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# A meta-analysis of different HR-enhancing practices and performance of small and medium sized firms



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## ABSTRACT

The role of human capital has received considerable attention in research on small and medium sized firms. However, much uncertainty remains as to how practices that enhance human resources (HR) affect the performance of small and medium sized firms, whether some practices have stronger effects than others, and which contingencies influence these effects. Relying on the framework proposed by Subramony (2009), we propose that small and medium sized firms need to implement HR practices that focus on enhancing skills, motivation, and empowerment. The results of our meta-analysis comprising 56 studies that focused on small and medium sized enterprises (SME) indicated that HR-enhancing practices are correlated with firm performance ( $r_c = .228$ ). Moreover, HR-enhancing practices were more relevant for young firms and SME operating in high-tech industries and in country contexts characterized by rigid labor regulations. We compare the results of this meta-analysis with meta-analyses performed in the large firm context. Overall, our results suggest that HR-enhancing practices are important in the SME context in general and, moreover, they specify whether or not these practices have to be adapted to the SME context.

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## Executive summary

Small and medium sized firms typically need a number of skills allowing them to prosper and grow and to survive in a market. One of such skills is managing employees and using HR-enhancing practices that ensure that the human capital of the entire firm contributes to its performance (Huselid et al., 1997). Scientific knowledge about HR-enhancing practices in the SME context is emerging, even though HR management is not a top domain in entrepreneurship research. As a consequence, there is still debate in the domain about (1) whether HR-enhancing practices are useful for SME in terms of firm performance, (2) which HR-enhancing practices are particularly related to firm performance, (3) what the contingencies are that affect the relationship between HR-enhancing practices and firm performance, and (4) whether the relationship between HR-enhancing practices and performance differs between SME and large firms.

We classify HR-enhancing practices along three dimensions based on the framework proposed by Subramony (2009): HR practices that focus on enhancing skills, motivation, and empowerment. The framework assumes that employees perform better and, thus, contribute to firm performance when they are qualified to do their work, when they are incentivized to work toward the accomplishment of a firm's goals and objectives, and when they are enabled to perform the required behavior.

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We performed a meta-analysis on 56 independent samples (including 18,521 firms) to examine the relationships between HR-enhancing practices and SME performance. Across studies, HR-enhancing practices are positively related with SME performance. The sample size and reliability corrected correlation was  $r = .228$ . Moreover, skill-enhancing, motivation-enhancing, and empowerment-enhancing practices correlate with SME performance. In addition, we found higher relationships for young firms as compared to older firms, in high technology firms, and in countries characterized by rigid labor market regulations. Finally, comparing our results with those studies conducted in the large firm context showed that high performance work practices revealed higher effect sizes in the SME context, and that HR-enhancing practices are more strongly related to operational performance in the SME than in the large firm context.

We make a number of contributions. First, a number of scholars have argued that HR-enhancing practices might not be effective in the context of SME, but only when firms grow and mature. Our results challenge this proposition as we found HR-enhancing practices to be effective in SME, with empowerment-enhancing HR practices such as participation and commitment appearing to be particularly useful. Thus, employees should be motivated by the tasks and challenges associated with working in the small firm. Moreover, our meta-analysis identified a number of moderators (cf. above), and unaccounted variance suggests that there are additional moderators operating. This indicates that, in some situations, a contingency approach is more suitable in the context of SME. For example, the early adoption of HR-enhancing practices is important in the SME context. Especially incentive and reward practices are useful in the young firm context, helping young firms to attract the talented employees required to enter new markets. While any HR-enhancing practice is important in a high technology context, simply because this context requires specific knowledge configurations at the firm level, owners/managers of SME operating in high-tech industries as compared to other industries are strongly recommended to implement motivation-enhancing practices. Finally, if the SME's employee base cannot be easily changed due to rigid labor regulations as it is the case for countries such as France, Germany, and the Netherlands, it is important to develop the existing human resources. The owners/managers of SME operating in these countries are encouraged to implement HR-enhancing practices that enable their employees to perform well (e.g., training), motivate them to do so (e.g., performance appraisals), and provide them with the necessary support and avenues for expression (e.g., upward feedback mechanisms, participative decision making).

## 1. Introduction

The role of human capital has been studied extensively in research on SME (Cooper et al., 1994; Gimeno et al., 1997; Preisendoerfer and Voss, 1990; Rauch and Rijdsdijk, 2013; Unger et al., 2011). This research has predominantly examined the human capital of the owner, founder, and manager of the firm. However, HR management that involves designing and implementing practices that ensure that a firm's human capital contributes to the achievement of the firm's goals and objectives (Huselid et al., 1997) are not a top priority of empirical investigations in the field of SME management (Hayton, 2005; Schmelter et al., 2010). Therefore, we know little about how HR-enhancing practices are related to SME performance, whether some practices have stronger effects in their relationship to firm performance than others, and which contingencies may influence these relationships.

To the best of our knowledge, two meta-analyses have been conducted that established a positive relationship between HR-enhancing practices and firm performance (Combs et al., 2006; Subramony, 2009). However, both meta-analyses did not focus on the context of SME, but examined HR management in the large firm context. Moreover, these meta-analyses examined the effectiveness of high performance work practices (Combs et al., 2006) and bundles of HR practices that focus on enhancing employee skills, motivation, and empowerment (Subramony, 2009). Whether these approaches apply in the context of SME is not known. Moreover, while both meta-analyses tested moderator variables, these moderator variables were not aligned to the SME context. Given that a small firm is not a little big firm (Welsh and White, 1981), thus implying idiosyncrasies of the SME context, the relationship between skill-, motivation-, and empowerment-enhancing HR practices and SME performance can be expected to be of a sui generis design and might be therefore different than that of large firms.

Specifically, in SME theorizing, there are competing views about how HR-enhancing practices are related to firm performance. Based on utility considerations (Barney and Wright, 1998; Sels et al., 2006), the costs associated with adopting HR-enhancing practices must be balanced with the potential benefits from such actions (Osterman, 1994). However, these costs may be comparatively higher in SME due to their resource and capability constraints (Klaas et al., 2010). Consequently, the HR management-related overstraining of the SME's resources may be negatively related to firm performance (Patel and Cardon, 2010). With regard to value considerations (Barney and Wright, 1998; Sels et al., 2006), life-cycle theories suggest that HR management is not important for young and small enterprises, but that it becomes increasingly valuable at later stages of the firm's life cycle where firms become larger and leadership and delegation become critical tasks in the firm management (Ciaverella, 2003; Rutherford et al., 2003). This perspective is in stark contrast to research findings indicating that HR management issues are among the major challenges of young and small firms (Hornsby and Kuratko, 1990; Tocher and Rutherford, 2009). As smaller firms do not have the tangible resources to compete with larger and more established firms (Cardon and Stevens, 2004; Hornsby and Kuratko, 2003), implementing practices that enhance HR may be an effective way to create value in the SME context (Rauch et al., 2005), which is positively associated with SME performance (Arthur, 1994; Chandler and McEvoy, 2000; Hayton, 2003). These considerations about HR management in SME as well as the conflicting empirical results lead us to the question of whether HR-enhancing practices are related to firm performance in the context of SME and whether some practices have stronger relationship with SME performance than others. Thus, the aim of the present meta-analysis is to compare different HR-enhancing practices in their

relationship with SME performance. Moreover, we argue for a contingency perspective assuming that the effectiveness of HR-enhancing practices depends on the context of SME.

Our study offers the following contributions: First, most approaches to HR management in SME assumed that firm performance is just a result of the skills, motivation, and abilities of the founder, owner, or the management team. In contrast, the present study examines HR-enhancing practices that aim at ensuring that the human capital of the whole firm, that is, the employees' skills, motivation, and their discretionary behaviors, are related to firm performance. Thus, we look at performance relationships of firm-level HR management, for example, that Hayton (2003) has called for.

Second, our study provides a quantitative aggregation of empirical findings on the relationship between HR-enhancing practices and SME performance (Sels et al., 2006). By providing information about the generalizability of the HR-enhancing practices–performance relationship, our meta-analytical estimation allows us to make an educated guess on the extent to which HR management needs to be included in a theory of SME performance (Barrett and Mayson, 2006).

Third, we advance HR management research in the SME field by examining the relationship of different HR-enhancing practices with SME performance (Patel and Cardon, 2010). By exploring the relationship of skill-enhancing, motivation-enhancing, and empowerment-enhancing HR practices with SME performance, our study provides a more fine-grained understanding of the HR-enhancing practices–SME performance relationship. We also compare the meta-analytic results of SME with those of larger firms (Combs et al., 2006; Subramony, 2009), allowing the assessment of which HR-enhancing practices are beneficial in the SME versus large firm context. Additionally, our approach contributes to the discussion on the HR management systems versus individual HR practices perspective (Gerhart, 2007).

Finally, by adopting a contingency perspective, we examine the circumstances under which HR-enhancing practices are related to SME performance (Sels et al., 2006). Specifically, we argue that HR-enhancing practices are especially relevant for young and small firms, for firms operating in high-technology industries, and in country contexts characterized by rigid labor market regulations. Thereby, our study contributes to the debate on the universalistic (Huselid, 1995; Pfeffer, 1994) versus contingency perspective of strategic HR management research (Delery and Doty, 1996; Schuler and Jackson, 1987), suggesting that the latter might be more suitable for understanding the idiosyncrasies of the SME context.

Our research specifically focuses on small and medium sized firms with up to 500 employees, thus allowing us to draw detailed conclusions for this specific context (Rosenbusch et al., 2011). It specifically addresses questions of whether more resource-constrained organizations can benefit from HR management. Thereby, our study enables us to identify the unique intersections between the field of SME management and the field of HR management.

## 2. Theoretical background and hypotheses

### 2.1. The relationship between HR-enhancing practices and performance

HR management involves practices that ensure that the human capital of the entire firm contributes to its performance (Huselid et al., 1997). Such practices comprise a set of distinct but interrelated activities, functions, and processes that are directed at attracting, developing, and maintaining (or disposing of) a firm's human resources (Lado and Wilson, 1994). Although the HR management literature reports competing conceptualizations of the various HR-enhancing practices (Boselie et al., 2005; Brewster, 2007; Paauwe, 2009), there is agreement that some bundles of HR-enhancing practices can be combined based on their contribution to firm performance (Delery and Shaw, 2001; Wright et al., 2001). Specifically, skill-, motivation-, and empowerment-enhancing practices have been established in research on the relationship between HR-enhancing practices and performance (Jiang et al., 2012; Subramony, 2009).

Firms employ skill-enhancing HR practices (Subramony, 2009), aiming to increase the knowledge, ability, and skill levels in the firm, enabling employees to do their job. Skill-enhancing HR practices involve advanced planning, staffing, and training (Subramony, 2009). This bundle of HR-enhancing practices includes two concepts: First, abilities are among the strongest predictors of performance and they are largely genetically determined (Schmitt, 2014). Therefore, practices aiming to increase the ability level in a firm need to rely on job selection. Second, knowledge and skills can be affected by interventions and, consequently, can be enhanced by training and coaching of employees.

Motivation-enhancing HR practices help direct employee behavior toward the accomplishment of the firm's aims and objectives through inducements, such as performance management practices, compensation policies, and incentive and rewards practices (Huselid, 1995; Jiang et al., 2012; Subramony, 2009). It is important to note that the conceptualization of motivation-enhancing practices in this literature deviates from conceptualizations of motivation in organizational behavior research (Deci and Ryan, 1985), as it primarily enhances extrinsic employee motivation by focusing on rewards and incentives. The intrinsic part of motivation is covered by empowerment-enhancing HR practices.

Empowerment-enhancing HR practices increase employee autonomy, decision-making involvement, and responsibility levels (Subramony, 2009) and include the use of self-managing or autonomous teams (Mathieu et al., 2006), participatory decision making, and upward feedback mechanisms (Wood and Wall, 2007). These have been associated with performance-related discretionary behaviors such as solving problems creatively (Alge et al., 2006) or developing process improvements (Kirkman et al., 2004). This conceptualization of empowerment-enhancing HR practices overlaps with the opportunities-to-contribute HR practices (Jiang et al., 2012) as it includes employee involvement practices. However, it does not cover environmental aspects of performance such as job design or the availability of tools required to do the job.

The three HR-enhancing practices should be related to firm performance. Several authors divide performance into several hierarchical levels, with HR-enhancing practices influencing firm performance through a causal chain of mediating variables, assuming that performance at the individual level contributes to organizational outcomes which, in turn, affect firm performance (Huselid, 1995; Jiang et al., 2012; Sels et al., 2006). Examples for such mediating mechanisms through which HR-enhancing practices affect firm performance are employee discretionary behaviors which affect customer perceptions and buying behavior (McClellan and Collins, 2011) and employees' attitudes (e.g., commitment) that, in turn, affect firm performance (Wright et al., 2005). Even though we do not address mediation processes, our meta-analysis builds on research that found support for the relationship between HR-enhancing practices and firm performance (Huselid, 1995; Messersmith and Guthrie, 2010; Way, 2002). Thus, we assume that HR-enhancing practices improve individual performance which should manifest itself in a positive relationship with firm performance.

Specifically, skill-enhancing HR practices should be associated with SME performance because they ensure that not only the most qualified employees are selected and hired, but also that they are adequately trained, thus making employees more capable in executing their tasks. In addition, skill-enhancing practices such as selective staffing lead to a better fit of the employees with the organization (Schneider et al., 1995) which increases firm performance (Combs et al., 2006). Motivation-enhancing HR practices should be related to SME performance as well because performance appraisals direct employees' efforts toward the firm's goals and objectives. Moreover, motivation-enhancing HR practices such as promotions and incentives reinforce the expected employee behaviors and provide a signal that the firm values employees' contributions. Employees reciprocate this by engaging in goal-directed favorable work behaviors. Finally, motivation-enhancing HR practices increase employee commitment (Schmelter et al., 2010), which is associated with SME performance (Zhou et al., 2013). Empowerment-enhancing HR practices are associated with SME performance because such HR practices enhance individual self-efficacy as well as employees' collective perceptions that lead them to take responsibility for goal-setting and task completion (Subramony, 2009). Moreover, empowerment can lead employees to reciprocate the positive emotional bonds with the firm, which were developed as a result of practices such as job enrichment or upward feedback mechanisms, by exerting in-role and extra-role behaviors affecting firm-level outcomes. Additionally, empowerment-enhancing HR practices support experimentation and the recognition of innovative opportunities. For example, participation and autonomous work teams enable employees to take part in the decision-making processes and allow them to combine their knowledge in the course of discovering new opportunities for the firm (Antonioni and Ansoff, 2004; Gudmunson et al., 2003). In fact, participative decision making can promote an atmosphere where innovative ideas are proposed, critiqued, and refined with a minimum of financial or social risk (Olson et al., 1995). As a consequence, the odds of developing innovations that successfully address market demands as well as technical and operational requirements are increased (Olson et al., 1995). Thus, empowerment-enhancing HR practices affect employee behavior and, consequently, should be related to the performance of SME. Based on the meta-analysis of Subramony (2009), our first three hypotheses constitute replication hypotheses for the SME context:

**Hypothesis 1.** Skill-enhancing HR practices are positively related to SME performance.

**Hypothesis 2.** Motivation-enhancing HR practices are positively related to SME performance.

**Hypothesis 3.** Empowerment-enhancing HR practices are positively related to SME performance.

## 2.2. Moderators affecting the relationship between HR-enhancing practices and performance

We argue that the skill-, motivation-, and empowerment-enhancing framework needs to be extended by a contingency perspective. This idea is not new as, for example, Appelbaum et al. (2000) found that different HR-enhancing practices unfold different effects in different industries. In general, the HR management literature has conceptualized contingency factors as factors inherent in the context of the firm (Wood, 1999). Such factors can be categorized at the organizational level, the level of the population, and the community level (Aldrich and Wiedenmayer, 1993). With regard to the organizational level, the contingencies that have been shown to be associated to HR management issues in SME are essentially firm size and firm age (Rutherford et al., 2003; Tocher and Rutherford, 2009). Moreover, SME are confronted also with different HR management challenges depending on the industry in which they are embedded (Giauque et al., 2010; Hayton, 2003). Specifically, innovative industries create specific disturbances that need to be addressed successfully via HR management. At the community level, institutional determinants such as the legal and regulatory framework of the labor market affect the relationship between HR-enhancing practices and performance (Gooderham et al., 1999).

### 2.2.1. Firm size

The size of the firm is an important contextual variable in the study of the relationship between HR-enhancing practices and SME performance because size creates some challenges for SME (Cardon and Stevens, 2004). In general, small firms are more labor intensive as compared to larger firms (Patel and Cardon, 2010). This implies that the payoff for HR management is higher in smaller firms than in large firms which are less labor intensive. In addition, small firms are often characterized by a lack of legitimacy as an employer-of-choice (Williamson et al., 2002). HR-enhancing practices help to create the legitimacy required to hire and develop employees. Moreover, whereas in larger organizations, employees are often specialists working on specific tasks, small firms require employees to deal with multiple roles and tasks (May, 1997; Messersmith and Guthrie, 2010), thus, HR-



enhancing practices need to address these demands. Finally, HR-enhancing practices are especially relevant in the SME context (Rauch et al., 2005) as smaller firms do not have the tangible resources to compete with larger and more established firms (Cardon and Stevens, 2004; Hornsby and Kuratko, 2003).

More specifically, implementing skill-enhancing HR practices such as professional recruiting, structured procedures for personnel selection, clear job descriptions, and training should help small firms in attracting and developing performance-relevant skills and knowledge required to compete with larger medium sized firms (Cardon and Stevens, 2004). Moreover, empowerment-enhancing HR practices help employees of SME working in entrepreneurial projects (Schmelter et al., 2010) and to deal with multiple roles and tasks that demand flexibility and decision-making power on the part of the employees (May, 1997; Messersmith and Guthrie, 2010). Given the greater level of managerial discretion and freedom from oversight enjoyed by the central owner/manager in a small firm, the CEO of a small firm is able to more fully empower employees to make decisions autonomously than the CEO of a larger medium sized firm (Ling et al., 2008). Specifically, because the central owner/manager of a small firm is “more engaged in the implementation of the firm’s strategy, with greater hands-on experience, there is a greater opportunity to directly encourage and support novel thinking among all the firm’s employees” (Ling et al., 2008, p. 924), which makes the small firm more flexible and adaptable when experimenting with new initiatives (Messersmith and Guthrie, 2010). In turn, in medium sized firms, implementing such empowerment-enhancing HR practices is associated with comparatively higher indirect costs because more employees are involved in workplace decisions requiring more time and communication between participants (Cooke, 1994; Sels et al., 2006). Moreover, motivation-enhancing practices are important to maintain employee effort in the labor-intensive context of small firms. Given that each individual employee has a stronger influence on the eventual performance of a small firm (as a direct result of its small size) in contrast to larger firms (Bacon et al., 1996), motivation-enhancing HR practices (Arthur, 1994) should contribute to the higher payoff of HR-enhancing practices in small as compared to larger medium sized firms. Thus, we propose that:

**Hypothesis 4.** The relationship between HR-enhancing practices and SME performance is stronger in small firms as compared to medium sized firms.

### 2.2.2. Firm age

Another important moderator variable in SME research in conjunction with HR-enhancing practices is the age of firms (Cardon and Stevens, 2004). Research indicates that HR management issues are among the major challenges of young firms (Hornsby and Kuratko, 1990; Tocher and Rutherford, 2009). Young firms suffer from constraints and factors associated with the liability of newness, such as the lack of efficient ways of operating, lack of organizational structure, barriers to entry, lack of legitimacy in a market, and lack of reliability (Aldrich and Auster, 1986; Stinchcombe, 1965).

HR-enhancing practices provide a valuable opportunity to address these constraints and liabilities of young firms. For example, a skilled and motivated work force helps to increase acceptance by the customers and other stakeholders important for young firms (McClellan and Collins, 2011) so that HR-enhancing practices can help establish performance-related legitimacy (Williamson et al., 2002). Moreover, by utilizing selective staffing techniques, young firms can increase their face validity by signaling to applicants that the organization is selective about whom it hires (Way, 2002). This is particularly valuable for young firms where hiring suboptimal candidates can have stronger negative implications for team dynamics and organizational growth as compared to older firms (Messersmith and Wales, 2013). Research also indicates that investment in training and development activities by young firms (Kotey and Folker, 2007) allows them to achieve more productive levels of innovation (Thornhill, 2006). Additionally, enhancing autonomy and responsibility levels is highly valuable in the young-firm context in which individual employees generally fulfill multiple roles (Cardon and Stevens, 2004). Moreover, motivation-enhancing practices such as pay-for-performance help to standardize processes and increase the firm’s reliability (Chadwick and Dabu, 2009), thus increasing young firm’s operational efficiency (Messersmith and Wales, 2013). Older firms, in contrast, face fewer challenges associated with social legitimacy, resource stability, and operational efficiency, and, therefore, benefit less strongly from HR-enhancing practices than young firms in terms of firm performance. Thus, we propose that:

**Hypothesis 5.** The relationship between HR-enhancing practices and SME performance is stronger in young firms as compared to older firms.

### 2.2.3. High-technology industries

SME operating in high-technology industries face specific challenges that can be successfully addressed by implementing HR-enhancing practices (Hayton, 2003). In general, the conduct of business in high-technology industries involves the use of sophisticated and complex methods, practices, and techniques and typically requires extensive research and development in a dynamic and uncertain environment (Khandwalla, 2006; Utterback, 1996). Moreover, firms operating in high-technology industries have to be innovative by introducing new products or services to the market. An additional constraint concerns a lack of legitimacy of the activities of SME in innovative industries (Aldrich and Martinez, 2001). For example, the new products and services offered may not be accepted in the market, and SME may not conform to accepted norms and values so that investors and (potential) employees may not be willing to offer the needed resources.

This situation demands SME to implement skill-enhancing HR practices enabling the employees to acquire the knowledge critical to manage complex research and developing projects typical in high-technology industries. Unfortunately, the uncertainty

in such industries makes it difficult to acquire new knowledge (Aldrich and Fiol, 1994), making it even more essential to implement skill-enhancing HR practices (Schmelter et al., 2010). Moreover, because high-tech firms emphasize intangible assets such as new ideas and new knowledge to explore novel solutions (Anand et al., 2007; Puranam et al., 2006), they need to attract the most qualified employees via professional recruiting and structured personnel selection. In addition, employees of SME operating in high-technology industries need to not only continuously adopt new knowledge, but they also have to transfer this knowledge and apply it in a way that it is beneficial for the focal firm (Hayton, 2003). Therefore, high-technology SME benefit from implementing motivation-enhancing HR practices such as performance appraisals and incentives, ensuring that employees behave in line with the SME's aims and mission and therefore in response to dynamic environmental conditions (Kuratko et al., 1990). Finally, high-technology industries demand not only enhanced skills and motivation from employees of SME, but they are also required to proactively explore risky innovation opportunities in the face of high dynamism and uncertainty. In order to deal with such challenges, HR practices need to focus on enhancing employee autonomy and participation, allowing employees to respond in unique ways to new challenges (Schmelter et al., 2010). Moreover, empowerment-enhancing HR practices can help to reduce uncertainties associated with innovation, for example, by creating a safe environment for experimentation, establishing plans and milestones for goal achievements, and routines for innovation implementation, thus making employees feel comfortable with ambiguity (Amabile, 1988; McGinnis and Ackelsberg, 1983). These arguments suggest that HR-enhancing practices are related to the performance of SME operating in high-technology industries. Thus, we suggest the following hypothesis:

**Hypothesis 6.** The relationship between HR-enhancing practices and SME performance is stronger in firms operating in high-technology industries as compared to firms operating in other industries.

#### 2.2.4. Labor market regulations

In order to better understand the relationship between HR-enhancing practices and SME performance, research needs to consider national contextual differences as a contingency factor (Brewster, 2007). In this regard, national differences in the regulatory environment are related to implementation (Gooderham et al., 1999) and effectiveness of HR-enhancing practices in SME (Gilman and Raby, 2012; Khavul et al., 2010). The regulatory environment can take many forms; one that should affect the relationship between HR-enhancing practices and SME performance the rigidity of labor market regulations that address the ability of firms to contract freely for labor and dismiss redundant workers when they are no longer needed (Miller et al., 2015). According to Miller et al. (2015), rigid labor market regulations prevent firms and employees from freely negotiating changes in terms and conditions of work, resulting often in a chronic mismatch of labor supply and demand. Against this background, we argue that enhancing HR is more important for the performance of SME that operate in such country contexts which are characterized by rigid labor market regulations. If the SME employee base cannot be easily changed, it is important to develop the existing human resources. Specifically, in order to foster the performance-related discovery of innovative solutions (Rosenbusch et al., 2011), SME in country contexts characterized by rigid labor market regulations need to implement HR practices that enhance their current employees' autonomy and responsibility levels. Such empowerment-enhancing practices might balance the HR-related flexibility disadvantages SME have in contexts with rigid labor markets (Brewster, 2007). In addition, enhancing their employees' skills via training can foster novel and innovative processes within the SME as training "enables employees to respond in unique ways to new challenges" (Schmelter et al., 2010, p. 721), thus, balancing the rigidities associated with a highly regulated labor market. Moreover, motivation-enhancing HR practices such as providing rewards beyond standard compensation practices (Schmelter et al., 2010) can be strongly connected with the desired entrepreneurial behavior in highly regulated labor markets (Hornsby et al., 1993). Thus, by implementing HR practices that enhance employee empowerment, skills, and motivation, SME operating in a labor market that is associated with rigid regulations can outperform those that do not. In particular, we assume that the potential benefits associated with adopting HR-enhancing practices in country contexts with rigid labor market regulations exceed the costs from such actions to a larger extent than for SME that operate in environments where labor regulations are more flexible. In such contexts, flexible labor market regulations allow for labor mobility and, therefore, do not demand highly sophisticated HR-enhancing practices and, as a consequence, HR-enhancing practices will be less strongly associated with SME performance. Therefore, we postulate:

**Hypothesis 7.** The relationship between HR-enhancing practices and SME performance is stronger in firms operating in country contexts characterized by rigid labor market regulations as compared to contexts characterized by flexible labor market regulations.

### 3. Methods

#### 3.1. Scope of the study

We conducted a meta-analysis to test our propositions. The scope of the study includes firms with up to 500 employees. Moreover, the unit of analysis is the firm. Therefore, we included only studies that investigate firm-level HR-enhancing practices and performance.

**Table 1**  
Studies and coding of studies included in the meta-analysis.

	Author name, year	Sample size	Effect size, corrected	Type of HRM practice	Size	Age	High-tech	Performance assessment	Study quality
1	Allen et al. (2013)	215	.319	Empowerment	Small	Old	No	Financial	High
2	Altinay et al. (2008)	165	.276	Skill, motivation, empowerment	Small		No	Financial	Low
3	Andries and Czarnitzki (2014)	305	.371	Empowerment	Small		No	Operational	Low
4	Barrett et al. (2008)	370	.117	Skill, motivation	Small	Old	No	Financial	Low
5	Barringer et al. (2005)	100	.215	Skill, motivation, empowerment	Medium	Old	No	Financial	High
6	Brand and Croon (2010)	81	−.17				No	Operational	Low
7	Burton and O'Reilly (2004)	101	.122	Skill, motivation, empowerment	Medium	New	Yes	Financial Operational	High
8	Chadwick et al. (2013)	96	.01	Skill	Small	Old	No	Financial	High
9	Changanti et al. (2002)	73	.046		Small	Old	No	Financial	High
10	Chang and Chun Huang (2005)	235	.184		Medium	Old	No	Financial	Low
11	DeGeest et al. (2015)	1100	.29	Motivation	Small	New	Yes	Financial	High
12	De Kok and den Hartog (2006)	520	.206				No	Financial	Low
13	De Kok et al. (2006)	16	.538	Skill, motivation	Small		No	Financial	Low
14	De Winne and Sels (2010)	294	.350		Small	New	Yes	Operational	Low
15	Fabi et al. (2007)	176	.029	Skill, motivation, empowerment	Medium		No	Financial Operational	Low
16	Georgiadis and Pitelis (2012)	460	−.027	Skill, motivation	Medium		No	Financial Operational	Low
17	Gilman and Raby (2012)	217	0.401	Motivation, empowerment	Small		No	Financial	Low
18	Gilman and Raby (2012)	134	0.026	Motivation, empowerment	Small		No	Financial	Low
19	Hayton (2003)	99	.408	Skill	Medium		No	Operational	Low
20	Heneman et al. (2008)	672	−.007	Skill, motivation, empowerment	Medium	Old	No	Financial	Low
21	Kaman et al. (2001)	319	.141	Skill, motivation, empowerment	Small		No	Financial Operational	Low
22	Karami et al. (2008)	132	.781	Skill, empowerment			Yes	Financial Operational	Low
23	Kasturi et al. (2006)	44	−.225	Motivation, empowerment	Medium	Old	No	Financial	Low
24	Katou (2012)	197	.446	Empowerment			No	Operational	Low
25	Kaya (2006)	124	.738				No	Financial Operational	Low
26	Kerr et al. (2007)	98	.238	Skill, motivation			No	Financial	Low
27	Khavul et al. (2010)	171	.225			New	No	Financial	Low
28	King-Kauanui et al. (2006)	200	.565	Skill, motivation			No	Financial	High
29	Klaas et al. (2005)	489	.289		Small		No	Operational	Low
30	Klaas et al. (2010)	494	.363		Small		No	Operational	Low
31	Kroon et al. (2013)	45	.189	Skill, motivation, empowerment	Small	Old	No	Operational	High
32	Leitão and Franco (2011)	80	.423	Motivation, empowerment			No	Financial Operational	Low
33	Litz and Stewart (2000)	300	.155	Skill		Old	No	Operational	low
34	Mavondo et al. (2005)	220	.484	Empowerment	Medium		Yes	Financial Operational	Low
35	McClean and Collins (2011)	180	.519			Old	No	Financial	High
36	Messersmith and Guthrie (2010)	215	.261	Motivation	Small	New	Yes	Financial Operational	High
37	Michie and Sheehan (2008)	189	.334	Skill, motivation, empowerment	Small	Old	No	Financial Operational	Low
38	Muse et al. (2005)	4367	.097	Motivation	Small	Old	No	Financial	Low
39	Patel et al. (2013)	215	.216		Small	New	Yes	Financial Operational	High
40	Patel and Cardon (2010)	145	.083		Small	Old	No	Financial Operational	Low
41	Rauch et al. (2005)	119	.213	Empowerment	Small	New	No	Financial	High
42	Razouk (2011)	275	.70	Empowerment	Medium		No	Financial Operational	High
43	Richbell and Szerb (2010)	678	.036	Skill, empowerment			No	Financial	Low

(continued on next page)



Table 1 (continued)

Author name, year	Sample size	Effect size, corrected	Type of HRM practice	Size	Age	High-tech	Performance assessment	Study quality
44 Roca-Puig et al. (2012)	819	.306		Small	Old	No	Financial Operational	Low
45 Rodrigues and Raposo (2011)	212	.388	Empowerment			No	Financial Operational	High
46 Rosli and Mahmood (2013)	284	.520	Skill, empowerment	Small		No	Financial Operational	Low
47 Schmelter et al. (2010)	214	.218	Skill, motivation			Yes	Operational	Low
48 Sels et al. (2006)	416	.131	Motivation		New	No	Financial Operational	High
49 Seong (2011)	162	.650	Motivation	Small	Old	No	Financial	Low
50 Sheehan (2014)	336	.542		Small	Old	No	Financial Operational	High
51 Solomon et al. (2014)	111	.29	Motivation	Medium		No	Financial	Low
52 Teo et al. (2011)	104	.650		Small	Old	No	Financial Operational	Low
53 Tomczyk et al. (2013)	111	.363	Motivation	Medium		No	Financial	High
54 Way (2002)	446	.137	Empowerment			No	Financial Operational	Low
55 Yu (2010)	172	.499	Skill, motivation, empowerment	Small		No	Operational	Low
56 Zhang et al. (2008)	139	.263		Medium	New	Yes	Operational	High

### 3.2. Study location procedure

We used a keyword search in scientific databases for locating the studies included in the meta-analysis. Specifically, we inspected ABI/Inform, EBSCOHost, Econlit, ISI Web of Knowledge, and Social Sciences Citation Index. Our keyword search used combinations of the following key words: human resource management, HRM, HR practices, and SME, small business, entrepreneur\*, ventures and performance, innovation, success, and growth. This procedure allowed us to identify 56 independent studies that examined 18,521 enterprises. A description of the studies including the coding of constructs is displayed in Table 1. It is interesting to note that the studies included in our meta-analysis focusing on the SME context do not overlap with the two meta-analyses performed in the large firm context (Combs et al., 2006; Subramony, 2009). The only exception is the study conducted by Way (2002), which is included in our analysis as well because it focuses on the SME context.

### 3.3. Coding

#### 3.3.1. HR-enhancing practices

We followed Subramony's (2009) suggestion to categorize HR-enhancing practices along three categories: skill-, motivation-, and empowerment-enhancing HR practices. Skill-enhancing HR practices aim to improve skill and knowledge levels in the firm and emphasize selection and training. Motivation-enhancing HR practices aim to direct and enforce employee behavior, for example, by providing rewards and incentives. Empowerment-enhancing HR practices emphasize employee autonomy and responsibility and consist of measures such as decision-making involvement/participation, job enrichment, meetings, feedback, and flexibility (Subramony, 2009). Table 2 lists the measures that have been categorized as empowerment-, skill-, and motivation-enhancing HR practices. The measures are ordered according to their frequency of operationalization in the sample of studies included in this meta-analysis.

Since it might be difficult to categorize HR-enhancing practices, the coding process was performed by two independent coders. The coders received detailed coding instructions including the definitions of the HR-enhancing practices and anchors consisting of the coding categories by Subramony (2009). We performed two assessments of inter-rater reliability. First, we measured Cohen's kappa coefficient for assessing the inter-coder agreement about whether or not a measure belongs to the mutually exclusive categories of HR-enhancing practices. The results suggest very good agreement (Landis and Koch, 1977) for skill-enhancing ( $\kappa = .86$ ), motivation-enhancing ( $\kappa = .93$ ), and empowerment-enhancing ( $\kappa = .93$ ) HR practices. Second, the data of HR-enhancing practices had to be aggregated within each study, for example, because studies used multiple indicators for performance or of HR-enhancing practices. This situation allowed us to calculate inter-rater reliabilities for each effect size calculation. The intraclass coefficients (Shrout and Fleiss, 1979) were .98 for skill-enhancing, .99 for motivation-enhancing, and .98 for empowerment-enhancing HR practices. Following the coding process, discrepancies were discussed and eliminated by the coders.

#### 3.3.2. Firm size

There are different categorizations of firm size. While the European Commission classified enterprises with less than 50 employees as small firms, the United States Small Business Administration defined larger size standards for different industries. As we code size on the basis of the average size of firms included in a study, we decided to rely on the conservative definition of

**Table 2**

Coding of HR-enhancing practices and performance variables.

Empowerment-enhancing HR practices	Motivation-enhancing HR practices	Skill-enhancing HR practices	Financial performance: accounting-based	Financial performance: growth	Financial performance: perceived performance	Operational performance
Involvement in decision making	Rewards	Training	Profitability	Sales growth	Performance compared with competitors	Innovation
Index of empowerment--enhancing HR practices	Compensation	Selection	Sales per FTE	Employment growth	Perceived firm performance	Entrepreneurial orientation
Meetings	Performance appraisal	Job description	Return on assets	Growth index	Performance importance × satisfaction	Corporate entrepreneurship
Empowerment	Stock options	Index of skill-enhancing HR practices	Profit per FTE			Differentiation
Flexibility	Health plan	Staffing plan	Return on sales			Employee turnover
Job rotation	Index of motivation-enhancing HR	Formal orientation	Value added per staff			Absenteeism
Grievance procedure	Performance-based pay	Written handbook	Failure			Product quality
Commitment	Skill-based pay	Job preview	Retained cash flow			Initial public offering
Treated like owners	Internal staffing	Formal procedures	Price–cost margin			Sales per square meter
Opportunities to perform (autonomy, participation)	Pension plan	Skilled HR management	Productivity			Strategic orientation
Voice		Development				Diversification
Use of employee ideas		Screening test				Satisfaction with HR outcomes
Communication		Specialist assignment				Cost leadership
Employee feedback		Selection ratio				Achievement of objectives
		Selection criteria				

the European Commission and used 50 employees as the cut-off for distinguishing between small and medium sized firms (Commission Recommendation, 2003).

### 3.3.3. Firm age

Regarding the coding of firm age, there is no commonly agreed upon definition in the literature, possibly because maturity depends on the industry (Covin et al., 1990). Previous meta-analyses in the domain of SME and entrepreneurship used an average age of 12 years (Rosenbusch et al., 2011) and eight years (Brinckmann et al., 2010) as the cut-off to differentiate between young and old firms. Since primary research has used eight years as a cut-off (McDougall and Robinson, 1990; Zahra, 1996), the present meta-analysis also uses a cut-off of eight years on average to differentiate between studies examining samples of young firms and studies examining samples of older firms.

### 3.3.4. Industry

Next, we coded the studies into high-tech and non-high-tech industries. High-tech industries include studies focusing specifically on innovative industries (De Winne and Sels, 2010), on knowledge-intensive industries (Kaman et al., 2001; Schmelter et al., 2010), and on high-technology industries as classified by the OECD (Hatzichronoglou, 1997). All other industries were coded as non-high-tech industries.

### 3.3.5. Labor market regulations

To distinguish between flexible and rigid labor market regulations, we draw on the Index of Labor Freedom, a subindex of the Index of Economic Freedom (Miller et al., 2015). The quantitative index consists of six equally weighted subfactors: ratio of minimum wage to the average value added per worker, hindrance to hiring additional workers, rigidity of hours, difficulty in firing redundant employees, legally mandated notice period, and mandatory severance pay. In 2005, the Index of Labor Freedom was available for the first time for all 20 countries included in this meta-analysis. To split the sample, we computed the median across all of these countries between 2005 and 2015. Based on this median (61.65), 10 of the researched countries show a flexible labor market regulations (United States, Australia, Canada, United Kingdom, Malaysia, Belgium, Hungary, Vietnam, India, China), while the remaining countries (the Netherlands, South Africa, Greece, France, Spain, South Korea, Taiwan, Germany, Portugal, Turkey) show rigid labor market regulations.

### 3.3.6. Performance

The relationship between HR-enhancing practices and SME performance might also depend on the performance assessment used. In general, performance is a multidimensional construct (Combs et al., 2005). Therefore, the HR management literature distinguished between HR-related outcomes (employee attitudes and behavior), operational outcomes (HR-enhancing practices supporting the strategy of a firm) (Schmelter et al., 2010), and financial outcomes (profits, market share) (Paauwe and Boselie, 2005). Since we are interested in examining firm-level performance outcomes, we do not consider HR-related outcomes which occur at the level of the individual. Therefore, our study distinguishes between financial performance and operational performance (Venkatraman and Ramanujam, 1986). Financial performance includes indicators that are directly related to the financial goals of a firm (Rosenbusch et al., 2013). We coded financial performance along three dimensions: accounting-based measures, growth, and perceived performance. These measures partially overlap, both theoretically and statistically (see Combs et al., 2006, for a discussion). Accounting-based measure include indicators such as profitability, return on sales, return on assets, and failure.<sup>1</sup> Indicators of growth are predominantly sales growth and employment growth. Finally, we coded perceived performance when studies assessed performance rather subjectively by asking the study participant for their performance assessment, for example, by comparing the own firm's performance level with the performance of their most important competitors (Wiklund and Shepherd, 2003). This operationalization is in line with other meta-analyses that focus on the financial performance of SME (Rauch et al., 2009; Rosenbusch et al., 2013). Operational performance comprises factors that might lead to subsequent financial performance, such as market share, new product introduction, product quality, firm strategy, or marketing effectiveness (Venkatraman and Ramanujam, 1986). Therefore, the coding of operational performance includes measures of innovation, entrepreneurial orientation, differentiation, and quality of products/services. Table 2 displays the specific measures that were coded in each performance category.

### 3.3.7. Controls

We used two control variables. First, we coded whether or not studies were published in peer-reviewed journals. Second, we computed an overall assessment of study quality by coding whether or not studies relied on a longitudinal design, whether the variables were assessed using a common method, whether the sample was drawn randomly, and whether study quality criteria (validities, reliabilities) were reported. A study was coded as 'high quality' if it scored high on at least two of the four quality criteria mentioned.

## 3.4. Meta-analysis procedure

We used the procedures suggested by Hunter and Schmidt (2004) for conducting the meta-analysis. When studies reported several correlation coefficients between independent and dependent variables, we aggregated these correlations by computing the mean value. In addition, we analyzed independent effect sizes; thus, we included overlapping or identical samples only once in the analysis. Specifically, we transformed the results of the examined studies into the  $r$  statistic. We subsequently calculated the sample size weighted mean correlation and the observed variance of the weighted correlation coefficients. We then calculated the 95% confidence interval. An effect size was regarded as significant if the confidence interval did not include zero. Next, we calculated the 95% credibility interval. A credibility interval excluding zero indicates that more than 97.5% of effect sizes of HR-enhancing practices in the population will exclude zero. To assess the heterogeneity of effect sizes, we calculated the sampling error variance. We assumed homogeneity when 75% or more of the observed variance could be explained by sampling error variance (Hunter and Schmidt, 2004). To examine the statistical significance of the difference between each moderator pair, we calculated  $z$ -statistics. The sum of studies for some moderator tests is larger than 56 because some studies reported effects on both sides of the moderators. Thus, the assumption of independent effect sizes is diminished in our moderator analysis (Crook et al., 2008; Unger et al., 2011). In addition, we corrected the sample size weighted mean correlation for reliabilities. Since many of the examined studies did not report reliabilities, we weighted the studies by the average reliability, which was .80 for the HR-enhancing practices variables and .81 for the SME performance assessment. Finally, we conducted a file drawer analysis (Rosenthal, 1979). This analysis indicates the number of studies with an effect size of zero needed to reduce the mean effect size to the point of nonsignificance. Therefore, this estimate provides information on whether the observed effect size is spurious or not (Lipsey and Wilson, 2001).

We complemented the bivariate meta-analysis by a meta-regression, relying on the methodology as suggested by Lipsey and Wilson (2001). Specifically, we used a weighted least square regression using the inverse variance weight and the random effect model. The random effect model is indicated given the heterogeneity of effect sizes included in the analysis. Given the insufficient number of studies at the level of specific HR-enhancing practices paired with the presence of missing values, we ran the multivariate analysis only for the overall construct of HR-enhancing practices.

## 4. Results

Table 3 displays the results of our meta-analysis. These results indicated that HR-enhancing practices are positively associated with SME performance. The overall sample size weighted and reliability corrected correlation was  $r_c = .228$ . This correlation was

<sup>1</sup> Failure can be defined as either insolvency or when a firm is unable to acquire new funding to continue operating under current ownership and management structures (Shepherd et al., 2009). Since failure is therefore an economic outcome, we categorized it accordingly as an accounting-based measure.

**Table 3**  
Meta-analysis results.

	<i>k</i>	<i>N</i>	<i>r<sub>w</sub></i>	<i>r<sub>c</sub></i>	<i>S<sub>o</sub></i>	<i>S<sub>e</sub></i>	Sampling error (% variance)	95% credibility interval	95% confidence interval	Sign. test	File drawer analysis
HR-enhancing practices overall	56	18,521	.182	.228	.0223	.0028	12.73	−.091 to .456	.143 to .221		20,414
1 Skill-enhancing HR practices	29	6195	.138	.173	.0318	.0045	14.24	−.186 to .462	.073 to .203		1102
2 Motivation-enhancing HR practices	26	10,524	.124	.155	.0170	.0024	14.14	−.113 to .361	.074 to .174	1.65 <sup>a</sup>	3775
3 Empowerment-enhancing HR practices	26	6116	.214	.268	.0268	.0039	14.49	−.083 to .511	.151 to .277	−2.20 <sup>*,b</sup>	2828
1 HR-enhancing practices overall small firms	29	12,591	.179	.224	.0159	.0022	13.59	−.051 to .409	.133 to .225	1.72 <sup>c</sup>	7372
2 HR-enhancing practices overall medium sized firms	13	3146	.093	.116	.0254	.0041	16.03	−.194 to .379	.006 to .179		315
1 HR-enhancing practices overall young firms	8	2354	.244	.304	.0070	.0030	42.90	.119 to .368	.185 to .302	2.67 <sup>**,c</sup>	860
2 HR-enhancing practices overall old firms	19	8738	.128	.160	.0194	.0021	10.85	−.130 to .386	.065 to .190		2213
1 HR-enhancing practices overall high-tech industries	9	2630	.277	.346	.0196	.0029	14.96	.023 to .530	.185 to .368	2.15 <sup>*,c</sup>	1154
2 HR-enhancing practices overall non-high-tech industries	47	15,891	.167	.209	.0227	.0028	12.35	−.110 to .443	.124 to .210		12,157
1 HR-enhancing practices overall flexible labor market regulations	35	13,564	.164	.205	.0197	.0024	12.43	−.093 to .422	.118 to .211	−2.25 <sup>*,c</sup>	8217
2 HR-enhancing practices overall rigid labor market regulations	16	3496	.281	.351	.0340	.0039	11.47	−.060 to .621	.190 to .371		2376
1 HR-enhancing practices overall financial performance	43	15,587	.169	.212	.0241	.0026	10.83	−.118 to .457	.123 to .216	−1.79 <sup>c</sup>	11,138
1.1 Accounting-based	16	9766	.103	.129	.0274	.0016	5.86	−.212 to .418	.022 to .184	0.79 <sup>d</sup>	664
1.2 Growth	17	8379	.059	.074	.0242	.0020	8.35	−.232 to .351	−.015 to .133	−3.51 <sup>**,e</sup>	126
1.3 Perceived performance	14	2888	.359	.449	.0510	.0037	7.24	−.067 to .786	.241 to .478	−4.23 <sup>**,f</sup>	2188
2 HR-enhancing practices overall operational performance	33	8332	.240	.299	.0333	.0035	10.63	−.099 to .577	.177 to .301		6631
1 Skill-enhancing HR practices small firms	14	3124	.165	.206	.0162	.0043	26.29	−.049 to .379	.098 to .232	2.39 <sup>*,c</sup>	468
2 Skill-enhancing HR practices medium sized firms	8	2330	.004	.005	.0269	.0034	12.81	−.296 to .304	−.109 to .118		
1 Skill-enhancing HR practices young firms	3	566	.201	.255	.0134	.0049	36.49	.023 to .385	.073 to .335	1.52 <sup>c</sup>	32
2 Skill-enhancing HR practices old firms	12	2258	.074	.093	.0303	.0053	17.44	−.236 to .384	−.024 to .173		
1 Skill-enhancing HR practices high-tech industries	4	741	.279	.348	.0564	.0046	8.19	−.167 to .725	.046 to .511	1.21 <sup>c</sup>	90
2 Skill-enhancing HR practices non-high-tech industries	25	5454	.130	.162	.0286	.0045	12.95	−.175 to .434	.063 to .196		703
1 Skill-enhancing HR practices flexible labor market regulations	19	4164	.144	.180	.0275	.0044	16.00	−.154 to .442	.069 to .218	−1.77 <sup>c</sup>	630
2 Skill-enhancing HR practices rigid labor market regulations	6	785	.331	.414	.0581	.0061	10.51	−.116 to .778	.138 to .524		248
1 Motivation-enhancing HR practices small firms	14	8,157	.130	.162	.0133	.0017	12.54	−.083 to .341	.069 to .190	1.56 <sup>c</sup>	1621
2 Motivation-enhancing HR practices medium sized firms	8	1775	.037	.047	.0209	.0045	21.58	−.214 to .288	−.063 to .138		
1 Motivation-enhancing HR practices young firms	3	1416	.264	.330	.0226	.0018	8.13	−.018 to .547	.094 to .434	1.99 <sup>*,c</sup>	210
2 Motivation-enhancing HR practices old firms	9	6235	.078	.098	.0103	.0014	13.91	−.106 to .262	.012 to .144		441
1 Motivation-enhancing HR practices high-tech industries	4	1630	.254	.318	.0202	.0022	10.66	−.008 to .518	.115 to .394	2.03 <sup>*,c</sup>	313
2 Motivation-enhancing HR practices non-high-tech industries	22	8894	.100	.125	.0164	.0024	14.82	−.132 to .332	.046 to .153		1963
1 Motivation-enhancing HR practices flexible labor market regulations	17	8840	.118	.147	.0113	.0019	16.64	−.072 to .308	.067 to .168	−1.49 <sup>c</sup>	2005
2 Motivation-enhancing HR practices rigid labor market regulations	6	609	.317	.397	.1032	.0080	7.80	−.287 to .922	.060 to .574		183

(continued on next page)

Table 3 (continued)

	<i>k</i>	<i>N</i>	<i>r<sub>w</sub></i>	<i>r<sub>c</sub></i>	<i>So</i>	<i>Se</i>	Sampling error (% variance)	95% credibility interval	95% confidence interval	Sign. test	File drawer analysis
1 Empowerment-enhancing HR practices small firms	12	2610	.221	.308	.0145	.0042	28.77	.023 to .420	.153 to .289	1.82 <sup>c</sup>	635
2 Empowerment-enhancing HR practices medium sized firms	8	2090	.092	.115	.0304	.0124	40.75	-.228 to .412	-.029 to .213		
1 Empowerment-enhancing HR practices young firms	2	220	.127	.159	.0080	.0089	110.83	0 to 0	.003 to .251	0.17	1
2 Empowerment-enhancing HR practices old firms	6	1265	.112	.140	.0220	.0046	21.11	-.147 to .370	-.007 to .321		
1 Empowerment-enhancing HR practices high-tech industries	3	453	.351	.439	.0459	.0051	11.16	-.044 to .747	.109 to .594	1.24 <sup>c</sup>	22
2 Empowerment-enhancing HR practices non-high-tech industries	23	5663	.192	.254	.0248	.0038	15.24	-.093 to .476	.127 to .256		1871
1 Empowerment-enhancing HR practices flexible labor market regulations	13	2981	.175	.243	.0272	.0041	15.124	-.123 to .473	.086 to .265	-1.70 <sup>c</sup>	457
2 Empowerment-enhancing HR practices rigid labor market regulations	10	2059	.293	.367	.0273	.0041	14.94	-.006 to .592	.191 to .395		797
Robustness test											
Study quality—high	21	4968	.264	.330	.0230	.0037	15.98	-.008 to .536	.199 to .329	3.30 <sup>**c</sup>	4466
Study quality—low	35	13,553	.152	.191	.0220	.0025	11.23	-.121 to .426	.103 to .202		6602
Published studies	47	15,902	.188	.235	.0230	.0028	12.03	-.090 to .466	.145 to .231	0.78 <sup>c</sup>	16,356
Unpublished studies	9	2619	.149	.186	.0183	.0033	18.04	-.091 to .389	.061 to .237		179

*k* = number of studies. *N* = sample size. *r<sub>w</sub>* = sample size weighted correlation. *r<sub>c</sub>* = reliability corrected correlation. *So* = observed variance. *Se* = sampling error variance.

<sup>a</sup> 1 versus 3.

<sup>b</sup> 2 versus 3.

<sup>c</sup> 1 versus 2.

<sup>d</sup> 1.1 versus 1.2.

<sup>e</sup> 1.1 versus 1.3.

<sup>f</sup> 1.2 versus 1.3.

\* *p* < .05.

\*\* *p* < .01.

heterogeneous, indicating the presence of moderator variables. Therefore, we looked at the specific HR-enhancing practices separately.

**Hypothesis 1** suggested a positive relationship between skill-enhancing HR practices and SME performance. A total of 29 studies (*N* = 6195) examined skill-enhancing HR practices, and the correlation with SME performance is *r<sub>c</sub>* = .173. This result supports **Hypothesis 1**. In support for **Hypothesis 2**, we found that motivation-enhancing HR practices are significantly and positively correlated with firm performance (*r<sub>c</sub>* = .155, *k* = 26, *N* = 10,524). Finally, we found that the relationship between empowerment-enhancing HR practices and firm performance is *r<sub>c</sub>* = .268 (*k* = 26, *N* = 6116), indicating support for **Hypothesis 3**. This effect size was significantly higher than the correlation between motivation-enhancing HR practices and SME performance (*z* = -2.20, *p* < .05), thus indicating that empowerment-enhancing HR practices are more important than motivation-enhancing HR practices in the SME context.

Next, we examined the moderator hypotheses. **Hypothesis 4** suggested that the relationship between HR-enhancing practices and firm performance is stronger in small firms as compared to medium sized firms. While the effect size of the relationship between HR-enhancing practices and firm performance was higher in small firms (*r<sub>c</sub>* = .224) as compared to medium sized ones (*r<sub>c</sub>* = .116), the difference between the two effect sizes is not significant (*z* = 1.72, ns.). Therefore, **Hypothesis 4** cannot be corroborated. However, there are differences between small and medium sized firms regarding the performance link of specific HR-enhancing practices (Table 3). Specifically, the relationship between skill-enhancing HR practices and firm performance is *r<sub>c</sub>* = .206 for small firms and *r<sub>c</sub>* = .005 for medium sized firms, and the difference in effect sizes is significant (*z* = 2.39, *p* < .05). Thus, small firms benefit more from skill-enhancing HR practices as compared to medium sized firms. It is interesting to note that the relationships between skill-enhancing and empowerment-enhancing HR practices on the one hand and performance on the other hand were insignificant for medium sized firms. These analyses indicate that HR-enhancing practices are particularly important in the small firm context.

Furthermore, we tested whether the relationship between HR-enhancing practices and SME performance depends on firm age (**Hypothesis 5**). In support of **Hypothesis 5**, we found that this relationship is stronger for young firms (*r<sub>c</sub>* = .304) as compared to older firms (*r<sub>c</sub>* = .160), and the difference between these effect sizes is significant (*z* = 2.67, *p* < .01). Looking at specific HR-



enhancing practices, it appears that this effect is driven by a difference in the relationship between motivation-enhancing HR-practices and performance ( $z = 1.99, p < .05$ ).

Subsequently, we tested the differential relationship of HR-enhancing practices and SME performance in different industries (Hypothesis 6). Not only was the effect size higher for SME operating in high-tech industries ( $r_c = .346$ ) than those operating in non-high-tech industries ( $r_c = .209$ ), but also the difference between these correlations was significant ( $z = 2.15, p < .05$ ). Therefore, Hypothesis 6 can be accepted. Table 3 indicates that this difference between high technology industries and other industries is predominantly driven by differences in the motivation-enhancing HR practices–performance relationship ( $z = 2.03, p < .05$ ).

Next, we found support for Hypothesis 7 as HR-enhancing practices are more strongly related to SME performance in country contexts characterized by rigid labor market regulations ( $r_c = .351$ ) as compared to contexts of flexible labor market regulations ( $r_c = .205$ ). The difference in these correlations is significant ( $z = -2.25, p < .05$ ).

Finally, we tested methodological moderators. First, we tested whether or not different performance indicators revealed different results. In this regard, we differentiated between financial and operational performance and found that the difference in the correlations between HR-enhancing practices and financial performance ( $r_c = .212$ ) and HR-enhancing practices and operational performance ( $r_c = .299$ ) is not significant ( $z = 1.79, ns$ ). Further, we differentiated between different operationalizations of financial performance: accounting-based, growth, and perceived performance. HR-enhancing practices correlated significantly with accounting-based performance as well as with perceived performance. Moreover, the corrected correlations were significantly lower for accounting-based performance ( $z = -3.51, p < .01$ ) and growth ( $z = -4.23, p < .01$ ) as compared to perceived performance. Second, our analysis revealed that study quality was another methodological moderator that affected the size of reported relationships ( $z = 3.30, p < .01$ ). Specifically, studies with high methodological quality reported higher effect sizes ( $r_c = .330$ ) as compared to studies with low quality ( $r_c = .191$ ). Thus, the study quality positively affects the effect sizes reported in this research. Finally, our results revealed that the effect sizes were not significantly different for published studies as compared to unpublished studies ( $z = .78, ns$ ).

Our meta-regression tested the multivariate effect of the moderator variables (Table 4). The results revealed that our moderators explained 28% of variance in the HR-enhancing practices–performance relationship (Model 1). Moreover, while the hypothesized effect of firm size and labor market regulations on the relationship between HR-enhancing practices and performance was supported in the multivariate analysis ( $B = -.25, p < .01$  and  $B = -.01, p < .05$ , respectively), we found no support for the moderator hypotheses regarding age and high-technology industry (Hypotheses 5 and 6, respectively). Next, we controlled for study quality and perceived performance (Model 2, Table 4). The resulting model is just not significant ( $p < .059$ ), rejecting the assumption that the covariates are related to the effect size. However, these results have to be interpreted with caution since the number of studies included in this analysis is small ( $k = 21$ ). Specifically, we had to exclude 29 studies that did not report the age of firms and 16 partially overlapping studies that provided insufficient information to differentiate between small and medium sized firms.

#### 4.1. The relationships between individual HR-enhancing practices and SME performance

We ran additional analyses on individual HR-enhancing practices to examine which practices are useful in the SME context. Table 5 indicates that there is a considerable variance in the relationships of individual HR-enhancing practices and SME performance. Commitment, empowerment and participation, training, and performance appraisal produced the highest correlations with SME performance ( $r_w = .198, r_w = .187, r_w = .163$ , and  $r_w = .163$ , respectively). Other HR-enhancing practices such as selection, job description, rewards and compensation, and communication produced small to insignificant correlations with SME performance ( $r_w = .069$  (ns.),  $r_w = .069$  (ns.),  $r_w = .099$  ( $p < .05$ ), and  $r_w = .078$  (ns.), respectively). These results support

**Table 4**

Meta-regression analysis: predictors of the relationship between HR-enhancing practices and performance.

	Model 1		Model 2	
	Unstandardized regression coefficient	Standard error	Unstandardized regression coefficient	Standard error
Intercept	.41*	.18	.40	.20
Age	.22†	.18	.25	.20
Size	-.25**	.08	-.14†	.08
High technology	.34	.19	.33†	.19
Labor market regulations	-.01*	.00	-.01*	.00
Study quality			.03	.03
Perceived performance			.17†	.10
R2	.28*		.43*	
Q model	12.19*		12.12†	
Q residual	77.74**		48.43**	
K	21		21	

†  $p < .10$ .

\*  $p < .05$ .

\*\*  $p < .01$ .

**Table 5**

The relationship of individual HR-enhancing practices with firm performance.

The present meta-analysis							Combs et al. (2006)					Subramony (2009)				
	<i>k</i>	<i>N</i>	<i>r<sub>w</sub></i>	<i>So</i>	Sampling error (% variance)	95% Confidence interval	<i>K</i>	<i>N</i>	<i>r<sub>w</sub></i>	<i>So</i>	z-test	<i>K</i>	<i>N</i>	<i>r<sub>w</sub></i>	<i>So</i>	z-test
HR-enhancing practices overall	56	18,521	.182	.0223	12.73	.143 to .221	92	19,319	.15	.013	1.38	63	12,281	.18	.03	0.07
Financial performance	43	15,587	.169	.0241	10.83	.123 to .216	64	12,499	.16	.016	0.32	12	2287	.18	.01	−0.29
Operational performance	33	8332	.240	.0333	10.63	.177 to .301	43	10,003	.14	.009	2.86**	22	3458	.14	.02	2.28*
Empowerment-enhancing HR practices	26	6116	.214	.0268	14.49	.151 to .277						20	3889	.20	.02	0.31
Skill-enhancing HR practices	29	6195	.138	.0318	14.24	.073 to .203						16	3181	.13	.04	−0.13
Motivation-enhancing HR practices	26	10,524	.124	.0170	11.14	.074 to .174						27	5192	.19	.04	−1.43
Individual HR practices																
1. Selection	9	2299	.069	.0255	15.24	−.035 to .174	15	3689	.11	.010	−0.69	17	4318	.07	.02	−0.02
2. Job description	6	1738	.069	.0234	14.67	−.054 to .191										
3. Rewards/compensation	18	7823	.099	.0133	17.99	.046 to .153	18	4666	.14	.018	−0.98	20	14,749	.09	.02	0.22
4. Performance appraisal	9	2116	.163	.0314	12.88	.048 to .279	8	1062	.03	.015	1.82	14	3581	.08	.01	1.29
5. Training	20	4231	.163	.0491	9.17	.066 to .260	29	6691	.12	.011	0.81	19	4009	.12	.04	0.64
6. Commitment	6	2125	.198	.0330	7.92	.053 to .344										
7. Empowerment/participation	16	3579	.187	.0425	9.85	.086 to .288	18	3322	.10	.007	1.58	20	3889	.09	.01	1.73
8. Communication	5	1354	.078	.0116	31.67	−.016 to .173	7	760	.09	.019	−0.17					
9. Aggregated HR management practices (e.g., high performance work practices)	27	6759	.251	.0584	6.03	.160 to .342	38	8615	.21	.014	0.82	50	15,223	.13	.03	2.30*

Note. We do not report results for constructs that were measured less than five times. *k* = number of studies. *N* = sample size. *r<sub>w</sub>* = sample size weighted correlation. *So* = observed variance.

\* *p* < .05

\*\* *p* < .01

our assertion that it is reasonable to distinguish between different HR-enhancing practices in the context of SME. Interestingly, a number of studies examined one single aggregated measure of HR-enhancing practices, such as high performance work practices or strategic HR management. These studies reported a comparatively high correlation between HR-enhancing practices and SME performance ( $r_w = .251$ ).

#### 4.2. Comparing the relationship of HR-enhancing practices with performance among SME and large firms

There are two published meta-analyses focusing on HR-enhancing practices in large firms thus allowing us to compare these meta-analytical results with our meta-analysis in the SME context. Therefore, in Table 5 we included the effect sizes reported by Combs et al. (2006) and Subramony (2009). All three meta-analyses computed an overall effect size of HR-enhancing practices. This overall effect is quite similar across these studies with sample size weighted correlations ranging between .15 and .182. The same applies to the three bundles of HR-enhancing practices, where we did not find significant differences between the present study and Subramony's (2009) meta-analysis.

However, we find differences in the moderator variables between the large firm and the SME context. For example, the studies conceptualized different moderator variables. The two meta-analyses on large firms found that the relationship between HR-enhancing practices and performance is higher in manufacturing industries while the results of our meta-analysis indicate the relevance of high-technology industries. Moreover, we studied labor market regulations emphasizing the role of institutional embeddedness in the SME context (Gooderham et al., 1999).

Table 5 allows us to also compare the performance relations of individual HR-enhancing practices with regard to the SME versus large firm context. This set of analyses does not reveal any significant differences between the three meta-analyses, which might in part be due to methodological problems as some of the individual HR-enhancing practices suffer from a small number of studies paired with relatively large observed variances.

The comparison displayed in Table 5 also shows that aggregated HR-enhancing practices, such as high performance work practices, show significantly stronger correlations with performance for the SME context than those reported by Subramony (2009). While not hypothesized, this result shows that the systems perspective of HR management might be a useful approach in the SME context.

Finally, our study found significantly higher relationships with SME performance for operational performance ( $r_w = .24$ ) than the two meta-analyses on large firms ( $r_w = .14$ ). However, this result should be interpreted in light of the fact that the indicators of operational performance are more biased toward innovation and entrepreneurial orientation in the SME context, while the operationalization of operational performance in the two other meta-analyses include measures referring to employee

productivity and retention as well. Therefore, a conservative interpretation of these findings is that innovation and entrepreneurial orientation are important HR-related criteria in the SME context.

## 5. Discussion

Our meta-analytical review was motivated by the question of how HR-enhancing practices are related to SME performance, whether some practices show stronger performance relationships than others, *which* contingencies influence these relationships, and whether the HR-enhancing practices–performance relationships differ between the SME and large firm context. By offering the following contributions, our meta-analysis sheds light on these questions. First, our study contributes to the entrepreneurship literature by showing that HR-enhancing practices are related to SME firm performance. The effect size was moderate ( $r_c = .228$ ). Compared to other meta-analyses in the SME context, this is a strong effect size. For example, HR-enhancing practices are more strongly correlated with firm performance than business planning (Brinckmann et al., 2010) or innovation (Rosenbusch et al., 2011). Moreover, the effect sizes for HR-enhancing practices identified in the present meta-analysis are of similar size as those reported in the large-firm context (Subramony, 2009). This result challenges the argument that HR management might be less important in SME and that it becomes more important if firms grow and mature (Rutherford et al., 2003). In contrast, our results suggest that HR-enhancing practices have value in the SME context, even more so than in the large firm context when we look at their relationship with operational performance.

Second, our study extends the SME literature by investigating knowledge configurations at the level of the firm. While the role of skills, motivation, and empowerment is well recognized in the field of SME management, studies often examined the human capital of the founder, owner, or manager, for example, in relation to firm performance (Unger et al., 2011). Our meta-analysis reports effect sizes of HR-enhancing practices that are more than twice as high as the relationship between firm owner human capital and firm performance (Unger et al., 2011). Thus, human resources need to be conceptualized at the level of the firm in order to gain a broader understanding of SME performance.

Third, our study provides insights into which HR-enhancing practices are related to firm performance in the SME context. Results show that skills-, motivation-, and empowerment-enhancing HR practices are positively related to SME performance. In general, this result suggests that different HR-enhancing practices tend to be related to firm performance in the same way. At the same time, some HR-enhancing practices produce higher effect sizes than others. For example, empowerment-enhancing HR practices are significantly and more strongly correlated with performance in the SME context than motivation-enhancing HR practices. This is in line with the results on individual HR-enhancing practices. While selection and the presence of job description – both related to skill-enhancing HR-practices – were not related with SME performance, commitment and empowerment/participation revealed highest effect sizes in the meta-analysis. These practices might positively affect self-efficacy of employees and increase task meaningfulness and task significance (Subramony, 2009). Thus, HR practices that enhance employee autonomy, decision-making involvement, and responsibility levels are generally more important in the SME context than directing employee behavior through oftentimes costly incentives and rewards.

Fourth, our study sheds light on the differences in the SME versus large firm context. The comparison of our study results with those meta-analyses on large firms (Combs et al., 2006; Subramony, 2009) revealed little differences between these firm contexts. This result is in line with the literature on strategic isomorphism (Williamson and Cable, 2003), assuming that small firms gain legitimacy by copying the HR-enhancing practices of larger companies. At the same time we found that skill-enhancing HR practices are more important in small firms as compared to medium sized firms and that all three HR-enhancing practices were not significantly correlated with performance in medium sized firms. These results suggest that the HR context at least partially differs for firms in different size classes, and such differences need to be addressed in the theory of HR management in SME.

We found even more support for a contingency approach when investigating other moderator variables. Thereby, our study contributes to the debate in organizational behavior research on whether a universalistic perspective of HR management (Huselid, 1995; Pfeffer, 1994) or a contingency perspective on the HR-enhancing practices–performance relationship is more valid (Chandler and McEvoy, 2000; Sels et al., 2006). As a matter of fact, we found that the corrected correlations reported in our study were heterogeneous, pointing to the presence of moderator variables. Specifically, firm age, industry, and labor market regulations affected the relationship between HR-enhancing practices and SME performance, with HR-enhancing practices being more relevant for young firms and SME operating in high-tech industries and in country contexts characterized by rigid labor regulations such as the Netherlands, Germany, or France. These results suggest that HR-enhancing practices have to fit the aims and actions of a firm (Dyer and Reeves, 1995). On the other hand and as stated above, firm size implies little differences between large firms and SME, suggesting that a universalistic perspective might be valid. A conservative explanation of these results implies that our results neither support a true universalistic interpretation nor a true contingency approach. Rather, HR-enhancing practices are effective in a number of different contexts but, at the same time, they are more effective in some specific contexts.

These contributions can be refined by further observations. First, our results revealed that the relationship between HR-enhancing practices and SME performance depends on the type of performance assessment. We found that HR-enhancing practices are correlated with operational performance and, moreover, that this relationship is stronger for SME as opposed to large firms. It might be very well possible that by fostering innovation, entrepreneurial orientation, differentiation, and quality of products/services, operational performance is the mechanism through which HR-enhancing practices relate to SME performance (Schmelter et al., 2010). With regard to utility considerations, we found considerable differences for different indicators of financial performance; specifically, perceived financial performance produced higher effect sizes than growth and accounting-based measures. We inspected other meta-analyses in the domain of entrepreneurship and found that four of them reported higher

effect sizes for perceived financial performance than for more objective performance assessments (Miller and Cardinal, 1994; Rauch et al., 2009; Rauch and Frese, 2007; Rosenbusch et al., 2011). One exception was Brinckmann et al. (2010), who reported higher effect sizes for objective as compared to subjective performance assessments. Thus, there seems to be a tendency that subjective performance produces higher effect sizes than more objective indicators, possibly because subjective performance often suffers from common method variance. Nevertheless, research indicated that perceived financial performance is correlated with other performance indicators (Wiklund and Shepherd, 2003). Our meta-analysis reveals that HR-enhancing practices are related to subjective and, although to a lesser extent, to accounting-based performance, indicating that HR-enhancing practices can be associated with utility in the SME context.

Second, additional analyses of individual HR-enhancing practices reveal that their effect sizes are smaller than effect sizes of HR-enhancing systems such as high performance work practices and, moreover, that such HR-enhancing systems are more strongly related to performance of SME as opposed to large firms. These results point to the relevance of an HR management systems perspective (Becker and Gerhart, 1996). The systems view emphasizes the simultaneous operation of multiple HR-enhancing practices that affect various business outcomes. At the same time, there are several issues associated with the systems view: For example, the size of the correlation between HR-enhancing systems and firm performance could simply be a result of the measurement aggregation (Gerhart, 2007).

Another observation concerns the analysis of study quality characteristics. We found that studies with higher methodological rigor reported higher correlations than studies with lower methodological quality. Thus, good quality and good study designs lead to higher predictive validities in the examined area of research. This indicates that our overall results reflect a conservative estimation of the HR management–performance relationship in the SME context.

The results of our meta-analysis should be examined in light of some limitations that, at the same time, point to avenues for future research. First, we developed moderator hypotheses for the overall HR-enhancing practices rather than for each of the three HR-enhancing practices. This approach is in line with Subramony (2009) who combined the three HR-enhancing practices when assessing moderator effects and when comparing the results with high performance work practices. Thereby, we assume that the three HR-enhancing practices affect outcomes simultaneously, but we do not make any assumption about whether there are complementarities between them. Moreover, we described the specific effects of the three HR-enhancing practices separately in Table 3, thus, we did not lose any information about the effect sizes associated with the single HR-enhancing practices.

Second, while the 56 studies included in our analysis depict an amount that exceeds the number of studies included in other meta-analyses (Brinckmann et al., 2010; Rosenbusch et al., 2011), the number of studies was small in some subsets of analysis, thus impeding a more fine-grained analysis. For example, the moderator variables firm age and firm size are, while conceptually different, empirically confounded (Ling et al., 2008). We tried to disentangle these effects via meta-regression analysis, and here the effect size of age became insignificant. However, this result should be treated with caution since the number of studies included in this analysis is small. Similarly, we found differential relationships between HR-enhancing practices and different performance indicators. Due to the small sample size, unfortunately, we were unable to examine which specific HR-enhancing practice is related with which performance criterion.

Third, this analysis included predominantly cross-sectional studies, and this does not allow us to draw causal conclusions. For example, SME performance may lead to new opportunities requiring firms to implement HR-enhancing practices. While we cannot test such reversed causality given the methods used in our study, our meta-analysis included some longitudinal studies. More specifically, of the seven included longitudinal studies, six found that the causal path goes from HR-enhancing practices to SME performance. This seems to be a strong indication that reversed causality is not an issue in our analysis.

Fourth, the HR management literature reports a number of alternative categorizations of HR-enhancing practices. For example, a well-validated taxonomy differentiates between HR practices focusing on commitment versus control (Arthur, 1994), although this conceptualization is based on large firms. However, the issues of gaining legitimacy as an employer-of-choice, increasing flexibility, and operational efficiency are not the most decisive practices in the large firm context (Messersmith and Wales, 2013). As our results indicated some differences between small and larger medium sized firms, future research might benefit from developing HR management taxonomies that are tied to the context of SME.

Moreover, we did not directly investigate the mechanisms that facilitate this relationship. For example, the positive performance relationship of HR-enhancing practices may be due to HR management motivating employees to use their skills proactively for exploiting risky innovation opportunities, which is in line with the aims of the SME—however, we did not test the mediating effects of organizational behavior. In this regard, case studies could provide greater insights into the role of internal and external contingencies and their evolution over time on the relationships examined here (Messersmith and Wales, 2013; Sheehan, 2014), thus encouraging a shift of the HR management literature away from a static perspective. It would also be valuable to examine antecedents of HR-enhancing practices in SME. As a matter of fact, adding any employee to the firm is HR management. It would be useful to examine which role the individual owner's goals and objectives as well as the nature of opportunities play for the occurrence of empowerment-, motivation-, and skill-enhancing HR practices.

Finally, we did not examine normative and cognitive aspects of the institutional environment. Moreover, there might be interactions as well as confounding effects between different institutional variables. A conservative interpretation of our study findings, thus, implies that institutions do play a role in the relationship between HR-enhancing practices and performance and that further research needs clarifying the role of other institutional contexts beyond labor market regulations.

In summary, our results provide evidence on the performance relationship of different HR-enhancing practices, thus offering strong practical recommendations for SME. In general, SME are encouraged to develop and implement HR-enhancing practices.



Thus, it is ill advised to suggest HR management only to firms that are larger or at least medium sized. It is particularly useful in the SME context to implement empowerment-enhancing HR practices such as participation and commitment as these practices revealed the highest correlations with firm performance. Thus, employees should be motivated by the tasks and challenges associated with working in the small firm. While motivation- and skill-enhancing HR-practices are also related to SME performance, they require more investments and, thus, need to be designed carefully so that the costs do not exceed the associated benefits.

In a similar manner, new firms need to address HR-enhancing practices at an early stage of their development. Our results indicated no support for the proposition that HR management becomes important only after firms mature. Rather, the early adoption of HR-enhancing practices is decisive. Especially motivation enhancing HR-practices such as incentive and reward practices are useful in the young firm context. While being resource-intensive, motivation-enhancing HR-practices might help young firms to compensate for their HR-related disadvantages and attract the talented employees required to enter new markets.

High-tech industries associated with environmental uncertainty and dynamism require HR-enhancing practices as well. While any HR-enhancing practice is important in a high technology context, simply because this context requires specific knowledge configurations at the firm level, motivation-enhancing practices are more important here as compared to other industries. Thus, owners/managers of SME operating in high-tech industries need to implement incentive and reward practices.

Finally, if the SME's employee base cannot be easily changed due to rigid labor regulations as it is the case for countries such as France, Germany, and the Netherlands, it is important to develop the existing human resources. The owners/managers of SME operating in these countries are encouraged to implement HR-enhancing practices that enable their employees to perform well (e.g., training), motivate them to do so (e.g., performance appraisals), and provide them with the necessary support and avenues for expression (e.g., upward feedback mechanisms, participative decision making).

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## References

- Aldrich, H.E., Auster, E.R., 1986. Even dwarfs started small: liabilities of age and size and their strategic implications. *Res. Organ. Behav.* 8, 165–198.
- Aldrich, H.E., Fiol, C.M., 1994. Fools rush in? The institutional context of industry creation. *Acad. Manag. Rev.* 19 (4), 645–670.
- Aldrich, H.E., Martinez, M.A., 2001. Many are called, but few are chosen: an evolutionary perspective for the study of entrepreneurship. *Enterp. Theory Pract.* 25 (4), 293–311.
- Aldrich, H.E., Wiedenmayer, G., 1993. From traits to rates: an ecological perspective on organizational foundings. In: Katz, J., Brockhaus, R. (Eds.), *Advances in Entrepreneurship, Firm Emergence, and Growth*. JAI Press, Greenwich, CT, pp. 145–195.
- Alge, B.J., Ballinger, G.A., Tangirala, S., Oakley, J.L., 2006. Information privacy in organizations: empowering creative and extra role performance. *J. Appl. Psychol.* 91 (1), 221–232.
- Allen, M.R., Erickson, J., Collins, C.J., 2013. Human resource management, employee exchange relationships, and performance in small businesses. *Hum. Resour. Manag.* 52 (2), 153–173.
- Altinay, L., Altinay, E., Gannon, J., 2008. Exploring the relationship between the human resource management practices and growth in small service firms. *Serv. Ind. J.* 28 (7), 919–937.
- Amabile, T.M., 1988. A model of creativity and innovation in organizations. *Res. Organ. Behav.* 10, 123–167.
- Anand, N., Gardner, H.K., Morris, T., 2007. Knowledge-based innovation: emergence and embedding of new practice areas in management consulting firms. *Acad. Manag. J.* 50 (2), 406–428.
- Andries, P., Czarnitzki, D., 2014. Small firm innovation performance and employee involvement. *Small Bus. Econ.* 43 (1), 21–38.
- Antoniou, P.H., Ansoff, I.H., 2004. Strategic management of technology. *Tech. Anal. Strat. Manag.* 16 (2), 275–291.
- Appelbaum, E., Bailey, T., Berg, P., Kalleberg, A., 2000. *Manufacturing Advantage: Why High-performance Work Systems Pay Off*. Cornell University Press, Ithaca.
- Arthur, J.B., 1994. Effects of human resource systems on manufacturing performance and turnover. *Acad. Manag. J.* 37 (3), 670–687.
- Bacon, N., Ackers, P., Storey, J., Coates, D., 1996. It's a small world: managing human resources in small businesses. *Int. J. Hum. Resour. Manag.* 7 (1), 82–100.
- Barney, J.B., Wright, P.M., 1998. On becoming a strategic partner: the role of human resources in gaining competitive advantage. *Hum. Resour. Manag.* 37, 31–46.
- Barrett, R., Mayson, S., 2006. Exploring the intersection of HRM and entrepreneurship: guest editors' introduction to the special edition on HRM and entrepreneurship. *Hum. Resour. Manag. Rev.* 16 (4), 443–444.
- Barrett, R., Mayson, S., Warriner, N., 2008. The relationship between small firm growth and HRM practices. In: Barrett, R., Mayson, S. (Eds.), *International Handbook of Entrepreneurship and HRM*. Edward Elgar, Cheltenham, pp. 186–204.
- Barringer, B.R., Jones, F.F., Neubaum, D.O., 2005. A quantitative content analysis of the characteristics of rapid-growth firms and their founders. *J. Bus. Ventur.* 20 (5), 663–687.
- Becker, B., Gerhart, B., 1996. The impact of human resource management on organizational performance: progress and prospects. *Acad. Manag. J.* 39 (4), 779–801.
- Boselie, P., Dietz, G., Boon, C., 2005. Commonalities and contradictions in HRM and performance research. *Hum. Resour. Manag. J.* 15 (3), 67–94.
- Brand, M.J., Croon, E.P.M., 2010. Franchised and small, the most beautiful of all; HRM and performance in plural systems. *J. Small Bus. Manag.* 48 (4), 605–626.
- Brewster, C., 2007. Comparative HRM: European views and perspectives. *Int. J. Hum. Resour. Manag.* 18 (5), 769–787.
- Brinckmann, J., Grichnik, D., Kapsa, D., 2010. Should entrepreneurs plan or just storm the castle? A meta-analysis on contextual factors impacting the business planning-performance relationship in small firms. *J. Bus. Ventur.* 24 (1), 24–40.
- Burton, M.D., O'Reilly, C., 2004. *Walking the Talk: The Impact of High Commitment Values and Practices on Technology Start-ups*. Cornell University, School of Industrial and Labor Relations, Technical Report.
- Cardon, M.S., Stevens, C.E., 2004. Managing human resources in small organizations. *Hum. Resour. Manag. Rev.* 14, 295–323.
- Chadwick, C., Dabu, A., 2009. Human resources, human resources management, and competitive advantage of firms: toward a more comprehensive model of causal linkages. *Organ. Sci.* 20 (1), 253–272.
- Chadwick, C., Way, S.A., Kerr, G., Thacker, J.W., 2013. Boundary conditions of the high-investment human resource systems-small-firm labor productivity relationship. *Pers. Psychol.* 66 (2), 311–343.
- Chandler, G., McEvoy, G., 2000. Human resources management, TQM, and firm performance in small and medium sized enterprises. *Enterp. Theory Pract.* 25 (1), 43–58.
- Chang, W., Chun Huang, T., 2005. Relationship between strategic human resource management and firm performance. *Int. J. Manpow.* 26 (5), 434–449.
- Changanti, R., Cook, R.G., Smeltz, W.J., 2002. Effects of styles, strategies, and systems and the growth of small businesses. *J. Dev. Entrep.* 7 (2), 175–192.
- Ciavarella, M.A., 2003. The adoption of high-involvement practices and processes in emergent and developing firms: a descriptive and prescriptive approach. *Hum. Resour. Manag.* 42 (4), 337–356.



- Combs, J.G., Crook, T.R., Shook, C.L., 2005. The dimensionality of organizational performance and its implications for strategic management research. In: Ketchen, D.J., Bergh, D.D. (Eds.), *Research Methodology in Strategic Management*. Elsevier, San Diego, CA, pp. 259–286.
- Combs, J., Liu, Y.I., Hall, A., Ketchen, D., 2006. How much do high-performance work practices matter? A meta-analysis of their effects on organizational performance. *Pers. Psychol.* 59 (3), 501–528.
- Commission Recommendation, 2003. Commission recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises. *Off. J. Eur. Union* 124, 36–41.
- Cooke, W.N., 1994. Employee participation programs, group-based incentives, and company performance: a union–nonunion comparison. *Ind. Labor Relat. Rev.* 47 (4), 594–609.
- Cooper, A.C., Gimeno-Gascon, F.J., Woo, C.Y., 1994. Initial human and financial capital as predictors of new venture performance. *J. Bus. Ventur.* 9, 371–395.
- Covin, J.G., Slevin, D.P., Covin, T.J., 1990. Content and performance of growth-seeking strategies: a comparison of small firms in high- and low-technology industries. *J. Bus. Ventur.* 5 (6), 391–402.
- Crook, T.R., Ketchen, D.J., Combs, J.G., Todd, S.Y., 2008. Strategic resources and performance: a meta-analysis. *Strateg. Manag. J.* 29 (11), 1141–1154.
- De Kok, J.M.P., den Hartog, D., 2006. Is human resource management profitable for small firms? Scales research reports H200621. EIM Business and Policy Research (Retrieved from <http://www.entrepreneurship-sme.eu/pdf-ez/H200621.pdf>).
- De Kok, J.M.P., Uhlaner, L.M., Thurik, A.R., 2006. Professional HRM practices in family owned-managed enterprises. *J. Small Bus. Manag.* 44 (3), 441–460.
- De Winne, S., Sels, L., 2010. Interrelationships between human capital, HRM and innovation in Belgian start-ups aiming at an innovation strategy. *Int. J. Hum. Resour. Manag.* 21 (11), 1863–1883.
- Deci, E.L., Ryan, R.M., 1985. *Intrinsic Motivation and Self-determination in Human Behavior*. Plenum, New York.
- DeGeest, D.S., Follmer, E.H., Walter, S.L., O'Boyle, E.H., 2015. The Benefits of Benefits: A Dynamic Approach to Motivation Enhancing HR Practices and Entrepreneurial Survival. *Journal of Management* (In press).
- Delery, J.E., Doty, D.H., 1996. Modes of theorizing in strategic human resource management: tests of universalistic, contingency, and configurational performance predictions. *Acad. Manag. J.* 39 (4), 802–835.
- Delery, J.E., Shaw, J.D., 2001. *The Strategic Management of People in Work Organizations: Review, Synthesis, and Extension*. Emerald Group Publishing Limited, pp. 165–197.
- Dyer, L., Reeves, T., 1995. Human resources strategies and firm performance: what do we know and where do we need to go? *Int. J. Hum. Resour. Manag.* 6 (3), 656–670.
- Fabi, B., Raymond, L., Lacoursiere, R., 2007. HRM practice clusters in relation to size and performance: an empirical investigation in Canadian manufacturing SMEs. *J. Small Bus. Entrep.* 20 (1), 25–40.
- Georgiadis, A., Pitelis, C.N., 2012. Human resources and SME performance in service: empirical evidence from the UK. *Int. J. Hum. Resour. Manag.* 23 (4), 808–825.
- Gerhart, B., 2007. Horizontal and vertical fit in human resource systems. In: Ostroff, C., Judge, T. (Eds.), *Perspectives on Organizational Fit*. Erlbaum, Mahwah, NJ, pp. 317–348.
- Giauque, D., Resenterra, F., Siggen, M., 2010. The relationship between HRM practices and organizational commitment of knowledge workers. Facts obtained from Swiss SMEs. *Hum. Resour. Dev. Int.* 13 (2), 185–205.
- Gilman, M.W., Raby, S.O., 2012. National context as a predictor of high performance work systems in SMEs: a British-French comparative analysis. *Int. J. Hum. Resour. Manag.* 24 (2), 372–390.
- Gimeno, J., Folta, T., Cooper, A., Woo, C., 1997. Survival of the fittest? Entrepreneurial human capital and the persistence of underperforming firms. *Adm. Sci. Q.* 42, 750–783.
- Gooderham, P.N., Nordhaug, O., Ringdal, K., 1999. Institutional and rational determinants of organizational practices: human resource management in European firms. *Adm. Sci. Q.* 44 (3), 507–531.
- Gudmunson, D., Tower, G.B., Hartman, E.A., 2003. Innovation in small businesses: culture and ownership structure do matter. *J. Dev. Entrep.* 8 (1), 1–17.
- Hatzichronoglou, T., 1997. Revision of the high-technology sector and product classification. OECD Science, Technology and Industry Working Papers, 1997/02. Publishing, OECD.
- Hayton, J.C., 2003. Strategic human capital management in SMEs: an empirical study of entrepreneurial performance. *Hum. Resour. Manag.* 42 (4), 375–391.
- Hayton, J.C., 2005. Promoting corporate entrepreneurship through human resource management practices: a review of empirical research. *Hum. Resour. Manag. Rev.* 15 (1), 21–41.
- Heneman, R.L., Tansky, J.W., Camp, S.M., 2008. Human resource strategies of high growth entrepreneurial firms. In: Barrett, R., Mayson, S. (Eds.), *International Handbook of Entrepreneurship and HRM*. Edward Elgar, Cheltenham, UK, pp. 165–185.
- Hornsby, J.S., Kuratko, D.F., 1990. Human resource management in small business: critical issues for the 1990s. *J. Small Bus. Manag.* 28 (3), 9–18.
- Hornsby, J.S., Kuratko, D.F., 2003. Human resource management in U.S. small business: a replication and extension. *J. Dev. Entrep.* 8 (1), 73–89.
- Hornsby, J.S., Naffziger, D.W., Kuratko, D.F., Montagnò, R.V., 1993. An interactive model of the corporate entrepreneurship process. *Enterp. Theory Pract.* 17 (2), 29–37.
- Hunter, J.E., Schmidt, F.L., 2004. *Methods for Meta-analysis: Correcting Error and Bias in Research Findings*. Sage, Newbury Park, CA.
- Huselid, M.A., 1995. The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Acad. Manag. J.* 38 (3), 635–672.
- Huselid, M.A., Jackson, S.E., Schuler, R.S., 1997. Technical and strategic human resource management effectiveness as determinants of firm performance. *Acad. Manag. J.* 40 (1), 171–188.
- Jiang, K., Lepak, D.P., Han, K., Hong, Y., Kim, A., Winkler, A., 2012. Clarifying the construct of human resource systems: relating human resource management to employee performance. *Hum. Resour. Manag. Rev.* 22 (2), 73–85.
- Kaman, V., McCarthy, A.M., Gulbro, R.D., Tucker, M.L., 2001. Bureaucratic and high commitment human resource practices in small service firms. *Hum. Resour. Plan.* 24 (1), 33–43.
- Karami, A., Jones, B.M., Kakabadse, N., 2008. Does strategic human resource management matter in high-tech sector? Some learning points for SME managers. *Corp. Gov.* 8 (1), 7–17.
- Kasturi, P., Orlov, A.G., Roufagalas, J., 2006. HRM systems architecture and firm performance: evidence from SMEs in a developing country. *Int. J. Commer. Manag.* 16 (3/4), 178–196.
- Katou, A.A., 2012. Investigating reverse causality between human resource management policies and organizational performance in small firms. *Manag. Res. Rev.* 35 (2), 134–156.
- Kaya, N., 2006. The impact of human resource management practices and corporate entrepreneurship on firm performance: evidence from Turkish firms. *Int. J. Hum. Resour. Manag.* 17 (12), 2074–2090.
- Kerr, G., Way, S.A., Thacker, J., 2007. Performance, HR practices and the HR manager in small entrepreneurial firms. *J. Small Bus. Entrep.* 20 (1), 55–68.
- Khandwalla, P.N., 2006. Tools for enhancing innovativeness in enterprises. *J. Decis. Mak.* 31 (1), 1–16.
- Khavul, S., Benson, G.S., Datta, D.K., 2010. Is internationalization associated with investments in HRM? A study of entrepreneurial firms in emerging markets. *Hum. Resour. Manag.* 49 (4), 693–713.
- King-Kauanui, S., Ngoc, S.D., Ashley-Cotleur, C., 2006. Impact of human resource management: SME performance in Vietnam. *J. Dev. Entrep.* 11 (1), 79–95.
- Kirkman, B.L., Rosen, B., Tesluk, P.E., Gibson, C.B., 2004. The impact of team empowerment on virtual team performance: the moderating role of face-to-face interaction. *Acad. Manag. J.* 47 (2), 175–192.
- Klaas, B.S., Yang, H., Gainey, T., McClendon, J.A., 2005. HR in the small business enterprise: assessing the impact of PEO utilization. *Hum. Resour. Manag.* 44 (4), 433–448.
- Klaas, B.S., Klimchak, M., Semadeni, M., Holmes, J.J., 2010. The adoption of human capital services by small and medium enterprises: a diffusion of innovation perspective. *J. Bus. Ventur.* 25 (4), 349–360.
- Kotey, B., Folker, C., 2007. Employee training in SMEs: effect of size and firm type—family and nonfamily. *J. Small Bus. Manag.* 45 (2), 214–238.

- Kroon, B., van de Voorde, F.C., Timmers, J., 2013. High performance work practices in small firms: a resource-poverty and strategic decision-making perspective. *Small Bus. Econ.* 41 (1), 71–91.
- Kuratko, D.F., Montagno, R.V., Hornsby, J.S., 1990. Developing an intrapreneurial assessment instrument for an effective corporate entrepreneurial environment. *Strateg. Manag. J.* 11, 49–58.
- Lado, A.A., Wilson, M.C., 1994. Human resource systems and sustained competitive advantage: a competency-based perspective. *Acad. Manag. Rev.* 19 (4), 699–727.
- Landis, J.R., Koch, G.G., 1977. The measurement of observer agreement for categorical data. *Biometrics* 33 (1), 159–174.
- Leitão, J., Franco, M., 2011. Individual entrepreneurship capacity and small and medium enterprises (SME) performance: a human and organizational capital approach. *Afr. J. Bus. Manag.* 5 (15), 6350–6365.
- Ling, Y., Simsek, Z., Lubatkin, M.H., Veiga, J.F., 2008. The impact of transformational CEOs on the performance of small- to medium-sized firms: does organizational context matter? *J. Appl. Psychol.* 93 (4), 923–934.
- Lipsey, M.W., Wilson, D.B., 2001. *Practical Meta-analysis*. Sage, London.
- Litz, R.A., Stewart, A.C., 2000. Research note: trade name franchise membership as a human resource management strategy: does buying group training deliver true value for small retailers? *Enterp. Theory Pract.* 25 (3), 125–135.
- Mathieu, J.E., Gilson, L.L., Ruddy, T.M., 2006. Empowerment and team effectiveness: an empirical test of an integrated model. *J. Appl. Psychol.* 91, 97–108.
- Mavondo, F.T., Chimhanzi, J., Stewart, J., 2005. Learning orientation and market orientation: relationship with innovation, human resource practices and performance. *Eur. J. Mark.* 39 (11), 1235–1263.
- May, K., 1997. *Work in the 21st century: understanding the needs of small businesses*. *Ind. Organ. Psychol.* 35 (1), 94–97.
- McClellan, E., Collins, C.J., 2011. High-commitment HR practices, employee effort, and firm performance: investigating the effects of HR practices across employee groups within professional services firms. *Hum. Resour. Manag.* 50 (3), 341–363.
- McDougall, P.P., Robinson, P.B., 1990. New venture strategies: an empirical identification of eight “archetypes” of competitive strategies of entry. *Strateg. Manag. J.* 11, 447–467.
- McGinnis, M.A., Ackelsberg, M.R., 1983. Effective innovation management: missing link in strategic planning? *J. Bus. Strateg.* 4 (1), 59–66.
- Messersmith, J.G., Guthrie, J.P., 2010. High performance work systems in emergent organizations: implications for firm performance. *Hum. Resour. Manag.* 49 (2), 241–264.
- Messersmith, J.G., Wales, W.J., 2013. Entrepreneurial orientation and performance in young firms: the role of human resource management. *Int. Small Bus. J.* 31 (2), 115–136.
- Michie, J., Sheehan, M., 2008. Human resource management and corporate performance: Evidence from UK and US small firms. In: Barrett, R., Mayson, S. (Eds.), *International Handbook of Entrepreneurship and HRM*. Edward Elgar, Cheltenham, pp. 137–164.
- Miller, C.C., Cardinal, L.B., 1994. Strategic planning and firm performance. A synthesis of more than two decades of research. *Acad. Manag. J.* 37 (6), 1649–1665.
- Principles of economic freedom. In: Miller, T., Kim, A.B., Miller, T., Kim, A.B. (Eds.), 2015 *Index of Economic Freedom: Promoting Economic Opportunity and Prosperity*. The Heritage Foundation/Wall Street Journal, New York, pp. 11–18.
- Muse, L.A., Rutherford, M.W., Oswald, S.L., Raymond, J.E., 2005. Commitment to employees: does it help or hinder small business performance? *Small Bus. Econ.* 24, 97–111.
- Olson, E.M., Walker Jr., O.C., Ruekert, R.W., 1995. Organizing for effective new product development: the moderating role of product innovativeness. *J. Mark.* 59 (1), 48–62.
- Osterman, P., 1994. How common is workplace transformation and who adopts it? *Ind. Labor Relat. Rev.* 47 (2), 173–188.
- Paauwe, J., 2009. HRM and performance: achievements, methodological issues and prospects. *J. Manag. Stud.* 46 (1), 129–142.
- Paauwe, J., Boselie, P., 2005. HRM and performance: what next? *Hum. Resour. Manag. J.* 15 (4), 68–83.
- Patel, P.C., Cardon, M.S., 2010. Adopting HRM practices and their effectiveness in small firms facing product-market competition. *Hum. Resour. Manag.* 49 (2), 265–290.
- Patel, P.C., Messersmith, J.G., Lepak, D.P., 2013. Walking the tightrope: an assessment of the relationship between high-performance work systems and organizational ambidexterity. *Acad. Manag. J.* 56 (5), 1420–1442.
- Pfeffer, J., 1994. *Competitive Advantage Through People*. Harvard University Press, Boston.
- Preisendoerfer, P., Voss, T., 1990. Organizational mortality of small firms: the effects of entrepreneurial age and human capital. *Organ. Stud.* 11 (1), 107–129.
- Puranam, P., Singh, H., Zollo, M., 2006. Organizing for innovation: managing the coordination-autonomy dilemma in technology acquisitions. *Acad. Manag. J.* 49 (2), 263–280.
- Rauch, A., Frese, M., 2007. Let's put the person back into entrepreneurship research: a meta-analysis of the relationship between business owners' personality characteristics and business creation and success. *Eur. J. Work Organ. Psychol.* 16 (4), 353–385.
- Rauch, A., Rijdsdijk, S.A., 2013. The effects of general and specific human capital on long-term growth and failure of newly founded businesses. *Enterp. Theory Pract.* 37 (4), 923–941.
- Rauch, A., Frese, M., Utsch, A., 2005. Effects of human capital and long-term human resource development and utilization on employment growth of small-scale businesses. *Enterp. Theory Pract.* 29 (6), 681–689.
- Rauch, A., Wiklund, J., Lumpkin, G.T., Frese, M., 2009. Entrepreneurial orientation and business performance: an assessment of past research and suggestions for the future. *Enterp. Theory Pract.* 33 (3), 761–788.
- Razouk, A., 2011. High-performance work systems and performance of French small- and medium-sized enterprises: examining causal order. *Int. J. Hum. Resour. Manag.* 22 (2), 311–326.
- Richbell, S., Szerb, L., 2010. HRM in the Hungarian SME sector. *Employee Relat.* 32 (3), 262–280.
- Roca-Puig, V., Beltrán-Martín, I., Segarra-Ciprés, M., 2012. Commitment to employees, labor intensity, and labor productivity in small firms. *Int. J. Manpow.* 33 (8), 938–954.
- Rodrigues, R.G., Raposo, M., 2011. Entrepreneurial orientation, human resources information management, and firm performance in SMEs. *Can. J. Adm. Sci./Revue Canadienne des Sciences De l'Administration* 28 (2), 143–153.
- Rosenbusch, N., Brinckmann, J., Bausch, A., 2011. Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *J. Bus. Ventur.* 26 (4), 441–457.
- Rosenbusch, N., Rauch, A., Bausch, A., 2013. The mediating role of entrepreneurial orientation in the task environment-performance relationship: a meta-analysis. *J. Manag.* 39 (3), 633–659.
- Rosenthal, R., 1979. The file drawer problem and tolerance for null results. *Psychol. Bull.* 86, 368–461.
- Rosli, M.M., Mahmood, R., 2013. Moderating effects of human resource management practices and entrepreneur training on innovation and small-medium firm performance. *J. Manag. Strategy* 4 (2), 60–69.
- Rutherford, M.W., Buller, P.F., McMullen, P.R., 2003. Human resource management problems over the life cycle of small to medium sized firms. *Hum. Resour. Manag.* 42 (4), 321–335.
- Schmelter, R., Mauer, R., Börsch, C., Brettel, M., 2010. Boosting corporate entrepreneurship through HRM practices: evidence from German SMEs. *Hum. Resour. Manag.* 49 (4), 715–741.
- Schmitt, N., 2014. Personality and cognitive ability as predictors of effective performance at work. *Ann. Rev. Organ. Psychol. Organ. Behav.* 1 (1), 45–65.
- Schneider, B., Goldstein, H.W., Smith, D.B., 1995. The ASA framework: an update. *Pers. Psychol.* 48 (4), 747–773.
- Schuler, R.S., Jackson, S.E., 1987. Linking competitive strategies with human resource management practices. *Acad. Manag. Exec.* 1 (3), 207–219.
- Sels, L., Winne, S.D., Delmotte, J., Maes, J., Faems, D., Forrier, A., 2006. Linking HRM and small business performance: an examination of the impact of HRM intensity on the productivity and financial performance of small businesses. *Small Bus. Econ.* 26 (1), 83–101.
- Seong, J.Y., 2011. The effects of high performance work systems, entrepreneurship and organizational culture on organizational performance. *Seoul J. Bus.* 17 (1), 3–36.
- Sheehan, M., 2014. Human resource management and performance: evidence from small and medium-sized firms. *Int. Small Bus. J.* 32, 545–570.

- Shepherd, D.A., Wiklund, J., Haynie, J.M., 2009. Moving forward: balancing the financial and emotional costs of business failure. *J. Bus. Ventur.* 24 (2), 134–148.
- Shrout, P.E., Fleiss, J.L., 1979. Intraclass correlations: uses in assessing rater reliabilities. *Psychol. Bull.* 86 (2), 420–428.
- Solomon, G., May, K., Kang, J., Yoon, J., 2014. When Being a "Scrooge" About Benefits Is a Benefit: The Impact of Emotional Self-management on Benefit Offerings and Firm Growth. *Recontres De Saint Gall, Saint Gallen, Switzerland*.
- Stinchcombe, A.L., 1965. Social structures and organizations. In: March, J.G. (Ed.), *Handbook of Organizations*. Rand McNally, Chicago, pp. 142–193.
- Subramony, M., 2009. A meta-analytical investigation of the relationships between HRM bundles and firm performance. *Hum. Resour. Manag.* 48 (5), 745–768.
- Teo, S.T., Le Clerc, M., Carmen, M., 2011. Human capital enhancing HRM systems and frontline employees in Australian manufacturing SMEs. *Int. J. Hum. Resour. Manag.* 22 (12), 2522–2538.
- Thornhill, S., 2006. Knowledge, innovation and firm performance in high- and low-technology regimes. *J. Bus. Ventur.* 21 (5), 687–703.
- Tocher, N., Rutherford, M.W., 2009. Perceived acute human resource management problems in small and medium firms: an empirical examination. *Enterp. Theory Pract.* 33 (2), 455–479.
- Tomczyk, D., Lee, J., Winslow, E., 2013. Entrepreneurs' personal values, compensation, and high growth firm performance. *J. Small Bus. Manag.* 51 (1), 66–82.
- Unger, J.M., Rauch, A., Frese, M., Rosenbusch, N., 2011. Human capital and entrepreneurial success: a meta-analytical review. *J. Bus. Ventur.* 26 (3), 341–358.
- Utterback, J., 1996. *Mastering the Dynamics of Innovation: How Companies Can Seize Opportunities in the Face of Technological Change*. Harvard Business School Press, Boston, MA.
- Venkatraman, N., Ramanujam, V., 1986. Measurement of business performance in strategy research: a comparison of approaches. *Acad. Manag. Rev.* 11, 801–814.
- Way, S.A., 2002. High performance work systems and intermediate indicators of firm performance within the US small business sector. *J. Manag.* 28 (6), 765–785.
- Welsh, J.A., White, J.F., 1981. A small business is not a little big business. *Harv. Bus. Rev.* 59 (4), 18–32.
- Wiklund, J., Shepherd, D., 2003. Knowledge-based resources, entrepreneurial orientation, and the performance of small and medium sized businesses. *Strateg. Manag. J.* 24, 1307–1314.
- Williamson, I.O., Cable, D.M., 2003. Organizational hiring patterns, interfirm network ties, and interorganizational imitation. *Acad. Manag. J.* 46 (3), 349–358.
- Williamson, I.O., Cable, D.M., Aldrich, H.E., 2002. Smaller but not necessarily weaker: How small businesses can overcome barriers to recruitment. In: Katz, J.A., Welbourne, T.M. (Eds.), *Advances in Entrepreneurship, Firm Emergence and Firm Growth*. JAI Press, Greenwich, CT, pp. 83–106.
- Wood, S., 1999. Human resource management and performance. *Int. J. Manag. Rev.* 1 (4), 367–413.
- Wood, S.J., Wall, T.D., 2007. Work enrichment and employee voice in human resource management-performance studies. *Int. J. Hum. Resour. Manag.* 18 (7), 1335–1372.
- Wright, P.M., Dunford, B.B., Snell, S.A., 2001. Human resources and the resource based view of the firm. *J. Manag.* 27, 701–721.
- Wright, P.M., Gardner, T.M., Moynihan, L.M., Allen, M.R., 2005. The relationship between HR practices and firm performance: examining causal order. *Pers. Psychol.* 58 (2), 409–446.
- Yu, M., 2010. High performance human resource practices, entrepreneurship, and entrepreneurial performance: a study in Taiwanese SME. *Bus. Rev.* 15 (2), 117–124.
- Zahra, S.A., 1996. Technology strategy and new venture performance: a study of corporate-sponsored and independent biotechnology ventures. *J. Bus. Ventur.* 11, 289–321.
- Zhang, Z., Wan, D., Jia, M., 2008. Do high-performance human resource practices help corporate entrepreneurship? the mediating role of organizational citizenship behavior. *The Journal of High Technology Management Research* 19 (2), 128–138.
- Zhou, Y., Hong, Y., Liu, J., 2013. Internal commitment or external collaboration? The impact of human resource management systems on firm innovation and performance. *Hum. Resour. Manag.* 52 (2), 263–288.