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Revisiting system theories in Strategic Human Resource Management – A set-theoretic analysis of high performing firms in the UK

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March 2012

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A set-theoretic analysis of high performing firms in the UK

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Abstract

Prior research has produced ambiguous support for theories on the nature and construction of Human Resource Management (HRM) systems. This ambiguity may be a function of the inherent limitations of the methodologies used in previous studies. We resume efforts by using a configurational methodology to analyze high performing HRM systems of 374 UK based firms. We reveal the multi-dimensional nature of successful and unsuccessful HRM systems. By providing a typology for comparing the interdependencies among vital and peripheral functions, we are able to describe and explain competitive advantages that rest in the orchestrating themes and integrative mechanisms of HRM systems.

Keywords: Strategic HRM, Organizational configurations, fsQCA

JEL Classification: O15, L22

INTRODUCTION

The literature on Strategic Human Resource Management (SHRM) maintains a diversity of opposing theoretical perspectives ranging from universalistic models such as the popular 'best practice' approach, to more complex, multi-dimensional models that advocate a 'best fit' perspective on SHRM (Arthur, 1992; Delery & Doty, 1996). The question of how one ought to think about SHRM is essential for theoreticians, researchers engaged in Human Resource Management (HRM) and practitioners alike. Answers promise insights into the nature, structure and internal dynamics of SHRM, provide fruitful guidance as to where future research should be directed and offer crucial support for managers to decide which Human Resource (HR) function or which constellation thereof require implementation to make best use of an organization's workforce. Previous research has attempted to substantiate these questions. Yet the results have been rather inconclusive, providing evidence supporting each and every theoretical perspective. Some argue that this is due to researchers being discouraged by the theoretical and methodological complexities involved in studying organizational systems (Lawrence, Suddaby, & Leca, 2010), others suspect that most studies fail to comprehensively account for theoretical considerations put forward by previous contributions (Colbert, 2004; Meyer, Tsui, & Hinings, 1993). Most scholars, however, are predominantly concerned with the lack of, or inappropriate use of analytical techniques employed to explore the potential complexities of systems of SHRM (Delery & Doty, 1996; Fiss, 2007).

In this article we resume efforts by trying to provide new answers to these old questions. We thereby follow calls for returning the focus of research on issues of organizational designs in general (Lawrence et al., 2010) and more specifically the notions of internal and external fit within SHRM (Lengnick-Hall, Lengnick-Hall, Andrade, & Drake, 2009). Our approach differs from previous studies in two ways. First, by comprehensively reviewing previous literature on HRM and organizational systems we summarize the most central theoretical arguments concerning the design of SHRM, namely the 'best practice' versus the 'best fit' hypotheses. We then expand this theoretical scope by formulating two fundamental null-

hypotheses of SHRM and - more importantly - supplement the range by developing three configurational hypotheses on the design of SHRM. Furthermore, we not only consider traditional HRM functions such as selection or payments practices but also include those that during the last years have gained prominence in theories on HRM, such as flexible workplaces and teamwork practices. Also, to account for exogenous influences on HRM systems we incorporate three contingency variables. This set of determining factors and theoretical arguments enables us to comprehensively compare and assess the validity of hypotheses on the design of SHRM.

Second, and most essentially, we employ a new analytical technique, fuzzy set Qualitative Comparative Analysis (fsQCA). Because fsQCA considers entire systems of interrelated elements, so called configurations, instead of focusing on singular statistical effects of individual variables, it is more appropriate for exploring the complexities of organizational systems. By systematically comparing configurations, fsQCA identifies factors - in relation to all other conditions - as either unimportant, contributing or essential for explaining an outcome of interest. It thereby goes way beyond the capabilities of statistical methods in testing two- or three- way interactions. In the context of HRM systems, this is crucial because one may examine synergies that rest within such systems only by identifying central combinations of functional HR areas and contingencies. In addition, fsQCA does not constrain associations between variables to linear and additive relationships as implicit in most variance-based methods. Instead it conceptualizes variables as fuzzy sets, i.e. degrees of membership within certain predefined sets, fsQCA more appropriately models the complexity assumed to underlie organizational systems. Finally, fsQCA is capable of revealing multiple systems of HRM that are equally efficient in benefiting from a firm's workforce. Handling equifinality, i.e. the notion that there are multiple equally valid paths to an outcome of interest, has posed substantial theoretical as well as methodological challenges in previous research. In sum, fsQCA provides a promising new analytical technique for advancing our understanding of SHRM systems.

We conduct our analysis on a complete cross-sectional sample of the HRM systems of 374 private, independent firms in the UK gathered through the Work Employment Relations Survey (WERS) 2004. Our results identify three configurations of SHRM systems that clearly permit achieving high labor productivity. In addition, we find four low performing configurations of SHRM systems. These findings allow us to explain various integrative mechanisms of interrelated elements that constitute competitive advantages, as well as systematic interdependencies posing 'deadly combinations', groups of HR functions that lead to low performance (Boxall & Purcell, 2000). We thereby contribute to the literature on SHRM by exploring in depth the nature of the construction of different configurations of SHRM systems. Our results not only identify various synergetic effects within and among configurations but, in addition, permit us to distinguish vital HR functions that are necessary to achieve high labor productivity from peripheral functions that contribute to this end but are not essential. This allows us to address issues of competitive advantages thought to rest in the orchestrating themes and integrative mechanisms that ensure complementarities (Black & Boal, 1994). Furthermore, we indicate strategic choices associated with the use of labor in firms by explaining why some firms manage labor more effectively than others. In addition, on the basis of our results we provide practitioners with a taxonomy of SHRM systems for achieving high labor productivity and indicate deadly combinations of functional HR areas that results in low labor productivity.

The paper proceeds as follows. After this introduction, we review previous literature and summarize the main theoretical hypotheses on the design of SHRM. We then introduce, in section three, the empirical study describing the composition of indices used to measure the variables of our model and guiding through the set-theoretic analysis. In section four, we present our results. The last section is dedicated to discussing the implications of our research.

THEORETICAL BACKGROUND AND HYPOTHESES

Research on Strategic Human Resource Management (SHRM) examines how Human Resource Management (HRM), i.e. the management of issues associated with employment relations in firms, is critical to organizational effectiveness (Lengnick-Hall & Lengnick-Hall, 1988; Lengnick-Hall et al., 2009). Central to SHRM is the examination of the role of functional HR areas in contributing to the performance of firms. This sub-functional perspective of HRM examines organizational practices for recruiting new employees, and for maintaining and developing, utilizing, and compensating employees (Braton & Gold, 2003; Fombrun, Tichy, & Devanna, 1981). Although the range of functions considered desirable for an organization varies significantly (see for instance Becker and Gerhart 1996; Dyer and Reeves 1995, Boxall & Purcell 2000), most studies revolve around the following four HR areas: selection, training, appraisal, and pay.

First, recruitment and selection permits the identification of the most adequate candidates available in the labor market, thereby improving the quality of employees. Various studies have shown that efforts focusing on recruiting and selecting individuals are positively related to the performance of organizations (Becker & Huselid, 1998; Schmidt & Hunter, 2004). Second, it is argued that through training and development the functional expertise and generic skills of employees are enhanced, adding to the overall capabilities of existing HR. Substantial evidence has been generated for the positive influence of training and development on firm performance. Furthermore, appraisals have been studied extensively in terms of their accuracy and effectiveness. These systems can be either behavior- or result-oriented and are employed to improve recruitment processes and to better align workforce performance with incentive-based payment systems (DeNisi & Gonzalez, 2004). Arguably the most extensively studied functions of HRM are payment systems. Remuneration ought to align the interests of employees with those of stakeholders by rewarding employees for meeting specific goals. A large diversity of designs are available differing in the type of measures employed and the level on which individual performance is linked to payments. Measures of employee performance may be based on quantitative or qualitative assessments

and might be measured for individual employees or collectively using an overall measure of corporate performance such as stock price, turnover or sales. Linking reward systems to performance has been argued to be one of the most effective management practices in modern firms (Lawler, Mohrman, & Ledford, 1995) and there is substantial evidence in support of the role of payment systems in influencing organizational performance (Bloom & Milkovich, 1998; Latham, 2004).

Although most research has focused on these four functional HR areas (Boxall & Purcell, 2000), other issues pertaining to the organization of work or to employee voice have often been neglected. This has occurred despite the fact that teamwork, flexible workplaces and labor representation are increasingly moving into the center of attention. Focused research on teamwork, for instance, has shown that team-based production systems positively affect performance. In addition, with the significant advancements in IT, flexible workplace arrangements have become prominent means to allow employees to balance private and professional life. They provide more flexibility and autonomy for employees to adjust their working schedules (Catalyst, 1989; Rodgers, 1992). From a managerial perspective, they permit the use of a more diverse workforce and have been shown to increase job satisfaction, and to lower employee turnover and absenteeism. Finally, employee representation for instance in the form of union-memberships or internal representation mechanisms, have been shown to be important determinants of firm performance (Delaney & Huselid, 1996; Freeman & Medoff, 1984-1985) as they serve as a communication platform to provide management with information on current concerns among the workforce (Cascio, 1998; Hyman, 1997).

Null-hypotheses in Strategic Human Resource Management
The most basic argument in SHRM maintains that efforts in designing, implementing and adjusting practices within each of these functional HR areas will positively influence the performance of an organization.[1] Irrespective of the discussion regarding which HR functions have a stronger effect on performance or whether synergies and complementarities add to such positive effects, the literature is

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[1]   We slightly depart from the general terminology prevalent in literature on SHRM in distinguishing the term HR practice from functional HR areas. We consider areas of HRM (e.g. remuneration) to be composed of various practices (e.g. payments by merit or payments by results). Most SHRM literature uses the term 'HR practice' when in fact referring to certain functional areas of HRM.

largely positive when it comes to the capacity of HRM to enhance the performance of employees and organizations (Delaney & Huselid, 1996). The null-hypothesis of SHRM therefore reads as follows:

Hypothesis 0a: The **presence** of recruitment and selection, training and development, teamwork, flexible workplaces, representation, appraisal **or** payments positively influences the performance of an organization.

This in return implies that without the proper implementation, i.e. in the absence, of such HR functions an organization will not achieve high performance. Consequentially,

Hypothesis 0b: The **absence** of recruitment and selection, training and development, teamwork, flexible workplaces, representation, appraisal **or** payments negatively influences the performance of an organization.

On the basis of these most essential premises of SHRM, scholars continue debating whether the influence of SHRM on firm performance requires the implementation of a single 'best practice' or the proper alignment of multiple functional HR areas in the form of a 'best fit'.

Revisiting 'best practice' versus the 'best fit'
Scholars advocating the 'best practice' approach argue that irrespective of context, there is one single best functional HR area that allows firms to achieve high performance (Boxall & Purcell, 2000; Huselid, 1995; Osterman, 1994; Pfeffer, 1994).[2] Scholars in this field argue that "... some HR practices are always better than others..." (Delery & Doty, 1996: 803). As it remains debatable which HR function precisely is the most desirable, the 'best practice' hypothesis therefore claims in general that

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[2]   It is here when referring to 'best practices' the confusion between HR practices and a functional area of HRM is most problematic. Most empirical research in fact conceptualizes such 'best practices' as bundles of practices within a given area of HRM (see for instance MacDuffie, 1995).

Hypothesis 1:   SHRM positively contributes to the performance of an organization through the implementation of **either** recruitment and selection, training and development, teamwork, flexible workplaces, representation, appraisal **or** payments.

Note that in contrast to hypothesis 0a, we use the *exclusive or* ('either...or') to express the exclusivity of the 'best practice' hypothesis indicating that one or the other functional HR area but not neither nor multiple are important determinants of performance. There is some evidence in support of the 'best practice' perspective. Ostermann (1994) observes that most private sector companies in the US adopt flexible work organizations, a result often interpreted as supporting the 'best practice' hypothesis (see for instance Boxall & Purcell, 2000). Wood (1995) argues that high commitment HRM is universally applicable; a statement reiterated for high performance HRM by Huselid (1995). Delery and Doty (1996) test the universalistic hypothesis in contrast to more complex theoretical perspectives. They use data on the HRM of 216 firms in the banking industry and examine their associations with two financial performance indicators, Return on Assets (ROA) and Return on Equity (ROE). Employing hierarchical regression and deviation analysis, their results predominantly support the 'best practice' perspective. Yet, most scholars criticize the universalistic perspective on SHRM. While some argue that supporting evidence commonly requires qualifications with regards to the dependence of SHRM on socio-cultural influences (Boxall & Purcell, 2000; Osterman, 1994) others raise concerns with the 'diffusion problem', i.e. if there really is one best practice guaranteeing superior performance why aren't there more firms adopting it?

The 'best practice' perspective is therefore commonly contrasted with the 'best fit' approach in research on SHRM (Boxall & Purcell, 2000; Delery & Doty, 1996). This normative approach argues that there is not a single, universally effective HR area. Instead, firms have to properly align multiple functional HR areas in order for SHRM to unleash its full potential. In other words, functional HR areas will only have a positive influence on the performance of organizations if and only if implemented in the form of "… properly configured HR systems" (Becker and Gerhart 1996: 797). One of the most important arguments in favor of a 'best fit' perspective stems from the observation that functional HR areas exhibit synergetic

interdependencies. For instance, more efforts dedicated to selecting employees might reduce, or act as a substitute for, training and development needs. Other interdependencies may exist in the form of complementarities, such as in the case of payment practices which only unleash their full potential in combination with matching appraisal techniques (Lengnick-Hall et al., 2009; MacDuffie, 1995). The effectiveness of any given functional HR area is thus assumed to depend - positively or negatively - on all other HR functions in place (Delery, 1998). The alignment of functional HR areas into a congruent system of mutually supporting practices has also been referred to as the 'internal fit'. In short, it argues that

Hypothesis 2a: SHRM positively contributes to the performance of an organization through achieving a 'best fit' among multiple (two or more) functional HR areas such as recruitment and selection, training and development, teamwork, flexible workplaces, representation, appraisal or payments.

Huselid (1995), using a cross-sectional sample of publicly listed US firms, finds that internally aligned functional HR areas should lead to positive outcomes for all types of firms. Yet Delany and Huselid (1996), failing to find any performance enhancing effect of complementarities among HRM practices, cautiously reject the notion of an internal fit. They argue that this might be due to the crude measures employed. Most scholars in fact reject the internal 'best fit' hypothesis (Delery, 1998; Kepes & Delery, 2006) mainly for its lack of empirical support (Lengnick-Hall et al., 2009). Others claim that a perspective purely focusing on the internal alignment of functional HR areas neglects the influence of factors exogenous to the organization.

Dating back to the late 1960s, scholars in organizational sociology have argued that previous research had largely failed to consider the influences of contingent factors on organizational systems (Child, 1972; Meyer et al., 1993; Pennings, 1975). Aside from considerations on the internal alignment of functional HR areas, it has been pointed out that SHRM systems should additionally be in coherence with external influences to achieve high performance (Baird & Meshoulam, 1988; Cascio, 1998; Delery, 1998). Three contingencies of an 'external fit' are considered in the literature on SHRM (Boxall & Purcell, 2000). First,

'strategic fit' most explicitly formulated by Schuler and Jackson (1987: 217) argues that "... HR practices should work together to stimulate and reinforce particular needed employee behaviors" where behavioral implications are linked to the various 'generic strategies' defined by Porter (1985). Most studies in SHRM have followed this Porterian understanding of 'strategic fit' and focus on the alignment of bundles of HR functions with the strategic orientation of the firm (Arthur, 1992; Lengnick-Hall & Lengnick-Hall, 1988; Milgrom & Roberts, 1995; Schuler & Jackson, 1987; Youndt, Snell, Dean, & Lepak, 1996). A second type of exogenous alignment relates to 'organizational fit', arguing that firms at different development stages, or of different sizes, require specifically adapted HRM (Jackson & Schuler, 1995; Milliman, von Glinow, & Nathan, 1991). Finally, scholars have considered uncertainties arising from a firm's business environment as an important contingency variable (Meyer & Scott, 1983; Miller & Friesen, 1983). In particular, it is argued that organizations require flexibility when adapting to a rapidly changing environment whereas less frequently changing environments permit reliance on more stable structures (Lengnick-Hall & Lengnick-Hall, 1988; Lengnick-Hall et al., 2009; Richard, Murthi, & Ismail, 2007; Simon, Hitt, & Ireland, 2007; Wright & Snell, 1998).

A more comprehensive 'best fit' hypothesis not only considers the internal alignment of various functional HR areas but also an external fit with contingency variables such as the strategic orientation of the firm, its organizational size and the business environment in which it operates. In short it argues that,

Hypotheses 2b: SHRM contributes positively to the performance of an organization through achieving a 'best fit' among multiple (two or more) functional HR areas such as recruitment and selection, training and development, teamwork, flexible workplaces, representation, appraisal or payments (internal), with contingencies such as strategic orientation, organizational size and business environment (external).

In other words, well-aligned SHRM systems combine a horizontal alignment of functional HR areas with a vertical alignment of contingencies (Delery, 1998) where horizontal fit refers to a system of internally

aligned functional HR areas and vertical fit prescribes the alignment of a coherent bundle of HR areas with factors specific to the organizational context.

There have been various attempts in the past to substantiate this more extensive 'best fit' hypothesis. Most studies, however, limit the focus of the analysis to the notion of 'strategic fit' of HRM practices. The common methodological approach to studying contingencies has been to measure the statistical effect of two- and three-way interactions on performance. Whereas Delery and Doty (1996) only find limited support for the contingency perspective in SHRM, Youndt et al. (1996) provide evidence in support of it. Other studies (Ichniowski, Shaw, & Prennushi, 1997; MacDuffie, 1995; Takeuchi, Wakabayashi, & Chen, 2003) provide similarly inconclusive results ranging from no support to moderate support for the prevalence of complex interdependencies among functional HR areas and contingencies (Chang & Huang, 2005; Delery & Doty, 1996). In sum, previous research has presented empirical evidence both in favor of as well as against the 'best fit' hypothesis.

Configurations in Strategic Human Resource Management
The notions of fit or alignment among different elements into a coherent system has also been noted by configurational researchers in the areas of SHRM (Delery & Doty, 1996; Takeuchi et al., 2003) and business strategy in general (Dess, Newport, & Rasheed, 1993; Doty, Glick, & Huber, 1993; Fiss, 2007; Ostroff & Schmitt, 1993). Configurational theory differs from contingency theory in that it provides further specifications with regards to the internal structure of such multi-dimensional systems.

A configuration is a *Gestalt* of crucial, interdependent elements (Meyer et al., 1993). A superior configuration combines all elements in such a way that their interdependencies are perfectly aligned towards achieving a certain objective. Superior configurations are thus those that most closely resemble certain ideal types "... each of which represents a unique combination of [...] attributes that are believed to determine the relevant outcome(s)." (Doty & Glick, 1994: 232). In essence, configurational theory thus assumes that there are sets of firms (Short, Payne, & Ketchen, 2008), i.e. more than one configuration of interrelated elements, each equally effective in determining a certain outcome. This phenomena is known

as equifinality (Doty et al., 1993; Fiss, 2007; Meyer et al., 1993; Ragin, 2008) and in the context of SHRM the equifinality hypothesis claims that

Hypothesis 3a: There are multiple systems of SHRM consisting of functional HR areas such as recruitment and selection, training and development, teamwork, flexible workplaces, representation, appraisal and payments, and contingencies such as strategic orientation, organizational size and business environment that are equally effective in achieving high performance.

Furthermore, configurational theory argues that elements of such multi-dimensional systems may be inversely or even entirely unrelated (Meyer et al., 1993) thereby acknowledging diversity in the directional relationships. This phenomena is referred to as causal asymmetry and in short claims "... that causes leading to the presence of an outcome of interest [such as high performance] may be quite different from those leading to the absence of the outcome." (Fiss, 2011: 16). For instance, if one were to find that a combination of training and development, appraisals and payments permits firms to achieve high performance, causal asymmetry would argue that low performance, i.e. the absence of the outcome, is not necessarily explained by the absence of training and development, appraisals and payments. The asymmetry hypothesis in SHRM therefore suggests that

Hypothesis 3b: Systems of SHRM that achieve high performance are not symmetrically related to but differ substantially from those that lead to low performance.

A final theoretical concern of configurational theory relates to the nature of the construction of configurations. Configurations are similar in terms of important characteristics (Short et al., 2008) such that each configurational type will consist of central elements essential for the configuration to function towards a specific objective. On this basis, Fiss (2011) introduced the notions of core conditions, i.e. those vital to the configuration, and peripheral conditions, those that are less important and may under circumstances even be expendable. For example, one may find that in the hypothetical configuration

described above training and development, appraisals and payments are essential for achieving high performance. On the other hand recruitment and selection contributes to performance but is not necessary. As a consequence, without one of the three core conditions, such as appraisals, high performance is not achievable, but the implementation of recruitment and selections is optional. Configurational theory thus argues with regards to the nature of SHRM systems that

Hypothesis 3c: SHRM systems (for achieving high or low performance) are distinguishable in that they exhibit different core and peripheral conditions.

The distinction between core and peripheral conditions allows for the examination of a series of synergetic effects existent among configurations. Identifying multiple conditions as constitutive for a certain configuration may substantiate claims for 'positive bundling' of functional HR areas that inter-depend for the achievement of high performance (MacDuffie, 1995). Moreover, whereas core conditions within a certain configuration are essential, there may be various substituting peripheral conditions. Consequently, one may specify harmful combinations of functional HR areas which in combination prevent firms from achieving high performance or identify duplication of practices that come at a cost without adding to higher performance (Boxall & Purcell, 2000).

The configurational perspective in SHRM has not been made that explicit in previous contributions and consequently has so far not been thoroughly scrutinized. Delery and Doty (1996) use deviation analysis to measure the statistical distance of 216 banks from *ex ante* defined ideal type employment systems. Their results provide limited support for configurational arguments. However, the authors note that their interpretations are highly speculative as the results are subject to the number of ideal types defined preliminary to the analysis and remark that their use of statistical techniques might misspecify assumptions of nonlinearity among configurational elements (Delery & Doty, 1996; Meyer et al., 1993). A more recent study by Takeuchi et al. (2003) examines the relationship between the HRM of 286 Japanese affiliates in mainland China and Taiwan with two financial performance indicators. Using regression and covariance-structure analysis they identify both direct as well as indirect effects of HRM practices on

performance and interpret the finding of such a pattern as supporting the configurational perspective. Yet, while they show that the effect of different functional HR areas contribute in a variety of ways to perfomance, the authors do not test for equifinality or the internal structure of SHRM configurations. In sum, despite explicit attempts to substantiate individual and systematically compare multiple theoretical perspectives on SHRM, research so far has only provided inconclusive evidence.

Limits to exploring the nature of SHRM systems
While some have argued that researchers in the past have been discouraged by the challenges involved in studying the nature and construction of complex organizational systems (Greenwood & Miller, 2010), such as SHRM systems, most scholars have raised concerns with methodological aspects pertaining to the design of empirical studies and the use of analytical techniques in research on SHRM (Boxall & Purcell, 2000; Fiss, 2007). Wood (1999) and Wall (2005) for instance argue that the widespread practice of selecting financial performance indicators as independent variables represent overly distant measures to adequately mirror the effectiveness of SHRM systems. Delery (1998) raises another issue when questioning the use of scales as reflective measures of functional HR areas. He speculates that the use of reflective measures for HR practices (Huselid, 1995; MacDuffie, 1995) is erroneous as items to measure HRM systems are quite different from those "... typically used in industrial/organizational psychology to measure such attitudes as job satisfaction or organizational commitment" (Delery, 1998: 300). Instead, he proposed to treat combinations of HRM practices as indices, i.e. formative measures, which allow for substitutions among items and thereby better reflect the nature of HR functions (see also DeVellis, 1991).

Moreover, scholars have argued that the choice of analytical methods employed to examine HRM systems have largely neglected the theoretical complexities entailed in studies of organizational design (Colbert, 2004; Fiss, 2007; Meyer et al., 1993). For instance, the use of hierarchical regression models is at best applicable to test universalistic, i.e. the 'best practice', hypothesis. The use of interaction terms may approximate contingency arguments. However, including more than two-or three- way interactions poses severe challenges. Furthermore, variance-based methods in general hold other variables constant, thereby

treating explanations as exclusively competing. They also maintain assumptions of linearity and additivity that do not correspond to more complex theoretical assumptions (Meyer et al., 1993). For configurational hypotheses, cluster analysis has been applied to identify commonalities among firms. Cluster analysis, however, has been shown to be vulnerable to the judgment of researchers as it requires the specification *ex ante* of how many clusters there are (Fiss, 2007). Arthur (1992) for instance identifies six clusters and subsequently combines practices subjectively to derive two ultimate clusters of HRM systems, resembling cost reduction and commitment maximizing systems. Another problem associated with cluster analysis is that all firms in fact are treated as equal, i.e. each firm corresponds perfectly to the ex-ante defined ideal type.

These limitations have in return significantly hindered further theoretical advancements in the field of SHRM. With the subsequent analysis, we follow suggestions voiced in previous contributions to ameliorate some of these shortcomings and contribute to the literature of SHRM systems.

A SET-THEORETIC ANALYSIS OF SHRM SYSTEMS

To test our hypotheses, we use data from the Workplace Employment Relations Survey (WERS) conducted in the UK in 2004. The data is gathered by the British Economic Research Council via personally administered questionnaires. It provides a representative account of the state of employment relations in 2295 UK workplaces and contains information about respondents and the organization as well as a variety of workplace related issues ranging from recruitment, training, consultation, representation, and fair treatment at work, to payments systems, pay determinations, and performance establishment. In addition, a parallel, independent survey assesses the financial performance of each participating organization.

The WERS survey represents a suitable dataset for our purposes. It contains information on a large number of organizations and specifically examines different areas of HR. The availability of independent

financial performance data adds to the attractiveness of the dataset. Moreover, it is publicly available and thus allows for our analysis to be replicated.

Sampling

As we are interested in the association of SHRM on firm performance, we included only those organizations (or workplaces as is the term from the questionnaire) that have discretionary power to influence, alter and adjust the various functional areas of their HRM system and to formulate their own strategic orientation. We excluded all public and state companies[3] as they are subject to much stronger external regulations concerning workplace design and employment practices and usually do not have the freedom to formulate their own strategic intent. 738 organizations were excluded as a result of these concerns. Furthermore, we eliminated all workplaces in which managers at a separate establishment in the UK spend a major part of their time in personnel and employment relation matters. These are mainly branch offices of larger corporations that do not manage employment related matters and thus do not dispose of discretionary power to design and implement HR practices. Finally, we decided to eliminate those cases for which no information on the efficiency of their HRM system was available, another 509 cases. This systematic elimination resulted in a final sample of 374 private[4] and independent workplaces for which information on the outcome variable had been disclosed. We therefore essentially use information on the business unit-level of entities with sufficient sovereign decision making power. We also avoid diluting our results with repetitive instantiations of HRM systems originating from one and the same headquarters, as would be the case of workplaces belonging to larger organization.

To understand the implications of our systematic elimination we conducted independent t-tests comparing means between the group of eliminated firms and the group of remaining firms. On average, firms included in the analysis were somewhat younger in age (M = 36.8; SE = 45.7 versus M = 44.3; SE = 66.5),

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[3]   Those are organizations with formal status as: trust/ charity, body established by royal charter, cooperative societies, government owned Ltd., public service agencies, other non-trading public corporation, quasi autonomous national government organizations and local or central governments.

[4]   Firms are considered private when they fall into one of the following categories: public limited company, private limited company, company limited by guarantee, partnership, incl. limited liability partnerships and self-proprietorship.

a significant difference (t(724) = 2.64, p < .05) with a small sized effect (r -= .09). Similarly, firms included in the analysis were smaller (M = 1,271; SE = 8585 versus M = 4575; SE = 18252). Again, the difference was significant (t(859) = 3.72, p < .05) yet had a small effect (r = .12). Finally, the differences in the levels of turnover between the two groups were negligible (M = £71,81; SE = 275,49 versus M = £160,39; SE = 2,109,896). In sum, these differences are neither surprising nor problematic as we believe that age and size of sprawling public firms is conceptually difficult to determine and may be overstated - partly the reasons why they were excluded in the first place. Moreover, the small size of the effects of these figures mitigates concerns that the results are driven by sampling strategy.

Our sample of 374 organizations accounts for 16.3% of the original dataset. Firms are on average 36 years old, 50% had been established after 1982. Nearly half (49.2%) had fewer than 50 employees (small), 29.4% were medium sized (50-249 employees), 18.7% employed between 250 and 2500 people (large) and 2.67% were considered ultra-large. Only 11% of all organizations were listed on a stock exchange. Nearly half (44%) of the firms had individuals or families owning at least 50% of the company and 12% of all firms in the sample owned subsidiaries. Table 1 provides descriptive statistics of the workplaces included in our analysis categorized according to size.

Insert Table 1 about here

Most respondents primarily functioned as HR (26.2%) or Personnel manager (13.9%), other respondents were General Managers (22.2%), Financial Officers (10.7%) or the owner of the company (23.3%). The majority (87.4%) of respondents were primarily responsible for employment matters. On average they had been responsible for HR matters for seven and a half years.

Model variables

We use labor productivity as our outcome (or dependent variable) for performance. Labor productivity is defined as the sales of the organization divided by the number of full-time equivalent (FTE) workers at the establishment.[5] Data on labor productivity is the only measure we retrieve from the financial performance survey. This allows us to disassociate the dependent from the independent measures and thereby avoids the problem of common method bias.

Previous studies have often used financial indicators such as Return on Equity (ROE), Return on Assets (ROA) or simple sales measures to assess the efficiency of HRM systems (Dyer & Reeves, 1995; Huselid, 1995; Wall & Wood, 2005; Wood, 1999). The difference between our measure of labor productivity and alternative financial performance measures is that the former is a more proximate indicator whereas the latter are more distant indicators (Lengnick-Hall et al., 2009). It is argued that the overall financial performance of a firm may not only be affected by labor productivity alone but also by other factors that are unrelated to labor productivity (such as marketing, consumer satisfaction or economic crises). Because we are primarily interested in the efficiency of HRM configurations rather than their ultimate contribution to financial performance, labor productivity is the more appropriate indicator for distinguishing more from less efficient SHRM systems.

Nevertheless, to understand the link between the efficient alignment of SHRM systems with labor productivity, and labor productivity with financial performance, we computed the ROA[6] for each firm in our sample and measured its correlation with labor productivity. We find a significant (at the 0.01 level) and positive ($\beta = 0.29$) correlation between both labor productivity ROA. Hence, while labor productivity better reflects the efficiency of SHRM systems, it also significantly determines the financial performance of organizations.

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[5]   The FTE ratio is used throughout WERS 2004. It not only considers full time employees but also includes a factor of 41% for each part time employer.

[6]   We calculate ROA as income (revenues adjusted for cost of doing business, depreciation, interest, taxes and other expenses) divided by value of total assets. All information is retrieved from the financial questionnaire. We were not able to compute ROEs for the firms as no information on the level of shareholder equity was available.

Developing indices as measures for HR areas and contingencies

Following the hypotheses, our model contains seven functional HR areas and three contingency variables. To develop measures we used items provided in the WERS database in each corresponding section. For instance, Section C contains questions on 'Recruitment, Training and Organization of Work', Section F instead relates to 'Payment systems and pay determination'. We used items in these sections to develop measures for our variables 'Recruitment and Selection' and 'Payments' respectively. We included only items with complete or near complete (<10% missing values) answers. As most items in the questionnaire are binary or percentages, we transformed categorical measure into percentage scales and combined all items into indices ranging from 0 to 1. Table 2 provides an overview of items used in our analysis and information on how we transformed categorical items.

Insert Table 2 about here

Instead of developing scales for the seven functional HR areas and the three contingency variables, we opted for an alternative approach and constructed indices to measure our variables (Diamantopoulos & Winkelhofer, 2001). Items included in a scale are thought to examine one and the same underlying, difficult to observe phenomenon. Scales are therefore also referred to as 'reflective measures'. Instead, items used in an index are considered constitutive, independent and alternative elements of a larger system. Instead of causing an underlying construct, they "...determine the level of the construct." (DeVellis, 1991: 9). For this reason, indices are also called 'formative measures' (Bagozzi, 2007).

Scholars in strategic management (Podsakoff, Shen, & Podsakoff, 2006), as well as in SHRM, suggest that indices are more appropriate instruments for measuring functional HR areas. Youndt et al. (1996) use indices and suggest that firms can improve by increasing *the number* of practices employed within a given functional HR area. Delery (1998: 300) argues that "... HRM practices are activities an organization

engages in [...] and while there may be an underlying logic [...] in choosing practices, we cannot assume that the practices are equivalent measures of this underlying philosophy."

We consider items in the WERS questionnaire to be more appropriate for developing indices. Take for instance those for recruitment and selection. They ask if, when filling vacancies, a firm conducts either any personality or attitude tests or any type of competence of performance test. Such practices do not necessarily reflect a firm's philosophy of recruiting and selecting new employees. Instead they represent discrete components of a given recruitment system of which either one may be implemented. In addition these components may exhibit certain synergetic effects, so that there is no reason to believe that they are strongly correlated with each other.

In line with this logic, our indices for the seven functional HR areas represent applications perceived as superior or more appropriate by firms. They indicate how extensively a given domain is designed and implemented for each organization. With regards to the three contingency variables, we measure strategic orientation as ranging from low-cost/ low-quality to high-cost/ high-quality, organizational size as the logarithmic function of the number of FTEs, and uncertainty arising from a firm's business environment in terms of the competiveness of the main product or service of a firm and the strength and breadth of its competition.

Calibration of indices into membership scores
The set theoretical foundation of fsQCA conceptualizes values of variables as membership scores (MS) within pre-defined sets. In our case for instance, each firm will have a membership score in the set of firms with an elaborate payment system or in the set of extensive selection and recruitment mechanisms. A score of 0 represents full *non*-membership while a score of 1 indicates full-membership. Membership scores for each firm within each set are obtained by a process called calibration. Calibration differs from a purely numerical use of measures by defining *meaningful* anchor points within the item distribution of the selected cases, depending on the level of fit between the content of the ordinal categories and our qualitative conceptualization of membership in the set.

We used the direct method of calibration as recommended by Ragin (2008) which transforms original items into fuzzy sets by defining three anchor points. The point of full membership (MS = 1), the point of full *non*-membership (MS = 0) and the cut-off point (MS = 0.5). The cut-off point is crucial. It is the point of maximum ambiguity as for cases with this membership score one essentially cannot determine whether they belong rather in or rather out of the set. Our selection of anchor points was guided by the following rules. In the case of labor productivity, we follow the approach suggested by Fiss (2011) and set the non-membership points at the 25th percentile, the cut-off point at the 50th percentile and the full membership point at the 75th percentile. The point of maximum ambiguity for the index of strategic orientation is set by the very nature of the included items - at 0. It is here, where it is impossible to determine whether a firm pursues a low-cost/ low-quality or a high-cost/ high-quality strategy. For all other sets we examined the distribution of each index to identify frequency clusters and set meaningful anchor points for each index individually where frequency peaks were clearly visible. Take for instance the histogram for flexible workplaces in Figure 1.

Insert Figure 1 about here

Firms clearly fall within one of three clusters as indicated by the frequency distribution. These clusters reflect meaningful differences as to how firms have implemented flexible workplaces. We consequently set the point for full-non membership at 0.05, the cut-off point at 0.35 and the point for full membership at 0.8 to acknowledge these substantive differences. In cases of ambiguous frequency clustering we also considered mean and standard deviation of the original indices. Once the three thresholds were determined, we used the calibration function available in the fsQCA 2.5 software to perform the transformations. The calibration pegs indices to the three thresholds and exponentially transforms the

original index to flatten towards *non*-membership and full membership (Ragin, 2008),[7] as indicated by the plot on the right side in Figure 1. Finally, to avoid difficulties with the membership value of 0.5 in analyzing the intersections of fuzzy sets we added a constant of 0.001 to all 0.5 membership scores following a standard practice in studies using fsQCA. Table 3 provides descriptive statistics for the uncalibrated index and the thresholds used to calibrate each index.

Insert Table 3 about here

RESULTS

The correlations for our calibrated measures of labor productivity, the seven functional HR areas and the three contingency variables are reported in Table 4. Most are positively and significantly correlated with each other. Selection and recruitment, training and development, payments and the contingencies of size and a stable business environment are significantly associated with labor productivity (at 0.01 level); flexible workplaces and representation are somewhat correlated (at 0.05 level). Only teamwork and appraisals do not exhibit any statistical relationship with labor productivity. The negative and significant correlation between labor productivity and strategic orientation indicates that labor productivity is higher in firms with a low-cost/ low-quality strategy. Overall, the strong multi-collinearity suggests that there are significant interdependencies among labor productivity, HR areas and contingency variables. Consequently, HR areas should not be studied in isolation but in relationship to one another to explain why SHRM systems achieve high labor productivity.

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[7]   For more information, we refer to Ragin (2008) Chapter 5 on 'Calibrating Fuzzy Sets' pp. 89-94. Also see Fiss 2010 or the fsQCA 2.0 software manual 'User's Guide to: Fuzzy Set / Qualitative Comparative Analysis'.

Insert Table 4 about here

Results of hierarchical regression models

Preceding our fsQCA, we perform a series of hierarchical regression models to examine the statistical

impact of individual and combined effects of functional HR areas on labor productivity. We conduct four

consecutive hierarchical regression models. Due to high multi-collinearity in our dataset we first estimate

the effect of each predictor variable separately - before (Model 1) and after (Model 2) adjusting for

strategic orientation, size and business environment. We then examine the unadjusted, combined effects of

functional HR areas on labor productivity (Model 3). Model 4 again includes adjustments. Table 5

provides the results for each of the four models.

Insert Table 5 about here

The coefficients in Model 1 correspond to the correlations of all functional HR areas with labor

productivity reported in Table 4. We present these to contrast them to the coefficients and R^2 of Model 2.

Although the explained variance for each functional HR area increases, after adjusting for size, strategic

orientation and business environment, neither is significant in predicting labor productivity. Model 3,

explaining only 6.8% of the variance, identifies payments systems as the only significant predictor. Yet

again, considering the adjusted Model 4, the combined effect of all seven functional HR areas does not

adequately explain labor productivity.

Results of fuzzy set Qualitative Comparative Analysis (fsQCA)

We subsequently employ fuzzy-set Qualitative Comparative Analysis (fsQCA) to explore the complex

interdependencies that are theoretically assumed and empirically observed among functional HR areas and

contingencies. fsQCA is based on set-theory and considers variables as membership scores in fuzzy sets.

The method examines the relationships between the outcome (dependent variable) and the conditions (independent variables) as sub- and superset relations. fsQCA then uses Boolean logic, similar to the functions commonly known from internet search engines, to reduce and identify combinations of conditions, or configurations, that in conjunction explain a certain outcome. It hereby closely follows Mill's method of difference, which stipulates that if two configurations differ only in a single condition but show the same outcome, this distinguishing condition is irrelevant and can be eliminated. The method is increasingly being used by researchers to systematically probe into the complexity of organizational phenomena (Fiss, 2007; Grandori & Furnari, 2008; Greckhamer, Misangyi, Elms, & Lacey, 2008; Kvist, 2007; Öz, 2004; Pajunen, 2008).

The analysis proceeds in three steps. After having calibrated indices, all logically possible combinations of independent factors are organized in a truth table. Truth tables contain 2^k rows (with k denoting the number of conditions in the analysis) and allow the systematic comparison the existing evidence. With seven functional HR areas and three contingencies, there are 1054 (2^{10}) logically possible combinations, i.e. rows, in our analysis of SHRM systems. This truth table is then minimized based first, on a minimum number of empirically observed cases for a configuration to be considered and second, on a minimum consistency level. Consistency computes the proportion of cases consistent with the outcome whereby a consistency score of 1 indicates a high and a score of .5 a low level of consistency.

We perform two fsQCA analyses. First, we examine high performing configurations (HPC) of SHRM systems, i.e. those that achieve high labor productivity. Our minimum consistency level is set at 0.82, higher than those levels employed in other studies (see for example Ragin, 2006 or Fiss, 2011) and given our relatively large sample we only consider frequencies of two or larger. Second, we analyze low performing configurations (LPC), those SHRM systems that do not achieve high labor productivity, i.e. they lead to low performance. Again, our consistency level is set higher than in other studies, here at 0.83, and the minimum frequency threshold at two. The results are illustrated in the form of configuration charts as introduced by Ragin & Fiss (2008). Figure 2 shows HPCs and Figure 3 LPCs. Large circles in the

charts represent core conditions, those essential for explaining the outcome of SHRM systems. Small circles indicate peripheral factors that support core conditions but are not vital for explaining the productivity of SHRM systems. Crossed-out circles denote the absence of a specific factor which means that it is important *not* to implement the respective functional HR area. Empty lines in the configuration chart indicate 'don't care's', meaning that neither the presence nor the absence of such of this functional HR area is relevant for achieving high or low performance (Fiss, 2010).

SHRM systems for high labor productivity
The solution for configurations achieving high labor productivity shows an overall consistency of above 0.80, a generally accepted value in studies using fsQCA (see for example Fiss 2007, 2010; Pajunen, 2008). It covers 23.3 % of all firms, in line with expectations given the relatively large size of our sample. According to our results, SHRM systems may take either one of the three configurations exhibited in Figure 2 to achieve high labor productivity.

Insert Figure 2 about here

The first configuration (HPC1) shows that in their very core, firms with a low-cost/ low-quality strategy achieve high labor productivity by implementing intensive training and development systems. Firm size and an uncertain business environment contribute exogenously to this end. HRM can furthermore contribute by implementing teamwork and appraisals - though these two conditions are by no means essential. Moreover, there are three variants of HPC1; neutral permutations in that the peripheral elements surrounding the core conditions are equally effective in contributing to labor productivity (Fiss, 2007). The comparison indicates that firms may choose between three pairs of implemented functional HR areas. Flexible workplaces (HPC1a) have the same effect within this configuration as has the simultaneous introduction of recruitment and selection and representation (HPC1b). Also, payments (HPC1b) may

replace flexible workplaces (HPC1c) and consequentially, representation and recruitment and selection (HPC1c) can substitute for payments (HPC1c).

The second configuration (HPC2) concerns firms operating in a stable business environment. Vital in this situation is the implementation of teamwork, flexible workplaces and representation in order to achieve high labor productivity. Interestingly, all core functions are concerned with how work is organized. Those regulating the source of new employees (recruitment and selection and training and development) and those providing incentives to employees (appraisals and payments) only perform a contributory role. With regards to contingencies, organizational size contributes to high labor productivity. In addition, and in contrast to HPC1, pursuing a high-cost/ high-quality strategy is advantageous.

The third configuration (HPC3) is interesting for two reasons. First, it differs from the previous two in that none of the three contingencies is essential. A high-cost/ high-quality strategic orientation, large organizational size and a stable business environment merely contributes to high performance; yet external conditions may also be different for this configuration for SHRM to achieve high labor productivity. Consequently, the only way to pursue is to adequately align functional HR areas. Secondly, it's not simply having the proper HR areas at place. Instead, in this case firms need to restrain from formalizing appraisals and payment systems while at the same time focusing on recruitment and selection and representation. Training and development and flexible workplaces contribute to achieving high labor productivity, teamwork practices may or may not be installed.

SHRM systems leading to low labor productivity
In our second analysis we examine configurations that do not achieve high labor productivity, i.e. those that lead to low labor productivity. Figure 3 pictures these configurations. The overall consistency lies at 0.82, covering 31.1 % of all firms in our sample.

Insert Figure 3 about here

There are four configurations leading to low performance. According to the first configuration (LPC1), the combination of recruitment and selection, flexible workplaces and the absence of appraisals and payments is deadly; especially for large firms pursuing a low-cost/ low-quality strategy while operating in an unstable environment. The second configuration (LPC2) refers solely to large firms. Without paying attention to recruitment and selection and appraisals of employees while allowing for teamwork these firms fail to properly capitalize on HR. Third, SHRM systems (LPC3) of small firms pursuing a high-cost/ high-quality strategy lead to low labor productivity when there are no flexible workplaces while appraisals are used but not translated to provide remuneration incentives. Finally, small firms in a stable business environment with a high-cost/ high-quality strategy (LPC4) fail to achieve high labor productivity when teamwork is encouraged, yet employees lack representation and adequate payments.

DISCUSSION

Based on these results, we are now able to critically re-examine the different theoretical perspectives discussed in the literature on SHRM systems. To assess the validity of each perspective we predominantly make use of the evidence provided by the fsQCA analysis. Having synthesized our insights with the theoretical perspectives, we discuss the implications of our study in the light of previous research on SHRM systems.

Insights for the null-hypotheses
To assess the validity of the null-hypotheses (H0a and H0b) we exclusively examine the seven functional HR areas. Model 1 in the regression analysis shows that five have a significantly positive association with labor productivity and although the coefficients for the remaining two are not significant, they remain positive. Once all functional areas are considered simultaneously (Model 3), only payments exhibit a positive and significant association. However, after controlling for the contingencies of strategic

orientation, size and business environment (Model 4) not a single 'best practice' can be identified that is significantly associated with labor productivity.

The results from the fsQCA provide different and more refined insights. Across all HPCs, the presence, i.e. the implementation, of functional HR areas clearly prevails. Moreover, each SHRM system that achieves high labor productivity contains at least one functional HR area as a core condition. Interestingly, however, in HPC3 the simultaneous *absence* of appraisals and payments is essential for achieving high labor productivity. The results for unsuccessful SHRM systems are even more perplexing. As expected, the absence of functional HR areas generally prevails in LPCs. Yet, each LPC also contains at least one thoroughly implemented HR function that consistently contributes to this outcome.

Our results therefore support Hypothesis 0a whilst clearly rejecting Hypothesis 0b. In general, they suggest that the implementation of HR functions contributes to the achievement of high labor productivity, a finding that corresponds with previous research (Delaney & Huselid, 1996; Huselid, 1995). However, not all functional HR areas are equally important. This is most impressively demonstrated firstly in HPC3, where *absent* practices contribute to high performance, and secondly when considering those configurations that lead to low performance, where precisely the wrong HR functions have been implemented. Hence, while theories on SHRM point towards the right direction and thus maintain a legitimate call for their contribution to performance, basic premises need to be further scrutinized as multi-dimensional dependencies significantly weigh in.

How SHRM contributes to performance: 'Best practice' versus 'best fit'
The 'best practice' hypothesis (H1) argues that irrespective of context there is one single functional HR area that firms must implement to make best use of the workforce. The results from the regression analysis suggest that - if any practice at all should be adopted - HRM should implement payment systems, although when controlling for contingencies we cannot identify a single functional HR area that in and by itself explains high labor productivity. Our results from the fsQCA draw a substantially different and again more nuanced picture. Neither among the HPCs nor among the LPCs do we identify a single 'best

practices' which, irrespective of contextual influences, explains when SHRM under- or outperforms others. There is however one notable exception. As HPC1 indicates, firms which pursue a low-cost/low-quality strategy must implement training and development mechanisms to achieve high labor productivity. Thus, under such a contingency, training and development is *the* 'best practice'. Also, if we additionally consider the contributory function of HR areas, we may even expand our conclusion. In contrast to all other functional HR areas, training and development is always present in HPCs, either as a core or a contributing condition. In summary, with two exceptions, our results largely reject the 'best practice' hypothesis (H1).

The competing 'best fit' perspective argues that it is not any singular HR area but the proper alignment of multiple elements of SHRM systems account for high labor productivity. We subdivided this perspective into an internal 'best fit' hypothesis (H2a) which claims that successful SHRM systems will exhibit a balanced alignment of two or more functional HR areas and a more extensive 'best fit' hypothesis (H2b) arguing that successful SHRM systems require additional alignment with external factors.

Two configurations, namely HPC3 and LPC1, exclusively rely on the internal alignment of functional HR areas. In both, the combination of four, or at least more than two, functional HR areas is essential for explaining high or low labor productivity respectively. Interestingly, although leading to substantially different performance outcomes, the two configurations are in fact quite similar, a finding which we discuss in more detail below. While these two configurations therefore provide evidence in support of the internal 'best fit' hypothesis (H2a), all other configurations exhibit alignments beyond the internal functional HR areas. What is more, once we incorporate the impact of contributing conditions into our interpretations, we find even less validity for the internal 'best fit' hypothesis (H2a). Consequently, as in the case of the 'best practice' hypothesis (H1), we interpret our findings as largely rejecting the internal 'best fit' hypothesis (H2a).

The more extensive 'best fit' hypothesis (H2b) claims that in addition to the internal fit, efficient SHRM systems require alignment with factors external to the firm. The evidence for the internal 'best fit'

hypothesis (H2a), shown in HPC3 and LPC1, clearly speak against the necessity of aligning internal and external elements of an SHRM system to achieve high performance. HPC1 is an ambiguous case. It doesn't perfectly match the expectations of the 'best practice' hypothesis (H1) as it exclusively concerns firms with a low-cost/ low-quality strategy. Neither does it entirely meet the expectations of the external 'best fit' hypothesis (H2b) because there is only a single functional HR area that requires alignment. However, as we believe the criteria of multiple, internal alignments of HR functions to be rather restrictive and less significant than that association of functional HR areas with contingencies, we ultimately interpret HPC2 to support the external 'best fit' hypothesis (H2b). In contrast, HPC2 and alongside the results for configurations that lead to low labor productivity provide unambiguous evidence for the requirement of a combined internal and external alignment. All of these results support the extended 'best fit' hypothesis (H2b) in that they feature two or more HR functions and at least one contingency factor as essential elements for explaining either high or low labor productivity.

In sum, our findings are largely in line with previous results that reject the universalistic 'best practice' perspective (Becker & Gerhart, 1996; Boxall & Purcell, 2000; Chang & Huang, 2005; Lengnick-Hall et al., 2009) and instead provide evidence for the internal, and especially for the external, 'best fit' perspective. As argued by MacDuffie (1995), the SHRM system perspective predicts performance better than approaches that focus upon individual practices. Yet, in contrast to his findings, our evidence indicates that simply adequately bundling HR practices does not suffice. Instead, alignment with exogenous, contingency factors is important to capitalizing on existing HR. Further, we disagree with the observation of Delery (1998) who claims that there is no support for either the internal or the external 'best fit' hypothesis. Interestingly, however, he does not reject the 'best fit' perspective on theoretical grounds but argues that due to issues of construct validity, the selection of overly distant dependent variables, the application of inappropriate methodologies (e.g. cluster analysis) or the use of small samples, previous studies suffer from weaknesses that hinder the proper substantiation of the 'fit' perspective on SHRM

systems. In this study, we have largely avoided those weaknesses and on this basis provide substantive support for the 'best fit' approach.

Configurations in Strategic Human Resource Management
Our remaining three hypotheses intend to substantiate the configurational perspective on SHRM systems. The equifinality hypothesis (H3a), central to configurational theory, argues that there are multiple, equally effective combinations of elements that allow for the achievement of high labor productivity. Our fsQCA results clearly show three different yet equally successful strategies pursued by firms in different situations for achieving high labor productivity. HPC1 pictures an SHRM system for firms with a low-quality/ low-cost strategy. HPC2 is appropriate for firms operating in a relatively stable business environment. The SHRM system captured in HPC3, although slightly more appropriate for larger firms with a high-cost/ high-quality strategy operating in an uncertain business environment, can be adopted by all companies. We find even more alternative SHRM systems that lead to low labor productivity. The equifinality hypothesis (H3a) is thus clearly supported.

The asymmetry hypothesis (H3b) maintains that configurations leading to high performance do not mirror those that lead to low performance. When comparing the results of the fsQCA for both high and low labor productivity it is clear that low performing firms do not simply operate 'inverse' HRM systems than those that achieve high performance. Compare for instance HPC2 with LPC4. Both SHRM systems operate in a stable business environment. Only labor representation is symmetrically related to performance. To achieve high labor productivity it needs to be implemented. In SHRM systems that lead to low labor productivity, it is never implemented. All other HR functions are not symmetrically associated with performance. Further evidence is provided by HPC3 and LPC1 which lead to opposing performance outcomes yet exhibit strong structural similarities. As these cases illustrate, our findings strongly support the asymmetry hypothesis (H3b).

The last configurational hypothesis (H3c) speculated that SHRM systems can structurally be discerned by featuring core and peripheral conditions. As our results indicate, all configurations comprise a set of at

least two core elements which are surrounded by various contributing or peripheral conditions. This observation holds for HPCs as well as for LPCs. Our findings therefore support the hypothesis on the structure of SHRM systems (H3c).

In sum, in line with previous studies with similar evidence (Delery & Doty, 1996; Takeuchi et al., 2003; Youndt et al., 1996) the results of our study clearly support the configurational perspective on SHRM systems. Most notably however, our study differs from previous ones in that we do not employ *ex ante* specified ideal types (as is common in substantiating contingency theories by using typologies, see for instance Ichniowski, C., et al. (1997), or Delery and Doty, 1996). Instead we have constructed an empirically grounded taxonomy of successful and unsuccessful SHRM systems. We thereby avoid biasing our result with predetermined conceptions about the structure of SHRM configurations (Doty et al., 1993). Moreover, in contrast to most previous research, we are able to clearly discern multiple, equally effective configurations by using a set theoretic methodology.

Table 6 provides an overview of our findings for the different theoretical perspectives that have been suggested in previous literature and which we have extended and supplemented with two null-hypotheses and three precise configurational hypotheses on SHRM systems.

Insert Table 6 about here

In sum, we provide evidence in support of the most essential hypothesis in SHRM (H0a) which claims that HRM has a performance-enhancing role in the management of firms. However, we reject its inverse implication that without implementing functional HR areas (H0b) firms necessarily fail to make best use of their workforce. All SHRM systems that lead to low performance have implemented at least one functional HR area, presumably the wrong one. Furthermore, the evidence provided rejects the 'best

practice' hypothesis (H1) and the internal 'best fit' hypothesis (H2a). Instead, we find moderate support for the more extensive 'best fit' hypothesis (H2b) and substantial evidence for all three configurational hypotheses (H3a, H3b, H3c).

On the nature and the internal dynamics of SHRM systems
Previous researchers have speculated that there are both significant and substantially different interaction effects among functional HR areas and contingencies; and even when empirical findings compelled them to reject the existence of synergetic effects, it has been argued that this lack of evidence is the result of methodological limitations (Delaney & Huselid, 1996; Delery, 1998). With the help of a new methodology, we have provided strong evidence in favor of the configurational perspective on SHRM, i.e. for the existence of positive and negative synergies among the various elements of SHRM systems. Our findings clearly indicate that functional HR areas cannot be studied in isolation but ought to be considered in their interdependencies with other elements. However, more than simply providing evidence for previous theorization, we are now able to examine in-depth the nature of these systems and to specify in more detail their synergetic and dis-synergetic dynamics. We restrict our discussion on successful SHRM systems, i.e. those that allow firms to achieve high labor productivity, and only make use of our results for unsuccessful SHRM systems when they useful to clarify our arguments.

HPC1 shows that firms with a low-cost/ low-quality strategy must implement training and development systems to be successful. Teamwork structures and appraisals are contributory across all three neutral permutations of HPC1. These serve to assess training and development needs rather than to link performance to financial incentive systems. Hence, firms with such SHRM systems predominantly capitalize on internally developed HR. Among the remaining contributing HR functions, we identify alternatives that serve as substitutes for one another. For instance, instead of implementing flexible workplaces (HPC1a) firms may choose to combine recruitment and selection with representation practices (HPC1b). Investments in a firms' HR thus may either be retained by offering employees flexible working conditions or by carefully choosing new employees and ensuring through representation mechanisms that

motivation levels remain sufficiently high. A second substitution exists between payments (HPC1b) and flexible workplaces (HPC1c). Employees are willing to waive salaries if it allows them to better accommodate private and professional life. HPC1 is the only SHRM system which pertains to firms with a low-cost/ low-quality strategy. Moreover, firms with such a strategic orientation never implemented unsuccessful SHRM systems. The prevalence of so many alternative HR functions indicates that undeliberated investments may easily be wasteful. Yet, as cost optimization is essential for such firms, HR managers will have to carefully balance investments in HRM with potential efficiency gains.

The SHRM system in HPC2 is particularly suitable for firms with a strong competitive position in the market for their main product. Here, it is essential for HR managers to implement a SHRM system that focuses on how work is organized. Flexible workplaces increase the diversity in HR while teamwork practices permit a firm to make the best use of this diversity. Representation in turn ensures that working conditions, especially with regards to flexible workplaces, can be adjusted to the needs of employees is order to sustain motivation levels and reduce turnover. Clearly, these elements within an SHRM system are more important than investing efforts in selecting new employees or evaluating and remunerating hired personnel. Instead, the focus lies on developing internal structures that capitalize on existing personnel. Moreover, HPC2 is interesting because it prescribes the implementation of all functional HR areas discussed in the literature, either essentially or as peripheral conditions.

Finally, HPC3 contains those SHRM systems that focus on recruitment and selection and representation while avoiding the implementation of appraisals and payments. HPC 3 provides a theoretical insight because it challenges that most basic premises of HRM theories, provides substantial evidence for the complexities of SHRM systems and in particular questions those HR functions that have previously received so much attention. Our results suggest that appraisals and payments deserve attention not because they occupy such a pivotal role in fully utilizing a firm's workforce, but because they have radically different influences on the overall efficiency of SHRM systems. For firms implementing HPC3 it is crucial to invest in decisions that will determine who will enter the workforce, to understand what

employees need and to refrain from evaluating their performance. This configuration refers to situations in which the costs associated with assessing the performance of employees and adjusting remuneration systems do not justify the gains in labor productivity. The absence of payments and appraisals may be necessary because performance is hard to measure. Alternatively, as in the case of professional service firms, performance may largely be determined by the expertise of individual employees, which renders the implementation of broadly applied appraisal and payments futile and demotivating. A third explanation might lie in employees' disinclination to having their performance formally assessed and being remunerated accordingly as one might find in artistic or academic organizations. In all cases, qualified employees are difficult to find in the labor market which explains the essential role of recruitment and selection and representation to avoid labor migration. Finally, HPC3 is striking because, despite the fact that the firms' high-cost/ high-quality strategy, their size and the uncertain business environment in which they operate all contribute to high labor productivity, it is the only set of SHRM systems advisable irrespective of conditions exogenous to the firm.

Our findings for successful SHRM systems corresponds to theoretical arguments expressed by Boxall (1998, 1999) who distinguished 'human capital advantages', advantages generated by employing personnel with rare knowledge and skills, from 'organizational process advantages', advantaged that result from the implementation of adequate internal practices, processes and structures. HPC1, strongly relying on the internal enhancement of HR through training and development means, and HPC3, structured around the specific requirements of employees, achieve high performance through the emphasis of 'human capital advantages'. HPC2, in contrast, clearly emphasizes the development of internal structures that organize how work is performed; the issue of who is doing the work is not so much in the focus. Here, firms benefit from 'organizational process advantages'.

Small changes with substantial impacts
A few elements of SHRM systems have rather unambiguously positive or negative influences on performance. As our results indicate, investments in training and development, while not the sole solution

to improving a firm's workforce, always play a positive role. This becomes even more apparent when considering unsuccessful SHRM systems. Here, training and development practices have either not been implemented or have been employed in a combination with other HR functions in such a manner that nullifies their potentially positive influence. We observe similar synergetic influences for labor representation. Most strikingly however, in SHRM systems leading to low performance, firms failed to implement adequate payment practices. The fact that the absence of remunerations is so characteristic for LPCs might explain why research in the past has paid so much attention to this HR function. As suggested above, payments play a particularly complex role in SHRM systems and comparing this role in HPCs with the one in LPCs provides further insights into this complexity. While failing to implement payments explains failure, merely implementing payments certainly does not lead to success.

With regards to contingencies, size always occupies a contributory role in successful SHRM systems. At the same time, all unsuccessful SHRM systems are identified for firms pursuing a high-cost/ high-quality strategy. These findings suggest that on the one hand that HRM might not be the most appropriate instrument for small firms to increase performance and, on the other hand that for firms with a high-cost/ high-quality strategy other, less tangible factors such as marketing or branding weigh in more heavily.

Our findings for LPCs then specify deadly combinations of elements of SHRM systems that firms should most definitely try to avoid. Interestingly, when SHRM systems are essentially aligned to exogenous conditions, as in LPC2 - LPC4, such deadly combinations are always the result of implementing stand-alone HR functions without considering other functional HR areas. Take for instance LPC 2 in which firms implement teamwork practices without considering who is being hired or assessing how employees perform on the job. Such systems applied within large firms may cause employees to merge into the crowd and escape lay-offs precisely because they are required to cooperate with randomly selected colleagues whose efforts, or lack thereof, are not even evaluated. In LPC3, appraisal systems are implemented yet employees neither have the opportunity to contribute uniquely, due to a lack of flexibility

on the workplace, nor are they compensated accordingly. They are constantly monitored without apparent consequences for working conditions or remunerations.

How minor adjustments lead to significant differences is best illustrated when comparing LPC1 with HPC3. Here, SHRM systems that emphasize recruitment and selection and underemphasize appraisals and payments will achieve high labor productivity when combined with flexible workplaces (LPC1). Including employees in decision-making fosters organizational commitment. Providing flexible workplaces instead opens opportunities for detachment from the firm. Hence, for firms that carefully choose employees whose contributions are highly specialized and remain un-evaluated, the opportunity to voice their opinions constitutes an essential link between employer and employees, the absence of this opportunity dilutes this connection and the implementation of a flexible workplace deepens this detachment leading to severe consequences.

In sum, our findings not only indicate that successful SHRM systems are complex structures of interdependent elements but also show that minor changes have substantial impacts. In three out of four LPCs, the misalignment of individual HR areas with conditions exogenous to the firm explain failure. Moreover, we observe that successful SHRM systems are much slimmer and less complex than those leading to low performance. This implies that out-performing others requires doesn't require blind activism but rather careful crafting and deliberate design of SHRM systems. It also provides insights into the internal stability of configurations suggesting that 'fit' is a rather challenging state to achieve (Lengnick-Hall & Lengnick-Hall, 1988; Lengnick-Hall et al., 2009) and that small changes may have substantial impacts on the performance of SHRM systems.

CONCLUSION

In this study we have comprehensively reviewed and extended the range of theoretical perspectives on SHRM and have used a new methodology, namely fsQCA, to systematically examine SHRM systems according to their performance. Although the contributory role of SHRM in pursuing organizational

objectives is generally supported, we find that the successful design of SHRM systems requires due diligence. Furthermore, our results prompt us to largely reject the 'best practice' and the internal 'best fit' perspective. Instead, we find moderate support for the extended best fit hypothesis and overwhelming evidence in favor of a configurational perspective on SHRM. There are three configurations that clearly permit the achievement of high labor productivity and four that lead to low labor productivity. On this basis, we are in the position to prescribe integrative mechanisms of interrelated elements that constitute competitive advantages as well as systematic interdependencies posing deadly combinations. Resting on empirical evidence our results constitute a taxonomy of alternative SHRM systems that can be used by managers to implement a new HRM system or adjust an existent HRM system. In doing so, the contingencies included in the analysis provide a first indicator as to which SHRM systems can most appropriately be employed.

We believe our contributions to be predominantly limited by our approach to sampling, the empirical data we employ and by factors associated with our choice of method. First, the results based on data gathered in the UK may be biased by the particular institutional background as labor laws, unionization and cultural aspects might differ substantially from those of other countries. We have reduced this bias to some extent by discharging all public firms from our analysis. Moreover, in contrast to other studies on SHRM systems, we employ a cross-sectional sample. Although this limits our results accordingly, as factors specific to certain industries are neglected, it adds to the generalizability of our findings. Furthermore, as the WERS data is not longitudinal, we are not able to evaluate temporal influences on our results or the temporal stability of the configurations identified here. For instance, the relevance of certain functional HR areas might change over time. Others speculate that entire configurations alter their shape with the course of time (Mintzberg, Ahlstrand, & Lampel, 2001).

Second, although we believe in the virtue of fsQCA in helping us to advance present theories on the structure of SHRM systems, there are - as with any analytical technique - certain limitations associated with the method that need to be pointed out. On the one hand, although fsQCA considers multiple

conditions simultaneously and thereby offers opportunities not available to statistical techniques, the method strictly speaking does not explain how or why certain configurations lead to superior or inferior performance. On the other hand, we cannot assess the impact of individual elements within given configurations beyond the distinction of core and peripheral conditions. Here, more traditional methods such as statistical techniques remain more suitable and are important to unravel the significance of each component of successful SHRM systems. Finally, the technique of calibration prescribed for set-theoretic methods, and employed here, enhances the internal validity of the empirical study yet renders the results less comparable with other studies, thus compromising external validity. For these limitations, due care is needed when interpreting our results or making use of the taxonomy presented here.
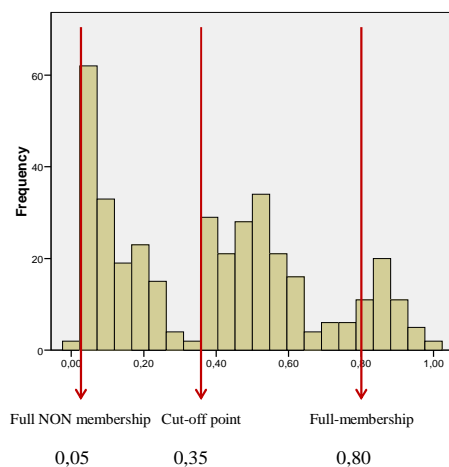
In consideration of the theoretical implications of our results and the abovementioned limitations to our study we believe that future research should predominantly be directed towards substantiating and extending the configurational perspective on SHRM systems. Using fsQCA we were able to distinguish essential components from 'nice-to-have's (contributing conditions) and 'don't care's (empty spaces). Yet, advancing our understanding of the internal functioning of integrative mechanisms within configurations, will provide further insights into the internal stability of configurations. Future research may be, for instance, a more in-depth examination of the dynamics that rest within the successful configurations that have been identified in our study. Furthermore, and in spite of varied speculations, we remain largely ignorant with regards to the temporal stability of configurations. Are ideal types identified in such analyses sufficiently abstract to provide temporally valid answers? If so, do firms switch between ideal types or remain rotating around a specific one? How desirable is 'fit' truly and how difficult to remain strategically flexible? While many of these questions remain unanswered they deserve a lot more attention in the future as potential insights promise substantive theoretical and practical contributions.

Table 1: Descriptive statistics for workplaces included in the analysis

Size*	Small		Medium		Large		Ultra-large		Total	
Total	184	(49,2%)	110	(29,4%)	70	(18,7%)	10	(2,7%)	374	
Does the firm have shares listed on a stock exchange?										
Yes	3	(7,5%)	11	(27,5%)	22	(55,0%)	4	(10,0%)	40	(11.0%)
No	14	(56,0%)	7	(28,0%)	3	(12,0%)	1	(4,0%)	25	(7.0%)
n.a.	167	(54,1%)	92	(29,8%)	45	(14,6%)	5	(1,62%)	309	(82.6%)
Total	184	49,2%	110	29,4%	70	18,72%	10	2,67%	374	(100%)
Is there an individual or family that owns at least 50% of the company?										
Yes	98	(59,8%)	41	(25,0%)	24	(14,6%)	1	(0,6%)	164	(43.9%)
No	48	(30,0%)	63	(39,4%)	41	(25,6%)	8	(5,0%)	160	(42.8%)
n.a.	38	(76,0%)	6	(12,0%)	5	(10,0%)	1	(2,0%)	50	(13.4%)
Total	184	(49,2%)	110	(29,4%)	70	(18,7%)	10	(2,7%)	374	(100%)
Does this company own subsidiaries?										
Yes	12	(27,3%)	11	(25,0%)	19	(43,2%)	2	(4,6%)	44	(11.8%)
No	39	(43,3%)	33	(36,7%)	18	(20,0%)		(0,0%)	90	(24.1%)
n.a.	133	(55,4%)	66	(27,5%)	33	(13,8%)	8	(3,3%)	240	(64.2%)
Total	184	(49,4%)	110	(29,4%)	70	(18,7%)	10	(2,7%)	374	(100%)

* Size categories: Small (<50); medium (50-249); large (250-2500); ultra-large (>2500)

Original distribution for flexible work-places including three threshold points

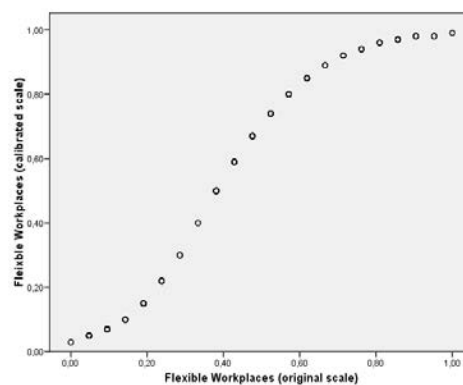Plot of membership scores in calibrated set against original values in distribution

Full NON membership   Cut-off point   Full-membership

0,05   0,35   0,80

Figure 1: Transformation from original distribution to calibrated membership scores

Table 2: Overview of model variables

	Variable	Item	Question/ description	Coding/ Transformation
0	Labor productivity	0A	Sales divided by number of FTE	
1		1A	How many different channels do you use to fill recent vacancies?	% Share of channels taken into account of total channels
	Selection & Recruitment	1B	How many factors do you take into account when recruiting new employees?	% Share of factors taken into account of total factors
		1C	Do you conduct any type of personality or attitude test when filling vacancies?	Yes = 1 No = 0
		1D	Do you conduct any type of competence of performance test when filling vacancies?	Yes = 1 No = 0
2		2A	What proportion of employees has have been given time off from their normal daily work duties to undertake training over the past 12 months?	% share of employees in workforce
	Training & Development	2B	How many topics are covered by trainings?	% share of topics covered of range of topics available
		2C	How many training objectives are aimed at in trainings?	% share of objectives covered of range of objectives
		2D	What proportion of employees is formally trained to do other jobs than their own?	% share of employees in workforce
		2E	What proportion of employees performs other jobs than their own more than once a week?	% share of employees in workforce
3	Teamwork	3A	What proportion, of employees at this workplace works in formally designated teams?	% share of employees in workforce
4		4A	Do any employees at this establishment ever work from home during normal working hours?	Yes = 1 No = 0
	Flexible Workplaces	4B	Are there any people presently working for this establishment on a freelance basis?	Yes = 1 No = 0
		4C	The number of flexible working options available for regular employees in the firm.	% share of factors covered of range of factors presented by the interviewer
5		5A	Are any of the employees here members of a trade union or independent staff association?	Yes = 1 No = 0
	Representation	5B	How would you describe management's general attitude towards trade union membership among employees at this establishment?	In favor of union membership: 100% (8.9%) Neutral about union membership: 60% (70,9%) Not in favor of union membership: 0% (20,2%)
		5C	Apart from the union representatives are there any employees here who act as representatives of other employees in dealings with management?	Yes = 1 No = 0
6	Appraisals	6A	What proportion of employees has their performance formally appraised?	% share of employees in workforce
7	Payments	7A	What are the factors listed on this card that explain the differences in the level of pay of employees at this workplace?	% share of factors covered of range of factors presented by the interviewer
		7B	Do any of the employees in this establishment get paid by results or receive merit pay? (Categories based on frequency distribution; result-based considered more elaborate than merit-based payments)	Result *and* merit based: 100% (25,9%) Result based: 75% (10,4%) Merit based: 60% (12,3%) None: 0% (51,3%)
		7C	Number of factors influencing the size of payments?	% share of factors covered of range of factors available
C2	Strategic orientation	C1A	To what extent would you say that the demand for your (main) product or service depends upon offering lower prices than your competitors?	We subtracted C1A (price) from C1B (quality) resulting in an index ranging from -4, a clear low-price/ low-quality strategy to +4, a clear high-price/ high quality strategy.
		C1B	To what extent would you say that the demand for your (main) product or service depends upon you offering better quality than your competitors?	
C2	Size	C2A	Number of full-time equivalents (PT=0.41*FT), incl. agency workers at site level.	Natural logarithm
C3	Business environment	C3A	Is the market for your main product or service primary (local – international)?	1 = local; 2 = regional; 3 = national; 4 = international
		C3B	How many competitors do you have for your main product?	1 = none; 2 = few; 3 = many
		C3C	How would you assess the degree of competition in the market for your main product or service? (Very high – Very low)?	1 = very low; 2 = low; 3 = neither high nor low; 4 = high; 5 = very high
		C3D	Does this establishment face competition from overseas-based suppliers (for its main product)?	1 = No; 2 = Yes, a little; 3 = Yes, a lot.

Table 3: Descriptive statistics for un-calibrated scales and direct calibration markers

Factor		Min.	Max.	Mean	Std.Dev.	Full-non membership	Cut-off point		Full membership
		Descriptive statistics				*Calibration points* (distribution within each membership segment)			
Labor Productivity		2,00	2000,00	189,36	364,61	46.8 (25.0%)	78.0 (25.0%)	(25.0%)	157.3 (25.0%)
HR Functions	*HR1: Selection & Recruitment*	,00	1,00	,44	,25	0,05 (1,1%)	0,40 (42,2%)	(56,1%)	0,95 (0,5%)
	HR2: Training & Development	,00	1,00	,35	,22	0,05 (12,8%)	0,30 (25,7%)	(53,7%)	0,65 (7,8%)
	HR3: Teamwork	,00	1,00	,60	,41	0,10 (23.3%)	0,60 (23.6%)	(21.4%)	0,90 (28.9%)
	HR4: Flexible Workplace	,00	1,00	,39	,28	0,05 (17,1%)	0,35 (25,7%)	(44,1%)	0,80 (13,1%)
	HR5: Labor Representation	,00	1,00	,34	,25	0,10 (13,1%)	0,50 (49,7%)	(30,2%)	0,80 (7,0%)
	HR6: Appraisal	,00	1,00	,63	,43	0,10 (25.1%)	0,50 (13.1%)	(10.5%)	0,90 (51.3%)
	HR7: Payments	,00	1,00	,45	,26	0,10 (7.5%)	0,50 (59.3%)	(30.0%)	0,90 (3.2%)
Contingencies	*C1: Strategic Orientation*	-4,00	4,00	,79	1,61	-2,00 (2,4%)	0,00 (13,1%)	(69,8%)	2,00 (14,7%)
	C2: Organizational size	,70	9,10	4,05	1,73	1,90 (7,8%)	3,50 (34,2%)	(46,3%)	6,30 (11,8%)
	C3: Environmental uncertainty	,00	1,00	,57	,23	0,25 (6,4%)	0,50 (32,6%)	(51,1%)	0,90 (9,9%)

Table 4: Correlation matrix for calibrated scales

	Labor productivity	Selection & Recruitment	Training & Development	Team-work	Flexible workplaces	Represent-ation	Appraisals	Payments	Strategic orientation	Size
Selection & Recruitment	,19(**)	1								
Training & Development	,16(**)	,38(**)	1							
Teamwork	0,08	,27(**)	,31(**)	1						
Flexible workplaces	,11(*)	,33(**)	,31(**)	,31(**)	1					
Representation	,13(*)	,36(**)	,24(**)	,14(**)	,16(**)	1				
Appraisals	0,10	,37(**)	,40(**)	,26(**)	,32(**)	,11(*)	1			
Payments	,20(**)	,22(**)	,23(**)	,13(*)	,23(**)	,13(*)	,20(**)	1		
Strategic orientation	-,14(**)	,14(**)	,13(*)	0,02	,16(**)	0,02	,17(**)	0,02	1	
Size	,25(**)	,44(**)	,32(**)	,29(**)	,37(**)	,49(**)	,25(**)	,29(**)	-0,02	1
Business environment	,21(**)	,14(**)	0,10	,11(*)	,17(**)	,16(**)	0,02	,26(**)	-0,08	,35(**)

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Table 5: Results of Linear Regression Models[a]

	Model 1[b]		Model 2[c#]		Model 3[d]		Model 4[e#]	
	Coeff.	R^2	Coeff.	R^2	Coeff.	R^2	Coeff.	R^2
Recruitment & Selection	,18(**)	,04	0,13	,11	,10	,07	,09	,12
Training & Development	,15(**)	,03	,14	,10	,07		,08	
Teamwork	,08	,01	,01	,09	-,01		-,03	
Flexible Workplaces	,11(*)	,01	0,05	,10	,02		,01	
Representation	,13(*)	,02	0,02	,09	,06		,00	
Appraisals	,10	,01	,08	,10	-,01		,02	
Payments	,20(**)	,04	,12	,11	,15(**)		,10	

[a] Dependent variable: Labor Productivity
[b.] Functional HR areas separately
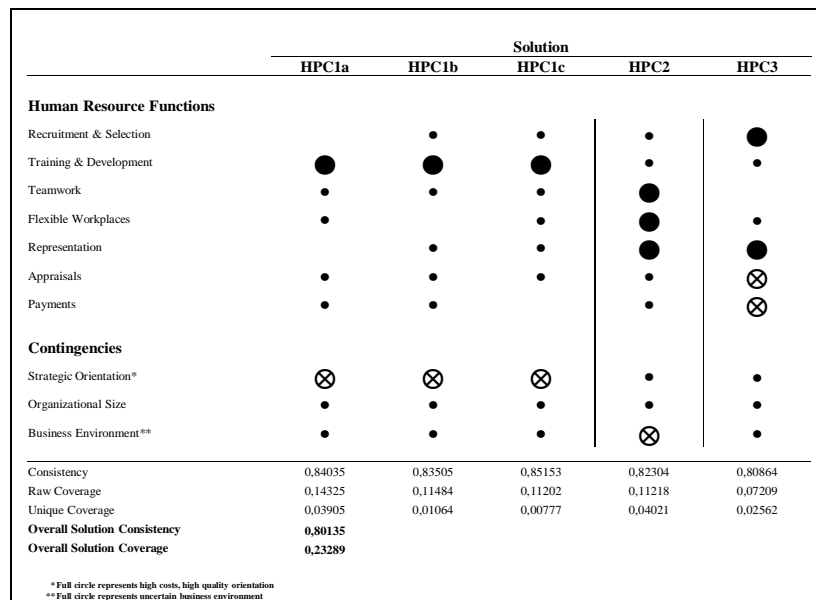[c.] Functional HR areas separately (adjusted)
[d.] All functional HR areas
[e.] All functional HR areas (adjusted)
[#] Adjusted for size, strategy and business environment
[*] Correlation is significant at the 0.01 level (1-tailed).
[**] Correlation is significant at the 0.05 level (1-tailed).

Figure 2: High performance configurations (HPC) of SHRM systems

		Solution							
		LPC1a	LPC1b	LPC2a	LPC2b	LPC3a	L3PCb	L3PCc	LPC4
Human Resource Functions									
Recruitment & Selection		●	●	⊗	⊗	⊗		⊗	
Training & Development			⊗		⊗		⊗	⊗	
Teamwork		⊗		●	●			⊗	●
Flexible Workplaces		●	●		⊗	⊗	⊗	⊗	
Representation			⊗		⊗	⊗	⊗	⊗	⊗
Appraisals		⊗	⊗	⊗	⊗	●	●	●	⊗
Payments		⊗	⊗	⊗		⊗	⊗	⊗	⊗
Contingencies									
Strategic Orientation*		•	•		•	●	●	●	●
Organizational Size		•	•	●	●	⊗	⊗	⊗	⊗
Business Environment**		•	•	•	•	⊗	⊗		⊗
Consistency		0.858416	0.747670	0.842221	0.854615	0.817047	0.865164	0.846080	0.820938
Raw Coverage		0.209772	0.088844	0.161709	0.134755	0.063488	0.103829	0.073555	0.070645
Unique Coverage		0.064452	0.017270	0.009543	0.001675	0.004673	0.005752	0.004626	0.003273
Overall Solution Consistency		0.820290							
Overall Solution Coverage		0.311406							

* Full circle represents high costs, high quality orientation
** Full circle represents uncertain business environment

Figure 3: Low performing configurations (LPC) of SHRM systems

Table 6: Overview of main theoretical results

	Hypothesis	Conclusion	Exceptions
Null-hypotheses of SHRM			
H0a	Presence of HRM	Supported	In HPC3 firms must *refrain* from implementing appraisals and payments
H0b	Absence of HRM	Rejected	
'Best practice' versus 'best fit' hypotheses			
H1	'Best practice'	Rejected	1) Firms with a low-cost/ low-quality strategy *must* implement training & development 2) Training & development always contributes to achieving high performance
H2a	'Best fit' (internal)	Rejected	
H2b	'Best fit' (comprehensive)	Supported	Exceptions where competing perspectives have been supported as indicated above
Configurational hypotheses of SHRM			
H3a	Equifinality	Supported	
H3b	Asymmetry	Supported	
H3c	Structure	Supported	

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