Enabling the HR function of industrial SMEs through the strategic alignment of e-HRM: A configurational analysis

Abstract

While prior studies have identified various consequences of the assimilation and use of IT-based human resource management systems (e-HRM), this has been done from a universalistic perspective and mostly in large enterprises. Examining this issue instead from a configurational perspective and in the context of small and medium-sized enterprises (SMEs) in the manufacturing sector, we argue that the firm's e-HRM capabilities and high-performance work system (HPWS) capabilities enable its HR function to the extent that these capabilities are strategically aligned. Survey data obtained from 206 industrial SMEs were analysed with the fuzzy set qualitative comparative analysis (fsQCA) method in order to answer the following research question: What configurations of HPWS and e-HRM capabilities are associated to high levels of performance of the HR function? As it allows for *equifinality*, the fsQCA analysis identified five capability configurations that were all associated to high-performance of the HR function. Moreover, as it also allows for *causal asymmetry*, this analysis identified four configurations associated with the absence of high-performance. This research makes theoretical and practical contributions to the strategic IT management and SHRM domains. From a theoretical point of view, this research has shown that a configurational approach is suitable for evaluating the complex interactions between IT and HR in the specific case of SMEs, where there are much less formalization, specialization and staff members than in large enterprises with regard to both the HR and IT functional areas of the organization. Moreover, this research has found that while HPWS alone remain an important determinant of the HR functional performance of industrial SMEs, these firms have reason to

invest in e-HRM when deploying their HPWS capabilities. From a practical point of view, this study highlights that SME owner-managers and other actors such consultants and government agencies should be aware that, in the manufacturing sector, e-HRM has become a necessary component of HR functional performance, insofar as a SME 'aligns' its investments in both its HR and IT resources or, more precisely, develops both its HPWS and e-HRM capabilities in synergistic fashion.

Keywords: HPWS capability; e-HRM capability; strategic IT alignment; strategic human resource management; fsQCA; SME.

1. Introduction

In facing globalization, SMEs in the manufacturing sector have been coping with strategic management challenges for the last twenty-five years, including strategic human resource management (SHRM) challenges (Hornsby and Kuratko, 1990; Marchington, Carroll and Boxall, 2003; Messersmith and Wales, 2011; Patel and Conklin, 2012). Competing for labor in an aging demographic context, and with the emergence of Web 2.0 technology such as social media, these small firms need to attract and develop skilled human resources to remain competitive. This in turn requires them to be more effective in SHRM terms, and especially to adopt and assimilate information technology (IT) to this aim (Bondarouk and Ruël, 2009; Marler and Fisher, 2013; Parry and Tyson, 2011). Thus, various *e-HRM* technologies and applications have been deployed by such organizations in order to enable their SHRM processes and, in so doing, to improve the effectiveness of their HR function (DeSanctis, 1986; Maier, Laumer, Eckhardt and Weitzel, 2013) and allow it to "engage in more significant strategic business roles" (Haines and Lafleur, 2008, p. 525). Understanding the impact of these competitive pressures on HRM in SMEs has thus become

a critical issue, if appropriate solutions are to be provided in this context. We must also question the potential effect of e-HRM technology deployment and use on SMEs' capacity to improve the performance of their HR function so that it becomes a "strategic business partner" and better meet their needs in this regard (Barrett and Oborn, 2013, p. 255).

The present research will thus focus on the e-HRM capabilities of industrial SMEs in conjunction with their *high-performance work system* (HPWS) capabilities, and on the combined effect of these organizational capabilities on the performance of the HR function of these firms. It is situated at the confluence of two research domains. The first domain is e-HRM, which essentially covers the use of IT by an organization to enable its HR function and HR information systems (DeSanctis, 1986; Hussain, Wallace and Cornelius, 2007). This relates to the HRM software used by the HR function's personnel as well as the Internet and Web technologies (e.g. social media) and databases used for strategic HRM purposes. The second research domain is SHRM, which may be defined as determining HR objectives and managing HR as a function of attaining the organization's strategic objectives and improving its competitive position (Kroon, Van De Voorde and Timmers, 2013; Pascual Ivars and Comeche Martínez, 2015). Now, firms enact their strategic management of HR by developing and deploying HPWS, that is, "an internally consistent set of policies and practices that ensure that a firm's human capital (employees' collective knowledge, skills, and abilities) contributes to the achievement of business objectives" (Huselid, Jackson and Schuler, 1997).

Early on, small business researchers established the specificity of SMEs with regards to their HRM function (Hornsby and Kuratko, 1990) and their IT function (Raymond, 1984), whereas HRM and IT researchers focused on the enablement of HRM by the use of IT (DeSanctis, 1986;

Khatri, Baveja, Agrawal and Brown, 2010). Regarding the specificity of the SME in HRM, studies have suggested that SMEs do not have access to the same resources as larger firms, especially in the HRM function where smaller firms rarely have access to full-time HR specialists (Hornsby and Kuratko, 1990). One often sees the entrepreneur himself or herself, or members of other functions in the organization, such as marketing and finance, performing HR management tasks (Pelletier and Cloutier, 2019). This brings about a great heterogeneity in the HR practices of SMEs (de Kok and Uhlaner, 2001) as well as outsourcing of certain practices to cope with the absence of HR specialists (Klaas and Gainey, 2000). Regarding this heterogeneity in the HR function of SMEs, some authors have focused on the HR practices that are integrated within high-performance work systems (HPWS) and thus improve the small firm's HRM performance (Coder, Peake and Spiller, 2017; Drummond and Stone, 2007; Fabi, Raymond and Lacoursière, 2007).

In similar fashion, SMEs have long been known to differ from large enterprises with regards to their adoption, use and management of IT (Raymond, 1984). For instance, the IT resource 'poverty' of most small firms implies major differences with regard to IT governance, thus several authors have proposed governance frameworks that are specific to the SME context (Bergeron, Croteau, Uwizeyemungu and Raymond, 2017; Devos, Van Landeghem and Deschoolmeester, 2009, 2012). Moreover, limitations in the IT competencies of SMEs requires a specific IT management practices in order for these firms to create a competitive advantage through their use of IT (Ashurst, Cragg and Herring, 2011; Scupola, 2008). While lacks in the IT resources and competencies of SMEs have the potential effect of limiting the usability and impact of IT in these firms, it is their strategic 'alignment' of the IT function with other organizational

functions such as the HR function that has an influence on the performance of such function (L'Écuyer and Raymond, 2017; L'Écuyer, Raymond, Fabi and Uwizeyemungu, 2019).

Given that many SMEs do not formalized their HRM practices and use IT in ways that differ markedly from large enterprises, this implies that these firms also differ in their use of e-HRM. Size thus appears to be a determining factor in the adoption of e-HRM and related HRM practices (Ball, 2001). However, there is as-of-yet little research on the adoption, use and management of e-HRM in the specific context of SMEs (Hooi, 2006). For instance, in a study on the performance of online recruitment activities (e-recruitment) of 60 SMEs in the agricultural, manufacturing and service sectors, Poorangi, Razavi and Rahmani (2011) found that firms who used e-HRM hired more high-skilled workers and had lower recruitment costs. Researching e-HRM use in staffing, workforce development, communication, compensation and performance evaluation, Hooi (2006) identified the lack of financial resources and expertise as the main factors constraining SMEs' adoption of e-HRM.

This research may be justified in both practical and theoretical terms. From a socio-economic perspective, as governments strive to assist industrial SMEs in facing their strategic HRM and IT management challenges, it is important for researchers to study these enterprises specifically in order to better understand and thus better support them in their quest for greater organizational performance and global competitiveness (Wu, Hoque, Bacon and Bou Llusar, 2015). Given that the e-HRM literature to-date has mostly pertained to large organizations with a well-developed HR function, it is necessary to change the frame of reference and contribute to a body of e-HRM literature that is more specific to SMEs. Furthermore, strategic IT deployment and use pose certain risks to SMEs in terms of cost overruns, implementation time or failure to meet

strategic objectives (Poba-Nzaou and Raymond, 2011). Given that e-HRM research is still rather sparse and consists mainly of conceptual or prescriptive studies aimed at developing e-HRM management frameworks for large enterprises (Marler and Fisher, 2013), the exact role played by e-HRM in the performance of the HR function remains to be determined for industrial SMEs.

Furthermore, the synergy between HPWS and e-HRM remains to be explored empirically if one is to better understand their combined effect on the performance of the HR function of industrial SMEs. While prior studies has examined various effects of the use of e-HRM on organizational performance, this was done mostly from a universalistic perspective (Parry, 2011). Looking at this issue rather from a configurational perspective, one could surmise that an industrial SME's organizational capabilities can be leveraged for purposes of performance of the HR function to the extent that these capabilities are configured coherently. Hence, survey data obtained from 206 industrial SMEs were analysed with the fuzzy set qualitative comparative analysis (fsQCA) method in order to first answer the following research question: *What configurations of HPWS and e-HRM capabilities lead industrial SMES to attain high levels of performance for their HR function?* And as fsQCA allows both for 'equifinality' and 'causal asymmetry' (Fiss, 2011), our second research question is the following: *What configurations of HPWS and e-HRM capabilities prevent industrial SMEs from attaining high levels of performance for their HR function?*

2. Theoretical and Empirical Background

The conceptual framework of this research is primarily founded upon the resource-based view (RBV) and especially upon the capability-based view (CBV) with the concepts of organizational resources and competencies that pertain to both SHRM and e-HRM. Managers can create an

economic rent for their firm by being more effective than their rivals at selecting HR and IT resources or by being more effective in deploying such resources (Makadok, 2001). As it applies to both SHRM and strategic IT management in the organization, the CBV thus focuses on the managers' role in selecting, developing, combining and deploying HR and IT resources rather than on the firm's positioning in its business environment (Colbert, 2004; Wade and Hulland, 2004). Organizational capabilities refer to the firm's "capacity to deploy" its resources and "are based on developing, carrying, and exchanging information through the firm's human capital" (Amit and Schoemaker, 1993, p. 35). These capabilities may be developed and hence observed both in functional areas (such as HR and IT) and at the corporate level (Grant, 1996).

2.1 HPWS capabilities

From a capability-based perspective that originates in the CBV, the firm capabilities for SHRM are defined "as an organization's capacity to acquire, develop, and deploy human resources via a dynamic HR architecture for achieving higher organizational performance in a complex and changing environment" (Khatri et al., 2010, p. 2891). Research on SHRM capabilities has focused on the SHRM practices that are deemed to be most effective, that is, on HPWS, and has assessed their actual effect on organizational performance (Becker and Huselid, 1998; Kehoe and Wright, 2013). Now, HPWS capabilities are meant to allow the firm to offer a rich work environment and thus lead to greater performance of the HR function in terms of greater employee satisfaction, commitment and lesser voluntary turnover (Fabi, Lacoursière, & Raymond, 2015).

HPWS capabilities are among the non-IT resources deemed most critical in their capacity to be enabled by IT capabilities (Aral and Weill, 2007). In this regard, two strategic management mechanisms allow a firm to gain and sustain a competitive advantage: resource-picking and

capability-building (Makadok, 2001). As the firm's HR are considered to be the key factor in both mechanisms, competent employees are thus needed to select and deploy the appropriate IT resources and to develop the required e-HRM capabilities.

2.2 e-HRM capabilities

The firm's e-HRM capabilities are defined here simply as "practices and competences" that support its use of IT for HRM purposes (Aral and Weill, 2007, p. 764). Now, e-HRM capabilities have been shown to "have significant effects on the strategic role of HRM in organizations" (Marler and Parry, 2016, p. 2250). As is the case for IT capabilities in general, e-HRM capabilities focus mainly on the e-HRM competencies of managers and employees (Kim, Shin, Kim and Lee, 2011; Ravichandran and Lertwongsatien, 2005), with a special attention to members of the HR function (Panayotopoulou, Vakola and Galanaki, 2007), and on the firm's e-HRM infrastructure which consists of e-HRM technology and software applications (Reddick, 2009). A number of characteristics may be used to identify the infrastructural capability of the HR function such as the e-HRM infrastructure's compatibility, flexibility, connectivity, level of integration and sophistication (Chung, Byrd, Lewis and Ford, 2005).

Research on e-HRM capabilities has focused in particular on their capacity to enable the HR function to play a more strategic role (Marler and Parry, 2016), and on the effect of e-HRM competencies and practices upon the effectiveness of HR function in the organization (Bondarouk and Ruël, 2009; Haines and Lafleur, 2008). Moreover, while they are based upon two different types of IT resources, the firm's e-HRM competencies and e-HRM infrastructure may affect one another. For instance, previous empirical research has found that by improving the technical and behavioural capabilities of its IT personnel, the firm could build a better IT infrastructure capability

(Fink and Neumann, 2007). It has also been found that by developing the expertise of its IT function, through improvements in its IT management capability, the firm could increase the flexibility of its IT infrastructure (Kim et al., 2011).

2.3 HPWS and e-HRM capability configurations

The notion of "strategic IT alignment" has often been employed by researchers to illustrate the coherence or "fit" between IT resources and non-IT resources (Chan and Reich, 2007). This notion has been applied in particular to assess the complementarity of HR and IT (Khatri et al., 2010), and to determine the effects of such complementarity on the firm's competitiveness and organizational performance (Byrd, Lewis and Bryan, 2006; Chen, 2012; Delery, 1998). Now, the strategic alignment of IT and non-IT resources and competencies has been conceptualized and operationalized from different perspectives, one of which is the configurational or "gestalts" perspective (Bergeron, Raymond and Rivard, 2004). From this last perspective, alignment is conceived as the firm's development of a coherent set of strategic HR and IT capabilities, i.e. in the form of a unique and hard-to-imitate "capability configuration" (Miller, Eisenstat and Foote, 2002). In taking this perspective to describe how and explain why the firm's e-HRM capabilities enable its HPWS capabilities, we then seek to identify the capability configurations that are associated to superior performance of the HR function in the context of industrial SMEs.

2.4 Configurational contingencies: environmental uncertainty and strategic orientation

One of the basic tenets of contingency theory, upon which the configurational approach emanates, is that improved performance results from a greater coherence or 'fit' among the multiple elements of the firm's business environment and strategy (Doty, Glick and Huber, 1993;

Drazin and Van de Ven, 1985; Fiss, 2011). Now, the two environmental and strategic elements most often found to play a role in this regard are the firm's environmental uncertainty and its strategic orientation (e.g. Dutot, Bergeron and Raymond, 2014; Teece, Peteraf and Leih, 2016; Yayla and Hu, 2012).

Environmental uncertainty relates to the unpredictability of change in the firm's business environment with regards to its markets, competition, technologies and supply sources (Duncan, 1972). This external factor is thus at the core of strategic HRM and IT management practice and must be accounted for with the other elements of the firm's strategic capability configuration (Kearns & Lederer, 2004). As uncertainty increases, so does the firm's information requirements (Tushman and Nadler, 1978) and, in turn, its need to develop stronger IT capabilities (Dutot et al., 2014). Moreover, the firm's quest for strategic alignment has been found to contribute more to innovation and organizational performance in uncertain environments (e.g. Choe, 2003; Freel, 2005; Mukherji and Mukherji, 2017).

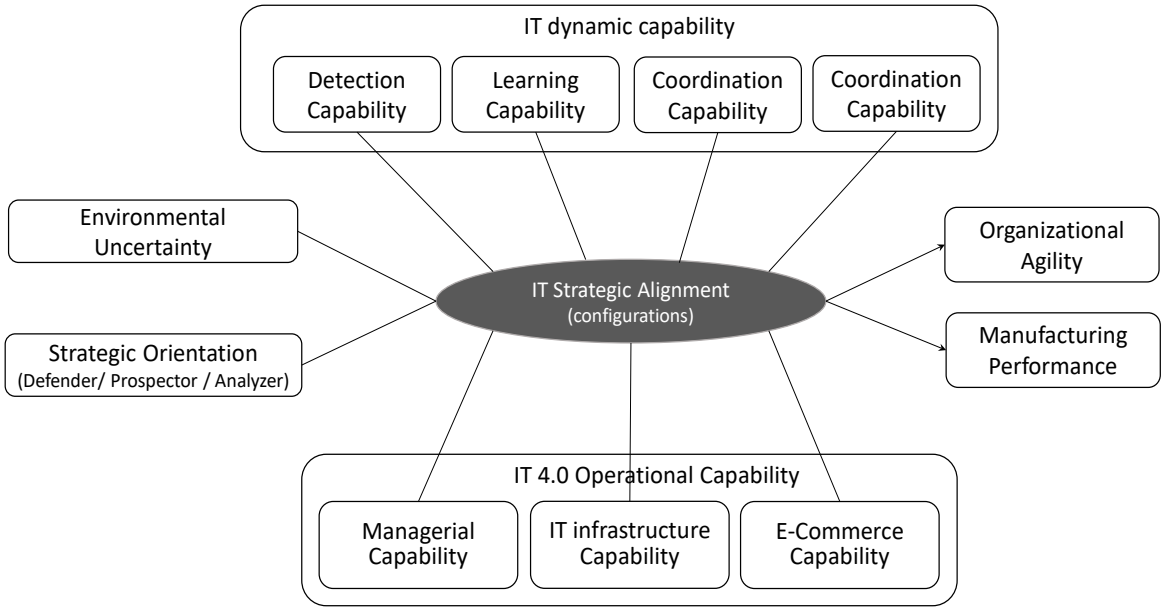
Strategic orientation refers to the type of business strategy realized by the firm to achieve coherence with its business environment (Miles and Snow, 1984). Thus, when the environment becomes more uncertain, certain firms choose to be more proactive by searching for new markets and business opportunities, and by focusing on product-service innovation and on their IT capabilities for exploration, whereas others choose to be more defensive by emphasizing product-service quality and by reinforcing their capabilities in terms of cost, delivery, flexibility and IT for exploitation (Raymond and Croteau, 2009). These two types would also differ in SHRM terms, as proactive firms have been found more prone to adopt HPWS practices than defensive firms (Wang and Verma, 2012). Moreover, the HR function's role has been found to be aligned

with the firm's strategic orientation, as proactive firms attribute a strategic role and defensive firms attribute an operational role to this function (Chowhan, 2016; Kuipers and Giurge, 2017).

2.5 Research model

Given prior empirical investigations on the complementarity of HR and IT resources (Aral, Brynjolfsson and Wu, 2012; Carte and Chidambaram, 2004; Khatri et al., 2010), on the adoption and consequences of e-HRM in SMEs (Bondarouk, Parry and Furtmueller, 2017), and from a configurational perspective of the strategic alignment of e-HRM capabilities and of their complementary role as IT resources that support the firm's human resources (Uwizeyemungu, Raymond, Poba-Nzaou and St-Pierre, 2018), the research model to be empirically validated in this investigation is illustrated below in Figure 1.

Figure 1: Research model on the strategic alignment of e-HRM



Now, in strategic alignment terms, the configurational perspective presumes "equifinality", that is, presumes that a few capability configurations will be equally successful with regard to the IT function's performance (Harms, Kraus and Schwarz, 2009). Prior studies have confirmed that when it comes to their HR function, firms demonstrating a more aggressive strategic orientation tend to develop HR and IT capabilities that are more aligned with their SHRM objectives (Haar and White, 2013; Khatri et al., 2010; Marler and Parry, 2016; Ruta, 2009). And as the "suboptimal" type of equifinality generally applies to industrial SMEs (Gresov and Drazin, 1997), certain coherent ensembles of HPWS and e-HRM capabilities could be favored, in other words there should be "pseudo-ideal" capability configurations with regards to the HR functional performance of these firms (Payne, 2006). The research proposition embedded in the research model is thus the following: *In the industrial SME context, HPWS and e-HRM capability configurations that are more aligned with the firm's dominant SHRM objectives will lead to a higher performance of the HR function*.

3. Method

3.1 Research design and sampling

A questionnaire-based survey was used to collect data for research purposes. The survey targeted a population of 1854 industrial SMEs whose size ranged from 30 to 250 employees, identified from a repertory listing all manufacturing firms in the Canadian province of Quebec. The questionnaire was mailed to the individual heading the HR function in these enterprises. Whereas 216 completed questionnaires were returned (12% response rate), ten were removed from the sample because they came from firms whose size was greater than 250 employees and were

thus considered to be large enterprises rather than SMEs. Over 40% of the survey's respondents occupied the position of HR director, others indicating positions such as CEO or president, CFO, COO, controller and HR support manager, revealing the HR function's varied leadership and level of formalization of the HR function in the SME context. The mean organizational size of the sampled SMEs was found to be 81 employees, with a median of 65.

Given that the survey's response rate is less than 15%, the potential presence of response bias was ascertained by comparing the 168 respondents who responded within four weeks of receiving the questionnaire with the 38 others who responded later (Hikmet and Chen, 2003). As t-tests found no significant differences between the two groups' responses, it appears that there is no response bias present in our sample. Furthermore, given that the survey questionnaire was answered at one point in time by a single individual, common method bias may also be present in the sample (Podsakoff, MacKenzie, Lee and Podsakoff, 2003). As recommended by Lindell and Whitney (2001), the potential presence of such bias was ascertained by using a marker variable, that is, an exogenous variable not assumed to be strongly correlated with the research variables. One of the control variables in the research, technological uncertainty of the environment, was thus used as a marker in relation with the three research constructs, HPWS capabilities, e-HRM capabilities and performance of the HR function. As the maximum correlation between the marker variable and each of the other constructs' indicators was equal to 0.15 (with a mean of 0.09), it appears that there is no common method bias present in our sample.

3.2 Measurement and questionnaire development

The sampled firms' HPWS and e-HRM capabilities were assessed with surrogate measures taken from the extant HRM and information systems literatures. A pre-test of the survey

questionnaire was conducted within three firms belonging to our population of manufacturing SMEs (having 33, 74 and 213 employees respectively). The HR managers of these firms were interviewed in order to assess the clarity and relevance of the questions and possible responses. The respondents had to read and answer the questions aloud while evaluating their ability to answer these questions according to their format and corresponding scale. Following the pre-test, a few questions were re-formulated and certain other minor adjustments were made.

HPWS capabilities. As the firm's HR function attempts to endow the organization with needed human resources, it do so through a variety of SHRM practices that may be used as surrogate measures of HPWS capabilities (Geringer, Frayne and Milliman, 2002). Relying on SHRM theory and on the AMO (ability-motivation-opportunity) framework in particular (Jiang, Lepak, Hu and Baer, 2012; Subramony, 2009), the firm's HPWS capabilities were operationalized under three dimensions through 34 HR practices: 1) HR development capability (through HR selection, integration and development practices), 2) HR motivation capability (through leadership, performance management, compensation and benefits practices), and 3) HR empowerment capability (through communication, participation and work-life balance practices). Following Fabi, Lacoursière and Raymond (2015), three indices of the firm's HPWS capabilities were thus obtained by assessing, for each dimension, the percentage of HR practices present in the firm.

e-HRM capabilities. The e-HRM capabilities of the firm focus on the IT resources that allow it to benefit from its use of e-HRM technology and applications, that is, on its e-HRM infrastructure (Fink and Neumann, 2007) and e-HRM competencies (Khatri et al., 2010). The two basic functionalities of the e-HRM infrastructure are its scope and its range, referring to the

connectivity and compatibility of the e-HRM technologies and applications used by the firm (Duncan, 1995). These functionalities were operationalized through nine 5-point Likert scales adapted from Byrd and Turner (2000). For their part, e-HRM competencies were operationalized through twenty-one 5-point scales (1:very weak, 5: very strong) adapted from Basselier, Benbasat and Reich (2003), that assess the knowledge and experience of the HR function's to enable the deployment and successful use of e-HRM technology. Cognitive e-HRM competencies are thus founded on the knowledge acquired with regards to the use and management of e-HRM technology whereas experiential competencies are founded on the HR personnel's previous experience and training with regards to e-HRM.

Performance of the HR function. The performance of the HR function was operationalized under three dimensions, HR function efficiency, human capital value and HR function effectiveness, following Huselid et al. (1997). This was done through nine 5-point Likert scales, adapted from Dulebohn and Johnson (2013), that assess the productivity and cost of the HR function's activities (e.g. hiring), the value of human resources for the organization (e.g. perceived return per employee), and the HR function's contribution to the attainment of the organization's strategic objectives.

Configurational contingency variables. Environmental uncertainty was measured by adapting an instrument initially developed by Miller and Dröge (1986), in which the respondent indicates the level of unpredictability and change in the organization's competitive, commercial and technological environment, on nine 5-point Likert scales. Strategic orientation was assessed through a self-typing approach previously used to categorize SMEs along Miles and Snow's (1984) well-known strategic archetypes (DeSarbo, Di Benedetto and Sinha, 2005; James and Hatten,

1995). The SME was thus identified in strategic terms as being either a *Prospector*, a *Defender*, an *Analyzer* or a *Reactor* by asking the respondent to choose the one statement, among four, that best described the firm's business strategy, following Raymond and Croteau (2009). The survey items used to operationalize the research constructs are presented in Appendix A.

4. Analysis, Results and Discussion

The research question was addressed by using fuzzy set qualitative comparative analysis (fsQCA), a method first devised for small samples (Rihoux and Ragin, 2009) but also able to deal with large samples (100 or more cases) (Cooper and Glaesser, 2016). Consistent with the configurational approach, this analytical technique incorporates both notions of equifinality and causal asymmetry (Liu, Mezei, Kostakos and Li, 2017). Using Boolean algebra to identify different configurations of causal conditions or elements associated to the same performance outcome (high-performance of the HR function in our case), fsQCA's advantage resides here in its capacity to evaluate the relationship between a capability configuration and a performance outcome (Ragin, 2008).

4.1 Calibration and necessity analysis

In fsQCA, every research variable is treated as a fuzzy set, i.e. as having different levels of membership in the set (Ragin, 2008). Analysis of our configurational framework was thus preceded by a 'calibration' of the research variables into fuzzy sets (Mendel and Korjani, 2013). Relying on their substantive knowledge of the cases, researchers may calibrate the variables either directly (by setting levels of membership into the fuzzy set) or indirectly (through a qualitative assessment of the cases and a re-scaling the original variables) (Liu et al., 2017). Now, when data collection is done quantitatively through 'scale' and 'index' variables, direct calibration is recommended (Ragin, 2008). For each variable, we thus set the three points of fuzzy set

membership through percentiles ('fully in' = top quintile, 'crossover' = median, 'fully out' = bottom quintile), again as recommended (Dul, 2016; Glaesser and Cooper, 2014), and as presented with the variables' descriptive statistics in Table 1. The sampled firms' size varied from 4 to 146 employees with a mean of 31 and a median of 25. As presented in Table 2, most research variables were not highly inter-correlated, with the exception of the HR development and HR motivation capabilities (r = 0.63).

Table 1: Descriptive statistics and calibration of the research variables (n = 206)

Configurational element	**Fuzzy Set Calibrations**			**mean**	**s.d.**	**min**	**max**
	fully in	cross-over	fully out				
Environmental Uncertainty	3.7	3.3	2.9	3.4	0.5	1.9	4.9
Strategic Orientation							
Defender (0/1)	1	-	0	0.306	-	0	1
Prospector (0/1)	1	-	0	0.320	-	0	1
HR Development Capability	0.83	0.63	0.42	0.62	0.22	0.07	1.00
HR Motivation Capability	0.67	0.50	0.32	0.50	0.19	0.08	0.92
HR Empowerment Capability	0.45	0.26	0.14	0.30	0.18	0.00	0.85
e-HRM Infrastructure	3.6	2.9	2.2	2.9	0.8	1.0	4.8
Cognitive e-HRM Competencies	3.5	2.9	2.4	2.9	0.8	1.0	4.8
Experiential e-HRM Competencies	2.6	1.6	1.2	1.8	0.7	1.0	4.5
Performance of the HR function	3.8	3.3	2.9	3.4	0.6	1.3	4.9

Nota. Calibration thresholds: fully in = top quintile, crossover = median, fully out = bottom quintile.

The fsQCA analysis begins by identifying the causal conditions (or configurational elements) that are deemed 'necessary' to the outcome of interest. As presented in Table 3, the necessity of a causal condition is determined by its 'consistency', that is, by the extent to which members in this condition (e.g., firms having a strong HR development capability), are also members in the outcome fuzzy set (i.e., the set of firms whose HR function achieves a high level of performance) (Ragin, 2006). Moreover, a causal condition is characterized as being necessary

when its consistency index is greater than 0.90 (Ragin, 2008). As presented in Table 3, no configurational element was thus found to be necessary, in this sense, for an HR function to attain high performance levels.

Table 2: Inter-correlations of the research variables (n = 206)

Variable	inter-correlations								
	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Environmental Uncertainty	-								
2. *Defender*	-0.10	-							
3. *Prospector*	0.13	-0.46	-						
4. HR Development Capability	0.01	-0.04	0.04	-					
5. HR Motivation Capability	0.14	-0.17	0.17	0.63	-				
6. HR Empowerment Capability	0.10	-0.13	0.19	0.55	0.52	-			
7. e-HRM Infrastructure	0.08	-0.01	0.04	0.18	0.14	0.21	-		
8. Cognitive e-HRM Competencies	0.11	-0.09	-0.15	0.21	0.19	0.11	0.29	-	
9. Experiential e-HRM Competencies	0.14	0.02	-0.11	0.14	0.11	0.12	0.25	0.45	-
10. Performance of the HR Function	-0.09	0.03	-0.10	0.28	0.19	0.20	0.11	0.23	-0.01
Nota. Correlations greater than 0.137 or less than -0.137 are significant ($p < 0.05$)									

Table 3: Necessity analysis of the configurational elements

Configurational element	High Performance of the HR Function	
	Consistency	**Coverage**
Environmental Uncertainty	0.609	0.578
Strategic Orientation		
Defender	0.317	0.582
Prospector	0.284	0.498
HPWS Capabilities		
HR Development Capability	0.613	0.690
HR Motivation Capability	0.610	0.676
HR Empowerment Capability	0.607	0.664
e-HRM Capabilities		
e-HRM Infrastructure	0.598	0.654
Cognitive e-HRM competencies	0.622	0.674
Experiential e-HRM competencies	0.538	0.614

4.2 Equifinality: configurations for high performance of the HR function

While fsQCA is first described with regard to the relationship between the desired outcome and the case sets built for each causal condition (or configurational variable), the main advantage of this technique lies in its capacity to analyze relationships between configurations, i.e. between combinations of causal conditions and the outcome case set (Ragin, 2008). As the solution sets (or desired configurations) are built through Boolean addition of individual causal conditions, a condition's fuzzy set score indicates its degree of membership in the solution.

The fsQCA technique starts its configurational analysis by creating a truth table of 2^k rows, where each row represents a possible configuration combining k individual causal conditions. This table is sorted on the basis of the frequency and consistency of each configuration, where frequency represents the number of observations for each possible configuration (Pappas, Giannakos and Sampson, 2019) while consistency estimates the proportion of configurations "consistent with the outcome" (Fiss, 2011, p. 402). For large samples, the recommended threshold for the frequency is set at 3 (Fiss, 2011); thus, here, all configurations whose frequency is 2 or less were removed for further analysis. Furthermore, the recommended threshold of 0.75 for consistency (Liu et al., 2017) was also used here.

Given the preceding explanations, the second step in the fsQCA analysis consists in identifying the causal conditions that, in combination, are deemed 'sufficient' to generate the outcome of interest (Ragin, 2008). As presented in Table 4, the results of the fsQCA analysis demonstrate equifinality by identifying three capability configurations (HP1, HP2, HP3), i.e. three sets of causal conditions that are equally associated to high levels of performance of the HR function. This analysis also distinguishes 'core' conditions, those found to have 'a strong causal

relationship' with the outcome', from 'peripheral' conditions, those found to be 'less important and perhaps even expendable or exchangeable' (Fiss, 2011, p. 394). Thus, configurations HP2 and HP3 both exhibit two 'neutral permutations' (H2a, H2b and H3a, H3b), i.e. configurations that share the same core elements and only differ in their peripheral elements. For the overall solution, the 'consistency' index assesses the extent to which the capability configurations are subsets of the outcome, whereas the 'coverage' index indicates the proportion of cases covered by these configurations (Ragin, 2006). The consistency threshold was set at 0.75, following Ragin's (2008) recommendation.

The first high-performance configuration (HPI1) highlights the primary importance for an industrial SME of developing strong HPWS capabilities under the condition that its strategic orientation is not of the *Prospector* type (core conditions).[1] It also highlights the secondary importance of developing strong e-HRM competencies under conditions of not encountering high environmental uncertainty and not being a *Defender* (peripheral conditions), and is irrespective of the firm's e-HRM infrastructure (immaterial condition).

The second configuration (HP2) also highlights strong HPWS capabilities under the condition of not being a *Prospector* but includes the development of a strong e-HRM infrastructure as an added core condition. Furthermore, this configuration shows two neutral permutations (HP2a, HP2b), one highlighting the secondary importance for the firm of developing strong cognitive competencies when it does not encounter high levels of environmental uncertainty and

[1] As only 4 out of the 206 sampled SMEs indicated, unsurprisingly, their strategic orientation to be of the *Reactor* type (O'Regan & Ghobadian, 2005; Raymond & Croteau, 2009), a firm that is neither a *Prospector* nor a *Defender* is considered for analytical purposes to be an *Analyzer*.

its strategic orientation is of the Defender type (peripheral conditions), the other highlighting the firm's e-HRM competencies under the condition that it not a *Defender*, and irrespective of its environmental uncertainty.

Table 4: Configurations for high performance of the HR function

Configuration / Configurational element	High Performance of the HR Function				
	HP1	**HP2a**	**HP2b**	**HP3a**	**HP3b**
Environmental Uncertainty	⊗	⊗		●	●
Strategic Orientation					
Defender	⊗	●	⊗	⊗	⊗
Prospector	⨂	⨂	⨂	●	
HPWS Capabilities					
HR Development Capability	⬤	⬤	⬤	⬤	⬤
HR Motivation Capability	⬤	⬤	⬤	⬤	⬤
HR Empowerment Capability	⬤	⬤	⬤	⬤	⬤
e-HRM Capabilities					
e-HRM Infrastructure		⬤	⬤	⬤	⬤
Cognitive e-HRM Competencies	●	●	●	●	●
Experiential e-HRM Competencies	●		●		●
Conditions tested					
Consistency	0.844	0.786	0.868	0.807	0.839
Raw coverage	0.055	0.039	0.086	0.070	0.127
Unique coverage	0.015	0.039	0.003	0.014	0.000
Overall solution consistency	0.816				
Overall solution coverage	0.211				

Legend. ⬤ : presence of a core condition ● : presence of a peripheral condition
⨂ : absence of a core condition ⊗ : absence of a peripheral condition
blank: immaterial condition ("don't care")

The third configuration (HP3) mainly differs from the second (HP2) in that it includes the presence of high levels of environmental uncertainty as a peripheral condition and does not include

as a core condition that the firm has a strategic orientation other than the *Prospector* type. It also shows two neutral permutations (HP3a, HP3b), one under the peripheral condition of being a *Prospector* and irrespective of experiential e-HRM competencies, the other highlighting these last competencies as a contributing condition for those firms that are not of the *Defender* strategic type.

4.3 Causal asymmetry: configurations for non-high performance of the HR function

Taking a configurational approach allows us not only to account for equifinality but also for causal asymmetry, that is, the possibility that the capability configurations associated to the attainment of the outcome of interest (high performance of the HR function in this case) will differ from those associated to its non-attainment (Fiss, 2011). As this approach assumes nonlinearity in cause-effect relationships, the same causal condition may not play the same causal role across different causal configurations. As presented in Table 5, further results of the fsQCA analysis thus identify four capability configurations associated to the non-attainment – rather than the attainment – of high levels of performance of the HR function.

The first two capability configurations associated to non-high levels of performance of the HR function, NHP1 and NHP2, have five core conditions in common, as SMEs in these configurations are characterized by the presence of strong HR development and motivation capabilities and strong cognitive e-HRM competencies, and under the condition that their strategic orientation is of the *Prospector* or *Analyzer* type. These two configurations also share a peripheral condition, which is the presence of high uncertainty in the business environment. However, NHP1 is also characterized by the presence of a strong e-HRM infrastructure, whereas NHP2 is characterized by the presence of strong experiential e-HRM competencies.

Table 5: Configurations for non-high performance of the HR function

Configuration / Configurational element	Non-High Performance of the HR Function			
	NHP1	**NHP2**	**NHP3**	**NHP4**
Environmental Uncertainty	●	●	⊗	⊗
Strategic Orientation				
Defender	⊗	⊗	⊗	⊗
Prospector	●	●	⊗	●
HPWS Capabilities				
HR Development Capability	⊗	⊗	⊗	⊗
HR Motivation Capability	⊗	⊗	⊗	⊗
HR Empowerment Capability			⊗	⊗
e-HRM Capabilities				
e-HRM Infrastructure	●		⊗	
Cognitive e-HRM Competencies	⊗	⊗	⊗	⊗
Experiential e-HRM Competencies		●		⊗
Conditions tested				
Consistency	0.888	0.818	0.853	0.847
Raw coverage	0.074	0.049	0.081	0.070
Unique coverage	0.022	0.002	0.081	0.040
Overall solution consistency	0.853			
Overall solution coverage	0.200			

Legend. ● : presence of a core condition ● : presence of a peripheral condition
⊗ : absence of a core condition ⊗ : absence of a peripheral condition
blank: immaterial condition ("don't care")

The other two capability configurations associated to the non-attainment of high performance of the HR function, NHP3 and NHP4, show six core conditions in common, as SMEs in these configurations are characterized by a lack of strong HPWS capabilities and cognitive e-HRM competencies under the conditions that these firms do not encounter high levels of environmental uncertainty and their strategic orientation is not of the *Defender* type. However,

NHP3 is characterized by an added core condition, i.e. the lack of a strong e-HRM infrastructure, whereas NHP4 is under the core condition that the SMEs' strategic orientation is of the *Prospector* type.

4.4 Discussion

A fsQCA-based causal analysis allowed us to unveil different strategic capability configurations in answer to our research questions, that is to unveil equifinal 'causal recipes' that lead industrial SMEs to achieve high levels performance for their HR function as well as those configurations that deter these firms from such an achievement. In line with the configurational approach and the CBV, these equifinal configurations manifest these firms' strategic alignment of their HPWS and e-HRM capabilities (Kuipers and Giurge, 2017). In answer to calls for 'building better causal theories' by taking a configurational approach (Fiss, 2011), high performance of the HR function was related here to the SME's capability configuration rather than being linearly predicted by its individual HPWS and e-HRM capabilities, as would be done the more traditional causal analyses based on regression or structural equation modeling methods.

With regard to the capability configurations unveiled, one first notes that strong HPWS capabilities are present as a core condition in all high-performance configurations (cf. Table 4). The same can be said of a strong e-HRM infrastructure, save for one configuration (HP1) where it is an immaterial condition. Thus, following Dul's (2016) approach, we may deem these four capabilities to be the 'necessary' conditions for the HR function to attain high levels of performance, notwithstanding the results of the prior necessity analysis (cf. Table 3). Note also that strong cognitive e-HRM competencies are also present as a peripheral condition in all configurations. This means that for the firm to achieve high levels of performance for its HR

function, focusing solely on developing its HPWS capabilities is clearly insufficient. These capabilities must rather be combined with e-HRM capabilities, that is, primarily with a strong e-HRM infrastructure and secondarily with strong cognitive e-HRM competencies. Moreover, this appear to be true in all environmental and strategic contexts, i.e. for high and non-high levels of environmental uncertainty and for the *Defender*, *Analyzer* and *Prospector* types of strategic orientation.

With regard to the non-high-performance configurations unveiled (cf. Table 5), strong HR development and HR motivation capabilities, strong cognitive e-HRM competencies and a strategic orientation of the *Defender* type are absent – rather than present – as core conditions in all four configurations. Hence the combination of these four causal conditions may be deemed as 'necessarily' preventing industrial SMEs from attaining high levels of performance for their HR function. Causal asymmetry is illustrated here by the fact that, among the e-HRM capabilities, while it is the presence of a strong e-HRM infrastructure that is central to the HR function's attainment of high performance, it is the absence of strong cognitive e-HRM competencies that is central to the non-attainment of such performance. Moreover, a strong e-HRM infrastructure is a core condition in one configuration (NHP1) whereas its absence is a core condition in another (NHP3) and is an immaterial condition in the two others (NHP2, NHP4), thus illustrating that the same configurational element may play a disabling or an enabling role, or play no role. Furthermore, the firm's e-HRM infrastructure plays a disabling (NHP1) or an enabling (NHP2) role depending upon the presence or not of high levels of environmental uncertainty and whether its strategic orientation is of the *Prospector* or *Analyzer* type. Again, this illustrates a basic tenet of contingency theory and the configurational approach that the firm must align its capability

configurations with its business environment and strategy, if performance is to follow. Finally, these results confirm that if one assumes that the firm's HPWS and e-HRM capabilities enable its SHRM processes by linearly and independently affecting the performance of its HR function, one's understanding of the complex interplay between these capabilities will be limited (Woodside, 2013).

In ending this discussion of the results of our configurational analysis, it is important to note that the capability configurations identified in this study reflect the specificities of SMEs with regard to their *a priori* lesser HPWS and e-HRM capabilities and their greater environmental uncertainty when compared to large enterprises. Most probably, a sample composed of both SMEs and large enterprises would have produced a greater number of configurations, that is, less coherent or more divergent configurations. Thus, recalling that this research is founded upon a capability-based view, wherein the firm's strategic advantage is based on its specific combination of resources and competencies, the capability configurations found in this study may be generalized in theory and applied in practice to the industrial SME domain with a certain amount of confidence.

5. Contribution to Theory and Practice

This study's results demonstrate that a configurational approach, based on the fsQCA analytical technique, is theoretically well-suited to apprehend the non-linear, complex interplay of HR and IT resources that underlies the strategic HR-IT alignment process, and thus to better understand the strategic choices of industrial SMEs in this regard. Moreover, the strategic alignment of HPWS and e-HRM capabilities as applied in the present research provides us with a powerful theoretical viewpoint that may be used in future research on the SHRM and strategic IT management behaviours of these firms. This viewpoint may also provide further comprehension

of the specific HPWS and e-HRM capabilities that should be developed by industrial SMEs to enable their digital transformation in the face of globalization.

The findings of this research make further contributions to both the theory and practice of strategic IT management and SHRM. Our research is the first to address the synergistic effects of IT resources and HR on HR functional performance from a capability-based view of strategic alignment, and to do so from the HR function's perspective in the context of industrial SMEs. In answering our research questions, we thus concentrated not on the organization in its entirety but on those e-HRM capabilities directly related to the HR function's IT infrastructure and to the HR personnel's IT competencies. We made this choice in light of the specificities of SMEs with regard to the HR and IT functional areas of the organization, i.e. areas where there are much less formalization, specialization and staff members than in large enterprises.

Another contribution of this research is that it has shed new light on the contribution of HPWS capabilities to HR functional performance through their interaction with e-HRM capabilities. Moreover, this research reintroduced the original definition of e-HRM as it is more appropriate to represent the informational processes within the HR function which is central to this research (DeSanctis, 1986). As mentioned by some authors, the IS research sub-field which pertains to HRM has suffered from a lack of consensus on a definition and conceptualization of the IS research object and associated IT artifact (Bondarouk and Ruël, 2009). This has led to a number of definitions that focus on different dimensions of the same phenomenon, that is, on the use of IT in support of the organization's HR function (Bondarouk and Ruël, 2009; Haines and Petit, 1997; Lengnick-Hall and Moritz, 2003; Strohmeier, 2007).

While some might question the existence of a direct link between investments in e-HRM and HR functional performance, in view of the "productivity paradox" (Brynjolfsson and Hitt, 1996) or on the basis that "IT doesn't matter" (Carr, 2003), this research has found that while HPWS alone remain an important determinant of the HR functional performance of industrial SMEs, these firms have reason to invest in e-HRM when deploying their HPWS capabilities. This need to develop their e-HRM capabilities is especially reflected in the SMEs' obligation to improve their HR functional performance, i.e. not only to manage their HR more efficiently but, more importantly, to better value their human capital and to manage their HR more effectively in order to compete globally.

As a first contribution to practice, our findings should render SME owner-managers and other actors such consultants and government agencies aware that, in the manufacturing sector, e-HRM has become a necessary component of HR functional performance, insofar as a SME invests both in its HR and IT resources or, more precisely, develops both its HPWS and e-HRM capabilities in synergistic fashion. These findings thus speak loudly for the global competitiveness of small and medium-sized manufacturers. The informed adoption and assimilation of e-HRM technology, due to the "mission-critical" nature of this technology, renders industrial SMEs more competitive globally. Indeed, such an IT investment would allow the HR function to play a more strategic role in these firms' response to threats and in seizing opportunities that emerge in their business environment.

Another implication for practitioners is that this research may provide the conceptual and methodological foundations of a diagnostic approach, i.e. a SWOT-type approach identifying the SME's strengths, weaknesses, opportunities and threats with regard to its strategic alignment of

HR and IT (Sørensen, Valqui Vidal and Engström, 2004). An HR planning methodology built on identifying, measuring and improving the level of coherence of the HPWS and e-HRM capabilities required to achieve strategic goals would also help in identifying the opportunities and threats faced by the SME with regard to its human resources. Moreover, the contextual and competitive specificities of small and medium-sized manufacturers, such as the institutional influences of the industry in which they operate (e.g. the SME's resource and customer dependency), would be accounted for by such a methodology. By concentrating on the strategic role of IT with regards to its support of HRM, such a diagnostic tool would furnish precise guidance to SMEs for translating their HPWS and e-HRM investments into HR functional performance.

5. Limitations and Conclusion

There are limitations to our research that are intrinsic to the survey methodology employed as it regards the nature of the sample and the generalization of our results. As causality cannot be inferred due to the cross-sectional nature of this study, we cannot ascertain time-lagged effects of the industrial SME's capability configuration upon the performance of its HR function. Furthermore, using the fsQCA technique means that the results may be affected by the choices made by the researchers in calibrating the research variables and in setting the analytical parameters of this technique (e.g. solution consistency threshold). We thus attempted to guard against this by doing a sensitivity analysis that found the configurational solutions to remain stable across changes in calibration values and by using the most recommended fsQCA parameter thresholds (e.g. solution consistency > 0.75).

While previous empirical studies have provided a solid conceptual and operational foundation to examine the strategic alignment of IT and human resources as well as the

performance outcomes of such alignment, few attempts have been made to assess this alignment from a configurational perspective and to operationalize it in the context of SMEs. Originating in the CBV, this research provides further understanding of the extent to which and the manner by which HPWS and e-HRM combine in enabling the HR function to play a more strategic role, notwithstanding the intrinsic limitations of survey research such as related to the nature of the sample and the perceptual measure of the performance of the HR function.

A configurational approach to the alignment of IT resources and HR has allowed us to reveal the HPWS and e-HRM capability configurations associated to high-performance HR function for SMEs in the manufacturing sector. Our findings thus confirm the basic research proposition that the strategic capabilities of a SME, most notably its HPWS and e-HRM capabilities, determine its competitiveness to the extent that these capabilities are co-aligned. Now facing global competitive challenges that include operating in a knowledge-based economy and having to wage a global "war for talent" with the support of information technology (Beulen, 2008), many SMEs in the manufacturing sector will be obliged to manage their IT and human resources more strategically and in a more coherent manner, and to do so in light of their strategic objectives.

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Appendix A: Survey items used to operationalize the research constructs

A.1 e-HRM Capabilities

A.1.1 e-HRM infrastructure

Please indicate how much you agree with the following statements on your company's e-HRM infrastructure, based on the scale below:

strongly disagree	rather disagree	neither agree/ nor disagree	rather agree	strongly disagree
1	2	3	4	5

Connectivity					
The desktop computers of the HR team are connected to the company's network	①	②	③	④	⑤
Communication between the HR team and employees is mainly done electronically	①	②	③	④	⑤
Communication between the HR team and managers is mainly done electronically	①	②	③	④	⑤
Employees have access electronically to some of their personal data.	①	②	③	④	⑤
Managers have access electronically to some of the RH data (dashboard)	①	②	③	④	⑤
Compatibility					
The e-HRM software applications may be installed on different platforms (desktop computers, tablets, smartphones)	①	②	③	④	⑤
The e-HRM software applications offer a great quantity of information to end-users	①	②	③	④	⑤
HRM data may be easily combined with other company data (sales data, financial data, etc.)	①	②	③	④	⑤
The e-HRM software applications are regularly updated on all platforms	①	②	③	④	⑤

A.1.2 Cognitive e-HRM competencies

Please evaluate the level of e-HRM knowledge of the members of your company's HRM team, based on the scale below:

very low	low	average	high	very high
1	2	3	4	5

Knowledge of e-HRM technologies					
Knowledge of self-service portals for HRM purposes	①	②	③	④	⑤
Knowledge of Web use for HRM purposes	①	②	③	④	⑤
Knowledge of social media use for HRM purposes	①	②	③	④	⑤
Knowledge of mobile telephony use for HRM purposes	①	②	③	④	⑤
Knowledge of e-HRM software					
Knowledge of software for the administrative management of HR (employee records, benefits, remuneration)	①	②	③	④	⑤
Knowledge of software for the management of HR competencies (recruitment, integration, training and development, performance management)	①	②	③	④	⑤
Knowledge of workforce management software (time and presence, labor relations, health and safety)	①	②	③	④	⑤
Knowledge of HR data analysis software	①	②	③	④	⑤
Knowledge of e-HRM management					
Knowledge of the equipment presently used by your company for e-HRM (computers, networks)	①	②	③	④	⑤
Knowledge of the e-HRM software presently used by your company	①	②	③	④	⑤
Knowledge of the budgets allocated to e-HRM by your company	①	②	③	④	⑤
Knowledge of the use of e-HRM that is made by your competitors	①	②	③	④	⑤

A.1.3 Experiential e-HRM competencies

Please evaluate the frequency with which the members of your company's HRM team access the following knowledge sources, based on the scale below:

very rarely	rarely	sometimes	often	very often
1	2	3	4	5

Continuing education and training on e-HRM					
Meetings with e-HRM software suppliers	①	②	③	④	⑤
Professional literature on e-HRM	①	②	③	④	⑤
Conferences on e-HRM	①	②	③	④	⑤
Informal networking to be up to date on new e-HRM technologies (social media, blogs)	①	②	③	④	⑤

Please evaluate the frequency with which the members of your company's HRM team participate in the following activities, based on the scale below:

very rarely	rarely	sometimes	often	very often
1	2	3	4	5

e-HRM experience					
Elaboration of the company's e-HRM strategy	①	②	③	④	⑤
Preparation of the company's e-HRM budget	①	②	③	④	⑤
Cost-benefit analysis of a e-HRM project	①	②	③	④	⑤
Planning of a e-HRM project	①	②	③	④	⑤
Implementation of a e-HRM project	①	②	③	④	⑤

A.2 HPWS Capabilities

A.2.1 HR development capability

Please indicate if the following HRM practices exist in your company and to whom they apply:

HRM practices	Managers	Professional and technical personnel	Sales and administrative personnel	Production personnel
Personnel selection practices				
Hiring decisions are influenced by the candidates' capacity to fulfill the technical requirements of the job	○	○	○	○
Hiring decisions are influenced by the job interview	○	○	○	○
Hiring decisions are influenced by a pre-hiring test	○	○	○	○
Hiring decisions are influenced by the candidates' relevant experience	○	○	○	○
An important part of the job positions posted are filled internally	○	○	○	○
Personnel integration practices				
There exists a formal program to welcome and integrate new employees (guides and manuals, visits and presentations, etc.)	○	○	○	○

Upon arrival, new employees receive intensive training that aims to renders them rapidly capable of fulfilling their work tasks	○	○	○	○
There are social activities within the company (sport and outdoor activities, celebrations, etc.)	○	○	○	○
Personnel training and development practices				
There exist practices that aim to improve the technical skills of employees	○	○	○	○
There exist practices that aim to facilitate teamwork	○	○	○	○
There exist practices that aim to favor the exchange of knowledge between employees	○	○	○	○

A.2.2 HR motivation capability

Please indicate if the following HRM practices exist in your company and to whom they apply:

HRM practices	Managers	Professional and technical personnel	Sales and administrative personnel	Production personnel
Performance management practices				
Performance management practices aim to document the employees' performance	○	○	○	○
Performance management practices aim to help employees to improve their performance	○	○	○	○
Performance management practices aim to identify the employees' strengths and weaknesses	○	○	○	○
There exist performance evaluation practices that aim to determine the appropriate remuneration	○	○	○	○
Remuneration practices				
The employees' length of tenure enters into the calculation of their remuneration	○	○	○	○
Salary increases are mainly determined by the employees' performance	○	○	○	○
Part of the employees' salary is related to the performance of a group or of the organization	○	○	○	○
Financial incentives such as bonuses and profit sharing constitute an important part of the employees' remuneration	○	○	○	○
Benefits-related practices				
Our company propose a collective insurance plan	○	○	○	○

Our company offers a sick leave bank	○	○	○	○
Our company offers a support program to employees facing difficulties (psychological counseling, drug abuse, alcoholism, etc.)	○	○	○	○
Our company offers discounts to employees on its products and services	○	○	○	○
Our company has established a retirement savings plan (collective RRSP)	○	○	○	○

A.2.3 HR empowerment capability

Please indicate if the following HRM practices exist in your company and to whom they apply:

HRM practices	Managers	Professional and technical personnel	Sales and administrative personnel	Production personnel
Communication and participation				
Our company has established programs to enable employee participation (quality circles, discussion groups, etc.)	○	○	○	○
Employees receive operational data (quality, productivity, etc.)	○	○	○	○
Employees receive financial information (financial statements, sales data, etc.)	○	○	○	○
Employees receive strategic information (company's mission, objectives, competition, etc.)	○	○	○	○
Employees periodically answer opinion surveys	○	○	○	○
Work-life balance				
Employees have the possibility of re-arrange their work schedule (variable schedule, work *à la carte*, etc.)	○	○	○	○
Employees have the possibility of doing part of their work at home	○	○	○	○
Employees have the possibility to take a long-term leave from their work (sabbatical, deferred remuneration, etc.)	○	○	○	○
Employees have the possibility to share an important part of their workload with their colleagues at work	○	○	○	○
Our company proposes measures to facilitate the exercise of family responsibilities (information programs, nurseries, etc.)	○	○	○	○

A.3 Performance of the HR function

Please evaluate your level of satisfaction relative to the following elements of the performance of your company's HR function, based on the scale below:

very dissatisfied	dissatisfied	neither dissatisfied/ nor satisfied	satisfied	very satisfied
1	2	3	4	5

Efficiency					
Cost of hiring a new employee	①	②	③	④	⑤
Expenses of the HR function per employee	①	②	③	④	⑤
Management costs per employee of benefits	①	②	③	④	⑤
Human capital value					
Operational expenses of the company per employee	①	②	③	④	⑤
Profit per employee	①	②	③	④	⑤
Cost of remuneration and benefits / company's income	①	②	③	④	⑤
Effectiveness					
Profitability of training programs	①	②	③	④	⑤
Extent and performance of teamwork	①	②	③	④	⑤
Personnel turnover	①	②	③	④	⑤

A.4 Environmental Uncertainty

Please indicate how much you agree with the following statements on the level of uncertainty in your company's business environment, based on the scale below:

strongly disagree	rather disagree	neither agree/ nor disagree	rather agree	strongly agree
1	2	3	4	5

Competitive uncertainty					
In our sector of activity, there is intense competition on the basis of the quality of products and services	①	②	③	④	⑤

In our sector of activity, there is intense competition on the basis of product and service innovation	①	②	③	④	⑤
In our sector of activity, there is intense competition on the basis of the price of products and services	①	②	③	④	⑤
Commercial uncertainty					
In our sector of activity, customers have extensive needs for products and services	①	②	③	④	⑤
In our sector of activity, product lines are very extensive	①	②	③	④	⑤
In our sector of activity, products and services become obsolete very rapidly	①	②	③	④	⑤
Technological uncertainty					
Manufacturing and service processes and technologies change rapidly in our sector of activity	①	②	③	④	⑤
It is difficulty to foresee the technologies that will prevail in our sector of activity for more than the next two years	①	②	③	④	⑤
Our company must frequently change its business strategy to face its competitors or adapt to its customers	①	②	③	④	⑤

A.5 Strategic Orientation

Among the following statements, please check the one that best represents your company's strategy in terms of its development of markets and its launching of products/services (check only one statement):

- ❑ Our company continuously innovates and regularly launches new products/services. [*Prospector*]
- ❑ Our company first seeks to maintain its market share with its existing products/services by attempting to reduce their price and/or increase their quality. [*Defender*]
- ❑ Our company primarily seeks to achieve its objectives with its existing products/services, while cautiously attempting to launch one or more products/services that have proven themselves on the market. [*Analyzer*]
- ❑ Our company is satisfied with the current situation and will revise the price or quality of its products/services or eventually launch new products/services only if it is facing a major threat that endangers its survival. [*Reactor*]