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HRM Practices and Knowledge Processes Outcomes: Empirical Evidence from a Quasi-Experiment on UK SMEs in the Tourism Hospitality and Leisure Sector

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Abstract
This paper presents empirical evidence of the relationship between human resources practices and the effectiveness of a firm to capitalise on investment in knowledge as measured by the returns to innovation and business development expenditure. The empirical design is based on exploiting a natural experiment provided by a policy intervention that offers human resources-related support to small and medium sized enterprises in the UK Tourism Hospitality and Leisure sector. Our findings suggest that businesses that receive support on the area of staff training and development, in HR planning and in staff recruitment and retention generate 100%, 86% and 134% more revenue per pound spend on innovation and business development compared to firms that do not receive such services. Thus, in contrast to existing empirical studies in the field, this evidence supports a strong causal link between human resources and knowledge processes and sheds some light on the "black box" that describes the strategic logic between human resource management and firm performance.

Keywords: Human resources, innovation and business development expenditure, policy evaluation
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1. Introduction

The resource-based view (RBV) of the firm and its knowledge-dynamic capabilities variants (Barney, 1991; Peteraf, 1993; Foss, 1997; Teece et al, 1997) has been instrumental to the development of the field of strategic human resource management (SHRM), as it led to a growing acceptance of internal resources as sources of competitive advantage and added credence to the SHRM's assertion that people are strategically important for firm success. Based on the RBV logic Human Resources are thought to encapsulate firm specific skills and capabilities and serve us a source of competitive advantage (Wright, McMahan and McWilliams, 1994).

Although both theory (Wright et al., 1994; Lado and Wilson, 1994) and evidence (Huselid, 1995; Koch and McGrath, 1996) have been produced that establish a relationship between human resources and firm performance, Becker and Huselid (2006) point out that "the most pressing theoretical challenge facing SHRM is a useful articulation of the "Black Box" that describes the strategic logic between firm's HR architecture and its subsequent performance[1].

A potential mediating construct between HR and performance is organisational knowledge and learning, as suggested by Lado and Wilson (1994) who argue that "human resource systems can contribute to sustained competitive advantage through facilitating the development of competencies that are firm specific, produce complex social relationships, are embedded in a firm's history and culture, and generate tacit organisational knowledge." [2]. Moreover, Pucik (1988) argues that competencies are fundamentally information-based invisible assets that can be accumulated by careful planning and executed practice of organisational learning. Therefore, as this latter process is embedded in people many of the necessary capabilities are closely linked to HRM strategies and practices.

Although, a number of theoretical papers (Kazanjian and Drazin, 1986; Pucik, 1988; Wright et al., 2001) suggest that strategic HRM and outcomes of knowledge-related activities are linked, empirical evidence (Callahan and Salipante, 1979; Kazanjian and Drazin, 1986; Mirvis, Sales and Hackett, 1991; Wang, Lee, Lin and Zhuo, 2007) seems to be unpersuasive and incomplete. In part this is because such evidence has been mainly based on case studies, which are firm-specific and produce results that cannot be generalised and ultimately are unable to say anything about the nature of the causal relationship between HRM practices and the outcomes of knowledge processes.

In this paper, we attempt to fill this gap by providing more systematic empirical evidence on the causal relationship between HRM practices, such as the development and training of managers and employees and the practices of recruitment and retention of workforce on knowledge outcomes such as the returns to product innovation and business development and commercialisation expenditure. In order to achieve that, we exploit the unique empirical design formed by a policy intervention organised by the Department of Trade and Industry (DTI) and the Best Practice Forum (BPF) in the UK with objective to provide also free HR-related advice and support to SMEs in the UK THL in order to boost competitiveness in the sector.

The key qualifications of the empirical design is that a) the HR-related business support is not allocated to all businesses selected into the BPF's business support programmes and b) the allocation of HR support is not determined by business choice and is also independent of business characteristics, as it is determined by funding availability in the region which in turn is

decided externally by the EU on the basis of regional economic performance indicators (DTI, 1999). The fact that there is no systematic difference ex ante between SMEs that receive HR support and those that do not, limits any concerns for confounding bias in the econometric estimates of the impact of HR support on the returns to product innovation and business development expenditure and gives to these estimates causal attributes.

Our results show that SMEs which receive support on the area of staff training and development (the "employees training and development" service) have 100% higher returns to product innovation and business development expenditure compared to businesses that do not receive such HR support service. Similarly, returns to innovation and development are around 86% and 134% higher for SMEs that receive support in the areas of HR planning (the "managing people" service) and in the area of staff recruitment and retention (the "quality people" service) respectively. This evidence suggests that more effective HR practices lead to more efficient knowledge creation and integration, as measured by the ability of the business to capitalise on investment in product innovation and development and support a strong link between HR practices and knowledge process outcomes.

The paper is structured as follows: in the next section we provide a discussion of the conceptual frameworks that provide a link between HRM practices and knowledge processes and some important related empirical evidence produced by case studies. In Section 3 we discuss in detail the institutional setting and programme selection and HR-support allocation mechanisms. In section 4 we present our method i.e. data collection and measures, whereas in sections 5 we present our statistical/econometric results. The final section concludes and discusses implications for HRM practice.

2. Conceptual and Empirical Background

The competence can-based view (Lado and Wilson, 1994)- argues that HRM systems contribute to superior organisational performance by facilitating the development of competencies. Based on that view, organisational competencies are knowledge-based, as (tacit) knowledge and skills are key attributes or isolation mechanisms that render competencies heterogeneous and immobile. Therefore, the competence-based view suggest a link between HRM systems and knowledge-based processes, as organisational knowledge is embedded, diffused and generated by HR managers and employees (Wright et al, 2001).

According to Westley (1990), HR managers are expected to contribute to the development of knowledge through their participation in strategic conversation, and to serve as a strategic node of communication of information between top management and "the rank and file" (Nonaka, 1988). Lado and Wilson also emphasize the importance of knowledge and information sharing by HR managers for strategic decision making within the firm. Moreover, HR practices engaging in motivation and retention of employees may be crucial for boosting or slowing down organisational learning, as commitment on the job and a sufficient long period of job tenure are prerequisites for effective learning (Bower and Hilgard, 1981).

The link between HRM practices and knowledge-based processes could also be justified by adopting a behavioural perspective (Schuler and Jackson, 1987, Schuler and MacMillan, 1984), according to which HRM practices can contribute to knowledge creation, sharing and diffusion by eliciting and reinforcing the necessary set of role behaviours. For example, activities engaging in the development and training of employees may facilitate the adaptation of

employees in new production techniques or new technologies and lead to the successful implementation of new products and services (Mirvis, Sales and Hackett, 1991).

Wright et al (2001) propose a conceptual framework that links HR practices to knowledge management such as knowledge creation, transfer and integration which in turn shape core competencies. In particular, they argue that HR practices may impact organisational knowledge via two channels: the one is by the direct effect that HR practices may have on employees' skills and behaviours and the other by their effect on social and cultural systems of the organisation (Conference board, 2000). The former effect is realised through training of employees to build job-related knowledge (Gephart, Marsick, Van Buren and Spiro, 1996) and providing incentives for individuals to apply their knowledge (Gerhart, Milkovich and Murray, 1992), whereas the latter occurs when HR practices help weave skills and behaviours within the broader fabric of organisational processes and systems.

Additionally, Pucik (1988) points out a link between HRM practices and knowledge management and learning within the organisation, under the specific context of strategic alliances that involve competitive collaborations. Under this context, the organisational capability to learn is the key to protect competitive advantage of the firm. An organisation has many tools to manage the process of learning (Hedberg, 1981) but in principle the learning ability of an organisation depends on its ability to accumulate invisible assets. As invisible assets are embodied in people, practices regarding human resources, such as HR planning and management, staff training and development, and appraisal and rewards systems, are critical for organisational learning.

Another conceptual framework that provides a link between knowledge processes and HRM practices is presented by Kajanjian and Drazin (1986) who argue that the successful implementation of manufacturing process innovations is a function also of the existence of a constellation of critical staffing roles. Based on this framework the decision to innovate involves new and existing knowledge and the main organisation design challenge is to incorporate the new knowledge created with existing knowledge in a viable and implementable manner. The key tool for organisational design in meeting this challenge is organisational structure, which also needs to be complemented by effective staffing to ensure that process innovation occurs.

On the empirical side of the relationship between HR processes and knowledge processes there is evidence produced by a number of case studies that provide some support to this relationship. In particular, Callahan and Salipante (1979) provide evidence that creative HR management was critical to one firm's successful adoption of new technology in its major product line. This is because creative staffing and dispensation from normal organisation rules were the main reasons why the firm managed to successfully utilise special boundary spanning units to develop a new product line while retaining its capabilities in established markets. Moreover, Kazanjian and Drazin (1986) present a case study of an aerospace firm which manufactures military transport aircraft and conclude that manufacturing innovation can be aided by HR practices such as team development and staffing that jointly with organisational structure lead to successful creation and implementation of manufacturing process innovations.

More evidence on the link between knowledge processes and HR practices is produced by another case study conducted by Mirvis, Sales and Hackett (1991) who examined the determinants of successful adoption of new technology and in particular computerisation. The study compared qualitative data collected by interviews with managers and employees from two firms, a metal fabrication factory and a professional publishing company. The main result highlighted was that the adoption of new (computer) technology was successful for the

publishing company in contrast to the metal fabrication firm, mainly because the publishing company considered carefully the social implications of technological change and redesigned HR systems and processes to allow employees the most autonomy, control and decision making possible on the job. Finally, more recent evidence linking HR and knowledge management is provided by Wang et al. (2007) who interviewed 154 healthcare workers in Taiwan and found that employees' personal qualities and behaviours, which are largely shaped by HR processes, were strongly associated with the staff's willingness to share knowledge.

The main characteristic of the evidence produced by the case studies discussed above is that they provide a link between HR practices and particular knowledge processes only for the organisations considered, and one cannot extrapolate from these results to suggest that this evidence support a relationship between HR practices and knowledge processes. Our subsequent analysis aims in filling this gap by providing more systematic quantitative evidence from a large sample of UK SMEs in the THL industry.

3. The Best Practice Forum Programmes and HR Related Business Support

Virtually all industrialized countries now utilize taxpayers' money to offer 'soft' business support to small and medium-sized enterprises (OECD, 2000). This support is in the form of advisory assistance, the dissemination of best practice, encouragement of partnerships, gateway services and so on, which make recognition of the particular kinds of market failures facing these firms. Expenditure on 'soft' business support is provided either directly by public agencies or through subsidized private-sector consultancies and is substantial and probably growing (Gavron et al., 1998).

In the UK 'soft' business support measures form a key part of the Government's program to raise industrial competitiveness. In particular, as a direct response to the government's competitiveness white paper the Department of Trade and Industry (DTI) has founded several industry forums with main role to promote government's competitiveness targets in each sector of the economy (DTI, 2004).

One of the most important sectors in which the UK government seeks to boost productivity and competitiveness is the Tourism, Hospitality and Leisure (THL) sector. The prominence of the THL sector in the government's competitiveness agenda is mainly due to the fact that the sector is most open to international competition and is characterized by high volatility, especially due to the high proportion of SMEs in the sector (Wood, 2002). Moreover, the world share of the sector is growing at the fastest rate among all sectors in the service industry (Lerner and Harber, 2000).

As the principal trade association for the hospitality industry, the British Hospitality Association (BHA) has created the Best Practice Forum (BPF), which was launched in 2001 to improve quality, productivity and business performance, particularly amongst small businesses which make up the vast majority of establishments in the industry (BPF 2004).Through funding from the Department of Trade and Industry and the European Union, the first five years of the BPF's work is budgeted at some 6 million pounds, as over 2000 businesses are expected to participate in the business support programmes offered by the forum (BPF 2005).

The rationale for the BPF business support programmes was a presumed market failure due to lack of information and financial constraints, with SMEs being unaware or unwilling to use outside consultancy advice. From 2001, the Forum offered support in a variety of areas as

marketing, product and service quality, business planning as well as human resources management-related support (BPF 2004).

In this paper we focus on the HRM related support provided by the BPF, as it is the one relevant for the purpose of our analysis which aims to provide evidence of the impact of HR practices on outcomes of knowledge processes.

Among the various support services offered by the BPF there are three that are specifically targeting HR functions of the business: the "employees training and development" service that aims in developing the knowledge, understanding and skills of the staff and increase productivity, the "managing people" service with aim to help owner/managers to develop skills and expertise related to HR management, and the "quality people" service that is tailored to the manager and is mainly related in promoting best practice in recruitment and retention of employees (BPF 2005).

Each of the above HR support service, which is provided free of charge to the selected businesses, is based on a range of support tools. In particular, the "employees training and development" service includes a number of modules/courses taught by certified business coaches/experts aiming to improve employees' business skills (the courses covers a variety of business skills such as numerical and communication skills as well as ways to deliver reliable customer service). As part of this service there is a key well-trained and experienced employee who serves as a work-based mentor with main responsibility to ensure staff understands the aims and objectives of the service and helps them to complete the training (BPF 2005).

Similarly the "managing people" service includes training provision for the entrepreneur/owner and includes a number of courses/workshops focusing on developing managers' HR management skills, as how to lead and motivate staff, decision making and problem solving (the courses give guidance on topics such as assertiveness, delegation, managing teams, and planning development). Training is supplemented by a support toolkit with includes a helpline for confidential free advice and guidance 24 hours a day, seven days a week, BPF's publications of case studies that provide new ideas from other successful and accredited business managers/owners as well as best practice visits where trainees visit businesses that achieved dramatic improvements in labour productivity and turnover since their manager(s) completed the training (BPF, 2004).

In the "quality people" service managers have one to one sessions with a business coach that reviews business performance in the area of recruitment and retention and offers practical advice and tips for improvements. Moreover, managers are also provided with a series of employment guides published by the BPF and CD-ROMs with a wealth of practical examples of good recruitment and retention practices, and case study examples and tips for success which managers can adapt and use in their businesses.

Unlike other business support services (Wren and Storey, 2002) the procedure for business selection in the BPF support services is very simple. At the first stage businesses are contacted randomly by phone using information from the Yellow Pages Business database and business telephone lists provided by the trade associations, and programme selection is determined on the basis of "first-accept"-"first-served". However, the number of businesses that can be offered support as well as the kind and amount of support are determined by funding availability in the region each selected business is based, as available funds are allocated by the DTI across regions based on regional criteria - regional growth, institutional setting, etc (DTI, 2004). In particular, regional funding availability determines with how many of the three support services and which ones a selected business is going to be provided. Moreover, the type,

quality and amount of support are the same for all businesses selected under a particular HR-support service.

The business support allocation mechanism across businesses leads to a very appealing research design, as the provision of any of the three HR support services is not determined by business decision or choice and it is also independent of (observed or unobserved) business characteristics. In this way this empirical setting forms a "natural" experiment or a "quasi"-experimental design (Angrist and Krueger, 1999; Rozenzweig and Wolpin, 2000), under which policy intervention randomly assigns the population of program participating firms into those who receive HR-support (treatment group) and those that don't receive support (control group) . Thus, because of random assignment the control group provides a valid counterfactual, i.e. for what would have happened in the treatment group in the absence of the treatment, as the only systematic difference between the two groups should be attributed to the policy intervention. This setting allows one to estimate the causal effect of the HR-support services on outcomes of interest using very simple techniques as simple comparison of means between control and treatment groups (Card and Krueger, 1995).

Provided that the HR-business support is engaged with the training, recruitment and retention of the workforce as well as the HR-management skills of the owner/manager of the business one can identify the causal effect of HR practices on knowledge process outcomes (here the returns to product innovation and business development and commercialisation expenditure) by simply evaluating the impact of HR-support services on these outcomes.

4. Method

a) The Sample

The data used in our econometric analysis, was collected through a large scale survey of SMEs in the UK THL sector between September and December 2005. The THL sector is a very heterogeneous sector consisting mainly of micro (very small), small and medium sized businesses. Selected businesses included hotels, attractions, other service accommodation and self-catering accommodation providers, restaurants, caravan/home sales, pubs/bars, businesses in catering service, health clubs and leisure centres, businesses organising conferences and events, recruitment, cottage letting and travel agencies.

The survey included multiple contacts of 1250 businesses that participated in business support programmes offered by the BPF. The CEOs of all trade associations of the UK THL sector were initially contacted and were kindly requested to send a signed notification letter that was sent to businesses, explaining the purpose and the usefulness of the research for the sector, and requesting their help and collaboration. At the second stage a survey questionnaire was addressed to the owner/entrepreneur/manager of the business. The questionnaire included questions on key financial and other performance indicators as sales revenue, total expenditure, advertising expenditures and expenditure on RandD (e.g. expenditure on the development and commercialisation of new products/services, expenditure on the development of new ways of doing business and expenditure on new technology). Information was also collected on main business characteristics such as number of employees, ownership type, location (coastal, urban, rural, city centre), and other characteristics The data collected were matched with data provided by the BPF including information on business support necessary to distinguish between

businesses which have received either of the three HR support services, i.e. the "employees training and development service", the "managing people" and "quality people" service.

The survey achieved a very high response rate (35%), compared to the average response rate for SMEs in this sector (Dillman, 1999), with 430 businesses returning the survey questionnaire. The information collected was of very good quality as the vast majority of managers provided detailed answers to all questions.

However, there are two issues regarding sample representativeness that should be investigated. The first is the possibility that firms responded in the survey differ systematically from non-respondents, which may lead to a non-representative sample of the population of businesses that participate in the BPF programmes and thus contaminate (non-response bias) our estimates of the average effect of HR-support services on the returns to innovation and development expenditure of participating firms.

There are two points that may limit this concern: the first is that the response rate is quite high to suggest significant difference between respondents and non-respondents and the second is that as presented in table 1 there is not significant difference in key descriptive statistics or industry break-down between the two groups of businesses[3].

The second issue is related to sample selection which may be the case if SMEs choose to participate in BPF support programmes on the basis of (observed or unobserved) characteristics that are also related to the returns to innovation and development expenditure, which will result in systematic difference in the returns to innovation between participating and non-participating businesses[4]. (For example it may well be that firms choose to participate out of concerns driven by low returns to innovation and development expenditure. In this case our econometric results will systematically underestimate the effect of HR-related support on the returns to innovation and business development). Our econometric analysis in the following section addresses this sample selection concern.

b) The Variables

The dependent variable in our analysis is the returns to innovation and development expenditure as measured by the ratio of sales revenue to expenditure related to product innovation and business development through the adoption of new technology and commercialisation of new products. The latter expenditure is calculated as the sum of expenditure on the development and commercialisation of new products/services, expenditure in adopting new ways of doing business and expenditure in adopting new technology. The latter three types of expenditure are highly loaded into one factor (labelled as (product) innovation and (business) development expenditure) and yield a cronbach alpha of 0.86 suggesting that their sum is an internally reliable measure of innovation and development.

The innovation and development expenditure is expected to be closely linked to knowledge processes as it may well be viewed as an indicator of the importance the business assigns to processes that generate new knowledge (developing new products/services) and to processes that require the acquisition and integration of existing (market relevant) knowledge, as knowledge regarding customers and competitors is essential for developing new ways of doing

business and commercialising new products (Leonard-Barton, 1992). Thus, the returns to (product) innovation and (business) development expenditure is indicator of the ability of the business to capitalise on investment in knowledge-based processes, which in this case is expressed by the revenue generated per pound spent on innovation and development.

As our main objective is to evaluate the effect of receiving HR support services on the returns to product innovation and business development expenditure the main independent (causing) variables are three binary (dummy) variables taking the value of one if the business has received the particular HR service and zero if the business hasn't.

5. Estimation Results

The fundamental issue regarding the validity of a quasi-experimental design is the validity of the counterfactual provided by the control group (Card and Krueger, 1995). In other words how close the outcomes of the control group resemble the outcomes of the treatment group in the absence of the treatment. In our case, as HR-support is allocated independently of firms characteristics and performance outcomes, we would expect that there is no systematic difference in characteristics between firms receiving and those that do not receive support which further implies that any systematic difference in the outcome of interest (the returns to innovation and development expenditure) will be due to the receipt of the HR support service.

Table 2 summarises some of the main characteristics and presents industry and location break down separately for businesses that receive and do not receive the "employees training and development" service, the "managing people" service and the "quality people service respectively.

As expected we observe no noticeable difference in the business characteristics presented in the table, which seems to support the fact that SMEs that have received HR support are not systematically different (at least based on observed characteristics) than those that do not receive support and to confirm that the allocation of businesses to support recipients and non-recipients was independent of business characteristics.

If the latter condition also holds also for unobserved business characteristics that may be correlated with the returns to business innovation expenditure, then a simple (quasi-experimental) estimate of the effect of each HR support service on the returns to innovation and development may be provided by the difference in the sample means of the returns to innovation between businesses that receive the particular HR service and those that do not.

Table 3 presents sample means of the returns to product innovation and business development expenditure for recipients and non-recipients of HR-support services. As it is indicated by the table SMEs that have received the "employees training and development" service generate on average £105 more revenue per pound spent on product innovation and business development expenditure than those that haven't been offered the service, whereas firms that receive the "managing" people and the "quality" people services generate around £107 and £188 more revenue per pound spend on RandD compared to those that haven't been offered the services respectively.

Although, the latter estimates seems to provide some support of a significant positive effect of BPF's HR-support services on the returns to innovation, they may not be consistent/unbiased as the observed differences in the returns to RandD expenditure between groups may be attributed to other factors. Moreover, these (quasi-experimental estimates) may

not be consistent estimates of the causal effect of HR processes on knowledge process outcomes, if the sample of participating firms is not representative of the population which may be the case if firms select themselves into BPF support on the basis of their characteristics (sample selection bias).

In order to address the latter two issues we use regression analysis that also controls for other business characteristics as well as Heckman's two-step method that corrects for sample selection (Heckit, Heckman, 1979) [5].

Table 4 presents estimation results from OLS and Heckit regression of the returns to innovation on dummies which indicate receipt of a particular HR support service.

Regression (1) produces exactly the same estimates of the effect of HR-support services as those produced by simple mean differences between recipients and non-recipients presented in table 2, which is something expected as it does not include any other controls. Heckit estimation results[6] are fairly similar to the OLS and the inverse Mills ratio is insignificant, thus suggesting that OLS estimates are not contaminated by sample selection bias and thus this bias is not expected to be an issue. This is why the remaining model (3) is estimated by OLS.

Regression (3) includes also other controls in an attempt to reduce any omitted variable bias in the case that there are unobserved factors that are both correlated with HR-support services and returns to innovation and development. Estimates from model (3) do not differ much from those in model (1) or (2), which may further suggest that not controlling for observed characteristics in the regression is not expected to cause any significant difference in the estimates of interest.

Estimated coefficients of the three HR-support dummies are strongly significant and positive and do not differ much in magnitude from the difference in sample means of the returns to innovation between control and treatment groups presented in table 3. In particular, results from model (3), suggest that SMEs that have received the "employees training and development" service generate on average £121 more revenue per pound spent on product innovation and business development compared to businesses that do not receive the service. Similarly, revenue per pound spent on innovation and development is higher by £106 and £185 respectively for SMEs that have received the "managing people" and the "quality people" service respectively, compared to businesses that haven't been supported by these services (Inferences are valid as an Information Matrix test (White, 1982; Hall, 1987) cannot reject that errors are homoscedastic and normally distributed).

Thus, in regions where funding availability is such that a firm has received all three services (there are 38 businesses in our sample that receive all three services), returns to innovation and commercialization expenditure are one average £412 higher than businesses that have received none of these services. Moreover, receipt of HR-support services can explain an important part of the differences in the effectiveness to capitalize on investment in innovation and business development, as nearly one fifth of variation in the returns to innovation and commercialization can be attributed to HR-support services (R-squared is around 0.2).

As discussed above, because the allocation of HR-support services across businesses is independent of business characteristics that may be also correlated with the returns to innovation and development, our estimates do not suffer from omitted variable bias or reverse causality and

thus have a causal interpretation. Therefore the evidence produced suggest that HR-support services offered by the BPF on staff training and development ("employees training and development" service), HR planning ("managing people" service) and staff recruitment and retention ("quality people" service) improve business effectiveness in capitalising on investment on investment in product development, commercialization and innovation.

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Moreover, as activities engaged with staff training and development, HR planning and recruitment and retention of employees are key HR practices because returns to product innovation and business development through the adoption of new technology and commercialization of new products is an indicator of the effectiveness of activities that generate and integrate knowledge in the organization, this evidence may be interpreted as supporting a causal link between HR practices and knowledge process outcomes.

Note however that these are reduced-form estimates i.e. they express what the effect on knowledge process outcomes is when there are improvements in HR practices and cannot actually suggest why this effect takes place. It may well be investment in product innovation and business development and commercialization yields higher returns when employees are better trained and more skilled because they have the "readiness" to adopt new knowledge and better understand and appreciate the potential of new products and thus can better promote them (Mirvis et al, 1991). Or it may be that better HR planning and management of people may lead to a more effective deployment of knowledge needed to achieve strategic intent (MacDuffie, 1995). Finally, one must also consider that poor performance in areas like recruitment and retention of employees may seriously slow down organizational learning and hurt any attempt to capitalize on investment in knowledge as learning at the individual level precedes and is critical for learning at the level of the organization (Argyris and Schon, 1978).

6. Conclusions and Implications for Managerial Practice

One of the most significant challenges for SHRM scholars has been the identification of the exact mechanism that explains HR's contribution to a firm's Sustainable Competitive Advantage (SCA) (Becker and Huselid, 2006). Provided that HRM contributes to SCA by facilitating the accumulation of competencies that are heavily knowledge based (Lado and Wilson, 1994), a

potential mediating construct between HRM practices and performance are knowledge processes.

Although there are several theoretical and empirical studies which may suggest a link between HRM processes and outcomes of knowledge-related activities, the relevant mechanisms are not yet fully understood. On the empirical side, the existing evidence has been produced mainly by case studies that provide case-specific support to the above link. In this paper we present an empirical study that offers more systematic quantitative evidence on the relationship between HRM and knowledge process outcomes.

In particular, we exploit the unique research design provided by a policy initiated by the DTI and the BPF of the UK THL sector with aim to assist SMEs in the sector to boost productivity and performance by also providing free HR-related support in the form of consultancy advice and training. The main qualification of this design is that HR support services are not allocated to SMEs on the basis of their choice or on the basis of business characteristics and performance indicators but is set exogenously by EU regulations and standards. This quasi-randomisation in the allocation of support forms a quasi-experimental setting that enables us not only to evaluate the causal effect of HR support services on outcomes of knowledge processes such as the returns to product innovation and business development expenditure, but also to identify the causal link between HR practices and knowledge process outcomes.

We find a strong positive relationship between HR support services and the returns to innovation and development expenditure. Our estimates suggest that firms receiving support in the area of staff training and development generate on average almost 100% more revenue per pound spent on product innovation and commercialization compared with SMEs that do not receive this service. Moreover, SMEs that receive support in the areas of HR planning and staff recruitment and retention generate 86% and 134% higher return to investment in innovation and development than firms that do not receive the services respectively.

By providing systematic and quantitative evidence that support a causal link between HR practices and knowledge processes, we feel that we also provide clear lessons to management that it pays to leverage and empower human resources through HR practices. In addition our evidence suggests that intermediate organizations with the support of government funding can be productively leveraged to address market failures, especially in the case of SMEs.

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Endnotes

1. HR practices can impact SCA and firm performance in a variety of ways, as for instance these practices might have resulted in the creation of high human capital quality pool that cannot be easily imitated because of time compression diseconomies, or alternatively they may promote and maintain socially complex relationships characterised by trust, knowledge sharing, and teamwork As Wright et al put it "As yet no study has demonstrated anything close to a full causal model through which HR practices are purported to impact firm performance".
2. For example, organisational competencies include managerial competencies such as enacting organisational environment, where the enactment process is idiosyncratic and involves the generation and interpretation of firm-specific symbolic knowledge and transformational competencies such as the fostering of organisational learning, a heavily knowledge-based process (Lado and Wilson, 1994).
3. The statistics on non-respondents were calculated using information from the BPF database. Unfortunately the database doesn't include information on characteristics of non-respondents other than those presented in the table.
4. For example it may well be that firms choose to participate out of concerns driven by low returns to innovation and development expenditure. In this case our econometric results will systematically underestimate the effect of HR-related support on the returns to innovation and business development.
5. According to this method at the first stage the analyst estimates a probit model where a binary variable that takes the value 1 if the firm participates in BPF programmes and 0 if it doesn't is regressed on a firm characteristics that may determine participation, for

example size, profitability, location, ownership type, etc. The estimated results of the first stage are used to construct a selection bias control (the inverse Mill's ratio). In the second stage the dependent variable of interest (here the returns to product innovation and business development expenditure) is regressed on the independent variables including the selection bias control (see Wooldridge, 2002). In the case that the estimated coefficient of the inverse Mill's ratio in the second-stage model is significant then this suggests that estimating the model using OLS in the selected-sample and thus omitting the sample selection control, leads to biased estimates.

6. Data on THL SMEs that are not involved in BPF programmes were extracted from the FAME (Financial Analysis Made Easy) database which is an economy-wide database that covers all registered firms in the UK.

Tables

Table 1: Comparison of main characteristics between responding and non-responding businesses that participate in BPF business support programmes

	Respondents	Non-Respondents
Number of employees	54	52
Turnover/sales revenue	2172	2088
Industry break-down (%)		
Hotels	40	42
Attractions	13.25	14.15
Other serviced accommodation	10.45	11.1
Restaurants	9	10
Caravan/Holiday parks	7	6.5
Catering	9.3	8
Bars/pubs	3.7	2.5
Other	6.5	5.85

Notes: sales revenue is measured in thousands of pounds sterling (£000).

Table 2: Descriptive statistics and industry and location break down of control and treatment groups

Variable	Employees Training and Development Service		Managing People Service		Quality People Service	
	Yes	No	Yes	No	Yes	No
Number of employees	53.89	54.1	47.61	57.7	63.2	51.43
Proportion that are part of larger organisation	17.22	17.8	17	18	18	17.55
Staff turnover	26.68	24.7	25.51	25.7	30.35	24.3
Average hourly wage	5.68	6	5.8	5.9	5.81	5.9
Number of managerial employees	6	5.11	4.86	5.9	7.12	5
Number of non-managerial employees	47.88	48.97	42.75	51.8	56.06	46.36
Ratio of employees with degrees qualification to those with no qualification	0.55	0.59	0.55	0.57	0.54	0.58
Industry(%)						
Hotels	39.6	41.52	40.88	40.6	47.87	38.7
Attractions	8.78	16.9	13.88	12.9	12.76	13.4
Other serviced accommodation	12.3	8.9	9.43	11	8.51	11
Restaurants	11.34	7.2	8.8	9.27	6.38	9.8
Caravans/home sales	7.73	6.39	10.7	4.8	7.44	6.8
Catering	9.8	8.9	6.9	10.7	11.7	8.63
Bars/pubs	4.63	3	5.66	2.58	4.25	3.87
other	5.67	7.2	3.77	8.11	1	8
Location(%)						
Coastal	21.6	25	28.3	20.66	33.4	23.21
Market town	9.27	8.4	8.8	8.3	12.76	7.73
Rural	37.62	38	39.62	32.6	37.23	38.1
Urban	31.44	25	22.64	31	24.46	28.86
Number of firms	194	236	159	271	94	336

Table 3: Comparison of average returns to innovation and development expenditure of control and treatment groups

	Employees Training and Development Service			Managing People Service			Quality People Service		
	Yes	No	Difference	Yes	No	Difference	Yes	No	Difference
Average returns to innovation	205	100	105	229.16	122.42	106.74	327.6	139.56	188.04
Number of firms	194	236		159	271		94	336	159

Table 4: OLS and Heckit estimates of the effect of HR-support services on the returns to product innovation and business development expenditure

Dependent variable: ratio of sales revenue to RandD expenditure	(1) OLS	(2) Heckit	(3) OLS
Independent variables			
Employees training and development	105**	103.8**	121.82**
Managing people	106.74**	108.5**	106.4**
Quality people	188.04**	183.5**	185.11**
Log no of employees			-31.11
Part of larger organisation			-48.4
Industry dummies	No	No	Yes
Ownership dummies	No	No	Yes
Location dummies	No	No	Yes
Inverse Mills ratio		38.44	
R-squared	0.19		0.22
F	31.43**		5.56**
No of observations	414	2314	414
Censored Observations		414	
Uncensored observations		1900	

Notes: Hotels were the reference industry. In the first stage of Heckit the binary participation dummy is regressed on the log of the number of employees (size), profitability, industry, location ownership type dummies and a dummy of whether the business is a part of a larger organization. For all Heckit models calculations of p-values were based on Heckman corrected standard errors, *p-value<0.05, **p-value<0.01 levels

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