceding intervention	69556	8922	78712	14951
Average weekly energy consumption (kWh) in months 4-12 in year post intervention	63558	11916	73144	15643
Energy checks completed months 1-3*	3.00	0.00	5.49	2.11
Second largest store format				
Average weekly energy consumption (kWh) in months 4-12 in year preceding intervention	41051	13573	41502	14501
Average weekly energy consumption (kWh) in months 4-12 in year post intervention	39393	13292	40008	14364
Energy checks completed months 1-3*	3.00	0.00	6.76	2.02
Smallest store format				
Average weekly energy consumption (kWh) in months 4-12 in year preceding intervention	19057	6645	16608	5600
Average weekly energy consumption (kWh) in months 4-12 in year post intervention	18850	5713	16811	5484
Energy checks completed months 1-3*	3.00	0.00	5.40	2.04

N = 769 stores

* Variable ranges from 3 (lowest task completion over three months) to 9 (highest task completion over three months)

Table 2.   Correlations between variables.

	1	2	3	4	5	6
1. Control versus test store	--					
2. Average weekly energy consumption (kWh) in months 4-12 in year preceding intervention	.06	--				
3. Average weekly energy consumption (kWh) in months 4-12 in year post intervention	.06	.97**	--			
4. Monthly energy check	.44**	-.09*	-.08**	--		
5. Largest store category	.05	.77**	.73**	-.14**	--	
6. Second largest store category	-.03	-.22**	-.19**	.25**	-.65**	--

N = 769. * *p* < .05, ** *p* < .01.

Table 3.   Multilevel regression analysis.

	Completed energy checks months 1-3 post intervention	Energy consumption months 4-12 post intervention
	B	B
Control versus test region	3.13**	6083.05**
Completed energy tasks – store level		-273.62
Completed energy tasks – regional level		-1502.26**
Weekly energy consumption same week previous year		0.36**
Largest store category	0.08	33446.80**
Second largest store category	1.22**	16045.43**
Variance components		
Between stores intercept	--	8961.52**
Between regions intercept	0.72**	1564.23**

$N = 769$ stores for energy checks, * $p < .05$, ** $p < .01$.