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## Training and organizational performance: a meta-analysis of temporal, institutional and organizational context moderators

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# **Training and Organizational Performance: A Meta-Analysis of Temporal, Institutional and Organizational Context Moderators**

## **ABSTRACT (150 words max)**

Drawing on systems theory, we conducted a moderated meta-analysis of the training and organizational performance relationship using 119 primary studies. We examined the moderating effects of quality versus quantity of training, time, institutional, and organizational context factors in the relationship between training and organizational performance. Our findings reveal that training is positively and directly related to organizational performance with no statistically significant difference between measures of training quality and quantity. We found that the relationship was stronger over time and that country performance orientation and country labor cost moderate the training and organizational performance relationship. We found no evidence for the moderating effects of the three organizational context moderators we examined (i.e., industry sector, organizational size and technology intensity). Finally, our results reveal that training type (i.e., general or firm-specific) does not moderate the training and organizational performance relationship.

## **KEYWORDS**

Training

Organizational performance

Meta-analysis

Moderators

## **INTRODUCTION**

Training consists of formal on- and off-the-job structured activities focused on the development of knowledge, skills and abilities (KSAs) for current and future job roles (Kim & Ployhart, 2014; Tharenou, Saks, & Moore, 2007). These activities have become widespread HRM practices in organizations worldwide (ATD, 2018; Hughes, Zajac, Woods, & Salas, 2019). Through investment in structured training, organizations enhance employee and organizational human capital which, in turn, contribute to better organizational performance (Jiang, Lepak, Hu, & Baer, 2012; Tharenou, Saks, & Moore, 2007). While earlier research focused on investigating the direct relationship between training and organizational performance (e.g., Bartel, 1994; Beugelsdijk, 2008), more recent studies have started to take into account the role of moderators (e.g., Arunprasad, 2017; Sing, Darwish, Wood, & Mohamed, 2017). Much of this more recent research has focused on the role of internal organizational context moderators such as firm size (e.g., Lee, 2012), human capital levels (e.g., Sung & Choi, 2014) and organizational climate (e.g., Van Esch, Wei, & Chiang, 2018). However, the strength of the training and organizational performance relationship may also depend on external institutional factors within which the organization operates (Budhwar, Pereira, Mellahi & Singh, 2018; Farndale & Paauwe, 2018).

Drawing on systems theory and three of its principles (i.e., congruence, adaptation and equifinality) (Kast & Rosenzweig, 1972; Shin & Konrad, 2017), the primary purpose of the current meta-analysis is to investigate the role of temporal, institutional and organizational context moderators in the training and organizational performance relationship. The congruence hypothesis embedded in systems theory (Nadler & Tushman, 1980) suggests that organizational performance is a function of the congruence between various organizational components, in this case training, and the context within which the organization operates.

Specifically, we explore country performance orientation (a national cultural difference) and country labor cost as two institutional context moderators of the training and organizational performance relationship. We also shed light on how quality versus quantity of training impacts organizational performance. By doing so, we address important gaps in the literature on moderators of the training and organizational performance relationship. In addressing these gaps, researchers and practitioners will acquire a greater understanding of how context impacts the training and organizational performance relationship and have greater insights into whether it is the amount or quality of training, or both, that is important.

The adaptation principle of systems theory (Schleicher et al., 2018) provides a useful theoretical framework to support our proposition that training must adapt to changing environmental conditions to be effective, which therefore allows us to take a temporal perspective to examine whether the strength of the training and organizational performance relationship has increased or decreased over time (Johns 2006; Wegman, Hoffman, Carter, Twenge & Guenole, 2018). Finally, the equifinality principle argues that organizations can utilize different paths to achieve the same outcome. In this context, there is much debate concerning the value of investment in firm-specific or general training for organizational performance (Riley, Michael, & Mahoney, 2017). Utilizing the principle of equifinality, we argue that the type of training (i.e., firm-specific or general training) does not moderate the relationship between training and organizational performance and we examine this relationship in our meta-analysis.

In the context of the scarcity of talent in the external labor market, firms strive to develop a competent workforce, which is a critical factor impacting competitive advantage. Training has been acknowledged as a key HR practice to improve employee morale, productivity and

ultimately organizational performance (Tharenou et al 2007; Sun & Choi 2014). Industry reports reveal continuous investment in employee KSAs (ATD, State of Industry Report, 2018) indicating that firms increasingly appreciate the strategic importance of investment in training to gain competitive advantage. To justify such resource investment in training, organizations look to research findings to provide evidence that training impacts organizational performance. However, the research findings to date are heterogeneous with many studies showing a relatively weak training-organizational performance relationship. In addition, training researchers have been eager to understand why and in what ways the training-organizational performance link is so heterogeneous (Sung & Choi, 2018; Magableh, Kharabsheh & Al-Zuba, 2011). Accordingly, researchers have called for the consolidation of empirical findings to understand the role of context factors as moderators in explaining the variation in findings on the training-organizational performance relationship and this paper responds to that call.

The objective of our paper is fourfold: (i) to examine how the relationship between training and organizational performance varies over time; (ii) to examine whether the relationship differs for the quantity versus the quality of training undertaken in organization; (iii) to examine to what extent the relationship is influenced by two institutional context variables (country performance orientation and country labor costs) and three organizational contextual factors (industry sector, organizational size and technology intensity); and (iv) to examine if type of training (i.e., firm-specific or general training) moderates the training and organizational performance relationship. To achieve our objective, we conduct a three-level meta-analysis aggregating 119 primary studies consisting of 313 effect sizes derived from studies published between 1985 and 2019.

We make four significant contributions to the training and HRM literature. First, within a field of study that is still maturing and where empirical findings are inconsistent, a meta-analysis can help synthesize key findings and identify new research avenues (Rosenbauch, Gusenbauer, Hatak, Fink, & Meyer, 2019). To the best of our knowledge, one meta-analysis has been conducted to date on the training-organizational performance relationship (Tharenou et al., 2007). Since publication of Tharenou et al.'s (2007) meta-analysis, a significant number of empirical studies have been added to the existing literature investigating the training-organizational performance relationship. Second, our meta-analysis contributes to theory by utilizing concepts and principles derived from systems theory (congruence, adaptation and equifinality) to understand the role of institutional and organizational context moderators of the training-organizational performance relationship. By doing so, we shed light on the significance of these contextual moderators in explaining the heterogeneity of findings. Third, using insight from the adaptation principle of systems theory, we incorporate a temporal perspective into the theoretical framework and methodological design to test if the relationship between training and organizational performance varies across time thus supporting arguments that organizations are investing more in training in the expectation of higher organizational performance returns. The current meta-analysis also investigates the issue of quality versus quantity of training in explaining organizational performance thereby helping to resolve the debate as to whether more of the same is better or should there be less training but of higher quality. Finally, we make a methodological contribution by employing a three-level meta-analytic approach to address the issue of inter-dependency of effect sizes in meta-analysis techniques employed in the training/HRM field.

## **THEORY AND HYPOTHESIS DEVELOPMENT**

### ***The Relationship between Training and Organizational Performance***

In line with prior research (Kim & Ployhart, 2014; Tharenou et al., 2007), we define training as consisting of formal on- and-off the job activities focused on the development of KSAs for current and future roles. Tharenou et al (2007) in their meta-analysis emphasized KSAs for the current role. However, scholars argue that training also includes development components for future organizational roles (Kraiger, Passmore, Dos Santos, & Malvessi, 2014). For example, Sitzmann & Weinhardt (2018) argued that while a significant amount of training in organizations emphasizes the development of KSAs that are directly applicable to the current role, they increasingly provide training activities focused on the development of general or soft skills that have application to future organizational roles.

We propose a number of reasons as to why training is linked to organizational performance. First, training enhances employees KSAs for current and future roles which results in enhanced organizational performance (Kim & Ployhart, 2014; Wright & McMahan, 2011). Second, training enables the development of a greater depth of KSAs enabling employees to be more flexible and perform different tasks more effectively (Somaya, Williamson & Lorinkova, 2008) leading to enhanced organizational performance. The increase in flexibility is critical to a variety of organizational outcomes such as innovation (Zhou & Wu, 2010), customer service (Johnson, 1996) and labor productivity (Guerrazzi, 2016). Third, training can enhance skill depth and enable employees to develop specialized knowledge and skills and general skills to help the organization build core competencies within the organization staying ahead of the competition (Coff, 1997). Hence, we argue that both unique, valuable and rare human capital developed through firm-specific training and general training leads to higher organizational performance. In addition, there are theoretical arguments suggesting that higher quality training will have a greater impact on training than the quantity of training provided. Where training is of higher quality, employees will learn more quickly (Aquinis &

Kraiger, 2009). Quality training will also shorten learning times and motivate the transfer of training to the workplace (Hughes et al., 2019) and enhance the motivation of employees to transfer the outcomes of training to the organization. Studies to date have utilized different measures of training quantity including the percentage of employees trained (e.g., Ely, 2004), the amount spend on training (e.g., Choi & Yoon, 2015) and the number of days training (e.g., Appleyard & Brown, 2001). Studies of training quality focus on measures of effectiveness and evaluation of training (e.g., Otoo, 2019).

Therefore, we propose the following hypotheses:

***Hypothesis 1a:*** Training is positively and directly related to organizational performance

***Hypothesis 1b:*** The relationship between training and organizational performance will be stronger for measures of the quality compared to measures of the quantity of training.

### ***The Training-Organizational Performance Relationship and Time***

The adaptation principle of systems theory (Von Bertalanffy, 1968) asserts that organizations utilize various mechanisms, one of which is training, to adapt to changing and shifting internal and external context factors to maintain effectiveness. This principle suggests the need to adopt a temporal perspective on the training-organizational performance relationship to account for changes over time. Wright, Nyberg and Ployhart (2018) emphasized the need for a dynamic understanding of the relationship between HRM and organizational performance, given the increased pace of change in the external environment, such as increased globalization, changes and skill gaps in the labor market, and the fast pace of technological change.

The literature suggests that the global business environment has experienced significant transformation and change over the past three decades. Such business environment changes include the emergence of technology-based organizations (Montealegra & Cascio, 2017), knowledge workers, the globalization of organizations (Friedman, 2016), difficulties in recruiting talent (Cascio & Graham, 2016), job changes (Wegman et al., 2018), and generational differences in work, career and development expectations (Hirsch-Kreinsen, 2016). Based on the proposition that time can be considered as a surrogate for all these changes, which Johns (2006) terms ‘omnibus context’, these changes shape organizational HR practices (Johns, 2006; Wegman et al., 2018). In turn, we argue that organizations may respond to these external context changes by investing more in training.

There is evidence that organizations have responded to the external environment by increasingly investing in training. The Association of Talent Development (2017) State of Industry Report on Training reported a spend of US\$90.6 billion in 2017 representing an increase of 325% on 2016 and the relevant figure for 2010 was \$125.9 million. Data for the UK indicate that expenditures on training have increased by 600% between 2000 and 2016 to \$29 billion (CIPD, 2017). As such, training is an important and pervasive HRM practice in organizations (Kim & Ployhart, 2014; Riley, Michael & Mahoney, 2017; Training Industry Report, 2018). The research indicates that organizations are increasing investment in training over time. Many organizations have devoted extra financial resources to training to garner accreditations such as Investors in People in the UK ([www.investorsinpeople.com](http://www.investorsinpeople.com)), Training Magazine’s Best Training Organizations list (Riley et al., 2017) and to be ranked highly in workplace rankings such as the Great Place to Work ([www.greatplacetowork.com](http://www.greatplacetowork.com)). Coupled with increased investment in training, there is evidence that the quality and impact of training has improved as the field has developed (Kraiger, 2014; Kraiger et al., 2014) resulting from

more research and growing practitioner education and expertise in training, learning and development over time (Ruona, 2016). Therefore, we propose the following hypothesis:

***Hypothesis 2:*** The strength of the relationship between training and organizational performance has increased year on year over time.

### ***Institutional Context Factors and the Training-Organizational Performance Relationship***

The congruence hypothesis (Nadler & Tushman, 1980) proposes the role of fit and the need for various components of a system to be consistent and in balance. In organizational settings, the performance outcomes of training are conditional upon the levels of congruence between the training and both the external institutional context and the internal organizational context (Farndale & Paauwe, 2018; Purcell & Boxall, 2015). In the HRM and organizational performance literature, a stream of research argues that both external institutional factors (such as labor markets, national and regional institutions and cultures, competitive mechanisms, industry sector and market conditions) and internal organizational context characteristics (such as ownership, size, sector, strategic objectives and culture) impact the HRM and performance relationship (Jackson, Schuler & Jiang, 2014; Farndale & Paauwe, 2018). The concept of fit or congruence, which is embedded in systems theory, between external and internal context factors and HR practices provides a theoretical logic to understand the moderating role of external moderators of the training and organizational performance relationship (country performance orientation and country labor cost) as well as important institutional factors (sector, size and technology intensity) impacting HR and training policy and practice (North, 1990; Meyer & Peng, 2016).

***Country Performance Orientation.*** Scholars studying the HRM-performance relationship in cross-cultural contexts have suggested that the strength of the training and organizational performance relationship will be influenced by the country performance

orientation where the organization is situated (Ahmad & Schroeder, 2003; Rabi, Jayasingh, Gerhart, & Kuhlmann, 2014). The GLOBE study included performance orientation as an important cultural dimension that influences leadership and organizational decision-making (House, Hanges, Javidan, Dorfman, & Gupta, 2004). Grove (2005) characterized high performance orientated cultures as encouraging and rewarding the setting of challenging goals, and high standards, innovation excellence and performance improvement. These performance-driven characteristics potentially exert a positive effect on the strength of the relationship between training and organizational performance. Specifically, the emphasis on performance improvement encourages and promotes employees to apply and integrate new knowledge and skills in their workplace. Organizations located in high performance oriented cultures are likely to achieve increased efficiency in training delivery, the transfer of the training to the job setting and better performance (Rabi et al., 2014). In addition, the emphasis on knowledge sharing, participation in team activities and quick decision making (Rabi et al., 2014) lead to better job and business performance. In contrast, low performance oriented cultures place greater emphasis on values including social and family relationships, loyalty, harmony, tradition and seniority (Javidan, House, Dorfman, Hanges, & Sully de Luque, 2006, Grove, 2005), which may potentially undermine the effectiveness of training and training transfer.

Therefore, we propose the following hypothesis:

***Hypothesis 3a:*** The relationship between training and organizational performance will be stronger for organizations from countries with a high performance orientated culture than for organizations in a low performance orientated culture.

*Country Labor Costs.* A second institutional condition that may potentially moderate the relationship between training and organizational performance is the level of labor costs

within the country. Countries vary in their labor cost structure, and higher labor costs may inhibit the degree to which training translates into organizational performance. Countries such as the US and European nations generally have significantly higher labor costs compared to emerging or developing countries like China, South Korea, Taiwan and African countries (International Labor Organization, 2016; United States Bureau of Labor Statistics, 2017). Differences in country labor costs reflect currency evaluation and cost of living differences as well as educational attainment and skill levels, in that lower educational attainment and skills reflect lower labor-cost economies. A number of researchers have shown that training can help low-skilled employees to increase their skills and earnings (Prince 2008; Washington State Board for Community and Technical College, 2005), and that the impact of training is stronger among low-skilled rather than higher skilled employees (Kim, Hawley, Cho, Hyun, & Kim, 2016). Budria and Pereira (2007) found that less educated workers experience larger returns from training compared to well educated workers. They suggest that training plays a remedial role in place of education shortage and that returns from training can be greater for low-skilled workers. Training may help organizations in low labor cost countries to attract capable employees and retain them subsequently generating better organizational performance. Therefore, we propose the following hypothesis:

***Hypothesis 3b:*** The relationship between training and organizational performance is stronger for organizations in low labor cost countries compared to high labor cost countries.

### ***Organizational Context Factors and the Training-Organizational Performance***

#### ***Relationship***

The congruence principle of systems theory suggests that it is important to have a fit or balance between training and internal organizational context factors and we examine the

moderating effect of industry sector, organizational size and intensity of technology on the training-organizational performance relationship.

*Industry sector.* Industry sector is highlighted as an important context factor explaining the training-organizational performance relationship, however, findings regarding its impact are mixed and unclear. Tzabber et al. (2016) found that training had a stronger relationship with organizational performance in the service sector whereas Subramony (2009) found that the relationship for all HRM practices, including training, was stronger in manufacturing compared to service sector organizations. Combs et al. (2006) found that the relationship between all HRM practices and performance was significantly stronger in manufacturing organizations compared with service organizations. Dipoye (2018) argued that tasks are more clearly defined in manufacturing organizations, they lend themselves more effectively to training, and that the results of training will be more quickly realizable. An alternative argument is that the benefits generated from training in manufacturing organizations are less because they rely heavily on technology and automation compared to service organizations where there is a need to continuously maintain employee KSAs at a high level. In service sector organizations, employee competencies are key to achieving organizational goals whereas the manufacturing sector is typically characterized as highly capital-intensive with a reliance on plant, equipment and technology to achieve organizational goals. Service organizations may benefit more from formal training because their employees generally have greater flexibility and discretion to exert their KSAs compared with their counterparts in manufacturing organizations (Rosenthal, Hill, & Peccei, 1997). Training opportunities, particularly development-focused training, may act as a motivational tool for service sector employees to demonstrate extra-role behaviors and discretionary effort (Tharenou et al., 2007), which is particularly important in customer service-focused organizations. A counter argument is that jobs in service organizations are

less structured and less clearly defined and not as easily trainable with a significant lapse in time between the training and its impact on organizational performance. Overall, the theory proposes that training in manufacturing organizations is more structured, skills are more trainable and the impact on organizational performance will occur faster. Therefore, based on these theoretical arguments, we propose the following hypothesis:

***Hypothesis 4a:*** The relationship between training and organizational performance is stronger in manufacturing organizations than in service organizations.

*Organizational Size.* Like sector, findings on the impact of organizational size on the training-organizational performance relationship are also unclear. For example, Rauch and Hatak (2016) found that there were differences between small and medium sized firms for skill-enhancing practices. Tzabbar, Tzafrir, & Baruch (2017) found that training had the strongest impact on medium rather than large firms.

A number of conflicting arguments are proposed regarding the moderating effect of organizational size on the training-organizational performance relationship. First, it is argued that large organizations have more financial resources to invest in training compared to resource-constrained small organizations (Kortekaas, 2007). Large organizations also have a greater training resource and expertise base to design and implement training effectively which is more unlikely in the case of small organizations (Garavan, Shanahan, Carbery, & Watson, 2016). The level of expertise and knowledge involved in developing, implementing and evaluating training programs determines the effectiveness of training, the quality of the human capital pool, and ultimately organizational performance. A second reason is that small firms are more labor intensive and job roles are broad with employees required to

perform multiple tasks whereas in large organizations employees perform more specialist tasks (Messersmith and Guthrie, 2010; Rauch and Hatak 2016).

A third reason for expecting organizational size to moderate the training-organizational performance relationship relates to strategic goal ambiguity. Organizations that take a more strategic approach to training tend to have better alignment of training with strategic goals (Blom, Krunyen, Van der Heijden and van Thiel, 2018; Garavan, 2007; Noe, 2017).

Fernandez and Moldogaziev (2010) argued that high levels of strategic goal ambiguity undermine the positive influence of HR practices (including training) on organizational performance. Following this line of reasoning, we expect that small organizations will experience greater strategic goal ambiguity because organizational objectives and goals tend to be less tangible, more fluid and dynamic (Chadwick, Way, Kerr, & Thacker, 2013). As a result, training may lack clarity, and thus decrease the impact of training on organizational performance (Wu, Bacon, & Hoque, 2013). In large organizations, there will be less goal ambiguity and, as a result, training will be more aligned to organizational strategy (Garavan, Watson, Carbery, & O'Brien, 2016). In addition, there will be greater emphasis on the identification of training need and their linkage with strategy suggesting large organizations may benefit more from training than smaller organizations. Therefore, based on these theoretical arguments we propose the following hypothesis:

***Hypothesis 4b:*** The relationship between training and organizational performance is stronger in large organizations than in small organizations.

*Technology Intensity.* We selected technology as a potential moderator because these firms rely on the implementation and use of “sophisticated and complex methods, practices and techniques” (Rauch & Hatak, 2016, p. 489) that are based on extensive research and

development. These firms operate in dynamic and complex environments where innovation is essential to competitiveness. Technology intensive organizations can attain enhanced organizational performance when they build human capital through strategic training investment (Bettis & Hitt, 1995; Chatterjee, 2017; Grant, 1996). They implement training to ensure their employees possess appropriate levels of KSAs to perform challenging tasks (Rauch & Hatak, 2016; Utterback, 1996). Technology intensive organizations are required to be innovative (Bouncken & Kraus, 2013) and to implement complex processes and routines to stay competitive in a dynamic and changing environment (Khandwalla, 2006). In this case, training is an effective mechanism to develop a set of complex KSAs to manage complex processes and generate innovative solutions for clients (Anand, Gardner, & Morris., 2007). Given the significant changes in technology as an external environment context factor impacting organizational functioning, and in line with the congruence hypothesis of systems theory, we argue that a stronger positive relationship between training and organizational performance will exist in high technology intensive organizations. Therefore, we propose the following hypothesis:

***Hypothesis 4c:*** The relationship between training and organizational performance is stronger for high technology intensity organizations than for low technology intensity organizations.

### ***Type of Training***

The equifinality principle of systems theory advocates that an organization can reach the same end-state by taking different paths (Katz & Kahn, 1978). Drawing on this principle, we argue that both firm-specific and general training may be equally valuable to organizations in achieving organizational performance. We utilize the equifinality principle to argue that where organizations have a choice between investment in firm-specific and general training,

they can take either path as both will positively impact organizational performance.

Empirical findings point to the value of investment in firm-specific and general training for organizational performance. For example, Kim and Ployhart (2014) and Ahmad & Schroeder (2003) found a positive relationship between firm-specific training and organizational performance and Riley et al. (2017) and Georgiadis and Pitelis, (2014) found a positive relationship between general training and organizational performance.

There are theoretical arguments supportive of both relationships. For example, human capital theory (Becker, 1964) and the resource based view (Barney, 1991) argue that human capital investment can only lead to superior organizational performance when the accumulated human capital is firm-specific. Training used to develop KSAs that is firm-specific and unique to organizational performance needs to possess the valuable, rare, inimitable, non-substitutional conditions proposed by the RBV (Barney, 1991). Chadwick and Dabu (2009) argued that organizations are more likely to capture the returns from investment in firm-specific training and achieve enhanced organizational performance.

Theory also supports a positive relationship between investment in general training and organizational performance. For example, Riley et al. (2017) and Campbell et al. (2012) have argued that, contrary to the arguments of human capital theory, organizations may be able to gain performance advantages from investment in general training. This occurs because first of all, employees may view organizational investment in general training as a signal of its commitment to employees and the potential for future training investments, promotion opportunities and commitment to retention. Second, while human capital theory argues that employees who receive general training will be more likely to move organization, Riley et al. (2017) argued that due to established networks and connections within the current organization, employees may choose to stay.

In terms of the organizational performance benefits of investment in firm-specific and general training, research highlights that firm-specific training enhances existing knowledge and deepening of job skills (Kang et al., 2007) whereas general training helps the development of a broader set of KSAs and enhanced connectivity between employees (Shipton et al., 2017). Both types of KSAs therefore enhance organizational performance. Therefore, we propose the following hypothesis:

***Hypothesis 5:*** Organizations will achieve the same organizational performance from investment in specific or general human training.

## **METHOD**

### ***Literature Search and Data Collection***

To identify studies that could be included in the meta-analysis, we began by searching online and electronic databases – specifically, ABI/INFORM, Business Source Complete, Emerald, Google Scholar, JSTOR, PSYCHINFO, Web of Science, and Business Source Complete for studies published until May 2019. We used multiple keywords. For training, we used the keywords “training”, “human capital development”, “human resource development” or “ability/skill-enhancing HR practices”. For organizational performance, we searched for studies that also included the keywords “organisational/organizational effectiveness”, “operational performance”, “financial performance”, “business performance”, “productivity”, “quality”, “innovation”, “service”, “sale”, “ROE/ROA” or “profitability”. In addition, we also searched the references lists of several reviews that focused on the relationship between training/HRM and organizational performance (Tzabbar et al., 2017; Rauch & Hatak, 2016; Jiang et al., 2012; Subramony, 2009; Tharenou et al., 2007; Combs et al., 2006).

The following inclusion criteria were utilized: first, only empirical studies were included; second, we focused only on studies that reported a relationship between training and organizational performance (i.e., the unit of analysis was the organization); third, we included each identified sample once in order to avoid overrepresentation of particular organizations in the sample and we excluded studies with overlapping samples; and fourth, we excluded studies lacking the key statistical information necessary to extract effect sizes (correlation coefficient  $r$ ) and sample sizes ( $N$ ). Two authors independently coded half of the studies (Lipsey & Wilson, 2001) to assess the levels of agreement regarding effect sizes, sample sizes and moderators. The inter-rater agreement score of 95 percent suggested an acceptable level of agreement among two raters (McHugh, 2012). Our final meta-analytical database comprises 313 effect sizes nested in 119 independent studies. Appendix A displays the reference list for primary studies included in our meta-analysis.

### ***Coding<sup>1</sup>***

The focal *independent variable* was training. We operationalized training as that which enhanced skills for a current job or future role in an organization. Specifically, we identified five primary training measurements in the 119 primary studies, three of which were measures of quantity and two were measures of quality. The three quantity measures were: absolute measures (e.g., amount of money spent on training) (e.g., Choi & Yoon, 2015); proportional measures (e.g., percentage of employees trained) (e.g., Esteban-Lloret et al., 2016); and content measures (e.g., type of training provided) (e.g., Chuang & Liao, 2010). The two quality measures were: emphasis measure (e.g., importance or emphasis given to training) (e.g., Russell, Terborg, & Powers, 1985); and training effectiveness (e.g., effectiveness of training) (e.g., Delaney & Huselid, 1996, Tharenou et al., 2007).

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<sup>1</sup> A complete coding sheet is presented in Appendix B.

Our *dependent variable* was organizational performance. According to previously published meta-analytical studies (Tharenou et al., 2007; Jiang et al., 2012), we categorized

organizational performance into operational performance and financial performance.

Operational performance (also known as internal performance) reflects the effectiveness and efficiency by which an organization deploys its internal resources including human capital resources (Kim & Ployhart, 2014). Examples of operational performance measures include labor productivity (e.g., Barrett & O'Connell, 2001), innovation (e.g., Nieves & Quintana, 2016), product or service quality (e.g., Vlachos, 2008) and customer satisfaction (e.g., Wood, Holman & Stride, 2006). Financial performance, on the other hand, is influenced by both internal (e.g., HR practices that affect costs or revenues) and external factors (e.g., economic conditions and market competition) (Barney & Wright, 1998, White & Hamermesh, 1981).

Financial performance consists of a number of organizational 'bottom-line' performance outcomes such as return on assets (ROA) (e.g., Darwish, Singh & Mohamed, 2013), return on equity (ROE) (e.g., Kwon & Rupp, 2013), sales (e.g., Chi, Wu, & Lin, 2008) and profitability (e.g., Khatri, 2000). As our meta-analysis focused on examining how contextual variables shaped the strength of the relationship between training and performance measured at the organizational level, we coded the above mentioned operational and financial performance measures as organizational performance. *Training quality* was captured by measures of training effectiveness and importance whereas *training quantity* was reflected in three objective dimensions: training time (i.e., training hours or training days); percentage of employees trained; and training expenditure.

We used the year of data collection to capture the potential moderating effect of *time* on the training-organizational performance relationship. Whenever the data collection occurred over

a longer timeframe, the mean year of data collection was used (Rosenbusch et al., 2019). For studies that did not specify the time point of observations, following the method introduced by Schommer, Richter and Karna (2019: 280), we used “the three years prior to the publication date”.

We coded the *country performance orientation* according to the GLOBE study of country clusters and leadership styles<sup>2</sup> (House et al., 2004). Anglo, Germanic, Nordic, SE Asian, Latin European and Latin American countries were classified as high performance oriented cultures (coded as “1”), whereas Confucian, African, Eastern European and Middle Eastern countries were categorized as low performance oriented cultures (coded as “0”)<sup>3</sup>.

We used the International Labor Organization’s Global Wages Report (2016) to distinguish high (coded as “1”) and low (coded as “0”) *labor cost countries*. *Industry sector* is coded as either manufacturing (coded as “0”), such as machinery, manufacturing, pharmaceuticals, oil refinery, and textiles or services (coded as “1”) such as banking and financing industry, software industry, health industry, retail stores and transportation and logistics.

*Organizational size* was categorized into two groups: Following the definition of SMEs provided by the European Commission (2003), SMEs with 249 or fewer than employees (coded as “0”), and large organizations with 250 or more employees (coded as “1”) (Tzabbar

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<sup>2</sup> The GLOBE study groups the country clusters into six leadership style according to the responses of 17,000 middle managers from 61 countries to 21 leadership scales. The performance-oriented style stresses high standards, decisiveness and innovation, seeks to inspire people around a vision, creates a passion among them to perform, and does so by organizationally holding on to core values.

<sup>3</sup> The participating organisations in a primary study were drawn from multiple countries, and these countries are involved in both high and low performance oriented cultures (labour costs economies). They were coded as mixed cultures, and were not considered in the meta-analytical estimation as our hypothesis focuses on comparing the strength of the training-organisational performance relationship in the high and low performance oriented culture. In addition, we ran extra tests to include mixed category (coded as 2, treating low performance orientation /low labor cost category (coded as 0) as reference category ) in the estimation, the results showed performance orientation/ labor costs remained as significant moderators.

et al., 2017). Regarding *the intensity of technology*, studies that focused specifically on knowledge-based or knowledge-intensive industries (Rodwell & Teo, 2008) and high-technology industries as classified by the OECD (Hatzichronoglou, 1997) were coded as high technology industries (coded as “1”). All other industries were classified as low-technology industries (coded as “0”).

*Training type* was classified as general training (coded as “0”) if it builds KSAs that adds value both to the organization providing the training and to other organizations (Riley et al., 2017) or firm-specific training (coded as “1”) if it creates firm-specific human capital that only benefits the training organizational (Coff & Raffiee, 2015; Crook et al., 2011).

Finally, consistent with the approach taken in previous meta-analytical studies (e.g. Tzabbar et al., 2017; Subramony, 2009; Tharenou et al., 2007; Combs et al., 2006), we included a number of *control variables* concerning study methodological characteristics. First, we grouped the primary studies into cross-sectional (coded as “0”) or longitudinal *datasets* (coded as “1”) to consider the path dependence. For cross-sectional studies, training and organizational performance measures were taken at the same time during the data collection process (Crook et al., 2011). For longitudinal studies, performance measures were taken a period of time after the training was implemented in the organization (Ployhart & Vandenberg, 2010). Second, we distinguished subjective *training measures* (coded as “0”) and objective training measure (coded as “1”). Subjective training measures are based on respondents’ awareness, perceptions and/or experience of training in the organization whereas objective training measures are quantifiable, measurable and independent of respondents’ perceptions and experiences. Similarly, the *organizational performance measure* was also coded as a subjective measurement (coded as “0”) or an objective one

(coded as “1”). In general, subjective performance measures are typically framed by using ordinal type response categories and ask respondents to rate the organization’s performance relative to their competitors or previous years’ performance (Forth & McNabb, 2008) whereas objective organizational performance measures are absolute and obtained from company accounts/records or independent sources (Wall et al., 2004). Finally, the organizational performance control measure also captured operational performance measures coded as “0” and financial performance measures coded as “1”.

### ***Method of analysis***

Our final dataset contained many interdependent effect sizes (i.e. 313 effect sizes nested in 119 studies) resulting from the utilization of multiple training and/or organizational performance measures in some primary studies. In other words, the inter-effect size dependencies are influenced by the way the dependent and independent variables are operationalized (Cooper, 2009). Cheung (2014) warns that if the dependence effect is ignored in the meta-analysis, standard errors of fixed effects and heterogeneity of the random effects may be biased. Hence, we applied an appropriate multilevel analytical approach (i.e., a three-level meta-analysis) to account for dependency of effect sizes within and across studies (Cheung, 2014; Van den Noortgate, Lopez-Lopez, Marin-Martinez & Sanchez-Meca, 2013; 2015). The three-level analytical approach estimates three different variance components distributed over the three-levels of the model: the sampling variation of each effect size (level 1), within-study variation (level 2) and between-study variation (level 3) (Van den Noortgate et al., 2013). We used the `rma.mv` function of the `metafor` package that can be invoked in R to

conduct the three-level random effect meta-analysis<sup>4</sup> (Viechtbauer, 2019; Assink & Wibbelink, 2016).

To examine potential boundary conditions as set out in Hypotheses 1-5 that may influence the strength of the training-organizational performance relationship, we implemented the following steps. First, the overall association between training and organizational performance was estimated by fitting a three-level meta-analytical model that only consisted of an intercept representing the overall effect. Second, we estimated several heterogeneity statistics to examine the presence of potential moderators. In three-level meta-analyses, statistics pertaining to the amount of variation in level 2 and the amount of variation in level 3 ( $\tau^2_{(3)}$ ) along with the regular  $Q$  statistic are provided. However, these results were not informative in terms of determining the within-study (level 2) and between-study variance (level 3) (Assink & Wibbelink, 2016). Instead, two one-sided log-likelihood-ratio tests (LRT) were performed. In this respect, the fit of the original model in which variance at level 2 and level 3 were both freely estimated was compared to the fit of a model in which only variance at level 2 (or variance at level 3) was freely estimated whilst the variance at level 3 (or variance at level 2) was manually fixed to zero (Assink & Wibbelink, 2016). In other words, these tests examine whether the three-level model significantly improves the fit over that of the two-level model in which within-study or between-study variance is no longer accounted for.

Third, to test the proposed hypotheses, we used Restricted Maximum Likelihood estimation method (REML) to estimate the moderating influence of proposed institutional and

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<sup>4</sup> Before using the `rma.mv` function of the `metafor` package, we performed  $r$  to Fisher's  $Z$  transformation and calculated the corresponding sample variances and standard error estimates. This is because the default setting of the `rma.mv` function prescribes that test statistics of individual coefficients and confidence intervals are based on the normal distribution (i.e. the  $Z$  distribution) (Assink & Wibbelink, 2016).

organizational contextual variables in the meta-analytical model. However, such a method does not allow us to perform a log-likelihood-ratio test to investigate whether the fit of a model with proposed moderating variables improves compared with that without moderating variables (Hox, 2010). Instead, an omnibus test was adopted to determine whether the moderating effect of proposed study-level variables was significant.

In the RMEL model, the dependent variable was the correlation between training and organizational performance. The moderators were treated as predictor variables. Model 1 controlled for methodological variables only. Model 2 added the moderator of training quality vs training quantity. Model 3 added the timeline moderator. Model 4 added country performance orientation. Model 5 added country labor cost. Models 6 to 8 added three different variables describing organizational context-related boundary conditions: industry sector, organizational size, intensity of technology. Model 9 added types of training as the moderator. We examined the individual moderating effect of each institutional and organizational context variable instead of adding them cumulatively through different models (see Rosenbusch et al., 2019; Mueller, Rosenbusch & Bausch, 2013) because of the collinearity problem between two the institutional variables and a significant increase in missing values (and subsequently a sharp drop in the number of primary studies) as more contextual explanatory variables were added into the model. Rosenbusch et al. (2019) argued that the relatively small number of research objects (i.e., primary studies) in meta-analyses may result in a statistical power problem if the number of predictor variables in regression is too high.

## **RESULTS**

### ***Primary Results***

Hypothesis 1a proposed a significant and direct positive relationship between training and organizational performance. Table 1 presents the estimation results of the overall relationship between training and organizational performance by fitting a three-level intercept only model. The results suggest that training is positively and statistically significantly associated with organizational performance ( $\beta=0.25, p<0.001$ ), supporting hypothesis 1.

Insert Table 1 about here

Table 1 also reports the variance component distributed to the second level and third level. The variance between effect sizes due to within-study variation ( $\tau^2_{(2)}$ ) was 0.008 and the between-study variance ( $\tau^2_{(3)}$ ) was 0.039. The test for heterogeneity ( $Q=3,511.85, p<0.001$ ) revealed significant variation between all effect sizes in our modelling. However, the results do not necessarily determine the significance of within and between-study variance.

Therefore, we performed two one-sided LRTs to assess whether the variance component allocated at level 2 and level 3 was significant. The test results are presented in Table 2. The results reveal that within-study variance was statistically significant, as the fit of the three-level model consisted of both within- and between-study variation was significantly better than that the fit of the two-level model that only tested between-study variation (LRT = 158.84,  $p<0.001$ ). Similarly, the fit of the three-level model improved significantly over that of the two level model in which only within-study variance was freely estimated (LRT = 149.51,  $p<0.001$ ), suggesting that between-study variance was significant. Hence, we concluded that the relationship between training and organizational performance varied significantly between sub-groups, signaling the presence of study-level moderator effects.

Insert Table 2 about here

The estimation results of the moderator or sub-group analysis are presented in Table 3. Hypothesis 1b compared the magnitude of the effects of training quality and quantity on

organizational performance. The results suggest that organizations that emphasized training quantity ( $\beta=-0.12$ , *ns.* for training time;  $\beta=0.05$ , *ns.* for percentage of employees trained;  $\beta=-0.11$ , *ns.* for training expenditure) performed as well as those who emphasized training quality. Hence, hypothesis 1b is not supported. Hypothesis 2 examined whether the strength of the association between training and organizational performance increased over time. Our results show that although the extent of the change is relatively small, the impact of training on firm performance has improved significantly with the passage of time ( $\beta=0.01$ ,  $p<0.001$ ). Hypothesis 2 is, therefore, supported.

Insert Table 3 about here

Hypotheses 3a and 3b investigated two institutional moderators (i.e., country performance orientation and country labor economy) that impact the relationship between training and organizational performance. Opposite to our prediction, the results show that organizations from low performance oriented cultures benefitted more from training than organizations in high performance oriented cultures ( $\beta=-0.10$ ,  $p<0.001$ ). Hypothesis 3a, is therefore not supported. Our sub-group analysis reports that the relationship between training and organizational performance is stronger in organizations in low country labor costs than in those with high labor costs ( $\beta=-0.13$ ,  $p<0.001$ ) thereby supporting Hypothesis 3b.

Hypotheses 4a to 4c examined the moderating influence of industry sector, organizational size and technology intensity on the training-organizational performance, respectively. The multilevel modelling results revealed a non-significant difference between manufacturing and service industry ( $\beta=0.05$ , *n.s.*). Hypothesis 4a is therefore not supported. For the remaining two internal organizational context variables, neither of them revealed any significant differences in our multilevel modelling estimation results (organizational size  $\beta=0.07$ , *n.s.*, intensity technology:  $\beta=0.08$ , *n.s.*). Hence, Hypotheses 4b and 4c are not supported.

Hypothesis 5 proposed that the relationship between firm-specific training and organizational performance was invariant from that between general training and organizational performance. Our multilevel estimation results showed that organizational performance derived from firm-specific training was no different to that from general training ( $\beta=0.004$ , *n.s.*) thereby supporting Hypothesis 5.

### ***Publication Bias***

Due to the propensity that statistically non-significant findings go unpublished and/or that more positive findings than negative ones go published, meta-analyses could produce exaggerated evidence drawn on existing literature (Murad, Chu, Lin & Wang, 2018). To assess such publication bias in the current meta-analysis, we implemented Egger's regression test (Egger, Smith, Schneider & Minder, 1997) by adding standard errors of the effect size estimates as a moderator variable to the RMEL estimation in the *rma.mv* function of *metafor* package (Viechtbauer, 2019). This approach tackles inter-effect size dependencies when testing publication bias from multilevel meta-analytical modelling. A significant coefficient on the standard error predictor would suggest the presence of publication bias and funnel plot asymmetry. Scholars suggest that ignoring between-study heterogeneity when detecting publication bias could result in misleading results in small meta-analyses (Peters et al., 2010). Hence, we ran Egger's regression by controlling methodological moderators as well as significant context-related moderators (i.e. timeline, performance orientation and labor cost economy) identified in our sub-group analysis. The results of these tests were presented in Appendix C. The coefficients on the standard error predictor was found to be insignificant in all models, indicating that substantial evidence of publication bias was not present in the current meta-analysis.

## DISCUSSION

In spite of a considerable amount of research investigating the training and organizational performance relationship, significant gaps remain regarding the boundary conditions impacting the relationship and changes in the relationship over time. Driven by the desire to address these gaps, and informed by systems theory, our motivation for this paper was to: (i) examine the relationship between training and organizational performance over time; (ii) examine the relationship between training and organizational performance accounting for potential differences in training quality and training quantity; (iii) examine to what extent the relationship is influenced by two institutional context variables (country performance orientation and country labor costs) and three organizational contextual factors (industry sector, organizational size and technology intensity); and (iv) examine if type of training (i.e., firm-specific or general training) moderates the training and organizational performance relationship.

Our results reveal that training was directly and positively related to organizational performance, which aligns with findings reported in previously meta-analyses (Combs et al., 2006; Subramony, 2009; Tharenou et al., 2007). We also found that there was no statistically significant difference in the relationship for measures of quality versus quantity of training. We found that the strength of the relationship between training and organizational performance has increased over time. In terms of the overall relationship between training and organizational performance, we report a correlation of 0.25 between training and organizational performance. The effect size we report is significantly greater than other studies (e.g., Combs et al.'s (2006) effect size of 0.15, Subramony's (2009) effect size of 0.12, and Tharenou et al.'s (2007) effect sizes of 0.21 for training and operational

performance and 0.15 for training and financial performance). Our significant and important finding suggests that training is a valuable and important HR practice linked with organizational performance and provides further evidence to that reported in the literature (Riley et al., 2017; Wright & McMahon, 2011; Kim & Ployhart, 2014). The lack of significant difference between the quantity and quality of training and organizational performance is surprising. The reason for this finding may be related to the research design used in studies. Many of the studies in this meta-analysis measured training and organizational performance using cross-sectional data. In addition, the measurement of training quality relied on trainee reports rather than multiple data sources. Therefore, future studies need to more accurately measure training quality and use longitudinal research designs to more accurately assess the impact on organizational performance.

For the purposes of this study, we operationalized omnibus context using time (Johns, 2006) to capture changes in the external environment over time and to explore how time impacted the training organizational-performance relationship. One of our significant and novel findings is that the strength of the relationship between training and organizational performance has increased year on year over the past three decades. This important finding supports the idea that training has become increasingly important to organizational performance and competitive advantage. Specifically, omnibus context over that period has created a situation that requires organizations to train employees to develop human capital to achieve organizational performance (Cascio & Graham, 2016). This finding also lends support to the adaptation principle of systems theory (Von Bertalanffy, 1968) which indicates that training must adapt to changing environmental conditions (inputs) in order to achieve organizational performance (outputs).

Another important contribution of this study concerns the application of systems theory, and in particular, the congruence, adaptation and equifinality principles to explain the moderating effect of institutional and organizational contextual variables on the training and organizational performance relationship. Systems theory (Katz & Kahn, 1972; Nadler & Tushman, 1980) emphasizes the importance of interaction and integration of various components of a system to achieve desirable outcomes. The theory introduces the notion of congruence or fit between training and context. We investigated whether the strength of the relationship between training and organizational performance was moderated by two institutional variables, i.e. country performance orientation and country labor cost. To our knowledge, these two institutional-level moderators have not been explored and examined in the existing body of research of the HRM/training-organizational performance relationship to date and yet systems theory underlines their criticality to understanding our central research question.

For our first institutional context variable, and counter to our hypothesis, we found that the relationship between training and organizational performance was significantly stronger in low performance oriented countries than in high performance oriented countries. One possible explanation is that training is likely to be more commonly prevalent in high performance cultures that encourage and reward innovation, excellence and performance improvement (Grove, 2005). Marginal returns from training may be smaller in high performance oriented cultures compared to those in low performance oriented cultures (Schneider, Hanges, Smith, & Salvaggio, 2003) because employees in high performance oriented cultures expect training opportunities as a matter of form to fulfil work responsibilities and meet target goals. Another possible explanation is that employees in high

performance oriented cultures may already be performing at high levels and hence the organization may attain limited performance gains from training.

For our second institutional context variable, as expected, we found that the training and organizational performance relationship was stronger in organizations operating in low labor cost countries. This finding suggests that that organizations in low labor cost countries benefit more from training investment than those in high labor cost economies. Training can directly help to optimize the level or type of employees' KSAs that employees need to perform their work and tasks (Jiang et al., 2012) which is particularly important in low labor cost economy where education attainment and workforce skill level are generally low. Budria and Pereira (2007) suggested that training can play a remedial role in closing the skill gaps caused by lower education attainment, and low-skilled employees are more likely to gain larger marginal returns from training compared with well-educated workers in high labor cost cultures.

Taken together, our institutional context findings point to the benefit of taking a systems view of the training and organizational performance relationship. All too often, researchers tend to take more myopic views focusing only on internal factors or factors related directly to training design, delivery and implementation when assigning organizational performance. Greenwood et al. (2010) argued that there has been a trend in organizational research to focus on discrete elements and discrete relationships at individual or group levels of analysis, resulting in the loss of insight about the complexity of organizational phenomena and a lack of focus on the breadth and variety of issues impacting overall organizational decision-making and functioning. King, Felin and Whetten (2009: 4) succinctly captured the issue stating, "The tendency has been to wipe away differences altogether and prioritize abstraction

over contextual specificity” which is required to understand organizational phenomena. We strongly encourage scholars in the training field interested in questions relevant to our study to examine the potential benefits of employing broader theoretical perspectives such as systems theory.

Our findings regarding three internal organizational context moderators (i.e., industry sector, organizational size and technology intensity) of the training-organizational performance relationship were interesting and, in some cases, departed from findings in prior meta-analyses. In contrast to previous findings that report industry sector as a significant contextual moderator whereby a stronger training-organizational performance relationship exists for manufacturing rather than service organizations (Subramony, 2009; Combs et al., 2006), the current study found no significance difference across the industries. However, it is important to note that the focal explanatory variable in Subramony’s (2009) and Combs et al.’s (2006) meta-analyses was HRM system (i.e. high performance work practices) and HR bundles (i.e. skill-, motivation- and empowerment- enhancing practices), respectively, of which training was one element. Relatedly, the discrepancy in prior meta-analytical reviews may be explained by the complementarity of various individual HRM practices (e.g., selection practices which ensure employees possess the necessary KSAs needed for the role whilst training provides the further firm-specific KSAs to perform task) or derived from the other HR practices other than training practice. This proposition can be supported by scholars that take a strategic or ‘bundling’ approach in HRM research (e.g., Applebaum, Bailey, Berg, & Kalleberg, 2000; Lepak & Shaw, 2008).

Our results suggest that technology intensity did not act as a moderator of the training-organizational performance relationship. This finding is in line with Tzabbar et al. (2017) but

conflicts with Rauch and Hatak (2016). The fact that intensity of technology does not act as a moderator may be because training has both value-creating and cost-increasing effects (Cappelli & Neumark, 2001; Sels et al., 2006). That is, the costs associated with developing and delivering training may diminish or even neutralize the positive effects of training on organizational performance. This may be particularly so in high technology industries that rely on employees' KSAs to stay competitive in a dynamic and volatile environment.

Inconsistent with our prediction and previous findings (Tzabbar et al., 2017), our results found that organizational size was not a significant contextual moderator in the training-organizational performance linkage. One possible reason is that the effectiveness of training reflected in organizational performance is not about what (e.g., training content and quantity) has been implemented by the organizations but depends on how it has been adopted. Small organizations are reported to make more use of in-house and on-the-job training (OECD, 2012 Nolan & Garavan, 2019). Such in-house and on-the job training is very tailored to employee and organizational needs and is cost effective due to resource constraints faced by small organizations). A possible explanation is that small organizations can achieve similar performance improvement as their larger counterparts through training policy and practice that suit their unique characteristics focused on more in-house and on-the-job training. However, we were only able to test the difference in organizational size in the training-organizational performance relationship from the 'what' perspective but not 'how' perspective and further research would need to examine this question to provide more definite answers.

In line with the equifinality principle of systems theory, and consistent with our hypothesis, our results reveal that firm-specific and general training benefit organizational performance

and that neither type of training conferred a distinct advantage over the other. The finding runs contrary to the proposition postulated by human capital theory and RBV (Becker, 1964; Barney, 1991) that superior organizational performance can only be derived from firm-specific training and human capital in specific training. However, our results are supported by a number of empirical studies that have shown the positive contribution of general training to enhanced organizational performance (Riley et al., 2017; Aragon & Sanz Valle, 2013; Beugelsdijk, 2008; Barrett & O'Connell, 2001). As posited by the equifinality principle where organizations can achieve the same outcomes utilizing alternative organizational processes or mechanisms (Katz & Kahn, 1978), the results of this study suggest that general training can be as effective as specific training in terms of gaining performance advantage and vice-versa.

Finally, we make a methodological contribution. In particular, we have significantly increased the number of studies in the meta-analysis compared to previous meta-analyses and we utilized a three-model meta-analytic approach. Prior meta-analysis studies used Hunter and Schmidt's (2004) meta-analytical approach that accounts for within- and between-study variance only but does not deal with inter-dependency of effect sizes. This issue may lead to either over-estimated or under-estimated standard errors of the fixed effects and heterogeneity of the random effect meta-analytical results (Cheung, 2014; Van den Noortgate et al., 2015). Overall, our findings consolidate knowledge about the value of training in enhancing organizational performance. We hope this study will motivate theoretical and empirical work to more fully understand the relationship between training and organizational performance.

### ***Practical Implications***

Our study offers a number of important implications for managerial practice. First, our findings indicate that investment in training was associated with increased organizational performance. Specifically, a one standard deviation increase in training was associated with 0.25 standard deviation increase in organizational performance. This result indicates that organizations can achieve significant performance gains through investing in training. Second, in terms of the type of training that an organization should invest in, our findings indicate that HR managers may use general and firm-specific training as HR mechanisms to enhance the quality of accumulated human capital, because they can produce similar desirable performance outcomes. In addition, our findings shed light on the boundary conditions portrayed by institutional contexts that shape the strength of the relationship between training and organizational performance. The results indicate that organizations located in low performance oriented countries and low labor cost economies can potentially derive significantly greater benefits from training investment. Therefore, managers and HR practitioners in these organizations should devote more financial resources and expertise to the development and implementation of training. Finally, our findings reveal that the strength of the relationship between training and organizational performance has increased year on year over time suggesting that training has played an increasingly important role in an omnibus context characterized by globalization, increased scarcity of talent and changing generational expectations of work (Cascio, 2019). HR practitioners will benefit from ensuring they take a broader, systems perspective when analyzing and planning their training needs and investment.

### ***Limitations and Future Research Avenues***

The results of our meta-analysis are inevitably subject to limitations and some of these point to avenues for further research. First, we were constrained by the studies we could

incorporate in the meta-analysis database due to missing data and statistical information.

While we found that the time period of 2010-2019 resulted in a strong relationship between training and organizational performance, future research should look at if this trend continues to increase over time. Our findings point to the value of time-related effects, however, they cannot be generalized beyond the time periods included in the meta-analysis. Future studies could more explicitly investigate the temporal mechanisms that underlie the change over time that we report. In particular, it would be useful to delve further into the specific global changes and economic developments and explore how these changes (e.g., recession, economic growth, technological change, and changing worker expectations) specifically impact training and organizational performance.

Second, our meta-analytical review suggests two significant institutional moderators (i.e., country performance orientation and country labor economy) of the training-organizational performance relationship using the country (or countries) in which the primary study was conducted as a proxy. Future research should examine the moderation model by utilizing different institutional variables. Rosenbusch et al. (2019) suggest the use of inductive qualitative research in addition to fuzzy-set analysis to surface new institutional factors and investigate configurations of institutional factors that may influence the training-organizational performance relationship.

Third, we operationalized training in terms of five key measurements reported in the literature: spend, proportional measures such as number of staff trained, content of training such as type of training, emphasis given to training, and training effectiveness. Most of these measures pertain to training quantity rather than training quality. It would be useful for

future research to further understand how training effectiveness and quality impacts the training-organizational performance relationship.

Fourth, our meta-analysis highlights major methodological limitations in individual studies that need to be addressed by researchers in future studies of the relationship. In many cases, investigating the moderating effect of organizational and environmental factors results in a small number of correlations for practice. Our moderation analyses of three internal organizational context forces were drawn from small datasets (i.e. N=59 for industry sector, N=24 for organizational size, N=41 for technology intensity). Researchers have argued that the quantity of primary studies matters when conducting random-effect meta-analysis and inference made from small number of studies may not guarantee reliable conclusions (Guolo & Varin, 2017). Hence, moving forward, if a significant amount of empirical studies emerge in the future, it is worthwhile for training scholars to replicate the moderated meta-analytical analysis conducted here and perhaps include additional institutional variables informed by systems theory.

## References

- Ahmad, S., & Schroeder, R.G. (2003). The impact of human resource management practices on operational performance: Recognizing country and industry differences. *Journal of Operations Management*, 25(1), 19-43.
- Anand, N., Gardner, H.K., & Morris, T. (2007). Knowledge-based innovation: Emergence and embedding of new practice areas in management consulting firms. *Academy of Management Journal*, 50(2), 406-428.
- Appelbaum, E., Bailey, T., Berg, P., & Kalleberg, A. (2000). *Manufacturing Advantage: Why High Performance Work Systems Pay Off*. Ithaca, NY: ILR Press.
- Association for Talent Development (2017). State of the Industry Report . Available at: <https://www.td.org/research-reports/2017-state-of-the-industry>. [Retrieved on 15<sup>th</sup> June 2019].
- Aragon, I.B., & Sanz Valle, R. (2013). Does training managers pay off. *International Journal of Human Resource Management*, 24(8), 1671-1684.
- Arunprasad, P. (2017). Inevitable knowledge strategy: A paradigm shift in strategic HRM practices to augment firm's performance. *Employee Relations*, 39(5), 753-774.

- Assink, M., & Wibbelink, C.J.M. (2016). Fitting three-level meta-analytic model in R: A step-by-step tutorial. *The Quantitative Methods for Psychology, 12*(3), 154-174.
- ATD. (2018). *New ATD Research: Investment in Talent Development on the Rise*. Available online: <https://www.td.org/press-release/new-atd-research-investment-in-talent-development-on-the-rise> [Retrieved on 16th June 2019]
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*, 99-120.
- Barney, J.B., & Wright, P.M. (1998). On becoming a strategic partner: The role of human resources in gaining competitive advantage. *Human Resource Management, 37*, 31-46.
- Barrett, A., & O'Connell, P.J. (2001). Does training generally work? The returns to in-company training. *Industrial and Labor Relations Review, 54*(3), 647-662.
- Bartel, A.P. (1994). Productivity gains from the implementation of employee training programs. *Industrial Relations, 33*(4), 411-425.
- Becker, G.S. (1964). *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. Chicago: University of Chicago.
- Bettis, R.A., & Hitt, M.A. (1995). The new competitive advantage. *Strategic Management Journal, 10*, 449-474.
- Beugelsdijk, S. (2008). Strategic human resource practices and product innovation. *Organization Studies, 29*(6), 821-847.
- Blom, R., Kruijen, P.M., Van der Heijden, B., & van Thiel, S. (2018). One HRM fits all? A meta-analysis of the effects of HRM practices in the public, semipublic, and private sector. *Review of Public Personnel Administration*, doi: 10.1177/0734371X18773492
- Bouncken, R.B., & Kraus, S. (2013). Innovation in knowledge-intensive industries: The double-edged sword of cooperation. *Journal of Business Research, 66*, 2060-2070.
- Budhwar, P., Pereira, V., Mellahi, K., & Singh, S. (2018). The state of HRM in the Middle East: Challenges and future research agenda. *Asia Pacific Journal of Management*, doi: 10.1007/s10490-018-9587-7.
- Budria, S., & Pereira, P. (2007). The wage effects of training in Portugal: difference across skill groups, genders, sectors and training types. *Applied Economics, 39*(6), 787-807.
- Cappelli, P. & Neumar, D. (2001). Do 'high-performance' work practices improve establishment-level outcomes? *Industrial & Labor Relations Review, 54*, 737-775.
- Cascio, W.F. (2019). Training trends: Macro, micro, and policy issues. *Human Resource Development Review, 29*, 284-297.
- Cascio, W.F., & Graham, B.Z. (2016). New strategic role for HR: Leading the employer-branding process. *Organization Management Journal, 13*(4), 182-192.
- Chadwick, C., & Dabu, A. (2009). Human resources, human resource management, and the competitive advantage of firms: Toward a more comprehensive model of causal linkage. *Organization Science, 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. *Personnel Psychology, 66*(2). 311-343.

- Chatterjee, J. (2017). Strategy, human capital investments, business-domain capabilities, and performance: A study in the global software services industry. *Strategic Management Journal*, 38(3), 588-608.
- Cheung, M.W. (2014). Modeling dependent effect sizes within three-level meta-analyses: A structural equation modeling approach. *Psychological Methods*, 19(2), 211-229.
- Chi, N., Wu, C., & Lin, C.Y. (2008). Does training facilitate SME's performance? *International Journal of Human Resource Management*, 19(10), 1962-1975.
- Choi, M., & Yoon, H. (2015). Training investment and organizational outcomes: A moderated mediated model of employee outcomes and strategic orientation of the HR function. *International Journal of Human Resource Management*, 26(20), 2632-2651.
- Chuang, C., & Liao, H. (2010). Strategic human resource management in service context: taking care of business by taking care of employees and customers. *Personnel Psychology*, 63, 153-196.
- CIPD (2017). Employee Outlook: Spring 2017. Available online: <https://www.cipd.co.uk/knowledge/fundamentals/relations/engagement/employee-outlook-reports> [Retrieved 4th June 2019].
- Coff, R., & Raffiee, J. (2015). Toward a theory of perceived firm-specific human capital. *Academy of Management Executive*, 3, 326-341.
- Coff, R.W. (1997). Human assets and management dilemmas: Coping with hazards on the road to resource-based theory. *Academy of Management Review*, 22, 374-402.
- 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. *Personnel Psychology*, 59, 501-528.
- Cooper, H. (2009). *Research Synthesis and Meta-Analysis* (4th ed). London: Sage.
- Crook, T. R., Todd, S. Y., Combs, J. G., Woehr, D. J., & Ketchen, D. J. (2011). Does human capital matter? A meta-analysis of the relationship between human capital and firm performance. *Journal of Applied Psychology*, 96, 443-456.
- Darwish, T.K., Singh, S. and Mohamed, A.F. (2013). The role of strategic HR practices in organizational effectiveness: An empirical investigation in the country of Jordan. *International Journal of Human Resource Management*, 24(17), 3343-3362.
- Delaney, J.T., & Huselid, M.A. (1996). The impact of human resource management practices on perceptions of organizational performance. *Academy of Management Journal*, 39(4), 949-969.
- Egger, M., Smith, G.D., Schneider, M., & Minder, C.E. (1997) Bias in meta-analysis detected by a simple, graphical test. *BMJ Clinical Research*, 13(315), 629-634.
- Estebán-Lloret, N.N., Aragon-Sanchez, A., & Carrasco-Hernandez, A. (2016). Determinants of employee training: Impact on organizational legitimacy and organizational performance. *International Journal of Human Resource Management*, 29(6), 1208-1229.
- European Commission (2003). What is an SME? Available online [https://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition\\_en](https://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition_en) [retrieved on 9 Sep 2019]

- Farndale, E., & Paauwe, J. (2018). SHRM and context: why firms want to be different as legitimately possible. *Journal of Organizational Effectiveness: People and Performance*, 5(3), 202-210.
- Fernandez, S., & Moldogaziev, T. (2010). Empowering public sector employees to improve performance: Does it work? *American Review of Public Administration*, 41, 23-47.
- Fey, C., Bjorkman, I., & Pavlovskaya, A. (2000). The effect of human resource management practices on firm performance in Russia. *International Journal of Human Resource Management*, 11(1), 1-18.
- Forth, J., & McNabb, R. (2008). Workplace performance: A comparison of subjective and objective measures in the 2004 Workplace Employment Relations Survey. *Industrial Relations Journal*, 39(2), 104-123.
- Friedman, T.L. (2016). *Thank You for Being Late: An Optimist's Guide to Thriving in the Age of Accelerations*. New York, NY: Farrar, Straus & Giroux.
- Garavan, T., Shanahan, V., Carbery, R., & Watson, S. (2016). Strategic human resource development: towards a conceptual framework to understand its contribution to dynamic capabilities. *Human Resource Development International*, 19(4), 289-306.
- Garavan, T., Watson, S., Carbery, R., & O'Brien, F. (2016). The antecedents of leadership development practices in SMEs: The influence of HRM strategy and practice. *International Small Business Journal*, 34(6), 870-890.
- Garavan, T.N. (2007). A strategic perspective on human resource development. *Advances in Developing Human Resources*, 9, 11-30.
- Georgiadis, A., & Pitelis, C.N. (2012). Human resources and SME performance in services: Empirical evidence from the UK. *International Journal of Human Resource Management*, 23(4), 808-825.
- Grant, R. M. (1996). Prospering in dynamically competitive environments: Organizational capability as knowledge integration. *Organization Science*, 7, 375-387.
- Greenwood, R., Díaz, A. M., Li, S. X., & Lorente, J. C. (2010). The Multiplicity of Institutional Logics and the Heterogeneity of Organizational Responses. *Organization Science*. doi: 10.1287/orsc.1090.0453.
- Grove, C.N. (2005). Introduction to the GLOBE Research Project on Leadership Worldwide. Available online: <https://www.grovetwell.com/wp-content/uploads/pub-GLOBE-intro.pdf>. [Retrieved on 16<sup>th</sup> May, 2019]
- Guerrazzi, M. (2016). The effect of training on Italian firms' productivity: microeconomic and macroeconomic perspectives. *International Journal of Training and Development*, 21(1), 38-57.
- Guolo, A., & Varin, C. (2017). Random-effects meta-analysis: The number of studies matters. *Statistical Methods in Medical Research*, 26(3) 1500-1518.
- Hatzichronoglou, T. (1997). Revision of the high-technology sector and product classification. OECD Science, Technology and Industry Working Papers, 1997/2002. Publishing OECD.
- Hirsch-Kreinsen, H. (2016). Digitization of industrial work: Development paths and prospects. *Journal for Labour Market Research*, 49(1), 1-14.

- House, R., Hanges, P., Javidan, M., Dorfman, P., & Gupta, V. (2004). *Culture, leadership, and organizations: The GLOBE study of 62 societies*. Thousand Oaks, CA: Sage Publications.
- Hox, J.J. (2010). *Multilevel Analysis: Techniques and Applications*. New York, NY: Routledge.
- Hughes, A., Zajac, S., Woods, A., & Salas, E. (2019). The role of work environment in training sustainment: A meta-analysis. *Human Factors: The Journal of the Human Factors and Ergonomics Society*, doi: 10.1177/001872081989888.
- Hunter, J.E., & Schmidt, F.L. (2004). *Methods of Meta-Analysis: Correcting Error and Bias in Research Findings* (2<sup>nd</sup> ed). Thousand Oaks, CA: Sage.
- International Labour Organization. (2016). *Global Wage Report 2016/17: Wage Inequality in the Workplace*. Geneva: International Labour Office.
- Jackson, S.E., Schuler, R.S., & Jiang, K. (2014). An aspirational framework for strategic human resource management. *Academy of Management Annals*, 8(1), 1-56.
- Javidan, M., House, R.J., Dorfman, P.W., Hanges, P.J., & Sully de Luque, M. (2006). Conceptualizing and measuring cultures and their consequences: A comparative review of GLOBE's and Hofstede's approaches. *Journal of International Business Studies*, 37, 897-914.
- Jiang, K., Lepak, D.P., Hu, J. and Baer, J.C. (2012). How does human resource management influence organizational outcomes? A meta-analytical investigation of mediating mechanisms. *Academy of Management Journal*, 55(6), 1264-1294.
- Johns, G. (2006). The essential impact of context on organizational behaviour. *Academy of Management Review*, 31(2), 386-408.
- Johnson, J.W. (1996). Linking employee perceptions of service climate to customer satisfaction. *Personnel Psychology*, 49, 831-851.
- Kast, F.E., & Rosenzweig, J.E. (1972). General systems theory: Applications for organization and management. *Academy of Management Journal*, 447-466.
- Katz, D., & Kahn, R. (1978). *The Social Psychology of Organization*. New York: Wiley.
- Khandwalla, P.N. (2006). Tools for enhancing innovativeness in enterprises. *Journal of Decision Making*, 31(1), 1-16.
- Khatri, N. (2000). Managing human resource for competitive advantage: A study of companies in Singapore. *International Journal of Human Resource Management*, 11(2), 336-365.
- Kim, H., Hawley, J.D., Cho, D., Hyun, Y., & Kim, J. (2016). The influence of learning activity on low-skilled workers' skill improvement in the South Korean manufacturing industry. *Human Resource Development International*, 19(3), 209-228.
- Kim, Y., & Ployhart, R.E. (2014). The effects of staffing and training on firm productivity and profit growth before, during and after the Great Recession. *Journal of Applied Psychology*, 99(3), 361-389.
- King, B. G., Felin, T., & Whetten, D. A. (2009). Research in the sociology of organizations, vol. 26. Bingley, UK: Emerald Group Publishing Limited.

- Kortekaas, F. (2007). *HRM, Organisational Performance and the Role of Firm Size*. Master thesis submitted to Erasmus School of Economics, Department of Entrepreneurship, Governance, Organisation & Strategy, Erasmus University of Rotterdam.
- Kraiger, K. (2014). Looking Back and Looking Forward: Trends in Training and Development Research. *Human Resource Development Quarterly*, 25(4), 401–408.
- Kraiger, K., Passmore, J., dos Santos, N., & Malvezzi, S. (2014). *The Wiley Blackwell Handbook of The Psychology of Training, Development and Performance Improvement* (eds). Chichester: John Wiley & Sons.
- Kwon, K., & Rupp, D.E. (2013). High-performer turnover and firm performance: The moderating role of human capital investment and firm reputation. *Journal of Organizational Behavior*, 34, 129-150.
- Lee, G.J. (2012). Firm size and the effectiveness of training for customer service. *International Journal of Human Resource Management*, 23(12), 2597-2613.
- Lepak, D.P., & Shaw, J.D. (2008). Strategic HRM in North America: Looking to the future. *International Journal of Human Resource Management*, 19(8), 1486-1499.
- Lipsey, M., & Wilson, D. (2001). *Practical Meta-Analysis*. Thousand Oaks, CA: Sage.
- McHugh, M.L. (2012). Interrater reliability: the Kappa statistic. *Biochemistry Medicine*, 22(3), 276-282.
- Meyer, K.E., & Peng, M.W. (2016). Theoretical foundations of emerging economy business research. *Journal of International Business Studies*, 47(1), 3-22.
- Montealegre, R., & Cascio, W.F. (2017). Technology-driven changes in work and employment. *Communications of the ACM*, 60(12), 60-67.
- Mueller, V., Rosenbusch, N., & Bausch, A. (2013). Success patterns of exploratory and exploitative in innovation: A meta-analysis of the influence of institutional factors. *Journal of Management*, 39, 1606-1636.
- Murad, M.H., Chu, H., Lin, L., & Wang, Z. (2018). The effect of publication bias magnitude and direction on the certainty in evidence. *BMJ Evidence Based Medicine*, 23(3), 84-86.
- Nadler, D., & Tushman, M. (1980). A model for diagnosing organizational behaviour. *Organizational Dynamics*, 9(2), 35-51.
- Nieves, J., & Quintana, A. (201). Human resource practices and innovation in the hotel industry: The mediating role of human capital. *Tourism and Hospitality Research*, DOI: 10.1177/1467358415624137.
- Noe, R. (2017). *Employee Training and Development*. New York, NY: McGraw Hill Education.
- Nolan, C.T., & Garavan, T. N. (2019). External and internal networks and access to HRD resources in small professional service firms. *Human Resource Development International*, doi: 10.1080/13678868.2019.1625853
- North, D. (1990). *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press.
- OECD. (2012). *Innovation in Skills Development in SMEs*. Available online: <https://www.oecd.org/cfe/leed/TSME%20Highlights%20FINAL%20formatted.pdf> [Retrieved on 12<sup>th</sup> June 2019].

- Peters, J.L., Sutton, A., Jones, D.R., Abrams, K.R., Rushton, L., & Moreno, S.G. (2010). Assessing publication bias in meta-analyses in the presence of between-study heterogeneity. *Journal of the Royal Statistical Society Statistics in Society Series A*, 173(3), 575-591.
- Ployhart, R.E., & Moliterno, T.P. (2011). Emergence of the human capital resource: A multilevel model. *Academy of Management Review*, 36(1), 127-150.
- Ployhart, R.E., & Vandenberg, R.J. (2010). Longitudinal research: theory, design, and analysis of change. *Journal of Management*, 36, 94-120.
- Prince, D. (2008). Tracking low-skill adult students longitudinally: Using research to guide policy and practice. *New Directions for Community Colleges*, 59-69.
- Purcell, J., & Boxall, P. (2015). *Strategy and Human Resource Management (4<sup>th</sup> ed)*. London: Palgrave Macmillan.
- Quinn, J.B., Anderson, P., & Finkelstein, S. (1996). Managing professional intellect: Making the most of the best. *Harvard Business Review*, 74(2), 71-80.
- Rabi, T., Jayasingh, M., Gerhart, B., & Kuhlmann, T.A. (2014). Meta-analysis of country differences in the high performance work systems-business performance relationship: The roles of national culture and managerial discretion. *Journal of Applied Psychology*, 99, 1011-1041.
- Rauch, A., & Hatak, I. (2016). A meta-analysis of different HR-enhancing practices and performance of small and medium-sized firms. *Journal of Business Venturing*, 31, 485-504.
- Riley, S.M., Michael, S.C., & Mahoney, J.T. (2017). Human capital matters: Market value of firm investment in training and the role of complementary assets. *Strategic Management Journal*, 38(9), 1895-1914.
- Rodwell, J.J., & Teo, S.T.T. (2008). The influence of strategic HRM and sector on perceived performance in health services organizations. *International Journal of Human Resource Management*, 19(10), 1825-1841.
- Rosenbusch, N., Gusenbauer, M., Hatak, I., Fink, M., & Meyer, K.E. (2019). Innovation offshoring, institutional context and innovation performance: A meta-analysis. *Journal of Management Studies*, 56(1), 203-232.
- Rosenthal, P., Hill, S., & Peccei, R. (1997). Checking out service: Evaluating excellence, HRM and TQM in retailing. *Work, Employment & Society*, 11(3), 481-503.
- Ruona, W.E. (2016). Evolving Human Resource Development. *Advances in Developing Human Resources*, 18(4), 551-565.
- Russell, J.S., Terborg, J.R., & Powers, M.L. (1985). Organizational performance and organizational level training and support. *Personnel Psychology*, 38, 849-863.
- Schleicher, D., Baumann, H.M., Sullivan, D.W., Levy, P.E., Hargrove, D.C., & Barros-Rivera, B.A. (2018). Putting the system into performance management systems: A review and agenda for performance management research. *Journal of Management*, 44(6), 2209-2245.
- Schneider, B., Hanges, P.J., Smith, D.B., and Salvaggio, A.N. (2003). Which comes first: Employee attitudes or organizational financial and market performance. *Journal of Applied Psychology*, 88, 836-851.

- Schommer, M., Richter, A., & Karna, A. (2019). Does the diversification-firm performance relationship change over time? A meta-analytical review. *Journal of Management Studies*, 56(1), 270-298.
- Sels, L., DeWinne, 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. *Journal of Management Studies*, 43, 319-342.
- Shin, D., & Konrad, A.M. (2017). Causality between high-performance work systems and organizational performance. *Journal of Management*, 43(4), 973-997.
- Singh, S., Darwish, T., Wood, G., & Mohamed, A. (2017). Institutions, complementarity, human resource management and performance in a South-East Asian peoststate: The case of Brunei. *International Journal of Human Resource Management*, 28(18), 2538-2569.
- Sitzmann, T., & Weinhardt, J. (2018). Training engagement theory: A multilevel perspective on the effectiveness of work-related training. *Journal of Management*, 44(2), 732-756.
- Somaya, D., Williamson, I.O, & Lorinkova, N. (2008). Gone but not lost: The different performance impacts of employee mobility between co-operators versus competitors. *Academy of Management Journal*, 51(5), 936-953.
- Subramony, M. (2009). A meta-analytic investigation of the relationship between HRM bundles and firm performance. *Human Resource Management*, 48(5), 745–768.
- Sung, S., & Choi, J.N. (2014). Do organizations spend wisely on employees? Effects of training and development investments on learning and innovation in organizations. *Journal of Organizational Behavior*, 35(3), 393-412.
- Tharenou, P., Saks, A. M., & Moore, C. (2007). A review of critique of research on training and organizational-level outcomes. *Human Resource Management Review*, 17, 251–273.
- Training Industry Report. (2018). 2018 *Training Industry Report*. Available online: <https://trainingmag.com/sites/default/files/trn-2018-industry-report.pdf> [Retrieved on 16th June 2019]
- Tzabbar, D., Tzafrir, S., & Baruch, Y. (2017). A bridge over troubled water: Replication, integration and extension of the relationship between HRM practices and organizational performance using moderating meta-analysis. *Human Resource Management Review*, 27, 134–148.
- United States Bureau of Labor Statistics (2017). *Employment cost index*. Available online: <https://www.bls.gov/news.release/eci.toc.htm>. [Retrieved from 4<sup>th</sup> May 2019]
- Utterback, J. (1996). *Mastering the dynamics of innovation: How companies can seize opportunities in the face of technological change*. Boston: Harvard Business School Press.
- Van den Noortgate, W., Lopez-Lopez, J.A., Marin-Martinez, F., & Sanchez-Meca, J. (2015). Meta-analysis of multiple outcomes: A multilevel approach. *Behavior Research Methods*, 47(4), 1274-1294.
- Van den Noortgate, W., Lopez-Lopez, J.A., Marin-Martinez, F., & Sancez-Meca, J. (2013). Three-level meta-analysis of dependent effect sizes. *Behavior Research Methods*, 45(2), 576-594.

- Van Esch, E., Wei, L., & Chiang, F. (2018). High-performance human resource practices and firm performance: The mediating role of employees' competencies and the moderating role of climate for creativity. *International Journal of Human Resource Management*, 29(10), 1683-1708.
- Viechtbauer, W. (2019). Package 'metafor'. Available online: <http://www.metafor-project.org> <https://github.com/wwiechthb/metafor>. [retrieved on 26<sup>th</sup> May 2019]
- Vlachos, I. (2008). The effect of human resource practices on organizational performance: evidence from Greece. *International Journal of Human Resource Management*, 19(1), 74-97.
- Von Bertalanffy, L. (1968). *General System Theory Foundations, Development, Applications*. New York: Braziller.
- Wall, T.D., Michie, J., Patterson, M., Wood, S.J., Sheehan, M., Clegg, C.W., & West, M. (2004). On the validity of subjective measures of company performance. *Personnel Psychology*, 57, 95-118.
- Washington State Board for Community and Technical College. (2005). *Report on Building Pathways to Success for Low-Skill Adult Students: Lessons for Community College Policy and Practice from a Longitudinal Student Tracking Study*. Available online: <http://ccrc.tc.columbia.edu/publications/low-skilladults-policy.html>. [Retrieved on 13<sup>th</sup> May 2019]
- Wegman, L., Hoffman, B., Carter, N., Twenge, M., & Guenole, N. (2018). Placing job characteristics in context: Cross-temporal meta-analysis of changes in job characteristics since 1975. *Journal of Management*, 44(1), 352-386.
- White, R.E., & Hamermesh, R.G. (1981). Toward a model of business unit performance: An integrative approach. *Academy of Management Review*, 6, 213-223.
- Wood, S., Holman, D., & Stride, C. (2006). Human resource management and performance in UK call centres. *British Journal of Industrial Relations*, 44(1), 99-124.
- Wright, P., Nyberg, A., & Ployhart, R. (2018). A research revolution in SHRM: New challenges and new research directions, In Buckley, R., Wheeler, A., Halbesleben, J. (eds). *Research in Personnel and Human Resource Management*, pp.141-161. Bingley: Emerald Publishing Ltd.
- Wright, P.M., & McMahan, G.C. (2011). Exploring human capital: Putting 'human' back into strategic human resource management. *Human Resource Management Journal*, 21(2), 93-104.
- Wu, N., Bacon, N., & Hoque, J. (2013). The adoption of high-performance work practices in small businesses: The influence of markets, business characteristics and HR expertise. *International Small Business Journal*, 25(8), 1149-1169.
- Zhou, K.Z., & Wu, F. (2010). Technological capability, strategic flexibility, and product innovation. *Strategic Management Journal*, 31(5), 547-561.