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A meta-analysis on the effects of high-performance work practices in small and medium-sized enterprises: An exploration of organizational- and individual-level outcomes☆

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ABSTRACT

This research aims to achieve two objectives: to confirm results about the effects of high-performance work practices (HPWPs) at the organizational level, and to explore the effects of HPWPs on individual employee performance in small and medium-sized enterprises (SMEs). We conducted a meta-analysis of 115 studies to investigate how high-performance work practices are positively related to organizational and individual outcomes in SMEs, identifying critical benefits HPWPs offer. At the organizational level, HPWPs are positively related to firm performance, growth, and innovation, while negatively related to turnover and absenteeism rates. At the individual level, HPWPs are positively related to employee engagement, motivation, creativity, entrepreneurial orientation, job satisfaction, and organizational commitment, while negatively related to turnover intention. We nuance the applicability of HPWPs to the SME context and we contribute to the literature by highlighting the role of HPWPs at the individual level.

1. Introduction

Human capital is essential to the success of small and medium-sized enterprises (SMEs) (Van Lancker et al., 2022). SMEs often operate under scarce resources and high uncertainty, which makes human capital and in particular human resource management (HRM) important for achieving their goals (Krishnan and Scullion, 2017; Van Lancker et al., 2022). In the context of HRM, high-performance work practices (HPWPs) are often defined as a strategic management effort to improve organizational performance (Combs et al., 2006; Jiang et al., 2012; Saridakis et al., 2017). They aim to improve abilities, increase motivation, and provide opportunities for employees to build their human capital, which should benefit engagement and productivity (Delery and Shaw, 2001; Combs et al., 2006; Posthuma et al., 2013), and, in turn, contribute to the performance of an organization (Huselid, 1995; Becker et al., 1997; Posthuma et al., 2013).

Although several meta-analyses have identified beneficial performance effects for large firms (e.g., Combs et al., 2006; Subramony, 2009), SMEs remain comparably underexplored, which raises questions about the applicability of prior results in this context. In fact, entrepreneurial research primarily focuses on the effects of founders' or CEOs' human capital on SMEs performance, largely neglecting

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the role of employees' capabilities and the HRM structures that enhance them (Rauch and Hatak, 2016). As the only existing meta-analysis on HR-enhancing practices and organizational performance in SMEs thus far, Rauch and Hatak (2016) examined 56 empirical studies and confirmed the overall positive effects. Specifically, they show that skill-, motivation-, and empowerment-enhancing practices are similarly beneficial for SMEs' financial and organizational performance as for large firms, with empowerment-enhancing practices showing the strongest effect. Given the worldwide economic importance of SMEs (European Commission, 2021; World Bank, 2023), research on HRM in SMEs has advanced in recent years in terms of the quantity of new publications but also regarding single outcomes of HRM and specifically HPWPs (Harney and Alkhalaf, 2021; Van Lancker et al., 2022). This increase in research output allows us to conduct a more nuanced or fine-grained analysis by using the taxonomy and multilevel framework of Posthuma et al. (2013), which comprehensively covers key practices that impact performance at both individual and organizational levels, illustrating how HR practices can be combined and aligned to optimize employee and organizational outcomes.

Moreover, existing meta-analyses on HPWPs have mainly focused on organizational outcomes such as financial performance or growth, whereas individual outcomes such as employee creativity or job satisfaction are less regarded or totally set aside (Jiang et al., 2012; Rauch and Hatak, 2016). Meanwhile, employees' attitudes and behaviors are considered an important "missing link in the HRM-performance nexus" (Saridakis et al., 2017, p. 90), followed by calls to be explored in the context of SMEs (Van Lancker et al., 2022). It is thus timely to conduct a new meta-analysis to update existing knowledge, focus on additional outcomes, and offer a more comprehensive understanding of the effectiveness of HPWPs (Posthuma et al., 2013) on various types of SME performance.

The aim of this study is thus to set a meta-analytical starting point for a detailed investigation of the relationship between various HPWPs and organizational and individual outcomes in SMEs. Hence, we examine the strength of effect sizes of nine different HPWP categories and holistic systems in empirical studies. In doing so, we address the lack of understanding on the effects of different HPWPs on different types of organizational and individual outcomes and, consequently, contribute to SME research with a focus on HRM. Our meta-analytic results based on 124 samples from 115 empirical studies show that HPWPs are indeed highly beneficial for SMEs. HPWPs are related to positive organizational outcomes such as better performance, higher growth rates, more innovation, and lower turnover and absenteeism rates. Furthermore, they are also beneficial for individual outcomes and positively related to employee engagement, creativity, job satisfaction, and commitment.

2. Background

2.1. High-performance work practices

The concept of HPWPs is still considered complex (Huselid, 1995; Saridakis et al., 2017) and "fuzzy" (Posthuma et al., 2013, p. 1186). HPWPs are often interchangeably used with other terms, such as high-involvement practices, HR-enhancing practices, or HR practices (Harney and Alkhalaf, 2021). Historically, the term stems from strategic HRM as a premise to increase organizational performance (Saridakis et al., 2017), and thus often refers to performance enhancing (Combs et al., 2006, p. 502) and productivity improving (Kaushik and Mukherjee, 2022, p. 1624) "advanced strategic HRM" (Van Lancker et al., 2022). As an ultimate goal, HPWPs aim to increase organizational performance by improving employees' abilities and motivation (Combs et al., 2006; Jiang et al., 2012).

As a theoretical foundation, human capital theory and the resource-based view (RBV; Barney, 1991) are widely used to comprehend the relationship between HPWPs and organizational performance (Jiang et al., 2012; Saridakis et al., 2017). Human capital theory emphasizes that HPWPs practices develop employees' skills, boosting firm success (Jiang et al., 2012), while RBV highlights that competitive advantage stems from both employees' competencies and an organization's ability to attract and retain talent (Aït Razouk, 2011; Saridakis et al., 2017). To further explain how HPWPs influence organizational performance through individual-level outcomes, the ability, motivation, opportunity (AMO) framework is widely used in this research stream (Appelbaum et al., 2000; Purcell and Hutchinson, 2007; Collings and Mellahi, 2009; Kroon et al., 2013). HPWPs drive performance by improving employees' **ability** ("A", e.g. skills and knowledge), **motivation** ("M", e.g., engagement), and **opportunity** ("O", e.g., supportive work environment) (e.g., Collings and Mellahi, 2009). Therefore, HPWPs are designed to improve organizational performance through the focus on employees' competencies, motivation and creating opportunities for them.

As a natural evolution, single HPWPs can be combined into high performance work systems (HPWPs), which can be defined as "coordinated bundles of HPWPs that create synergistic effects in which certain practices reinforce one another to increase organizational efficiency and effectiveness" (Posthuma et al., 2013, p. 1185). The taxonomy of Posthuma et al. (see methods section 3.1 for details) was designed to comprehensively cover all relevant practices that can influence performance, considering both the **individual** and **organizational** levels. It highlights how different HR practices can be combined and aligned to maximize employee and organizational outcomes. Moreover, Posthuma's et al. (2013) framework emphasizes the importance of aligning different HPWPs to ensure they work together synergistically. This alignment, referred to as **bundling**, enhances the overall effectiveness of HPWPs, ensuring that practices in one area do not undermine those in another. Consequently, we apply the HPWP taxonomy from Posthuma et al. (2013) to assess the relationships between HPWPs and both organizational performance in SMEs and individual employee performance.

2.2. Effects of HPWPs in SMEs at the organizational level

Although scholars have raised concerns about the applicability of HRM findings from large firms to SMEs (Krishnan and Scullion, 2017; Farndale and Paauwe, 2018), there is evidence that HPWPs are also beneficial for SMEs. In recent years, a growing number of studies has investigated the impact of HPWPs on organizational and individual outcomes within SMEs, referring to the conceptual idea

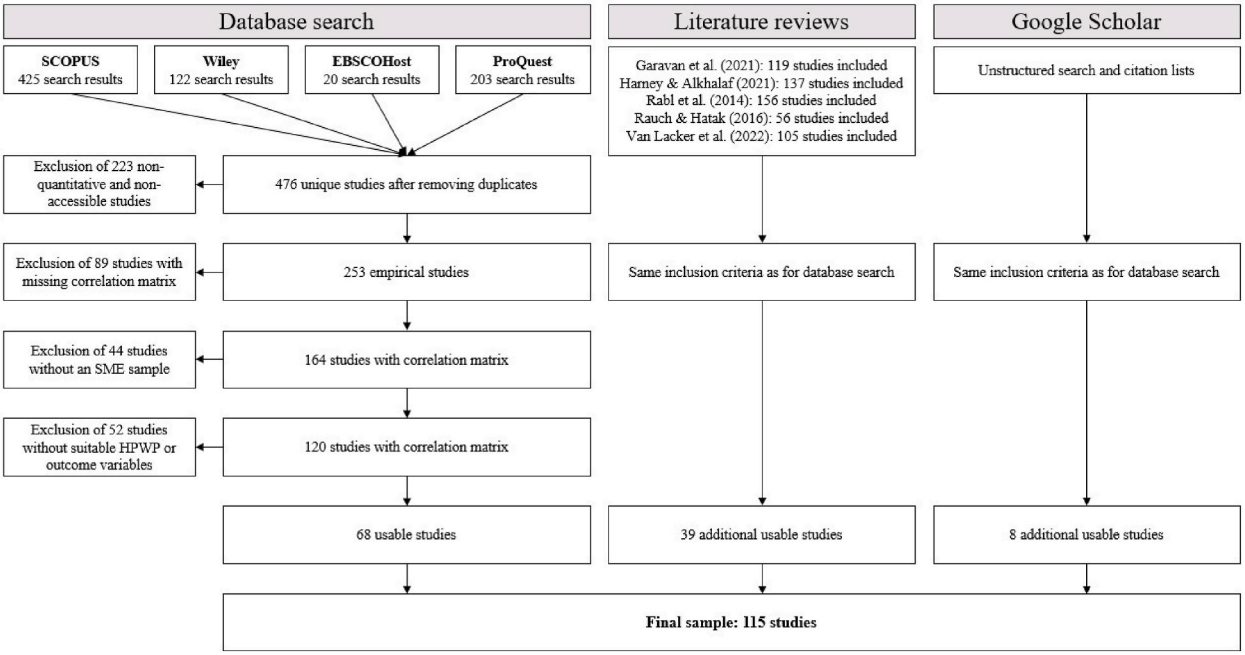

Fig. 1. PRISMA chart.

and results from large firms that HPWPs positively influence individual-level outcomes, which in turn enhance organizational-level outcomes (Jiang et al., 2012). A large literature stream examines single HPWPs and holistic HPWSs as determinants for SMEs' organizational performance and shows that HPWSs seem to have positive effects on SMEs' financial performance (e.g., Aït Razouk, 2011; Lai et al., 2017; Sels et al., 2006; Sheehan, 2014; Sheehan and Garavan, 2022) and innovation (e.g., De Winne and Sels, 2010; Della Torre et al., 2021; Messersmith and Guthrie, 2010; Patel et al., 2013; Schmelter et al., 2010; Shahzad et al., 2022). However, other studies note that not all practices contribute similarly to company success (Faems et al., 2005), and caution that the benefits of HPWPs may not always outweigh the costs in SMEs (Sels et al., 2006; Way, 2002). De Grip and Sieben (2009), e.g., find that more advanced HPWSs only benefit the employees rather than the organizational performance, and McClean and Collins (2011) recommend that SMEs should act selectively and concentrate their investments on employees that are most important for their value-creation and competitive advantage. Further empirical studies suggest that the benefits of HPWPs in SMEs are indeed not distributed uniformly but depend on various firm-internal and firm-external boundary conditions (e.g., Chadwick and Li, 2018; Chadwick et al., 2013; Guerrero et al., 2022; Haar et al., 2022; Kim et al., 2021; Lai et al., 2017; Martínez-del-Rio et al., 2022; McClean and Collins, 2019; Patel and Cardon, 2010; Patel and Conklin, 2012; Sheehan and Garavan, 2022; Wu et al., 2015). Given the heterogeneity in both HPWP measures and results, we should adopt a unified approach to the concept of HPWP (Posthuma et al., 2013) and clarify its effects on SME performance.

2.3. Effects of HPWPs in SMEs at the individual level

Apart from organizational-level outcomes, scholars also examined outcomes of HPWPs on employees as individuals. These effects are important since they are assumed to play a mediating role between organizational performance and HPWPs (Van Lancker et al., 2022). For example, Lai et al. (2017) find that HRM increases organizational commitment and job satisfaction, which in turn increase organizational performance. Similarly, Allen et al. (2013) conclude that HPWPs increase revenue growth through employees' engagement and quit rates. For the HPWP-innovation relationship, studies have also confirmed the mediating role of employees, and specifically their creativity (Al-Ajlouni, 2021; Do and Shipton, 2019), abilities, motivation, and voice behaviors (Shahzad et al., 2019). In addition, HPWPs are found to mitigate negative outcomes, such as reducing quitting intentions (Pajo et al., 2010; Li et al., 2019; Liang-Chih et al., 2022) and levels of job stressors (Giannikis et al., 2021). It is now time to systematically investigate the extent to which HPWPs affect individual employee outcomes in SMEs.

3. Methodology

3.1. Sample and coding

In conducting our meta-analysis, we followed recommended best practices for meta-analyses in management and organizational sciences (Hansen et al., 2022). Following our research question, we targeted all empirical studies that focus on the relationship

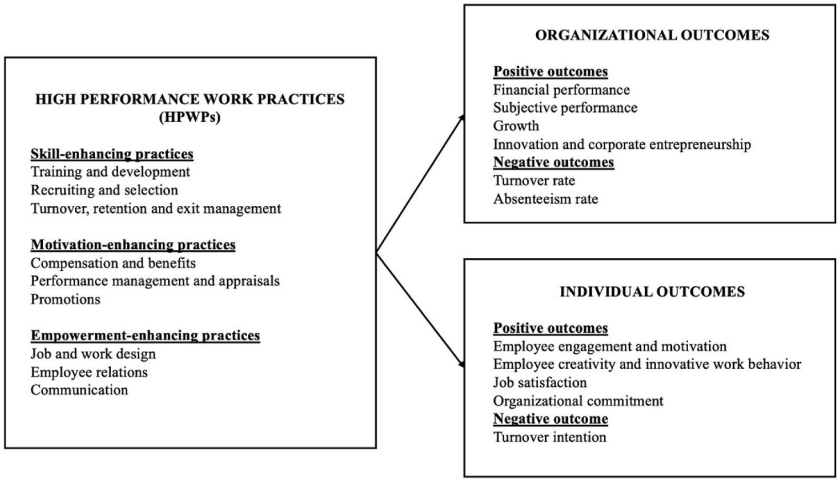

Fig. 2. Overview of HPWPs, and organizational and individual outcomes.

between HPWPs and organizational or individual outcomes in SMEs. SMEs are commonly distinguished from large firms based on employee count, with thresholds ranging from 250 to 500 depending on the country-specific context (Harney and Alkhalaf, 2021). We relied on the definitions and categorizations provided by the primary studies. Consequently, we included only studies that explicitly examined SME samples. The PRISMA flow chart (Page et al., 2021) in Fig. 1 displays the search and sampling process. Search strategies included a structured database search, scanning the study lists of previous literature reviews and meta-analyses, and an unstructured search in Google Scholar through keyword search and scanning citation lists. After excluding all studies that did not fulfill our selection criteria,[1] we ended up with a sample of 115 primary studies, including 124 unique samples. When several studies used the same sample, we kept the one with the highest informative value (e.g., most outcome measures). Two studies based on the same sample were only included if they reported different outcome measures or HPWPs.

Our effect size of interest is the correlation coefficient. From our sample studies, we coded all correlations that measure a relationship between HPWPs and organizational or individual outcomes. We coded HPWPs following the taxonomy of Posthuma et al. (2013, p. 1192), who defined nine categories: (i) *compensation & benefits*, (ii) *job & work design*, (iii) *training & development*, (iv) *recruiting & selection*, (v) *employee relations*, (vi) *communication*, (vii) *performance management & appraisal*, (viii) *promotions*, and (ix) *turnover, retention, & exit management*. Observations that used a composite measure of multiple categories (e.g., "high-performance work systems") were coded as a composite index measure (*HPWP index*). Furthermore, we followed previous meta-analyses (Rauch and Hatak, 2016; Subramony, 2009) and clustered the nine practices into the higher-order categories skill-, motivation-, and empowerment-enhancing practices. Fig. 2 shows the allocation to the three categories (Bos-Nehles et al., 2023).

We included six financial and nonfinancial measures addressing the outcomes related to HPWPs on the organizational level: (i) *financial performance*, (ii) *subjective performance*, (iii) *growth*, (iv) *innovation & corporate entrepreneurship*, (v) *turnover rates*, and (vi) *absenteeism rates*. While higher rates in the first four categories reflect positive company outcomes, higher rates in the latter two HR-related outcomes are negative. We furthermore included five individual-level outcome variables: (i) *employee engagement & motivation*, (ii) *employee creativity & innovative work behavior*, (iii) *job satisfaction*, (iv) *organizational commitment*, and (v) *turnover intention*. Except for turnover intention, all measures reflect positive outcomes. Fig. 2 gives an overview of the constructs and variables. Online Appendix A gives detailed information about the coding and categorization.

3.2. Meta-analysis technique

We applied the univariate meta-analysis approach to calculate mean correlation coefficients (Hunter and Schmidt, 1990, 2004) for each relationship of interest (e.g., HPWPs and innovation). Effect sizes in each sample were weighted by the number of observations (n). Before running the models, we checked for influential outlier observations in each outcome variable subsample. We conducted leave-one-out analyses and excluded influential outliers based on DFBETA and Cook's distance statistics. Since we observed multiple effect sizes for the same relationship in many studies (e.g., correlations for different compensation measures and financial performance), we extended the traditional univariate model. Instead of following the simple approach of averaging all observations from the same study, we included all available effect sizes and applied a three-level random effects model (Konstantopoulos, 2011), which correctly accounts for the dependency of multiple effect sizes from the same primary study within one analysis. Specifically, it adds an

[1] We included quantitative studies with correlation matrices that (i) focused exclusively on SMEs (pure SME samples without large firms), (ii) examined composite or individual HPWPs, and (iii) reported outcomes at the organizational or individual level. For overlapping samples, we retained the most informative study or included both if they reported distinct outcomes or practices. Full selection criteria are detailed in Appendix D.

Table 1
Descriptive statistics meta-analytic sample.

Panel A		Panel B	
Country	No. of samples	Publication year	No. of studies
Albania	1	2000	2
Australia	5	2001	1
Austria & Hungary	1	2002	1
Belgium	4	2003	1
Brunei	2	2004	1
Canada	4	2005	4
China	3	2006	3
Egypt	1	2007	1
France	2	2008	1
Germany	2	2009	2
Greece	3	2010	10
India	4	2011	7
Indonesia	2	2012	5
Ireland	1	2013	8
Italy	2	2014	3
Japan	1	2015	3
Jordan	3	2016	5
Malaysia	5	2017	7
Netherlands	1	2018	6
New Zealand	2	2019	11
Nigeria	2	2020	5
Pakistan	5	2021	12
Portugal	3	2022	16
South Africa	2	Total	115
South Korea	4		
Spain	14	**Panel C**	
Sri Lanka	1	**Publication outlet**	**No. of studies**
Sweden	1	IJHRM	15
Switzerland	1	HRM	10
Taiwan	3	ISBJ	6
Thailand	2	PR	5
United Kingdom	11	ETP	4
USA	17	All other journals	71
Vietnam	3	Book chapter	1
Zimbabwe	1	Working paper	1
Multiple countries	3	Dissertation	1
No information	1	Student theses	1
Total	124	Total	115

Notes: ETP = Entrepreneurship Theory and Practice; HRM = Human Resource Management; IJHRM = International Journal of Human Resource Management; ISBJ = International Small Business Journal; PR = Personnel Review

additional random effects component on the study level to reflect the nested structure. This more sophisticated approach produces unbiased results and uses all available information of primary studies, and should therefore be preferred over the simple procedure of averaging effects (Cheung, 2019; Moeyaert et al., 2017).[2] As a result, we have a number of effect sizes (k) that is different from the number of study samples (s). Analysis was conducted using the R-package metafor (Viechtbauer, 2010).[3]

4. Results

4.1. Descriptive statistics

Table 1 reports the descriptive statistics. Our sample covers almost all regions of the world, including Africa, Asia, Europe, North America, and Oceania (Panel A). The USA and Spain are the countries that contribute the most samples. The studies in our sample have been published between 2000 and 2022 (Panel B). Finally, 111 of the 115 studies are journal articles (Panel C). Book chapters, working papers, dissertations and student theses are each represented by one study.

[2] As a robustness check, we have also conducted analyses using the simple averaging method. The results are published in the online appendix and are largely similar to the three-level models.

[3] The online appendix provides a detailed description of coding and methods.

Table 2
Meta-analysis results for HPWPs and financial performance.

Analysis	k	s	n	$\bar{r}$	s.e.	z		95 % CI	95 % PI	Q		I^2
All HPWP measures	100	38	181,059	0.13	0.02	6.53	**	[0.09; 0.17]	[-0.11; 0.37]	1271.38	**	96 %
Composite measure												
HPWP index	31	25	9296	0.15	0.03	5.18	**	[0.09; 0.21]	[-0.13; 0.43]	238.21	**	86 %
Single measures												
Skill-enhancing practices	15	9	21,109	0.08	0.05	1.77		[-0.01; 0.18]	[-0.18; 0.34]	47,48	**	87 %
Training & development	9	7	1850	0.07	0.05	1.59		[-0.02; 0.16]	[-0.13; 0.28]	16.69	*	64 %
Recruiting & selection	4	3	1137	0.03	0.09	0.30		[-0.15; 0.20]	[-0.30; 0.35]	8.76	*	84 %
Turnover, retention, & exit mgmt.	2	2	18,122	0.20	0.14	1.37		[-0.09; 0.48]	[-0.29; 0.68]	19.34	**	95 %
Motivation-enhancing practices	34	9	93,319	0.11	0.04	3.00	**	[0.04; 0.18]	[-0.13; 0.35]	719.22	**	97 %
Compensation & benefits	28	9	91,350	0.11	0.04	2.79	*	[0.03; 0.19]	[-0.14; 0.37]	709.75	**	98 %
Performance mgmt. & appraisal	3	2	1023	0.15	0.03	4.99	**	[0.09; 0.21]	[0.09; 0.21]	0.29		0 %
Promotion	3	2	946	0.03	0.09	0.37		[-0.14; 0.20]	[-0.24; 0.30]	4.61		77 %
Empowerment-enhancing practices	20	9	57,335	0.07	0.04	2.05	*	[0.00; 0.14]	[-0.16; 0.31]	207.77	**	97 %
Job & work design	8	5	2001	0.04	0.05	0.77		[-0.06; 0.15]	[-0.24; 0.32]	29.25	**	80 %
Employee relations	6	3	36,840	0.03	0.04	0.73		[-0.05; 0.11]	[-0.14; 0.20]	142.06	**	96 %
Communication	6	5	18,494	0.14	0.06	2.11	*	[0.01; 0.26]	[-0.13; 0.40]	18.34	**	77 %

Note: k = number of effect sizes; s = number of study samples; n = number of observations; s.e. = standard error; $\bar{r}$ = mean effect size; z = test statistic; 95 % CI = 95 % confidence interval; 95 % PI = 95 % prediction interval; Q = test statistic for residual heterogeneity; I^2 = ratio of between study variability to total variability. **p < 0.01; *p < 0.05.

Table 3
Meta-analysis results for HPWPs and subjective performance.

Analysis	k	s	n	$\bar{r}$	s.e.	z		95 % CI	95 % PI	Q		I^2
All HPWP measures	166	54	45,379	0.33	0.03	12.92	**	[0.28; 0.38]	[-0.05; 0.72]	2138.65	**	93 %
Composite measure												
HPWP index	41	33	13,568	0.38	0.03	12.02	**	[0.32; 0.44]	[0.03; 0.73]	629.67	**	94 %
Single measures												
Skill-enhancing practices	53	20	12,677	0.26	0.05	5.18	**	[0.16; 0.36]	[-0.19; 0.71]	466.57	**	93 %
Training & development	29	19	6891	0.27	0.05	4.96	**	[0.16; 0.37]	[-0.19; 0.72]	273.83	**	93 %
Recruiting & selection	24	11	5786	0.24	0.06	4.02	**	[0.12; 0.35]	[-0.16; 0.64]	187.48	**	91 %
Turnover, retention, & exit mgmt.	–											
Motivation-enhancing practices	42	17	11,037	0.27	0.04	6.09	**	[0.18; 0.36]	[-0.10; 0.64]	502.89	**	91 %
Compensation & benefits	26	16	6159	0.24	0.05	5.21	**	[0.15; 0.34]	[0.11; 0.59]	254.67	**	88 %
Performance mgmt. & appraisal	15	8	4588	0.32	0.09	3.78	**	[0.10; 0.49]	[-0.17; 0.82]	183.49	**	95 %
Promotion	1	1	290	0.39	0.05	7.90	**	[0.30; 0.49]	[0.30; 0.49]	0.00		0 %
Empowerment-enhancing practices	30	11	8097	0.27	0.04	6.71	**	[0.19; 0.36]	[0.00; 0.55]	140.94	**	85 %
Job & work design	10	5	3240	0.28	0.07	3.94	**	[0.14; 0.42]	[-0.05; 0.61]	65.18	**	89 %
Employee relations	3	2	226	0.03	0.10	0.32		[-0.17; 0.24]	[-0.27; 0.33]	2.68		48 %
Communication	17	8	4631	0.29	0.02	12.70	**	[0.25; 0.34]	[0.15; 0.44]	43.13	**	61 %

Note: k = number of effect sizes; s = number of study samples; n = number of observations; $\bar{r}$ = mean effect size; z = test statistic; s.e. = standard error; 95 % CI = 95 % confidence interval; 95 % PI = 95 % prediction interval; Q = test statistic for residual heterogeneity; I^2 = ratio of between study variability to total variability. **p < 0.01; *p < 0.05.

4.2. Organizational outcomes

Table 2 reports the meta-analytic results for the relationship between HPWPs and (objective) *financial performance* measures. Overall, we identified 100 effect sizes (k) from 38 study samples (s).[4] The mean correlation coefficient for all HPWP measures is $\bar{r} = 0.13$ ($p < 0.01$), which means that HPWPs are in general positively related to financial performance. The results report furthermore a significant amount of heterogeneity (Q), of which 94 % (I^2) can be attributed to variance between the single studies. In a second step, we divided all observations according to the HPWP measures or categories used in the primary studies. The first group summarizes all effects that were derived from a composite measure of multiple HPWPs, thus reflecting an HPWS. Furthermore, we analyzed all nine single measures and the three categories separately, if available. The mean effect size (ES) for the composite measures (*HPWP index*) is almost similar to the overall mean effect size and statistically significant ($\bar{r} = 0.15, p < 0.01$), whereas group mean effect sizes are lower ($\bar{r}_{SKILL} = 0.08, p = 0.08$; $\bar{r}_{MOT} = 0.11, p < 0.01$; $\bar{r}_{EMP} = 0.07, p = 0.04$). Concerning the single measures, we find statistically significant effects only for the three categories *compensation & benefits*, *performance management & appraisal,* and *communication*. Most mean effect

[4] The metafor package uses "k" as the number of effect sizes. Other software programs might use "k" for number of studies. We stick to the convention of the metafor package for consistency reasons.

Table 4
Meta-analysis results for HPWPs and growth.

Analysis	k	s	n	$\bar{r}$	s.e.	z		95 % CI	95 % PI	Q		I^2
All HPWP measures	42	15	14,497	0.13	0.02	5.63	**	[0.09; 0.18]	[-0.01; 0.27]	75.52	**	56 %
Composite measure												
HPWP index	8	8	1107	0.18	0.03	6.25	**	[0.13; 0.24]	[0.13; 0.24]	13.19		0 %
Single measures												
Skill-enhancing practices	12	5	1256	0.00	0.06	0.06		[-0.12; 0.13]	[-0.25; 0.26]	19.33		57 %
Training & development	5	4	410	−0.04	0.08	−0.45		[-0.20; 0.13]	[-0.33; 0.26]	7.09		55 %
Recruiting & selection	7	3	846	0.03	0.07	0.47		[-0.10; 0.16]	[-0.19; 0.26]	7.05		51 %
Turnover, retention, & exit mgmt.	–											
Motivation-enhancing practices	14	7	10,926	0.13	0.03	4.13	**	[0.07; 0.19]	[0.00; 0.26]	26.64	*	65 %
Compensation & benefits	12	7	10,724	0.14	0.03	4.13	**	[0.07; 0.20]	[0.00; 0.27]	23.16	*	69 %
Performance mgmt. & appraisal	1	1	88	0.17	0.10	1.63		[-0.03; 0.37]	[-0.03; 0.37]	0.00		0 %
Promotion	1	1	114	−0.07	0.09	−0.75		[-0.25; 0.11]	[-0.25; 0.11]	0.00		0 %
Empowerment-enhancing practices	8	4	1208	0.09	0.03	3.16	**	[0.03; 0.15]	[0.03; 0.15]	2.26		71 %
Job & work design	3	2	772	0.07	0.04	2.07	*	[0.00; 0.14]	[0.00; 0.14]	0.09		0 %
Employee relations	2	1	228	0.15	0.07	2.31	*	[0.02; 0.28]	[0.02; 0.28]	0.02		0 %
Communication	3	3	208	0.09	0.07	1.23		[-0.05; 0.22]	[-0.05; 0.22]	1.13		0 %

Note: k = number of effect sizes; s = number of study samples; n = number of observations; $\bar{r}$ = mean effect size; s.e. = standard error; z = test statistic; 95 % CI = 95 % confidence interval; 95 % PI = 95 % prediction interval; Q = test statistic for residual heterogeneity; I^2 = ratio of between study variability to total variability. **p < 0.01; *p < 0.05.

Table 5
Meta-analysis results for HPWPs and innovation & corporate entrepreneurship.

Analysis	k	s	n	$\bar{r}$	s.e.	z		95 % CI	95 % PI	Q		I^2
All HPWP measures	76	30	88,792	0.39	0.04	9.85	**	[0.32; 0.47]	[-0.03; 0.82]	1897.59	**	98 %
Composite measure												
HPWP index	33	22	10,173	0.45	0.05	9.37	**	[0.35; 0.54]	[0.01; 0.89]	576.54	**	96 %
Single measures												
Skill-enhancing practices	14	6	20,231	0.23	0.06	3.56	**	[0.10; 0.36]	[-0.09; 0.55]	204.33	**	89 %
Training & development	8	5	1497	0.28	0.06	4.81	**	[0.17; 0.39]	[0.02; 0.54]	29.10	**	76 %
Recruiting & selection	5	3	844	0.27	0.10	2.68	*	[0.07; 0.47]	[-0.11; 0.64]	21.39	**	85 %
Turnover, retention, & exit mgmt.	1	1	17,890	0.04	0.01	5.36	**	[0.03; 0.05]	[0.03; 0.05]	0.00		0 %
Motivation-enhancing practices	13	4	2360	0.26	0.08	3.41	**	[0.11; 0.40]	[-0.06; 0.58]	65.04	**	82 %
Compensation & benefits	9	4	1730	0.26	0.08	3.32	**	[0.11; 0.41]	[-0.07; 0.59]	44.95	**	83 %
Performance mgmt. & appraisal	3	1	516	0.44	0.04	12.36	**	[0.37; 0.51]	[0.37; 0.51]	0.05		0 %
Promotion	–											
Empowerment-enhancing practices	16	5	56,028	0.25	0.06	4.02	**	[0.13; 0.37]	[-0.04; 0.53]	140.09	**	98 %
Job & work design	6	3	1288	0.30	0.10	2.97	**	[0.10; 0.50]	[-0.09; 0.69]	26.80	**	88 %
Employee relations	7	3	36,524	0.16	0.07	2.23	*	[0.02; 0.29]	[-0.11; 0.42]	46.93	**	98 %
Communication	3	3	18,216	0.18	0.06	3.28	**	[0.07; 0.29]	[-0.01; 0.37]	6.75	*	67 %

Note: k = number of effect sizes; s = number of study samples; n = number of observations; $\bar{r}$ = mean effect size; s.e. = standard error; z = test statistic; 95 % CI = 95 % confidence interval; 95 % PI = 95 % prediction interval; Q = test statistic for residual heterogeneity; I^2 = ratio of between study variability to total variability. **p < 0.01; *p < 0.05.

sizes are smaller than for the composite measure and sometimes only based on a few observations and studies.[5]

Table 3 shows the results for *subjective performance* measures. The overall mean ES is positive and almost three times larger than for objective performance measures ($\bar{r} = 0.33$, $p < 0.01$). Again, the mean ES for the composite measure is slightly larger ($\bar{r} = 0.38$, $p < 0.01$). Furthermore, almost all single categories show positive and significant effects, which are, however, smaller than for the composite measure. The mean ES of the three groups are almost similar. *Firm growth* is also positively related to HPWPs (Table 4), with an overall mean ES of $\bar{r} = 0.13$ ($p < 0.01$). While the mean ES for the composite measure is again slightly larger ($\bar{r} = 0.18$, $p < 0.01$), most single measures report positive but non-significant, and some even negative but non-significant effects (e.g., *training & development*). Again, the number of observations is small for most categories and sometimes contains only one observation. In these cases, results should be interpreted with caution due to low statistical power. On a group level, motivation- and empowerment-enhancing practices show positive and significant mean effects, whereas there is no effect for skill-enhancing practices. In contrast, the

[5] When there is only one observation for a relationship of interest, $\bar{r}$ and s.e. are derived from this observation solely. $\bar{r}$ is the effect size of the study, s.e. is calculated by $(1 - \bar{r}^2)/\sqrt{(n-1)}$. A 95 % confidence interval can still be calculated by $\bar{r} \pm 1.96$*s.e.*, which is similar to mean effect sizes based on multiple effects. For single observations, we use the Hunter and Schmidt (2004) method instead of the multi-level approach.

Table 6
Meta-analysis results for HPWPs and turnover rates.

Analysis	k	s	n	$\bar{r}$	s.e.	z		95 % CI	95 % PI	Q		I^2
All HPWP measures	28	12	12,216	−0.17	0.05	−3.22	**	[-0.28; −0.07]	[-0.55; 0.21]	440.92	**	94 %
Composite measure												
HPWP index	10	9	5536	−0.24	0.06	−4.03	**	[-0.36; −0.13]	[-0.61; 0.12]	165.79	**	95 %
Single measures												
Skill-enhancing practices	5	2	1789	−0.06	0.05	−1.22		[-0.14; 0.03]	[-0.23; 0.11]	11.00	*	66 %
Training & development	3	2	1054	−0.07	0.07	−0.95		[-0.21; 0.07]	[-0.33; 0.19]	10.88	**	82 %
Recruiting & selection	2	2	735	−0.04	0.04	−1.20		[-0.12; 0.03]	[-0.12; 0.03]	0.02		0 %
Turnover, retention, & exit mgmt.	–											
Motivation-enhancing practices	7	4	2655	−0.08	0.07	−1.16		[-0.23; 0.06]	[-0.42; 0.25]	49.60	**	90 %
Compensation & benefits	4	4	1504	−0.05	0.05	−0.93		[-0.15; 0.05]	[-0.24; 0.15]	10.84	*	73 %
Performance mgmt. & appraisal	2	2	735	−0.19	0.21	−0.90		[-0.60; 0.22]	[-0.89; 0.52]	33.50	**	97 %
Promotion	1	1	416	−0.03	0.05	−0.61		[-0.13; 0.07]	[-0.13; 0.07]	0.00		0 %
Empowerment-enhancing practices	6	3	2236	−0.06	0.06	−1.00		[-0.18; 0.06]	[-0.28; 0.16]	15.65	*	78 %
Job & work design	2	2	863	−0.05	0.11	−0.45		[-0.28; 0.17]	[-0.43; 0.33]	10.62	**	91 %
Employee relations	2	2	735	−0.09	0.06	−1.55		[-0.21; 0.02]	[-0.27; 0.08]	2.64		62 %
Communication	2	1	638	−0.08	0.04	−2.03	*	[-0.16; 0.00]	[-0.16; 0.00]	0.00		0 %

Note: k = number of effect sizes; s = number of study samples; n = number of observations; $\bar{r}$ = mean effect size; s.e. = standard error; z = test statistic; 95 % CI = 95 % confidence interval; 95 % PI = 95 % prediction interval; Q = test statistic for residual heterogeneity; I^2 = ratio of between study variability to total variability. **p < 0.01; *p < 0.05.

Table 7
Meta-analysis results for HPWPs and absenteeism rates.

Analysis	k	s	n	$\bar{r}$	s.e.	z		95 % CI	95 % PI	Q		I^2
All HPWP measures	12	3	3441	−0.12	0.04	−3.02	**	[-0.20; −0.04]	[-0.38; 0.13]	60.99	**	82 %
Composite measure												
HPWP index	2	2	345	−0.25	0.05	−4.90	**	[-0.35; −0.15]	[-0.35; −0.15]	0.32		0 %
Single measures												
Skill-enhancing practices	3	1	957	−0.12	0.10	−1.22		[-0.31; 0.07]	[-0.49; 0.25]	18.92	**	89 %
Training & development	2	1	638	−0.12	0.17	−0.71		[-0.45; 0.21]	[-0.69; 0.45]	18.92	**	95 %
Recruiting & selection	1	1	319	−0.12	0.06	−2.17	*	[-0.23; −0.01]	[-0.23; −0.01]	0.00		0 %
Turnover, retention, & exit mgmt.	–											
Motivation-enhancing practices	3	2	863	−0.04	0.07	−0.56		[-0.17; 0.09]	[-0.27; 0.20]	7.99	*	74 %
Compensation & benefits	2	2	544	−0.09	0.07	−1.19		[-0.24; 0.06]	[-0.31; 0.14]	3.01		67 %
Performance mgmt. & appraisal	1	1	319	0.06	0.06	1.07		[-0.05; 0.17]	[-0.05; 0.17]	0.00		0 %
Promotion	–											
Empowerment-enhancing practices	4	1	1276	−0.14	0.07	−1.85		[-0.28; 0.01]	[-0.44; 0.17]	21.90	**	86 %
Job & work design	1	1	319	−0.31	0.05	−6.12	**	[-0.41; −0.21]	[-0.41; −0.21]	0.00		0 %
Employee relations	1	1	319	0.04	0.06	0.71		[-0.07; 0.15]	[-0.07; 0.15]	0.00		0 %
Communication	2	1	638	−0.14	0.05	−2.80	*	[-0.24; −0.04]	[-0.27; −0.01]	1.65		40 %

Note: k = number of effect sizes; s = number of study samples; n = number of observations; $\bar{r}$ = mean effect size; s.e. = standard error; z = test statistic; 95 % CI = 95 % confidence interval; 95 % PI = 95 % prediction interval; Q = test statistic for residual heterogeneity; I^2 = ratio of between study variability to total variability. **p < 0.01; *p < 0.05.

relationship between HPWPs and *innovation & corporate entrepreneurship* is strongly positive (Table 5). The mean correlation for all observations is $\bar{r} = 0.39$ ($p < 0.01$), and $\bar{r} = 0.45$ ($p < 0.01$) for composite measure observations. Single categories also report positive and significant mean effects, but again on a lower level. Regarding the HR-related organizational outcomes, we observe significant effects in the expected negative direction. For *turnover rates* (Table 6), the mean ES is $\bar{r} = -0.17$ ($p < 0.01$) for all observations, and $\bar{r} = -0.24$ ($p < 0.01$) for the composite measure subsample. The effect sizes of most single measures are, however, non-significant. For *absenteeism rates* (Table 7), the mean correlation is $\bar{r} = -0.12$ ($p < 0.01$) for all observations, and $\bar{r} = -0.25$ ($p < 0.01$) for the composite measure subsample. For the single categories, mean ESs are mostly based on very few observations and are thus hardly representative.

Finally, Table 8 summarizes the mean ESs of all organizational outcome measures and allows a comparison of them. Mean effects are reported for the complete samples and the composite measure subsamples. Remarkably, innovation shows the strongest effects of all organizational outcome measures. Hence, HPWPs seem to be especially beneficial for SMEs' innovation performance and corporate entrepreneurship behavior. As mentioned before, the relationship between HPWPs and subjective performance measures is almost three times stronger than for objective financial performance measures and firm growth, which show almost similar mean ESs.

4.3. Individual outcomes

Next, we investigate the relationship between HPWPs and each of the four individual outcome measures. In general, the number of

Table 8
Comparison of mean effect sizes for organizational outcomes.

Analysis	k	s	n	$\bar{r}$	s.e	z		95 % CI	95 % PI	Q		I^2
All HPWP measures												
Financial performance	100	38	181,059	0.13	0.02	6.53	**	[0.09; 0.17]	[-0.11; 0.37]	1271.38	**	96 %
Subjective performance	166	54	45,379	0.33	0.03	12.92	**	[0.28; 0.38]	[-0.05; 0.72]	2138.65	**	93 %
Growth	42	15	14,497	0.13	0.02	5.63	**	[0.09; 0.18]	[-0.01; 0.27]	75.52	**	56 %
Innovation & corporate entrepreneurship	76	30	88,792	0.39	0.04	9.85	**	[0.32; 0.47]	[-0.03; 0.82]	1897.59	**	98 %
Turnover rates	28	12	12,216	−0.17	0.05	−3.22	**	[-0.28; −0.07]	[-0.55; 0.21]	440.92	**	94 %
Absenteeism rates	12	3	3441	−0.12	0.04	−3.02	**	[-0.20; −0.04]	[-0.38; 0.13]	60.99	**	82 %
Composite measure												
Financial performance	31	25	9296	0.15	0.03	5.18	**	[0.09; 0.21]	[-0.13; 0.43]	238.21	**	86 %
Subjective performance	41	33	13,568	0.38	0.03	12.02	**	[0.32; 0.44]	[0.03; 0.73]	629.67	**	94 %
Growth	8	8	1107	0.18	0.03	6.25	**	[0.13; 0.24]	[0.13; 0.24]	13.19		0 %
Innovation & corporate entrepreneurship	33	22	10,173	0.45	0.05	9.37	**	[0.35; 0.54]	[0.01; 0.89]	576.54	**	96 %
Turnover rates	10	9	5536	−0.24	0.06	−4.03	**	[-0.36; −0.13]	[-0.61; 0.12]	165.79	**	95 %
Absenteeism rates	2	2	345	−0.25	0.05	−4.90	**	[-0.35; −0.15]	[-0.35; −0.15]	0.32		0 %
Skill-enhancing practices												
Financial performance	15	9	21,109	0.08	0.05	1.77		[-0.01; 0.18]	[-0.18; 0.34]	47,48	**	87 %
Subjective performance	53	20	12,677	0.26	0.05	5.18	**	[0.16; 0.36]	[-0.19; 0.71]	466.57	**	93 %
Growth	12	5	1256	0.00	0.06	0.06		[-0.12; 0.13]	[-0.25; 0.26]	19.33		57 %
Innovation & corporate entrepreneurship	14	6	20,231	0.23	0.06	3.56	**	[0.10; 0.36]	[-0.09; 0.55]	204.33	**	89 %
Turnover rates	5	2	1789	−0.06	0.05	−1.22		[-0.14; 0.03]	[-0.23; 0.11]	11.00	*	66 %
Absenteeism rates	3	1	957	−0.12	0.10	−1.22		[-0.31; 0.07]	[-0.49; 0.25]	18.92	**	89 %
Motivation-enhancing practices												
Financial performance	34	9	93,319	0.11	0.04	3.00	**	[0.04; 0.18]	[-0.13; 0.35]	719.22	**	97 %
Subjective performance	42	17	11,037	0.27	0.04	6.09	**	[0.18; 0.36]	[-0.10; 0.64]	502.89	**	91 %
Growth	14	4	10,926	0.13	0.03	4.13	**	[0.07; 0.19]	[0.00; 0.26]	26.64	*	65 %
Innovation & corporate entrepreneurship	13	4	2360	0.26	0.08	3.41	**	[0.11; 0.40]	[-0.06; 0.58]	65.04	**	82 %
Turnover rates	7	4	2655	−0.08	0.07	−1.16		[-0.23; 0.06]	[-0.42; 0.25]	49.60	**	90 %
Absenteeism rates	3	2	863	−0.04	0.07	−0.56		[-0.17; 0.09]	[-0.27; 0.20]	7.99	*	74 %
Empowerment-enhancing practices												
Financial performance	20	9	57,335	0.07	0.04	2.05	*	[0.00; 0.14]	[-0.16; 0.31]	207.77	**	97 %
Subjective performance	30	11	8097	0.27	0.04	6.71	**	[0.19; 0.36]	[0.00; 0.55]	140.94	**	85 %
Growth	8	4	1208	0.09	0.03	3.16	**	[0.03; 0.15]	[0.03; 0.15]	2.26		71 %
Innovation & corporate entrepreneurship	16	5	56,028	0.25	0.06	4.02	**	[0.13; 0.37]	[-0.04; 0.53]	140.09	**	98 %
Turnover rates	6	3	2236	−0.06	0.06	−1.00		[-0.18; 0.06]	[-0.28; 0.16]	15.65	*	78 %
Absenteeism rates	4	1	1276	−0.14	0.07	−1.85		[-0.28; 0.01]	[-0.44; 0.17]	21.90	**	86 %

Note: k = number of effect sizes; s = number of study samples; n = number of observations; $\bar{r}$ = mean effect size; s.e. = standard error; z = test statistic; 95 % CI = 95 % confidence interval; 95 % PI = 95 % prediction interval; Q = test statistic for residual heterogeneity; I^2 = ratio of between study variability to total variability. **p < 0.01; *p < 0.05.

observed effects for most measures is smaller than for the organizational outcome measures, which limits statistical power. Furthermore, we could not observe any effects for some relationships of outcome measures and individual practices. Table 9 reports the results for *employee engagement & motivation*. We find an overall positive mean correlation of $\bar{r} = 0.35$ ($p < 0.01$). The effect is even higher for the subsample of composite HPWP measures ($\bar{r} = 0.44$, $p < 0.01$). For the single measures, most effects are based on only one study sample.

We also find positive and significant effects of HPWPs on *employee creativity and innovative work behavior* (Table 10). The mean ES is $\bar{r} = 0.29$ ($p < 0.01$) for the complete sample and $\bar{r} = 0.31$ ($p < 0.01$) for the composite measures only. Turning to the outcome measures concerning employees' satisfaction with and commitment to their job, we find positive and significant effects for both *job satisfaction* ($\bar{r} = 0.47$, $p < 0.01$, Table 11) and *organizational commitment* ($\bar{r} = 0.32$, $p < 0.01$, Table 12). As expected, the relationship between HPWPs and *turnover intention* (Table 13) shows an effect in the negative direction ($\bar{r} = -0.28$, $p < 0.01$). Hence, a strong manifestation of HPWPs in SMEs seems to increase employees' job satisfaction and company commitment and decrease their intentions to leave.

Finally, we compare again the most important mean ESs of the different individual outcome measures (Table 14). It is noticeable that the strength of the mean ESs is on average higher than for most of the organizational outcome measures. Within the group of individual outcome measures, *job satisfaction* shows the strongest effects.

Table 9
Meta-analysis results for HPWPs and employee engagement & motivation.

Analysis	k	s	n	$\bar{r}$	s.e.	z		95 % CI	95 % PI	Q		I^2
All HPWP measures	14	8	2782	0.35	0.05	6.91	**	[0.25; 0.44]	[0.05; 0.64]	79.73	**	84 %
Composite measure												
HPWP index	6	5	996	0.44	0.04	12.09	**	[0.37; 0.51]	[0.30; 0.58]	9.88		49 %
Single measures												
Skill-enhancing practices	1	1	203	0.17	0.07	2.49	*	[0.04; 0.30]	[0.04; 0.30]	0.00		0 %
Training & development	1	1	203	0.17	0.07	2.49	*	[0.04; 0.30]	[0.04; 0.30]	0.00		0 %
Recruiting & selection	–											
Turnover, retention, & exit mgmt.	–											
Motivation-enhancing practices	2	1	426	0.11	0.06	1.99	*	[0.00; 0.22]	[-0.03; 0.25]	1.39		28 %
Compensation & benefits	1	1	213	0.06	0.07	0.82		[-0.08; 0.19]	[-0.08; 0.19]	0.00		0 %
Performance mgmt. & appraisal	1	1	213	0.17	0.07	2.53	*	[0.04; 0.30]	[0.04; 0.30]	0.00		0 %
Promotion	–											
Empowerment-enhancing practices	5	2	1157	0.34	0.05	6.90	**	[0.24; 0.44]	[0.13; 0.55]	14.54	*	72 %
Job & work design	2	1	472	0.43	0.04	11.49	**	[0.36; 0.51]	[0.36; 0.51]	0.02		0 %
Employee relations	–											
Communication	3	2	685	0.28	0.06	4.66	**	[0.16; 0.40]	[0.08; 0.48]	5.88		66 %

Note: k = number of effect sizes; s = number of study samples; n = number of observations; $\bar{r}$ = mean effect size; s.e. = standard error; z = test statistic; 95 % CI = 95 % confidence interval; 95 % PI = 95 % prediction interval; Q = test statistic for residual heterogeneity; I^2 = ratio of between study variability to total variability. **p < 0.01; *p < 0.05.

Table 10
Meta-analysis results for HPWPs and employee creativity & innovative work behavior.

Analysis	k	s	n	$\bar{r}$	s.e.	z		95 % CI	95 % PI	Q		I^2
All HPWP measures	15	8	3018	0.29	0.06	5.05	**	[0.18; 0.40]	[-0.08; 0.65]	102.68	**	89 %
Composite measure												
HPWP index	4	4	1188	0.31	0.12	2.47	**	[0.06; 0.55]	[-0.22; 0.84]	39.38	**	95 %
Single measures												
Skill-enhancing practices	3	2	601	0.35	0.09	3.84	**	[0.17; 0.52]	[0.06; 0.63]	6.02		78 %
Training & development	2	2	402	0.33	0.08	4.12	**	[0.17; 0.49]	[0.09; 0.57]	3.22		69 %
Recruiting & selection	1	1	199	0.45	0.06	7.94	**	[0.34; 0.56]	[0.34; 0.56]	0.00		0 %
Turnover, retention, & exit mgmt.	–											
Motivation-enhancing practices	6	3	817	0.21	0.09	2.33	*	[0.03; 0.38]	[-0.22; 0.63]	28.38	**	84 %
Compensation & benefits	4	3	540	0.15	0.13	1.14		[-0.11; 0.40]	[-0.38; 0.67]	23.63	**	88 %
Performance mgmt. & appraisal	2	2	277	0.30	0.05	5.48	**	[0.19; 0.41]	[0.19; 0.41]	0.79		0 %
Promotion	–											
Empowerment-enhancing practices	2	2	412	0.38	0.05	8.03	**	[0.29; 0.47]	[0.27; 0.49]	1.26		21 %
Job & work design	1	1	199	0.43	0.06	7.42	**	[0.32; 0.54]	[0.32; 0.54]	0.00		0 %
Employee relations	–											
Communication	1	1	213	0.34	0.06	5.49	**	[0.22; 0.45]	[0.22; 0.45]	0.00		0 %

Note: k = number of effect sizes; s = number of study samples; n = number of observations; $\bar{r}$ = mean effect size; s.e. = standard error; z = test statistic; 95 % CI = 95 % confidence interval; 95 % PI = 95 % prediction interval; Q = test statistic for residual heterogeneity; I^2 = ratio of between study variability to total variability. **p < 0.01; *p < 0.05.

5. Discussion

The objectives of this meta-analysis were twofold: On the one hand, the study aimed to confirm known relationships but also to extend knowledge on previously unexplored relationships between HPWPs and nuanced organizational performance outcomes in SMEs. On the other hand, this study is the first meta-analysis to explore the effects of a broader set of HPWPs on individual-level performance. Our findings building on 124 empirical samples from 115 studies showed that not only large firms but also SMEs can benefit from HPWPs in various terms. SMEs that use HPWPs show better financial performance, higher growth rates and innovation activities, and lower turnover and absenteeism rates on the organizational level. These results confirm and extend the findings of existing meta-analyses on HPWPs in general and HPWPs in SMEs in particular (see Table 15).[6] Similar to previous meta-analyses, we find an on average positive relationship between HPWPs and (accounting-based) financial performance measures. Our mean ES of $\bar{r}$ =

[6] All other meta-analyses in the comparison table use the averaging method if primary studies report multiple effect sizes for the same relationship (either a simple average or an average calculated by the formular of Hunter and Schmidt (2004, p. 437). For these meta-analyses, the number of effect sizes is similar to the number of studies. In our study, we used all available effect sizes and applied a multi-level model, which accounts for the dependency of multiple effect sizes from the same primary study. We therefore stated "k" and "s" for reasons of comparability.

Table 11
Meta-analysis results for HPWPs and job satisfaction.

Analysis	k	s	n	$\bar{r}$	s.e.	z		95 % CI	95 % PI	Q		I^2
All HPWP measures	6	3	82,859	0.47	0.10	4.77	**	[0.28; 0.66]	[0.09; 0.84]	261.39	**	100 %
Composite measure												
HPWP index	1	1	90	0.61	0.07	9.20	**	[0.48; 0.74]	[0.48; 0.74]	0.00		0 %
Single measures												
Skill-enhancing practices	2	2	20,831	0.43	0.15	2.77	*	[0.13; 0.73]	[-0.09; 0.95]	39.42	**	97 %
Training & development	2	2	20,831	0.43	0.15	2.77	*	[0.13; 0.73]	[-0.09; 0.95]	39.42	**	97 %
Recruiting & selection	–											
Turnover, retention, & exit mgmt.	–											
Motivation-enhancing practices	–											
Compensation & benefits	–											
Performance mgmt. & appraisal	–											
Promotion	–											
Empowerment-enhancing practices	3	1	61,938	0.51	0.02	27.30	**	[0.47; 0.54]	[0.43; 0.58]	77.23	**	97 %
Job & work design	1	1	20,646	0.53	0.01	105.90	**	[0.52; 0.54]	[0.52; 0.54]	0.00		0 %
Employee relations	–											
Communication	2	1	41,292	0.50	0.02	19.80	**	[0.45; 0.54]	[0.41; 0.58]	45.28	**	98 %

Note: k = number of effect sizes; s = number of study samples; n = number of observations; $\bar{r}$ = mean effect size; s.e. = standard error; z = test statistic; 95 % CI = 95 % confidence interval; 95 % PI = 95 % prediction interval; Q = test statistic for residual heterogeneity; I^2 = ratio of between study variability to total variability. **p < 0.01; *p < 0.05.

Table 12
Meta-analysis results for HPWPs and organizational commitment.

Analysis	k	s	n	$\bar{r}$	s.e.	z		95 % CI	95 % PI	Q		I^2
All HPWP measures	26	10	6663	0.32	0.05	6.62	**	[0.23; 0.42]	[-0.07; 0.72]	322.22	**	92 %
Composite measure												
HPWP index	7	6	2677	0.34	0.10	3.36	**	[0.14; 0.53]	[-0.17; 0.84]	157.31	**	96 %
Single measures												
Skill-enhancing practices	9	4	1890	0.36	0.06	6.01	**	[0.25; 0.48]	[-0.01; 0.72]	73.22	**	89 %
Training & development	7	4	1436	0.37	0.08	4.64	**	[0.21; 0.53]	[-0.05; 0.80]	73.61	**	92 %
Recruiting & selection	2	1	454	0.34	0.04	8.17	**	[0.26; 0.42]	[0.26; 0.42]	0.10		0 %
Turnover, retention, & exit mgmt.												
Motivation-enhancing practices	4	1	908	0.33	0.05	6.12	**	[0.23; 0.44]	[0.12; 0.54]	10.09	*	70 %
Compensation & benefits	2	1	454	0.43	0.04	11.03	**	[0.35; 0.50]	[0.35; 0.50]	0.17		0 %
Performance mgmt. & appraisal	2	1	454	0.24	0.04	5.39	**	[0.15; 0.33]	[0.15; 0.33]	0.06		0 %
Promotion												
Empowerment-enhancing practices	6	1	1188	0.33	0.10	3.32	**	[0.13; 0.52]	[-0.17; 0.83]	72.67	**	93 %
Job & work design	3	1	594	0.35	0.16	2.19	*	[0.04; 0.67]	[-0.27; 0.97]	39.85	**	95 %
Employee relations	–											
Communication	3	1	594	0.31	0.15	2.03	*	[0.01; 0.60]	[-0.27; 0.88]	32.34	**	94 %

Note: k = number of effect sizes; s = number of study samples; n = number of observations; $\bar{r}$ = mean effect size; s.e. = standard error; z = test statistic; 95 % CI = 95 % confidence interval; 95 % PI = 95 % prediction interval; Q = test statistic for residual heterogeneity; I^2 = ratio of between study variability to total variability. **p < 0.01; *p < 0.05.

0.13 is close to the mean ES for SMEs identified by Rauch and Hatak (2016, $\bar{r}_{RH} = 0.103$), and similar to the mean ES identified for large firms by Combs et al. (2006, $\bar{r}_{CHK} = 0.13$). It is quite close to the findings of Jiang et al. (2012, $\bar{r}_{JLHB} = 0.15/0.22/0.22$), Subramony (2009, $\bar{r}_S = 0.08/0.18$) or Zhai and Tian (2023, $\bar{r}_{ZT} = 0.17/0.29$). However, it is worth noticing that these studies also include stock market-based performance measures. Although our sample is significantly larger, our mean ES of $\bar{r} = 0.33$ for subjective performance measures is also close to Rauch and Hatak (2016, $\bar{r}_{RH} = 0.359$). We can thus confirm their observation that the used performance measure seems to have an impact on the effect strength in empirical studies. For growth, our mean ES of $\bar{r} = 0.13$ is in between the results of Rauch and Hatak (2016, $\bar{r}_{RH} = 0.059$) and the mean effect size for large firms identified by Combs et al. (2006, $\bar{r}_{CHK} = 0.18$). Also, for turnover rates (or retention as inverted measure), our mean ES of $\bar{r} = -0.17$ is similar to Combs et al. (2006, $\bar{r}_{CHK} = -0.12$), Jiang et al. (2012, $\bar{r}_{JLHB} = -0.19/-0.15/-0.17$), or Subramony (2009, $\bar{r}_S = -0.16/-0.15$). In conclusion, the overall significant effects are important findings since they confirm the applicability to and the effectiveness of HPWPs within the SME context based on the empirical evidence of 115 studies. The growth of empirical research allowed us to go beyond existing meta-analyses and provide a more nuanced picture by focusing on additional types of organizational performance measures such as innovation or absenteeism separately. SMEs' innovation performance seems to be the variable that benefits the most from HPWPs ($\bar{r} = 0.39$), but we find also beneficial effects for absenteeism ($\bar{r} = -0.12$).

On the individual level, employees in SMEs with better developed HPWPs are on average more engaged and motivated, show higher levels of creativity and innovative work behavior, are more satisfied with their job and are more committed to their employers,

Table 13
Meta-analysis results for HPWPs and turnover intention.

Analysis	k	s	n	$\bar{r}$	s.e.	z		95 % CI	95 % PI	Q	I^2
All HPWP measures	5	3	1728	−0.28	0.03	−9.41	**	[-0.34; −0.22]	[-0.38; −0.18]	6.27	38 %
Composite measure											
HPWP index	1	1	862	−0.24	0.03	−7.37	**	[-0.30; −0.17]	[-0.30; −0.17]	0.00	0 %
Single measures											
Skill-enhancing practices	2	2	412	−0.27	0.05	−5.96	**	[-0.36; −0.18]	[-0.36; −0.18]	0.12	0 %
Training & development	1	1	185	−0.29	0.07	−4.29	**	[-0.42; −0.16]	[-0.42; 0.16]	0.00	0 %
Recruiting & selection	1	1	227	−0.26	0.06	−4.16	**	[-0.38; −0.14]	[-0.38; −0.14]	0.00	0 %
Turnover, retention, & exit mgmt.	–										
Motivation-enhancing practices	2	1	454	−0.34	0.07	−5.23	**	[-0.47; −0.21]	[-0.53; −0.15]	2.44	59 %
Compensation & benefits	1	1	227	−0.41	0.06	−7.28	**	[-0.51; −0.30]	[-0.51; −0.30]	0.00	0 %
Performance mgmt. & appraisal	1	1	227	−0.28	0.06	−4.47	**	[-0.15; −0.40]	[-0.40; −0.15]	0.00	0 %
Promotion	–										
Empowerment-enhancing practices	–										
Job & work design	–										
Employee relations	–										
Communication	–										

Note: k = number of effect sizes; s = number of study samples; n = number of observations; $\bar{r}$ = mean effect size; s.e. = standard error; z = test statistic; 95 % CI = 95 % confidence interval; 95 % PI = 95 % prediction interval; Q = test statistic for residual heterogeneity; I^2 = ratio of between study variability to total variability. **p < 0.01; *p < 0.05.

which is also related to lower turnover intentions. With these results, our meta-analysis contributes to the SME and entrepreneurship literature in various terms. While these research streams oftentimes focus on owner-manager characteristics and their impact on organizational outcomes (Unger et al., 2011), research on employees in SMEs is comparably scarce (Rauch and Hatak, 2016; Van Lancker et al., 2022). Hence, we redirect attention toward HR practices and contribute to the discussion on the various benefits of HPWPs in SMEs (Way, 2002; De Grip and Sieben, 2009; Wu et al., 2015; Haar et al., 2022). In doing so, we address calls to better contextualize HRM results coming from large firms and to understand the specificities of HPWP effects in SMEs (Harney and Alkhalaf, 2021; Van Lancker et al., 2022). We specifically respond to the call to elucidate the overall benefits of HPWPs for SMEs (Krishnan and Scullion, 2017), highlight its nuances (Harney and Alkhalaf, 2021) and explore how these practices "translate to employee experiences and outcomes" – an aspect that has been largely neglected (Harney and Alkhalaf, 2021, p. 20). Going beyond existing meta-analyses on HPWPs (e.g., Combs et al., 2006; Rabl et al., 2014; Rauch and Hatak, 2016; Subramony, 2009), our study also investigates outcomes at the employee's individual level. The overall positive relationships between HPWPs and individual outcomes confirm the importance of this investigation and suggest that individual employees' attitudes (e.g., organizational commitment) or motivation and behaviors (e.g., innovative work behavior or turnover intention) may play an important mediating role in the HPWPs-SMEs performance relationship (e.g., Lai et al., 2017; Do and Shipton, 2019; Parwita et al., 2021).

Another important finding is that combinations of HPWPs, namely HPWS, showed generally stronger effects than single HPWPs for most individual level outcomes. This finding is crucial since SMEs are known for ad-hoc HRM (Krishnan and Scullion, 2017) that often pursue fragmented HRM and adopting single HPWPs. Our findings suggest that holistic HPWSs in SMEs have a stronger impact on their employees' motivation and behavior. One explanation could be that employees perceive themselves as being valued when surrounded by a variety of different practices and supported by strategic HPWSs. Moreover, systems can be beneficial for organizational performance due to additive effects and synergies between different practices (Combs et al., 2006; Boon et al., 2019), meaning that one practice strengthens another in one consistent system (MacDuffie, 1995). Following similar results as in Rauch and Hatak (2016), we encourage HRM scholars to move their attention to the examination of interactions between and reinforcements of multiple HPWPs in a more holistic system. So far, the selection and combination of practices, their exact impact on organizational performance and the role of specific boundary conditions seem to remain a "black box" (Boon et al., 2019). Therefore, future research could focus on different combinations of HPWPs and their reinforcing effects, revealing "dead combinations" and "ideal combinations" of practices.

From a practitioner's viewpoint, we show that HPWPs such as compensation and benefits, communication, or performance management and appraisal are relevant managerial levers to increase SMEs' performance in various terms. Consequently, we advise managers to prioritize organizational and individual outcomes, and to develop a set of relevant HPWPs that helps them reach those goals. Furthermore, HPWPs such as training and development play a role for employees' job satisfaction, organizational commitment, and turnover intention. While it is challenging for SMEs to retain talents, especially in times of qualified workers shortage, managers should implement policies for skills development to remain competitive against large corporations with attractive salary and benefit packages.

This study has a few limitations that provide opportunities for future research. First, although our contribution lies in examining outcomes at both levels resulting from HPWPs, we did not test the mediating effects of individual-level outcomes, as suggested in studies on larger firms (Jiang et al., 2012). Future meta-analyses could explore this further. Moreover, despite research on HPWP in SMEs moved forward, the number of observations for the single HPWP categories was often still small, which limits the informative value of these analyses. Future research on SMEs can fill this gap by examining the relationships between single HPWPs or categories, and different outcome measures. Future meta-analyses can then summarize this knowledge and extend our findings by identifying

Table 14
Comparison of mean effect sizes for individual outcomes.

Analysis	k	s	n	$\bar{r}$	s.e	z		95 % CI	95 % PI	Q		I^2
All HPWP measures												
Employee engagement & motivation	14	8	2782	0.35	0.05	6.91	**	[0.25; 0.44]	[0.05; 0.64]	79.73	**	84 %
Employee creativity & innovative work behavior	15	8	3018	0.29	0.06	5.05	**	[0.18; 0.40]	[-0.08; 0.65]	102.68	**	89 %
Job satisfaction	6	3	82,859	0.47	0.10	4.77	**	[0.28; 0.66]	[0.09; 0.84]	261.39	**	100 %
Organizational commitment	26	10	6663	0.32	0.05	6.62	**	[0.23; 0.42]	[-0.07; 0.72]	322.22	**	92 %
Turnover intention	5	3	1728	−0.28	0.03	−9.41	**	[-0.34; −0.22]	[-0.38; −0.18]	6.27		38 %
Composite measure												
Employee engagement & motivation	6	5	996	0.44	0.04	12.09	**	[0.37; 0.51]	[0.30; 0.58]	9.88		49 %
Employee creativity & innovative work behavior	4	4	1188	0.31	0.12	2.47	**	[0.06; 0.55]	[-0.22; 0.84]	39.38	**	95 %
Job satisfaction	1	1	90	0.61	0.07	9.20	**	[0.48; 0.74]	[0.48; 0.74]	0.00		0 %
Organizational commitment	7	6	2677	0.34	0.10	3.36	**	[0.14; 0.53]	[-0.17; 0.84]	157.31	**	96 %
Turnover intention	1	1	862	−0,24	0,03	−7,37	**	[-0.30; −0.17]	[-0.30; −0.17]	0.00		0 %
Skill-enhancing practices												
Employee engagement & motivation	1	1	203	0.17	0.07	2.49	*	[0.04; 0.30]	[0.04; 0.30]	0.00		0 %
Employee creativity & innovative work behavior	3	2	601	0.35	0.09	3.84	**	[0.17; 0.52]	[0.06; 0.63]	6.02		78 %
Job satisfaction	2	2	20,831	0.43	0.15	2.77	*	[0.13; 0.73]	[-0.09; 0.95]	39.42	**	97 %
Organizational commitment	9	4	1890	0.36	0.06	6.01	**	[0.25; 0.48]	[-0.01; 0.72]	73.22	**	89 %
Turnover intention	2	2	412	−0.27	0.05	−5.96	**	[-0.36; −0.18]	[-0.36; −0.18]	0.12		0 %
Motivation-enhancing practices												
Employee engagement & motivation	2	1	426	0.11	0.06	1.99	*	[0.00; 0.22]	[-0.03; 0.25]	1.39		28 %
Employee creativity & innovative work behavior	6	3	817	0.21	0.09	2.33	*	[0.03; 0.38]	[-0.22; 0.63]	28.38	**	84 %
Job satisfaction	–											
Organizational commitment	4	1	908	0.33	0.05	6.12	**	[0.23; 0.44]	[0.12; 0.54]	10.09	*	70 %
Turnover intention	2	1	454	−0,34	0,07	−5,23	**	[-0.47; −0.21]	[-0.53; −0.15]	2.44		59 %
Empowerment-enhancing practices												
Employee engagement & motivation	5	2	1157	0.34	0.05	6.90	**	[0.24; 0.44]	[0.13; 0.55]	14.54	*	72 %
Employee creativity & innovative work behavior	2	2	412	0.38	0.05	8.03	**	[0.29; 0.47]	[0.27; 0.49]	1.26		21 %
Job satisfaction	3	1	61,938	0.51	0.02	27.30	**	[0.47; 0.54]	[0.43; 0.58]	77.23	**	97 %
Organizational commitment	6	1	1188	0.33	0.10	3.32	**	[0.13; 0.52]	[-0.17; 0.83]	72.67	**	93 %
Turnover intention	–											

Note: k = number of effect sizes; s = number of study samples; n = number of observations; $\bar{r}$ = mean effect size; s.e. = standard error; z = test statistic; 95 % CI = 95 % confidence interval; 95 % PI = 95 % prediction interval; Q = test statistic for residual heterogeneity; I^2 = ratio of between study variability to total variability; **$p < 0.01$; *$p < 0.05$.

Table 15
Comparison of main results with other meta-analyses.

	SME samples								Large firm/mixed samples													
	This study				Rauch and Hatak (2016)				Combs et al. (2006)				Jiang et al. (2012)				Subramony (2009)				Zhai and Tian (2023)			
Analysis	k	s	n	$\bar{r}$	k	n	$\bar{r}$	Z-test	k	n	$\bar{r}$	Z-test	k	n	$\bar{r}$	Z-test	k	n	$\bar{r}$	Z-test	k	n	$\bar{r}$	Z-test
Org. outcome meas.																								
Fin. performance	100	38	181,059	0.13	16	9766	0.103	0.59	35	6790	0.13	0.00	41/ 41/27	9966/ 12,219/ 5610	0.22/0.22/ 0.15	–	12/ 12	2287/ 5701	0.18/0.08	−1.42 1.42	55/ 15	19,698/ 2633	0.17/ 0.29	−1.11/- 2.97**
Subj. performance	166	54	45,379	0.33	14	2888	0.359	−0.43																
Growth	42	15	14,497	0.13	17	8379	0.059	1.66	16	2731	0.18	−0.98												
Innov. & corp. entr.	76	30	88,792	0.39																				
Turnover rates	28	12	12,216	−0.17					23	6105	−0.12	−0.92	19/ 24/19	6181/6674/ 8092	−0.19/- 0.15/-0.17	–	17/ 11	4249/ 3166	−0.16/- 0.15	0.15 0.30				
Absenteeism rates	12	3	3441	−0.12																				
Ind. outcome meas.																								
Empl. engagem. & motivation	14	8	2782	0.35									20/ 22/19	4915/4591/ 4647	0.25/0.33/ 0.32	–								
Empl. creat. & IWB	15	8	3018	0.29																				
Job satisfaction	6	3	82,859	0.47																				
Org. commitment	26	10	6663	0.32																				
Turnover intention	5	3	1728	−0.28																				

Note: k = number of effect sizes; s = number of study samples; n = number of observations; $\bar{r}$ = mean effect size; Z-test = Z-test statistic for mean effect size comparison; **p < 0.01; *p < 0.05.

which HPWPs contribute the most to different individual or organizational outcomes based on a larger data basis. Finally, our meta-analysis does not explore the heterogeneity of the included effect sizes. Contextual differences, such as industry or country culture, might potentially influence the effect of HPWPs on organizational or individual outcomes. Future research can provide a deeper understanding by exploring moderation effects of different contextual circumstances.

CRediT authorship contribution statement

Christopher Hansen: Writing – review & editing, Writing – original draft, Methodology, Formal analysis. **Ksenia Usanova:** Writing – review & editing, Writing – original draft, Conceptualization. **Mickael Geraudel:** Writing – review & editing, Writing – original draft, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jbvi.2025.e00572.

Data availability

Data will be made available on request.

References

* Indicates articles that are included in the meta-analysis.
* Aït 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), 311–330.
* Al-Ajlouni, M.I., 2021. Can high-performance work systems (HPWS) promote organisational innovation? Employee perspective-taking, engagement and creativity in a moderated mediation model. Employee Relat. 43 (2), 373–397.
* Allen, M.R., Ericksen, J., Collins, C.J., 2013. Human resource management, employee exchange relationships, and performance in small businesses. Hum. Resour. Manag. 52 (2), 153–173.
Appelbaum, E., Bailey, T., Berg, P., Kalleberg, A.L., 2000. Manufacturing advantage: why high-performance work systems pay off. Cornell University Press.
Barney, J., 1991. Firm resources and sustained competitive advantage. J. Manag.
Becker, B.E., Huselid, M.A., Pickus, P.S., Spratt, M.F., 1997. HR as a source of shareholder value: research and recommendations. Hum. Resour. Manag. 36 (1), 39–47.
Boon, C., Den Hartog, D.N., Lepak, D.P., 2019. A systematic review of human resource management systems and their measurement. J. Manag. 45 (6), 2498–2537.
Bos-Nehles, A., Townsend, K., Cafferkey, K., Trullen, J., 2023. Examining the ability, Motivation and Opportunity (AMO) framework in HRM research: conceptualization, measurement and interactions. Int. J. Manag. Rev. 25 (4), 725–739.
* Chadwick, C., Li, P., 2018. HR systems, HR departments, and perceived establishment labor productivity. Hum. Resour. Manag. 57 (6), 1415–1428.
* 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.
Cheung, M.W.L., 2019. A guide to conducting a meta-analysis with non-independent effect sizes. Neuropsychol. Rev. 29 (4), 387–396.
Collings, D.G., Mellahi, K., 2009. Strategic talent management: a review and research agenda. Hum. Resour. Manag. Rev. 19 (4), 304–313.
Combs, J., Liu, Y., 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.
De Grip, A., Sieben, I., 2009. The effectiveness of more advanced human resource systems in small firms. Int. J. Hum. Resour. Manag. 20 (9), 1914–1928.
* 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.
Delery, J.E., Shaw, J.D., 2001. The Strategic Management of People in Work Organizations: Review, Synthesis, and Extension. Research in personnel and human resources management.
* Della Torre, E., Gritti, A., Salimi, M., 2021. Direct and indirect employee voice and firm innovation in small and medium firms. Br. J. Manag. 32 (3), 760–778.
* Do, H., Shipton, H., 2019. High-performance work systems and innovation in Vietnamese small firms. Int. Small Bus. J. 37 (7), 732–753.
European Commission, 2021. SMEs: Small and medium-sized enterprises. European Commission. https://single-market-economy.ec.europa.eu/smes_en.
* Faems, D., Sels, L., De Winne, S., Maes, J., 2005. The effect of individual HR domains on financial performance: evidence from Belgian small businesses. Int. J. Hum. Resour. Manag. 16 (5), 676–700.
Farndale, E., Paauwe, J., 2018. SHRM and context: why firms want to be as different as legitimately possible. Journal of Organizational Effectiveness: People and Performance 5, 202–210.
* Giannikis, S., Grougiou, V., Kapoutsis, I., 2021. The effects of entrepreneurial orientation on job stressors and the moderating role of high-performance work systems: employee perspectives from two industries. Int. J. Hum. Resour. Manag. 32 (14), 3033–3060.
* Guerrero, S., Cayrat, C., Cossette, M., 2022. Human resource professionals' human and social capital in SMEs: small firm, big impact. Int. J. Hum. Resour. Manag. 33 (16), 3252–3274.
* Haar, J., O'Kane, C., Daellenbach, U., 2022. High performance work systems and innovation in New Zealand SMEs: testing firm size and competitive environment effects. Int. J. Hum. Resour. Manag. 33 (16), 3324–3352.
Hansen, C., Steinmetz, H., Block, J., 2022. How to conduct a meta-analysis in eight steps: a practical guide. Management Review Quarterly 72, 1–19.
Harney, B., Alkhalaf, H., 2021. A quarter-century review of HRM in small and medium-sized enterprises: capturing what we know, exploring where we need to go. Hum. Resour. Manag. 60 (1), 5–29.

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.
Hunter, J.E., Schmidt, F.L., 1990. Methods of meta-analysis: Correcting Error and Bias in Research Findings. Sage Publications, Inc., Newbury Park, CA.
Hunter, J.E., Schmidt, F.L., 2004. Methods of meta-analysis: Correcting Error and Bias in Research Findings (2Nd Ed. Sage Publications, Inc, Thousand Oaks, CA.
Jiang, K., Lepak, D.P., Hu, J., Baer, J.C., 2012. How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms. Acad. Manag. J. 55 (6), 1264–1294.
Kaushik, D., Mukherjee, U., 2022. High-performance work system: a systematic review of literature. Int. J. Organ. Anal. 30 (6), 1624–1643.
* Kim, K.Y., Messersmith, J.G., Allen, D.G., 2021. Are they worth it? Warmth and competence perceptions influence the investment of slack resources in and the efficacy of HPWS. Pers. Psychol. 74 (3), 611–640.
Konstantopoulos, S., 2011. Fixed effects and variance components estimation in three-level meta-analysis. Res. Synth. Methods 2 (1), 61–76.
Krishnan, T.N., Scullion, H., 2017. Talent management and dynamic view of talent in small and medium enterprises. Hum. Resour. Manag. Rev. 27 (3), 431–441.
Kroon, B., Van De Voorde, K., Timmers, J., 2013. High performance work practices in small firms: a resource-poverty and strategic decision-making perspective. Small Bus. Econ. 41, 71–91.
* Lai, Y., Saridakis, G., Johnstone, S., 2017. Human resource practices, employee attitudes and small firm performance. Int. Small Bus. J. 35 (4), 470–494.
* Li, S., Rees, C.J., Branine, M., 2019. Employees' perceptions of human resource management practices and employee outcomes: empirical evidence from small and medium-sized enterprises in China. Employee Relat. 41 (6), 1419–1433.
* Liang-Chih, H., Tzeng-Tian, H., Chien-Bin, H., 2022. Companies to promote CSR impact on employees: high-performance work systems as a moderator. Business Ethics, the Environment & Responsibility 31 (4), 999–1013.
MacDuffie, J.P., 1995. Human resource bundles and manufacturing performance: organizational logic and flexible production systems in the world auto industry. Ind. Labor Relat. Rev. 48 (2), 197–221.
* Martínez-del-Río, J., Perez-Luño, A., Bojica, A.M., 2022. In prosperity and adversity? The value of high-performance work practices for SMEs under conditions of environmental hostility and social embeddedness. Int. J. Manpow. (ahead-of-print).
* McClean, 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.
* McClean, E., Collins, C.J., 2019. Expanding the concept of fit in strategic human resource management: an examination of the relationship between human resource practices and charismatic leadership on organizational outcomes. Hum. Resour. Manag. 58 (2), 187–202.
* 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.
Moeyaert, M., Ugille, M., Natasha Beretvas, S., Ferron, J., Bunuan, R., Van den Noortgate, W., 2017. Methods for dealing with multiple outcomes in meta-analysis: a comparison between averaging effect sizes, robust variance estimation and multilevel meta-analysis. Int. J. Soc. Res. Methodol. 20 (6), 559–572.
Page, M.J., McKenzie, J.E., Bossuyt, P.M., Boutron, I., Hoffmann, T.C., Mulrow, C.D., et al., 2021. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. Int. J. Surg. 88, 105906.
* Pajo, K., Coetzer, A., Guenole, N., 2010. Formal development opportunities and withdrawal behaviors by employees in small and medium-sized enterprises. J. Small Bus. Manag. 48 (3), 281–301.
* Parwita, G.B.S., Arsawan, I., Koval, V., Hrinchenko, R., Bogdanova, N., Tamošiūnienė, R., 2021. Organizational innovation capability: integrating human resource management practice, knowledge management and individual creativity. Intelektine Ekonomika/Intellect. Econ. 15 (2), 22–45.
Patel, 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., Conklin, B., 2012. Perceived labor productivity in small firms—The effects of high–performance work systems and group culture through employee retention. Entrep. Theory Pract. 36 (2), 205–235.
* 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.
Posthuma, R.A., Campion, M.C., Masimova, M., Campion, M.A., 2013. A high performance work practices taxonomy: integrating the literature and directing future research. Journal of management 39 (5), 1184–1220.
Purcell, J., Hutchinson, S., 2007. Front-line managers as agents in the HRM-performance causal chain: theory, analysis and evidence. Hum. Resour. Manag. J. 17 (1), 3–20.
Rabl, T., Jayasinghe, M., Gerhart, B., Kuhlmann, T.M., 2014. A meta-analysis of country differences in the high-performance work system–business performance relationship: The roles of national culture and managerial discretion. J. Appl. Psychol. 99 (6), 1011–1041.
Rauch, A., Hatak, I., 2016. A meta-analysis of different HR-enhancing practices and performance of small and medium sized firms. J. Bus. Ventur. 31 (5), 485–504.
Saridakis, G., Lai, Y., Cooper, C.L., 2017. Exploring the relationship between HRM and firm performance: a meta-analysis of longitudinal studies. Hum. Resour. Manag. Rev. 27 (1), 87–96.
* 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.
* Sels, L., De Winne, S., Maes, J., Delmotte, J., Faems, D., Forrier, A., 2006. Unravelling the HRM–performance link: value-creating and cost-increasing effects of small business HRM. J. Manag. Stud. 43 (2), 319–342.
* Shahzad, K., Arenius, P., Muller, A., Rasheed, M.A., Bajwa, S.U., 2019. Unpacking the relationship between high-performance work systems and innovation performance in SMEs. Pers. Rev. 48 (4), 977–1000.
* Shahzad, K., De Sisto, M., Rasheed, M.A., Bajwa, S.U., Liu, W., Bartram, T., 2022. A sequential relationship between entrepreneurial orientation, human resource management practices, collective organisational engagement and innovation performance of small and medium enterprises. Int. Small Bus. J. 40 (7), 875–903.
* Sheehan, M., 2014. Human resource management and performance: evidence from small and medium-sized firms. Int. Small Bus. J. 32 (5), 545–570.
* Sheehan, M., Garavan, T., 2022. High-performance work practices and labour productivity: a six wave longitudinal study of UK manufacturing and service SMEs. Int. J. Hum. Resour. Manag. 33 (16), 3353–3386.
Subramony, M., 2009. A meta-analytic investigation of the relationship between HRM bundles and firm performance. Hum. Resour. Manag. 48 (5), 745–768.
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.
Van Lancker, E., Knockaert, M., Audenaert, M., Cardon, M., 2022. HRM in entrepreneurial firms: a systematic review and research agenda. Hum. Resour. Manag. Rev. 32 (3), 100850.
Viechtbauer, W., 2010. Conducting meta-analyses in R with the metafor package. J. Stat. Software 36, 1–48.
* Way, S.A., 2002. High performance work systems and intermediate indicators of firm performance within the US small business sector. Journal of management 28 (6), 765–785.
World Bank, 2023. Small and medium enterprises (SMEs) finance. World Bank. https://www.worldbank.org/en/topic/smefinance.
Wu, N., Hoque, K., Bacon, N., Bou Llusar, J.C., 2015. High-performance work systems and workplace performance in small, medium-sized and large firms. Hum. Resour. Manag. J. 25 (4), 408–423.
Zhai, X., Tian, X., 2023. An institutional view on the relationship between high-performance work system and organizational performance: the role of country of origin. Pers. Rev. 52 (4), 1051–1070.