Opening the black box of HR practices – performance relationship: testing a three pathways AMO model

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Summary

This study aims to go beyond the classical investigation of the black box of the relationship between HR practices and company performance. A common trend in Strategic Human Resource Management (SHRM) is to develop black box investigations through the Ability – Motivation – Opportunity (AMO) perspective, considering that the company manages employees in a way that gives them the ability and the motivation to perform as well as giving them the opportunity to do so. While this perspective is strongly theoretically developed and has been frequently used in empirical studies, we point out that the AMO model has rarely been fully empirically tested. Given this gap, this study empirically investigates the theoretical AMO model and tests the sequential mediating effects of business unit-level employees’ AMO characteristics and collective human capital in the relationship between HR practices and business unit performance. Based on a survey of 341 employees and their supervisors in 46 business-units, we found a support for a path model linking HR skill-enhancing practices to business unit performance through employees’ ability and collective human capital. Yet, we found no support for the motivation and opportunity paths. Hence, we point out important integrative research perspectives to take black box investigations even further.

Keywords: Ability, Motivation, Opportunity, HR practices, Pathways.

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OPENING THE BLACK BOX OF HR PRACTICES – PERFORMANCE RELATIONSHIP: TESTING A THREE PATHWAYS AMO MODEL

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This study aims to go beyond the classical investigation of the black box of the relationship between HR practices and company performance. A common trend in Strategic Human Resource Management (SHRM) is to develop black box investigations through the Ability – Motivation – Opportunity (AMO) perspective, considering that the company manages employees in a way that gives them the ability and the motivation to perform as well as giving them the opportunity to do so. While this perspective is strongly theoretically developed and has been frequently used in empirical studies, we point out that the AMO model has rarely been fully empirically tested. Given this gap, this study empirically investigates the theoretical AMO model and tests the sequential mediating effects of business unit-level employees’ AMO characteristics and collective human capital in the relationship between HR practices and business unit performance. Based on a survey of 341 employees and their supervisors in 46 business-units, we found a support for a path model linking HR skill-enhancing practices to business unit performance through employees’ ability and collective human capital. Yet, we found no support for the motivation and opportunity paths. Hence, we point out important integrative research perspectives to take black box investigations even further.

Keywords: Ability, Motivation, Opportunity, HR practices, Pathways.

1. Introduction
The question of the role of the variables composing the black box of the HR practices – company performance relationship arose in the early stages of SHRM research. Particularly, employees’ characteristics are commonly recognized today as strategic
levers in this relationship (Piening, Baluch, & Salge, in press; Wright & McMahan, 2011; Wright & Nishii, 2013). There is strong evidence that HR systems “work”, but the literature still suffers from a lack of precise understanding of “how” they work to produce company performance (Messersmith, Patel, Lepak, & Gould-Williams, 2011). Although numerous cumulative analyses of the mediating impact of the black box factors have been recently published, the question of the underlying mechanisms of the relationship between HR practices and performance remains unanswered. Numerous studies have investigated the mechanisms of the black box through various theoretical frameworks at different levels (Aryee, Walumbwa, Seidu, & Otaye, 2013; Blok & Paauwe, 2013; Jiang, Lepak, Hu, & Baer, 2012b; Pececi, Van De Voorde, & Van Veldhoven, 2013). The choice to focus on the role of employees’ characteristics in this relationship is based on the assumption that ‘organizations do not “perform”: it is the individuals who perform in ways that allow the organization to achieve desirable effectiveness and performance outcomes’ (Lepak, Liao, Chung, & Harden, 2006: 230). As attitudes and behaviors are shared among the team members, these characteristics will emerge at the business unit-level as collective human capital and constitute a source of competitive advantage and performance (Nyberg, Moliterno, Hale, & Lepak, in press; Ployhart, Nyberg, Reilly, & Maltarich, in press).

A trend today is to justify the black box opening by drawing on the Ability – Motivation – Opportunity (AMO) theory (Appelbaum, Bailey, & Berg, 2000; Aryee et al., 2013; Gardner, Wright, & Moynihan, 2011; Jiang et al., 2012b). Based on the Resource-Based View (RBV) of the firm, this framework basically considers that HR practices contribute to developing employees’ characteristics – i.e. specifically, knowledge, skills, abilities and other characteristics such as attitudes and behaviors – classified in three domains: abilities (A), motivation (M) and opportunities (O) (Lepak et al., 2006). Several authors thus consider that ‘people perform well when they are able to do so, they have the motivation to do so and their work environment provides the necessary support and avenues for expression’ (Kinnie, Hutchinson, Purcell, & Swart, 2006: 41).

Strategic employees’ characteristics that are needed by the company in order to reach strategic goals can be identified and adequately leveraged through specific HR practices (Wright & McMahan, 2011). Recent studies in SHRM consider HR practices bundles as groups of multiple complementary and coherent HR practices, having a superior explanatory power in influencing employees’ characteristics and company performance (Gardner et al., 2011; Jiang et al., 2012b; Minbaeva, 2012; Subramony, 2009). Mobilizing the AMO theory, these authors showed the differential and positive influence of HR practices bundles that are precisely implemented to impact AMO employees’ characteristics, in terms of skill-enhancing HR practices – i.e. implemented to give abilities to employees to perform the task –, motivation-enhancing HR practices – i.e. implemented to motivate them to do so –, and empowerment-enhancing HR practices – i.e. giving them the opportunity to participate in the company performance. On this basis, as suggested in the AMO framework, we assume that these specific AMO HR practices
bundles are implemented to directly impact specific corresponding employees’ AMO characteristics, resulting in valuable collective human capital and company performance. Nevertheless, while this AMO framework is strongly theoretically developed and has been frequently mobilized in empirical studies for many years (Jiang et al., 2012b), the AMO model has never been fully empirically tested as far as we know (Aryee et al., 2013; Messersmith et al., 2011). Given this gap, the aim of this study is to develop and test a three pathways model in which HR practices influence business unit performance through three underlying mechanisms integrating AMO components and collective human capital.

A first contribution of the present paper is to develop a critical perspective of the fruitful but incomplete works that point out the strengths and weaknesses of previous empirical attempts to open the black box and focus on the studies mobilizing the AMO framework. With that in mind, a second contribution is to fill in this gap and thus to test whether or not a context-specific AMO model is empirically validated. We consider here that there should be at least sequential relationships between AMO HR practices bundles, corresponding AMO individual characteristics, and collective human capital and business-unit performance – i.e. three “classical” AMO pathways (Figure 1). Based on the literature on knowledge-intensive firms (KIFs) and on an exploratory qualitative study, we integrate three contingent AMO employees’ characteristics into the relationship: professional expertise (ability), corporate sense (motivation), and entrepreneurial mindset (opportunity). These components are commonly considered as strategic HR factors in the KIF context.
Fig. 1. Theoretical model

- Skill-enhancing HR practices (employees - T1)
- Motivation-enhancing HR practices (employees - T1)
- Empowerment-fostering HR practices (employees - T1)
- Professional Expertise (employees - T2)
- Corporate Sense (employees - T2)
- Entrepreneurial Mindset (employees - T1)
- Collective Human Capital (managers - T2)
- Business-unit Performance (managers - T2)
The third contribution of this paper is to point out integrative theoretical and empirical research perspectives that go beyond the current trend of “simple” linear analysis of the mediating mechanisms operating in the HR practices – company performance relationship. The goal is here to open research perspectives and capitalize on the cumulative but theoretically heterogeneous knowledge concerning these efforts to open the black box (Jiang, Takeuchi, & Lepak, in press).

2. Black box investigations: identifying some gaps
Several criticisms can be made of the empirical investigations into the black box of the HR practices – company performance relationship. The first criticism regarding the models based on the AMO framework is that various other theoretical frameworks can be relevant to explain the mechanisms operating inside this black box (Peccei et al., 2013). Several studies justify the mediating effect of these mechanisms through social exchange theory (SET) (Blau, 1964), mainly through employee-organization relationships (EOR) mechanisms. Such studies integrate mediating variables such as affective commitment, leader-member exchange or perceptions of organizational support (Gong, Chang, & Cheung, 2010; Gong, Law, Chang, & Xin, 2009; Kuvaas, 2008; Liao, Toya, Lepak, & Hong, 2009). Gardner et al. (2011) used the behavioral perspective as a rationale for the integration of collective affective commitment.

At the macro level, several studies include context variables such as organizational climate or culture in the relationship between HR practices and performance (Aryee, Walumbwa, Seidu, & Otaye, 2012; Gelade & Ivory, 2003). More recently, Aryee et al. (2013) used Vroom (1964)’s motivational framework of performance and introduced human capital and motivation variables in the relationship between a global measure of HR practices and company performance. This perspective corresponds to a truncated test of the AMO mediating factors: authors focus on ability and motivation. Until now, while researchers recognize that there is no overarching theory to explain the underpinning mechanisms of the HR practices – company performance relationship (Blok & Paauwe, 2013), any consideration of the complementarity of these theoretical perspectives for opening the black box has so far been largely neglected. A recent exception to this is proposed by Ehrnrooth and Björkman (2012), who validate an integrative model that includes the AMO framework, signaling effect mechanisms of HR practices (Bowen & Ostroff, 2004) and identity-based control mechanisms (Alvesson & Kärreman, 2007) to explain the relationship between HRM process and HR outcomes. Ehrnrooth and Björkman (2012) found reinforcing effects of these variables and thus showed the complementary of the theoretical frameworks to explain black box mechanisms.

In addition, attempts to open the black box seem to forget the necessity of contingent perspectives to develop and leverage adequate human resources: based on RBV principles, HR systems and human capital components must be aligned with
organizational strategy in order to reach strategic goals (Wright, Dunford, & Snell, 2001; Wright & McMahan, 2011). This trend goes against many fundamental empirical studies analyzing the direct relationship between HR practices and company performance by adopting contingent and configurational analysis perspectives (Delery & Doty, 1996; Jiang et al., 2012a; Lepak & Snell, 1999; Paauwe, Boon, Boselie, & Den Hartog, 2013; Posthuma, Campion, Masimova, & Campion, 2013; Verburg, Den Hartog, & Koopman, 2007). Recent studies include generic measures of human capital, motivation and empowerment climate (Aryee et al., 2012, 2013; Liao et al., 2009; Takeuchi, Lepak, Heli, & Takeuchi, 2007; Youndt & Snell, 2004), and do not take into account the importance of firm-specific individuals’ characteristics needed to develop a competitive advantage through the resource of human capital development. A challenging criticism would thus be that the AMO pathways are only independently empirically validated from a universalistic point of view.

In the same way, authors still generally consider the effect of global and universalistic HR practices scales (Aryee et al., 2013; Lepak & Snell, 2002; Messersmith et al., 2011; Takeuchi et al., 2007). Going beyond the numerous studies that provided wide evidence that global measures of HR practices have a significant impact on individual and organizational performance (Arthur, 1994; Combs, Liu, Hall, & Ketchen, 2006; Delery & Doty, 1996; Huselid, 1995), authors call for a focus on HR practices bundles as a primary unit of analysis (Chadwick, 2010; Gardner et al., 2011; Jiang et al., 2012a; Lepak et al., 2006). They consider that individual HR practices do not function in isolation but work in concert and reinforce their common effects on individuals: employees are exposed to and experience multiple practices simultaneously.

Authors recently analyzed the differential effect of these bundles (Gardner et al., 2011). Posthuma and his colleagues (2013) introduced the concept of equifinality, suggesting that many possible combinations of HR practices can be successfully implemented to reach the same positive outcome. As these HR practices form a coherent bundle, the effect of a specific bundle on individual targets and performance should be greater than the sum of the separate effects of each practice alone. This suggests the existence of multiple specific pathways in the HR practices bundles – company performance relationship (Jiang et al., 2012a): different HR practices bundles can be implemented to specifically influence different individual employees’ characteristics, resulting in organizational performance.

In line with this rationale, several authors proposed classifying HR practices into sub-dimensions according to their effects on employees’ characteristics. Huselid (1995) differentiated HR practices aiming at 1) developing human capital, and 2) motivating employees. Another example is based on the EOR framework (Tsui, Pearce, Porter, & Tripoli, 1997): researchers have argued that HR practices may be categorized as 1) HRM inducement and investments practices, implemented to improve employees’ expected outcomes, and 2) HRM expectation-enhancing practices, reflecting organizations’ expectations of employees’ contributions. This perspective has been adopted in several recent studies (Batt & Colvin, 2011; Gong et al., 2009).
In the same vein, but specifically drawing upon the AMO framework to sub-divide HR systems into coherent bundles, the meta-analysis of Subramony (2009) demonstrated the effect of skill-enhancing, motivation-enhancing and empowerment-fostering HR practices on business outcomes. This author showed that the larger effect of these bundles on outcomes compared to the global HR practices measures. Minbaeva (2012) used the same framework to theoretically explain the impact of these three AMO HR bundles on the micro-foundations of organizational knowledge-based performance. She particularly focused on the need to develop multi-level investigations of the black box in order to precisely understand the underlying mechanisms and boundary conditions of the mechanisms involved. Nevertheless, these studies did not test the effect of any mediating variables in the HR practices bundles – company performance relationship.

Taking this line of thought further, Gardner et al. (2011) proved the differentiated effect of the three AMO HR bundles on collective affective commitment and aggregated turnover. They showed that skill-enhancing HR practices were positively related to voluntary turnover but not mediated by collective affective commitment. Moreover, collective affective commitment independently mediated the negative relationship between motivation-enhancing HR practices and empowerment-fostering HR practices, and aggregated voluntary turnover. The integration of the mediating variable is based on the behavioral perspective, without reference to any AMO components.

Partially filling this gap, several recent studies justify the integration of mediating variables in the HR practices – company performance relationship through the AMO theory, specifically referring to the HR domains (Lepak et al., 2006). Liao et al. (2009) showed the differentiated mediating role of employee human capital – i.e. ability component –, perceived organizational support and psychological empowerment – i.e. considered as forming employees’ motivation – in the relationship between perceived high-performance work system (HPWS) and performance. More recently, Aryee et al. (2013)’s results revealed that the relationship between HPWS and individual-level service quality is mediated by collective human capital (ability) and aggregated service orientation (motivation). More generally, the meta-analysis of Jiang et al. (2012b) is clearly based on the AMO theoretical framework and includes two AMO components in the AMO HR bundles – company performance relationship: human capital (ability) and employee motivation (motivation). Jiang et al. (2012b) showed that skill-enhancing HR practices are more positively related to human capital and less positively related to employees’ motivation than motivation-enhancing and empowerment-fostering HR practices. In addition, they show that the three HR bundles are related to financial outcomes both directly and indirectly by influencing human capital and employee motivation; HR bundles also influence voluntary turnover and operational outcomes in sequence.

In any case, the above-mentioned studies never jointly investigated the mediating effect of variables relating to the three AMO HR domains as such. This gap challenges the empirical validity of the AMO theoretical framework. Authors generally only validated the effects of ability-related and motivation-related employee characteristics (Aryee et al.,
2013; Jiang et al., 2012b). Paradoxically, Jiang et al. (2012b) did not include the empowerment-related factors in their meta-analysis, precisely because this type of variable was not often enough included in the HR practices – company performance relationship in previous studies (Aryee et al., 2012). More recently, Aryee et al. (2013: 3) recognized ‘the importance of opportunity as an important contextual influence on performance’, but preferred to focus on a formal test of Vroom (1964)’s framework in the relationship. They nevertheless tested the role of employees’ psychological empowerment in the HPWS – service performance at both organizational and individual levels in another study based on the same dataset (Aryee et al., 2012).

Hence, as far as we know, existing studies mobilize the AMO framework either to justify the AMO HR bundles, or to justify their choice of the mediating variables, but not both simultaneously (Jiang et al., 2012b). Since the AMO theoretical framework is largely strongly supported in the theoretical literature and seems fashionable in practice, this important gap raises doubts concerning the empirical validity of the AMO model. By specifically questioning this model, this paper aims to test the relevance of the AMO pathways in the HR bundles – company performance relationship on a context-specific perspective.

3. Testing three AMO pathways

Based on the AMO model, AMO HR bundles can directly impact corresponding AMO employees’ characteristics and result in valuable collective human capital and business-unit performance. There are at least three direct sequential relationships in the AMO model. While synergies and interactions could be considered both among HR bundles and among individuals’ characteristics (Jiang et al., 2012b), we focus on the three main theoretical pathways in the AMO HR practices bundles – company performance relationship (Lepak et al., 2006) (Figure 1). As we analyze this relationship on a context-specific perspective (KIFs). AMO components are operationalized as described below.

3.1. Professional expertise, corporate sense and entrepreneurial mindset in KIFs

Knowledge-intensive firms were recently defined as ‘any organizations reliant on a workforce with substantial expertise’ (Von Nordenflycht, 2010: 156). Alvesson (2000: 1101) defines them as companies ‘where most of the work can be said to be of an intellectual nature and where well qualified employees form the major part of the workforce’. Several types of companies can be considered as KIFs: consulting firms, law firms, private banking, private or public research centers, and architecture or engineering offices (Von Nordenflycht, 2010). Knowledge workers are highly qualified, and have generally acquired high professional experience and expertise in the company or in its industrial sector. This high professional expertise is partly based on tacit knowledge that constitutes a valuable resource in the labor market (ability) (Chuang, Jackson, & Jiang, in press). Moreover, because of the high competitive pressure in the knowledge labor market, companies have to attract, develop and retain highly motivated knowledge-
workers. Employees are expected to be highly engaged in their job and develop a strong corporate sense (motivation). Finally, due to the highly complex and specific characteristics of the tasks and the necessity of adapting to specific client solutions, core employees in the KIFs need a broad latitude of action and flexibility if they are to perform adequately (opportunity) (Robertson & O’Malley, 2000). This means they must have the opportunity to manage assigned tasks ‘as if the company was their own company’, as intra-preneurs – i.e. demonstrating an entrepreneurial mindset.

We based the choice of these specific individual AMO components in KIFs through both a literature review and an exploratory case study in the specific context of the KIFs. On this basis, we theoretically develop the three AMO pathways that have not been jointly tested to date.

3.1.1. The ability-related pathway

The skill-enhancing HR practices bundle is a combination of HR practices primarily related to staffing and training. These practices focus on increasing employees’ knowledge, ability, and skill levels at the individual and collective levels (Subramony, 2009). The positive mediating role of human capital in the relationship between a global measure of HR practices (Liao et al., 2009) and company performance (Crook, Combs, Todd, Woehr, & Ketchen, 2011) has often been validated, both at the individual level and collective level (Aryee et al., 2013; Takeuchi et al., 2007; Youndt, Subramaniam, & Snell, 2004). Nevertheless, as described above, the relationship between skill-enhancing HR bundle and human capital has rarely been tested.

In this paper, we consider employees’ professional expertise as an ability-related variable. This characteristic is obtained through the acquisition of knowledge, skills, abilities, and other characteristics, through skill-enhancing HR practices (De Vos, De Hauw, & Van der Heijden, 2011: 438). Professional expertise is a prerequisite for positive outcomes from both individual and company perspectives, and corresponds to a high degree of knowledge, skills and abilities (KSAs) in a particular professional domain (Van Der Heijden & Van Der Heijden, 2006).

As predicted at the group level by the Attraction – Selection – Attrition model (Schneider, Goldstein, & Smith, 1995), ‘selective staffing practices are likely to lead to the hiring of workers who possess desired KSAs, and job-related training is likely to enhance these KSAs, in addition to providing the socialization necessary for integration into the organization’ (Subramony, 2009: 750). From this point of view, we assume that at the group-level, professional expertise positively relates to collective human capital and business-unit performance. We thus argue that skill-enhancing HR practices will result in the ability to acquire task-related skills, knowledge and abilities necessary for high levels of collective human capital and business-unit performance. As a consequence, we assume that:
Hypothesis 1: Group-level professional expertise and collective human capital will sequentially mediate the relationship between skill-enhancing HR practices and business-unit performance.

3.1.2. The motivation-related pathway

The motivation-enhancing HR practices bundle fosters employees’ direct efforts toward the accomplishment of job objectives and provides them with the inducements necessary to deliver high levels of performance (Kinnie et al., 2006; Subramony, 2009). As introduced by Huselid (1995), this bundle mainly comprises practices such as performance appraisals and feedback processes that are generally linked to incentive compensation systems, the use of internal promotion and mobility systems and other forms of incentives intended to align the interest of employees with those of the company. Motivation-enhancing HR practices thus aim to adequately leverage the employees’ KSAs acquired, developed and retained, which employees do not automatically make available to the company. Following Ployhart and Moliterno (2011), KSAs can be viewed as the “can do” (capacity - ability) components, reflecting the cognitive form of human resources. However, employees’ capacity may have no value for the company without the “will do” (willingness - motivation) component, reflecting the non-cognitive form of human resources that energizes employees to engage in behaviors that facilitate effective task performance. Moreover, because it fosters the mobilization of KSAs, we can thus assume that a motivational variable such as corporate sense relates positively to collective human capital.

In these terms, employees’ group-level corporate sense consists of employees’ attitudes as members of a team, identifying themselves with corporate goals and accepting collective responsibility for the decision-making process (Van Der Heijden & Van Der Heijden, 2006: 455). Corporate sense extends organizational citizenship behaviors to extra-role performance in different workgroups. An organizational citizenship behavior (OCB) is defined as ‘an individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and that in aggregate promotes the effective functioning of the organization’ (Organ, 1988: 4). In other words, corporate sense can be an antecedent of various positive employee behaviors leading them to reach organizational objectives (Gong et al., 2010). In these terms, intrinsic and extrinsic motivation at work leads to desired work behaviors and discretionary efforts, and contributes to organizational outcomes (Deci, Connell, & Ryan, 1989). Numerous studies have validated the mediating impact of corporate sense in the HR practices – organizational performance relationship (Messersmith et al., 2011; Sun, Aryee, & Law, 2007). We thus argue that corporate sense has a positive mediating role in the motivation pathway:
Hypothesis 2: Group-level corporate sense and collective human capital will sequentially mediate the positive relationship between motivation-enhancing HR practices and business-unit performance.

3.1.3. The opportunity-related pathway

The empowerment-fostering HR practices bundle comprises HR practices that aim to delegate decision-making authority and responsibility down the hierarchy through collaborative work practices and the use of self-managing or autonomous teams. These practices also contribute to facilitate employees’ participation and voice using upward feedback mechanisms (Gardner et al., 2011; Subramony, 2009). This bundle consequently fosters creativity and entrepreneurship through practices encouraging autonomous individual task management. These practices also aim to valorize problem-solving initiatives and general flexibility, volunteer initiatives, creativity in job organization and new product or services development (Amabile, Conti, Coon, Lazenby, & Herron, 1996).

In these terms, Aryee et al. (2013) underline the fact that the deployment of human resources is likely to be more than simply motivating employees to make available their human capital: as knowledge brokers, individuals should be empowered to think out of the box, to diagnose problems, to think creatively, and to develop innovative solutions to perform highly complex tasks, reach objectives and thus lead the company to continuously remain competitive. In order to do this, individuals need autonomy and management support of their actions in a favorable empowerment climate (Aryee et al., 2012). As such, we consider entrepreneurial mindset as an indicator of this proactive spirit. It is defined as a behavior syndrome resulting in individuals taking an active and self-starting approach to work and going beyond what is formally required in a given job (Frese, Kring, Soose, & Zempel, 1996). As entrepreneurial mindset is a non-cognitive individual characteristic based on a personality trait, ‘it exert a lifelong impact on the types of situations and experiences one chooses to engage in and the kinds of social relationships one develops and maintains’ (Ployhart & Moliterno, 2011: 133) and could be considered as more stable than ability and motivation-related characteristics.

At the group-level, since empowerment-fostering HR practices are implemented to impact employees’ power to perform and give them the opportunity to participate, this HR bundle should contribute to develop individuals’ entrepreneurial mindset. As shared among the group members as a kind of facilitator of human capital leveraging – e.g. through the collaborative development of innovative solutions – entrepreneurial mindset will positively impact collective human capital (Ployhart et al., 2013). In the same way, as these behaviors are designed to adequately and efficiently reach specific goals, we suggest that employees’ entrepreneurial mindset plays a decisive role in the relationship between empowerment-fostering HR practices and perceived business-unit performance.

On this basis our third hypothesis states that:
Hypothesis 3: Group-level entrepreneurial mindset and collective human capital will sequentially mediate the positive relationship between empowerment-fostering HR practices and business-unit performance.

4. Methods

4.1. Context, sample and procedure

This study was conducted in the specific context of Knowledge-intensive firms in Luxembourg between November 2011 and June 2012. As a part of a larger research project, the data collection process was carried out in two waves with a four-month interval and two measure levels: the business-unit (BU) level (group or collective level) and employees’ level (individual level). All the selected companies employed more than 100 individuals, distributed in at least 5 BU. Nine companies accepted to take part in the research and supported the online survey. Two types of profiles were invited to answer the survey: BU managers, and their respective subordinates (BU members). We consider a business-unit as a group of individuals, defined as “a collective of individuals interacting through meetings, training, and interdependent work, shared goals, all within a larger setting” (Chan, 1998: 235).

A sample of 98 BU managers and 1530 BU members were contacted via e-mail and asked to participate in an online survey on a voluntary basis. At Time 1, 69 BU managers and 764 employees completed online surveys, with a 49.9% response rate. BU members answered survey items regarding their perceptions of HR practices bundles and their entrepreneurial mindset (Time 1). We contacted participants 4 months later for the second wave of data collection. From the 69 BU managers and 764 BU members who responded at Time 1, 61 BU managers and 457 BU members fully completed the Time 2 survey, yielding a response rate of respectively 87% and 59.8%. The Time 2 survey captured collective human capital and perception of business-unit performance for the BU managers, and professional expertise and corporate sense for BU members. We decided not to measure all the individuals’ characteristics at the same time to make sure each questionnaire took a similar time to complete and to reduce common method variance (Podsakoff, MacKenzie, & Podsakoff, 2012). We only kept data of individuals whose BU managers answered both T1 and T2 surveys, resulting in a sample of 387 BU members. Among these 61 BU, we excluded 13 BU that were too small (< 3), and 1 BU including outliers, in line with recent recommendations of Aguinis, Gottfredson and Joo (2013). Moreover, in accordance with thresholds generally recognized for measures for multilevel analysis (Bliwise, 2000), we excluded 1 BU from the sample due to low agreement among employees’ responses.

The final sample for this study thus consisted of 341 BU members working in 46 BU including 4 to 17 members, with an average of 8.08 (SD = 3.70). Employee respondents were 75.5% male; 2.6% were under 25 years old, 15.9% were 25 to 29, 23.5% were 30 to 34, 21.7% were 35 to 39, 14.9% were 40 to 44, 11.7% were 45 to 49, 4.0% were 50 to 54, 4.4% were 55 to 59, and 1.3% were over 60 years old; the mean number of training years
was 4.37 years; lastly, 25.6% had under 2 years of tenure, 27% had 2 to 5 years, 18.8% had 5 to 10 years, 17.3% had 10 to 15 years, and 10.4% had over 15 years’ service.

4.2. Attrition bias
To examine possible non-random sampling effects of attrition among participants, we followed the procedure recommended by Goodman and Blum (1996) and performed a logistic regression analysis. The criterion was a dummy-coded variable classifying respondents as stayers who were present at Time 1 and 2, or leavers who responded at Time 1 but had left at Time 2. The predictors were all Time 1 independent variables: the three HR practices bundles and entrepreneurial mindset. Some non-random sampling was observed: $\chi^2 (8) = 20.007, p = .010$. The results slightly revealed that only individuals’ seniority in the company related significantly to staying in or leaving the sample ($\text{Exp}(B) = 1.046, p < .043$): the longer participants had worked in the company, the more they were likely to opt out at Time 2. However, the percentage of respondents working in the companies for more than 15 years was quite low 10.4%. T-tests and $\chi^2$ tests showed that employees who responded at Times 1 and 2 did not differ from employees who responded only at Time 1 regarding HR practices bundles and entrepreneurial mindset. Hence, there was little evidence that loss of observations due to attrition would bias the results.

4.3. Measures
The online survey was in English, as this is the main working language in Luxembourg. Unless otherwise noted, we used a six-point Likert scale (1 = Totally disagree to 6 = Totally agree).

**Individual-level measures.** Skill-enhancing HR practices, motivation-enhancing HR practices, empowerment-fostering HR practices, and employees’ AMO characteristics were measured at the employee’s level, and aggregated to be analyzed at group level.

*Skill-enhancing practices* were measured at Time 1 through an eleven-item scale, mainly based on that of Takeuchi et al. (2007) and supplemented with items from Lepak and Snell (2002) and Gardner et al. (2011). A sample item was: ‘In my business unit, training programs emphasize “on the job experience”’. The reliability Cronbach alpha ($\alpha$) was .93.

*Motivation-enhancing HR practices* were measured at Time 1 through a nine-item scale and largely based on the measure of Takeuchi et al. (2007) and supplemented with items by Lepak and Snell (2002) and Gardner et al. (2011). A sample item was: ‘In my business unit, employees have the opportunity to earn group bonuses (or commissions) for productivity or other group-performance outcome’, ($\alpha = .85$).

*Empowerment-fostering HR practices* were measured at Time 1 through a sixteen-item scale mainly based on the measure of Gardner et al. (2011), and supplemented with items from Lepak and Snell (2002) and Takeuchi et al. (2007). A sample item was: ‘In my business unit, employees are empowered to make decisions’, ($\alpha = .89$).
Individuals’ AMO characteristics were evaluated at Time 1 and Time 2. The measures of these components were as follows:

- **Professional expertise** was measured at Time 2 by a fifteen-item scale from the employability scale developed by Van Der Heijden and Van Der Heijden (2006). A sample item was: ‘I am confident in my capacities within my expertise area’, \((\alpha = .94)\).

- **Corporate sense** was measured by a seven-item scale, based on the same employability scale (Van Der Heijden & Van Der Heijden, 2006). A sample item was: ‘I am involved in achieving my company's mission’, \((\alpha = .83)\).

- **Entrepreneurial mindset** was measured by fourteen items adapted from the personal initiative scale developed by Frese et al. (1996). Sample items were: ‘I can make suggestions on how to improve the work process’, \((\alpha = .87)\).

**Business unit-level measures.** Collective human capital and business-unit performance were directly assessed by the BU managers regarding their business unit.

Collective human capital was measured using a five-item scale inspired by Subramaniam and Younct (2005) and Younct, Subramaniam and Snell (2004). A sample item was: ‘Employees working in our business unit develop new ideas and knowledge’, \((\alpha = .77)\).

**Business-unit performance.** We used nine items from the perceived organizational performance measure developed by Delaney and Huselid (1996). Based on 5-point scale (1 = worse, 5 = much better), a sample item was: ‘Compared to other business units that do similar work, how do you think your business unit performs concerning quality of products and services’, \((\alpha = .89)\).

**Controls.** To minimize omitted-variable bias, we included aggregated BU-level control variables. We controlled for average tenure in the business unit and average number of training years.

### 4.4. Aggregation Tests

The hypotheses were tested at the business unit-level perspective. Consistent with prior research (Aryee et al., 2013; Batt, 2002; Gardner et al., 2011; Lepak & Snell, 2002), HR practices bundles, professional expertise, corporate sense, and entrepreneurial mindset were measured at the individual level mainly using the ‘direct consensus model’ (Chan, 1998), and were introduced at BU levels of analysis. Several indexes were computed to determine whether creating aggregate scores of group-level HR practices bundles and group-level employees’ characteristics from individual-level data was empirically justifiable. First, we calculated \(rWG(J)\) scores as a measure of agreement within business units (James, Demaree, & Wolf, 1984) and obtained the following average values: .87 for BU skill-enhancing HR practices; .81 for BU motivation-enhancing HR practices; .92 for BU empowerment-fostering HR practices; .98 for professional expertise; .88 for corporate sense; and .91 for entrepreneurial mindset. These values exceed conventional standards \((rWG(J) > .70)\) and are supportive of aggregation (Bliese, 2000; James et al., 1984). In addition, we assessed between-unit variance and unit mean reliability by
estimating the ICC(1) and ICC(2) coefficients as recommended by Bliese (2000). The values were ICC(1) = .16, ICC(2) = .61 for BU skill-enhancing HR practices; ICC(1) = .14, ICC(2) = .58 for motivation-enhancing HR practices; ICC(1) = .11, ICC(2) = .50 for empowerment-fostering HR practices; ICC(1) = .07, ICC(2) = .39 for professional expertise; ICC(1) = .05, ICC(2) = .32 for corporate sense; ICC(1) = .08, ICC(2) = .42 for entrepreneurial mindset. The ICC1 values suggest that group membership accounted for a high proportion of the variance in individual responses, particularly regarding perceptions of HR practices bundles. ICC2 values indicate that the branch means were stable (Bliese, 2000). Although the values of ICC(1) and ICC(2) were low for the aggregated employees’ characteristics (AMO components), they were nearly comparable with estimates reported in previous studies (Liu & Batt, 2010), and the rWG(J) scores supported their aggregation. These low rates could also be explained by the fact that these variables depend on the individual’s differences and background, as formed before their integration in the group. Nevertheless, taken together, these results provide empirical support for aggregating and analyzing these mediating variables at the branch level (LeBreton & Senter, 2008).

4.5. Analytical strategy

We ran several multiple hierarchical regression analyses using data aggregated at the BU-level. As the main objective of this contribution is to test three sequential pathways – i.e. including two mediating variables – in the HR practices bundles – company performance relationship, the commonly used mediation test of Baron and Kenny (1986) was not suitable. To overcome this limitation, we followed Preacher and Hayes’s (Hayes, 2013; Preacher & Hayes, 2008) recent recommendations for testing multiple mediation and used a bootstrapping approach (Hayes’s PROCESS macro). The same routine was repeated for each AMO pathway.

5. Results

Table 1 presents the means, standard deviations, and inter-correlations of the study variables at group level.
Table 1. Descriptive statistics, internal consistency reliabilities, and correlations.

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>1</th>
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<tbody>
<tr>
<td>Controls</td>
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<td>1. Average number of training years</td>
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<tr>
<td>2. Average tenure in the BU</td>
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<td>-.13</td>
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<tr>
<td>HR practices bundles</td>
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<tr>
<td>3. Skill-enhancing HRP</td>
<td>3.82</td>
<td>.50</td>
<td>.04</td>
<td>-.41*</td>
<td>(.93)</td>
<td></td>
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<tr>
<td>4. Motivation-enhancing HRP</td>
<td>3.07</td>
<td>.51</td>
<td>-.02</td>
<td>-.29*</td>
<td>.68**</td>
<td>(.85)</td>
<td></td>
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<tr>
<td>5. Empowerment-enhancing HRP</td>
<td>3.72</td>
<td>.57</td>
<td>.07</td>
<td>-.23</td>
<td>.77**</td>
<td>.69**</td>
<td>(.89)</td>
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<td>Individuals’ characteristics</td>
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<tr>
<td>6. Professional expertise</td>
<td>4.95</td>
<td>.27</td>
<td>-.21</td>
<td>.01</td>
<td>.28</td>
<td>.24</td>
<td>.21</td>
<td>(.94)</td>
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<tr>
<td>7. Corporate sense</td>
<td>4.24</td>
<td>.35</td>
<td>.12</td>
<td>-.19</td>
<td>.32*</td>
<td>.42**</td>
<td>.37**</td>
<td>.31*</td>
<td>(.83)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Entrepreneurial mindset</td>
<td>3.32</td>
<td>.53</td>
<td>-.19</td>
<td>-.13</td>
<td>.26*</td>
<td>.38**</td>
<td>.06</td>
<td>.10</td>
<td>.17</td>
<td>(.87)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Collective human capital</td>
<td>4.61</td>
<td>.57</td>
<td>.01</td>
<td>-.19</td>
<td>.20</td>
<td>.13</td>
<td>.14</td>
<td>.43**</td>
<td>.16</td>
<td>.07</td>
<td>(.77)</td>
<td></td>
</tr>
<tr>
<td>10. BU performance</td>
<td>4.04</td>
<td>.79</td>
<td>-.29*</td>
<td>-.23</td>
<td>.41**</td>
<td>.51**</td>
<td>.38**</td>
<td>.29*</td>
<td>0.13</td>
<td>.27</td>
<td>.50**</td>
<td>(.89)</td>
</tr>
</tbody>
</table>

*Note. N= 46. * p < .05; ** p < .01 (two-tailed tests). Numbers into brackets represent coefficient alpha (internal consistency) reliability. Individuals’ characteristics were aggregated at the group level. HRP = HR practices
5.1. Measurement model

To assess the constructs’ validity, we conducted a series of confirmatory factor analyses (CFA), using Mplus 7.0, that included all the study’s constructs. The model with eight factors (skill-enhancing HR practices bundle, motivation-enhancing HR practices bundle, empowerment-fostering HR practices bundle, professional expertise, personal flexibility, corporate sense, entrepreneurial mindset, collective human capital, and BU performance) loading separately fits the data well ($\chi^2 [402] = 854.46, p < .001; \text{CFI} = .93; \text{RMSEA} = .055; \text{SRMR} = .054$). The fit of this model compared favorably with the fit of more parsimonious potential alternative models: seven-factor models (for example, collapsing for example collective human capital and perceived BU performance: $\Delta \chi^2 [7] = 301.79, p < .01$ or collapsing skill-enhancing and motivation-enhancing HR practices bundles: $\Delta \chi^2 [7] = 199.59, p < .01$), six-factor models (for example, collapsing professional expertise, corporate sense, and entrepreneurial mindset: $\Delta \chi^2 [13] = 932.72, p < .01$; or merging skill-enhancing, motivation-enhancing, and empowerment-enhancing HR practices bundles: $\Delta \chi^2 [13] = 275.60, p < .01$), a five-factor model (collapsing collective human capital, professional expertise, corporate sense, and entrepreneurial mindset: $\Delta \chi^2 [18] = 1568.72, p < .01$), and a one-factor model ($\Delta \chi^2 [28] = 2887.15, p < .01$). These CFAs demonstrate the convergent and discriminant validity of constructs, and provide a satisfactory basis to test our model.

5.2. Hypothesis testing

To test the three AMO pathways, we ran a series of multiple mediation regressions using a bootstrapping approach with the PROCESS macro (Hayes, 2013). The bootstrap approach avoids statistical power problems caused by the normality assumption of the Sobel test. The output provides 95% bias corrected bootstrap confidence interval (Lower Limit Confidence Interval – LLCI, Upper Limit Confidence Interval – ULCI) that should not include zero in order to be significant (Number of bootstrap samples = 5000). We analyzed the effects of an independent variable – i.e. skill-enhancing, motivation-enhancing, and empowerment-fostering – on a dependent variable – i.e. BU performance – through the indirect effect of employees’ characteristics – i.e. professional expertise, corporate sense, and entrepreneurial mindset – and collective human capital.

Hypothesis 1 suggested that skill-enhancing HR practices would impact BU performance through the effect of professional expertise and collective human capital (ability-related pathway). As shown in Table 2, the indirect effect of these two sequential mediating variables (professional expertise and collective human capital) was positive and significant: (indirect effect = .09; LLCI = .006 and ULCI = .30). The impact of skill-enhancing HR practices on professional expertise was significant (.15; p < .05); the impact of professional expertise on collective human capital was also significant (.88; p < .01); moreover, the relationship between collective human capital and BU performance was significant (.64; p < .01). Results show that the direct effect of skill-enhancing HR
practices on collective human capital was not significant (.08; ns.); however, the impact of skill-enhancing HR practices on BU performance remained significant (.53; p < .05). Results also show a significant total effect of skill-enhancing HR practices on BU performance (c = .59, p < .01; LLCI = .13 and ULCI = 1.04), with R² = .27 (F (3, 42) = 5.44, p < .01). Overall, this yields support for Hypothesis 1.
Table 2. Direct, indirect and total effects of HR practices on BU performance

<table>
<thead>
<tr>
<th></th>
<th>Professional expertise</th>
<th>Collective human capital</th>
<th>BU performance</th>
<th>Bootstrapping BCa 95% CI (effect of HRP on BU performance)</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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<td>Lower Limit</td>
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<tr>
<td><strong>Skill-enhancing HRP</strong></td>
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</tr>
<tr>
<td>DIRECT EFFECT</td>
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<td></td>
<td></td>
<td><strong>0.15</strong>*</td>
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<tr>
<td>INDIRECT EFFECT</td>
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<td></td>
<td></td>
<td>0.09*</td>
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<tr>
<td>TOTAL EFFECT</td>
<td></td>
<td></td>
<td></td>
<td><strong>0.59</strong>***</td>
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<tr>
<td>$R^2$</td>
<td></td>
<td></td>
<td></td>
<td>0.27</td>
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</tbody>
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<table>
<thead>
<tr>
<th></th>
<th>Corporate sense</th>
<th>Collective human capital</th>
<th>BU performance</th>
<th>Bootstrapping BCa 95% CI (effect of HRP on BU performance)</th>
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<td></td>
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<td>Lower Limit</td>
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<tr>
<td><strong>Motivation-enhancing HRP</strong></td>
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<tr>
<td>DIRECT EFFECT</td>
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<td></td>
<td><strong>0.28</strong>***</td>
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<tr>
<td>INDIRECT EFFECT</td>
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<td></td>
<td></td>
<td>0.04</td>
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<tr>
<td>TOTAL EFFECT</td>
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<td></td>
<td></td>
<td><strong>0.73</strong>***</td>
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<tr>
<td>$R^2$</td>
<td></td>
<td></td>
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<td>0.35</td>
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<table>
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<tr>
<th></th>
<th>Entrepreneurial mindset</th>
<th>Collective human capital</th>
<th>BU performance</th>
<th>Bootstrapping BCa 95% CI (effect of HRP on BU performance)</th>
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<tr>
<td></td>
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<td>Lower Limit</td>
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<tr>
<td><strong>Empowerment-fostering HRP</strong></td>
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<td></td>
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<tr>
<td>DIRECT EFFECT</td>
<td>0.05</td>
<td>0.14</td>
<td><strong>0.43</strong>*</td>
<td>0.10</td>
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<tr>
<td>INDIRECT EFFECT</td>
<td></td>
<td></td>
<td>0.01</td>
<td>-0.02</td>
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<tr>
<td>TOTAL EFFECT</td>
<td></td>
<td></td>
<td><strong>0.49</strong>*</td>
<td>0.12</td>
</tr>
<tr>
<td>$R^2$</td>
<td></td>
<td></td>
<td></td>
<td>0.26</td>
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</tbody>
</table>
Hypothesis 2 related to the motivation-related pathway, and suggested that motivation-enhancing HR practices impact BU performance through the combined sequential indirect effect of corporate sense and collective human capital. As shown in Table 2, the indirect effect was not significant: indirect effect = .04, ns. (LLCI = -.05 and ULCI = .17). Indeed, results show a significant effect of motivation-enhancing HR practices on both corporate sense (.28; p < .01) and BU performance (.75; p < .01); however, the relationship between corporate sense and collective human capital was not significant (.09; ns.). Finally, the total effect of motivation-enhancing HR practices on BU performance was significant (c = .73, p < .01; LLCI = .32 and ULCI = 1.14), with \( R^2 = .35 \) (F (3, 42) = 7.83, p < .01). Overall, Hypothesis 2 was not supported.

Finally, Hypothesis 3 assumed the opportunity-related pathway, suggesting that empowerment-fostering HR practices would impact BU performance through the sequential mediating effects of entrepreneurial mindset and collective human capital. Results show no indirect effect of both mediating variables, and no direct effects of empowerment-fostering HR practices on entrepreneurial mindset and collective human capital (Table 2). Nevertheless, there was a positive direct effect of empowerment-fostering HR practices on BU performance (.49; p < .05). Hypothesis 3 was not supported. In sum, the effects of the three HR practices bundles on business-unit performance were different. The three AMO pathways assumptions received little support in this model.

6. Discussion

Questioning the empirical validity of the AMO model, this study contributes to SHRM scholarship by proposing to unlock the black box of the HR practices bundles – business-unit performance relationship (Ehrnrooth & Björkman, 2012; Jiang et al., 2012b). In the specific context of the KIFs and using a longitudinal perspective, this study intended to apprehend the existence of three AMO pathways in the classical SHRM relationship, assuming that the three HR practices bundles would impact BU performance through the specific indirect effect of respectively professional expertise, corporate sense, and entrepreneurial mindset, and collective human capital.

6.1. Theoretical contributions and limitations

The results proved the existence of only one of the three assumed AMO pathways. This is nonetheless a first contribution of this paper, demonstrating that the implementation of ability-enhancing HR practices leads to positively leverage group-level professional expertise and collective human capital leading to business-unit performance. This is in line with several recent studies investigating the effect of ability variables and collective human capital in the relationship (Aryee et al., in press; Bos-Nehles, van Riemsdijk, & Looise, 2013; Jiang et al., 2012b; Takeuchi et al., 2007). This appears to mean that
professional expertise is a particularly strategic component that must be leveraged at the collective level in the KIFs context. ‘Motivation and opportunity cannot directly influence performance without the necessary skills and knowledge to implement the HRM practices on the work floor. Ability is therefore a prerequisite for performance to occur. Motivation and opportunity are also essential, but only after sufficient ability is ensured’ (Bos-Nehles et al., 2013: 864).

As a second contribution, results showed a positive direct impact of the three HR practices bundles on BU performance, as has been traditionally assumed and proved in numerous studies (Combs et al., 2006; Gardner et al., 2011; Huselid, 1995; Jiang et al., 2012b). The fact that the collective human capital and BU performance were assessed by supervisors brings a more objective perspective to the relationship reinforcing the relevance of the results.

Another contribution of this paper is to partially demonstrate the relevance of HR bundles: these encourage positive attitudes and behaviors and the development of valuable collective human capital. Organizations can thus obtain substantial benefits from investing in the three HR bundles and target strategic HR dimensions (Jiang et al., 2012b). Managers should thus make explicit the varied and sequential effects expected from these practices in terms of a strategic selection and development of employees’ characteristics, and of specific attitudes and behaviors required for the company to reach its objectives. Nevertheless, assessing the three linear AMO pathways, we did not apprehend any interactions or synergies existing among the three HR practices bundles, as assumed in the classical model (Appelbaum et al., 2000). A complete test of the model may reinforce the assumed relationships: this approach could underline the fact that HR bundles influence several AMO components, but more positively impact the individual characteristics that they are assumed to foster, as demonstrated by Jiang et al. (2012b) for the ability and motivation-related components.

An important limitation of the model resides in the choice of the context-specific mediating variables; they may be theoretically too specific compared to those in other studies that have adopted a more universalistic perspective of analysis. On another hand, the absence of relationship could be coherent with the specific KIFs context that we deeply apprehended in the framework of an exploratory case study to build our model. Indeed, we noted that the structure and values of a majority of the participating companies – i.e. with low hierarchical structure and high reactivity constraints for example – consider entrepreneurial mindset as a basic core employee characteristic. As a consequence, employees do not have to claim opportunity to participate: they have to. In these terms, the AMO model would not be applicable in this context: it is interesting to note that the seminal theoretical background on which the framework was developed in the context of the manufacturing industry (steel, apparel, medical electronic instruments and imaging industry) (Appelbaum et al., 2000). In any case, the results of this study in the specific context of KIFs may be not generalizable. A future research avenue would be to test the three AMO pathways model in other contexts.
Moreover, the fact that the mediating effect of AMO employees’ characteristics is apprehended at the group level is not in line with recent multi-level perspectives of analysis. These recent works consider that HR practices impact employees at the individual level: individuals perceive these HR practices, moderate their reactions, and individually behave and adopt positive or negative attitudes; this in turn leads them to perform and contribute to the company’s success (Nyberg et al., in press; Ployhart & Moliterno, 2011; Wright & Nishii, 2013). Nevertheless, due to the variety of independent theoretical frameworks, black box mechanisms are apprehended at various levels (Blok & Paauwe, 2013), but mainly at a single-level perspective – i.e. either at the organizational level (often based on aggregated individual measures) or at the individual level. In this study, the aggregation of individual variables reduced their variances, probably limiting the chance to get significant results.

From a methodological point of view, while HR practices bundles were measured at Time 1 and business-unit performance was measured at Time 2 consistent with prior suggestions (Wright, Gardner, Moynihan, & Allen, 2005), employees’ AMO characteristics were measured at Time 1 (entrepreneurial mindset) and at Time 2 (professional expertise and corporate sense). This lag is not theoretically justified, and may induce a bias in the analysis. A future research would be to take the lagged effect of the HR bundles and employees’ AMO characteristics into account and to measure the variables in three waves: HR practices at Time 1, employees’ AMO characteristics at Time 2, and performance variables at Time 3. Another methodological limitation resides in the fact that we could not use objective performance indicators, due to the diversity of business units investigated. A future research avenue would be to compare the impact of HR practices bundles on various proximal and distal indicators (Jiang et al., in press).

The lack of significant relationships may challenge the empirical validity of the AMO theory. A contribution of this paper is also to propose theoretical and empirical research perspectives to better explain the mechanisms underpinning the black box of the HR practices – company performance relationship, proposing non-exhaustive paths of evolution of the field.

**6.2. Integrative research perspectives for unravelling the black box mechanisms**

Drawing on an interactive perspective, synergies may exist among AMO employees’ characteristics (Bos-Nehles et al., 2013; McMahar & Harris, 2013). As theoretically suggested by Ployhart and Moliterno (2011), individual human capital dimensions may emerge under certain conditions as valuable collective human capital constituting a competitive advantage for the company. These kinds of synergies or interactions should be explored and tested, in order to go beyond the investigation of linear pathways, as suggested recently by Ployhart et al. (in press). In this line of thinking, one concern of AMO empirical tests is that they generally consider a simple juxtaposition of the AMO employees’ characteristics, while some of these factors could reinforce other factors and be antecedents, consequences, or boundary conditions of others inside the black box.
Opening the black box of HR practices – performance relationship

(Aryee et al., 2012). For instance, Ehnrooth et al. (2012) propose a new perspective of the model, and consider that HR practices directly influence employees’ motivation, which contributes to the development of employees’ ability and opportunity to participate. Bos-Nehles et al. (2013) found a significant interaction effect between ability and opportunity in predicting HRM performance.

The mobilization of the AMO framework seems also to be too restrictive to completely explain the underpinning mechanisms of the black box of the relationship. Other theoretical frameworks could also be used to unravel these mechanisms at different levels (Blok & Paauwe, 2013; Ehrnrooth & Björkman, 2012). We think that the AMO perspective can be considered as the basis of a meso-level model – i.e. based on the RBV principles – (Blok & Paauwe, 2013): the effect of AMO components can be considered at both individual and organizational levels. The model can nevertheless be reinforced through other mediating and moderating mechanisms. For example, the attitudinal and behavioral mechanisms developed in social exchange theory (SET) (Blau, 1964) could lead to better explain the impact of HR practices on human resources and foster the employees’ ability, motivation and opportunity to perform. Several studies have shown that good quality employee-organization relationships encourage the mobilization of employees’ human capital and their motivation to reach objectives taking adequate initiatives (Gong et al., 2010; Kuvaas, 2008; Liao et al., 2009). In this perspective, social exchange quality would be considered as a boundary condition – i.e. as a moderating factor – for the development of valuable human resources (Ployhart & Moliterno, 2011). A future research perspective could thus consider the effect of moderating factors such as leader- or team-member exchange (Liao et al., 2009), affective commitment (Gardner et al., 2011; Gong et al., 2009) in the AMO pathways.

At a micro-level, Ehnrooth (2012) included identity-based control mechanisms as components of the black box. These mechanisms ‘affect the employees’ motivation to perform through the social construction of their identities’ (2012: 1113): the identity-based motivational effects refer to ‘the fusion of self-identity, the struggle to maintain and improve skills, the prospect of realizing objectives and get instrumental rewards, and desire to comply with and live up to a specific normative order’ (Alvesson & Kärreman, 2007: 720). Each employee will react to HR practices according to his/her own personal background and personal career goals. On this perspective, identity mechanisms determine employees’ individual reactions in the framework of their social exchanges in the company.

The quality of social exchanges is also fostered through employees’ adequate perception of the implemented HR practices, since these HR practices signal the company’s expectations in terms of performance (Bowen & Ostroff, 2004). Ehnrooth et al. (2012) found a reinforcing impact of this signaling effect on employees’ motivation; it led them to adequately mobilize their abilities and gave them the opportunity to adequately contribute to the company’s performance. Results demonstrate the importance of the strength of the HR system – i.e. the global coherence of the HR system in terms of the relevance, intensity and validity of HRM content (Bowen & Ostroff, 2004). Previous
studies have taken into account the simple implementation of these HR practices, without specifying the strength factor (Jiang et al., 2012a). Den Hartog et al. (in press) recently demonstrated the importance of good managerial communication on employees’ perceptions of HR practices and on employee-related outcomes. The importance of these perceptions is also underlined in Boswell (2006: 1489)’s works concerning employees’ line of sight – i.e. employees’ understanding of the organization’s objectives and how they can contribute to those objectives.

These employees’ perceptions of HR practices are also recognized as impacting the group or organizational climate that encourages employees to perform in the company and to leverage AMO characteristics. In this vein, on a macro-level perspective, recent studies have shown the moderating effect of organizational or empowerment climates on the relationship (Aryee et al., 2012; Van De Voorde, Van Veldhoven, & Paauwe, 2010). These variables are nevertheless too rarely apprehended in the HR practices – company performance relationship (Buller & McEvoy, 2012; Ehrnrooth & Björkman, 2012).

Recent theoretical works define human capital ‘as a unit-level resource that is created from the emergence of individuals’ knowledge, skills, abilities, and other characteristics’ (Ployhart & Moliterno, 2011: 128). This definition implies that human capital – i.e. employees’ characteristics – can only provide a competitive advantage and lead to performance since it emerges at the organizational level. A perspective for future research would be take into account this multilevel emergence process of human capital (Ployhart & Moliterno, 2011): individual’s characteristics emerge at the group-level as human capital resource through the effect of emergence-enabling states – i.e. social links that bind unit members together and foster human capital emergence at the group-level. Corporate sense and entrepreneurial climate would be considered as emergence-enabling states in the relationship: they relate to positive behavioral states, foster the sharing of knowledge and information and support the achievement of objectives. They hence increase individuals’ willingness to remain in and contribute to the team and in the company. The fact that the indirect effect was not validated in two pathways out of three is in line with this: employees’ AMO characteristics do not result in linear manner in a valuable collective human capital resource and business-unit performance.

In sum, while all the above-developed theoretical frameworks are relevant to an integrative test of the AMO theory, it is seems very difficult to take all these underpinning mechanisms jointly into account in a same model due to methodological constraints. The development of this kind of multilevel model nevertheless implies designing more sophisticated datasets and analysis strategies.
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