The role of HR architecture and capabilities in the performance of service organizations

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Introduction

The field of strategic human resource management (SHRM) has acquired increasing importance in the last two decades (Becker and Huselid, 1996). Wright and Boswell (2002), in their review of the field of HRM, pointed out that SHRM might be distinguished from the other streams of research in HR literature (defined as "micro human resource management research"), on the base of two dimensions, the level of analysis and the number of HR practices examined. Research rooted in SHRM investigates the impact of HR practices by using the organization as level of analysis, while the micro approaches to HR have analyzed the effects of HR practices at the individual level. Moreover, SHRM analyzes multiple HR practices, while the other approaches have focused on a single one.

In the last decade, SHRM has posed two major challenges to scholars. The first one is related to the analysis of the mediating mechanisms in the link between "high-performance", "high involvement" work system and organizational performance (Becker and Huselid, 2006; Collins and Smith, 2006). The second one focuses on testing the effects on organizational performance of differentiating the type of the "HR architecture" across different types of employees (Lepak and Snell, 1999; Lepak et al., 2007). Especially, the notion of HR architecture implies an internally coherent and aligned set of human capital skills, HR practices, employment modes and psychological contract. The High involvement HR architecture (HIHA) includes an orientation to internal development of *highly strategic and unique* employees; an employment mode oriented to security and long term relationship; a psychological contract expressing an open relationship of mutual investment between employer and employees; HR practices that loosely define jobs to allow for change and adaptation, that develop unique skills through extensive training initiatives, and that implement developmental performance appraisal systems to make certain that employees receive continued and useful feedback (Lepak and Snell, 1999).

Concerning the first challenge posed by SHRM, diverse studies within SHRM have focused on analyzing the performance effects of "high-performance, commitment based work systems"

(Huselid, 1995; MacDuffie, 1995; Delery & Doty, 1996; Kintana et al, 2006; Collins and Smith, 2007; Appelbaum et al., 2000). However, SHRM scholars have called for a shift of the focus of empirical research from the direct link between HR architecture and performance, to the analysis of the intermediate variables in this relationship in order to shed lights on the "black box" in the HR-performance link (Becker and Huselid, 2006).

On the one side, SHRM theoretical research has emphasized the role of organizational capabilities as relevant mediating variables between the HR architecture and firm performance (Wright, et al. 2001), but, notwithstanding this theoretical advancement, empirical research on this topic is still in its infancy (Cheng and Huang, 2009; Collins and Smith, 2006) and further investigations are required (Becker and Huselid, 2006). In addition, in the few studies that have considered the HR-capabilities-performance link, sometimes confusion emerges on the definition of capabilities, that might be called "strategic firm capabilities" or "strategic business process" (Becker and Huselid, 2006) or that might be defined as capabilities only *ex-post*, as implications of the findings (Collins and Smith, 2006). According to this view, the process through which HR influences performance remains ambiguous, since the construct of capabilities is not clearly defined and the empirical test of its role in the HIHA-performance link is underdeveloped. On the other side side, when examining the literature on the HR-performance relationship, existing studies have not yet considered the adoption of the construct of HIHA. As a result, the boundaries of the construct of HIHA and its link with possible mediating mechanisms and organizational performance have not yet been examined

When considering the context of application of research the HR-performance link and capabilities literature, other gaps emerge. Existing studies on the performance effects of HR are based largely on manufacturing organizations (Appelbaum et al., 2000), while the context of service sector and especially of non for profit service sector, has been less explored (West et al., 2006; Boselie et al., 2003; Boxall, 2003; Lashley, 1999; Keltner et al. 1999). In particular, HR research on service sector has mainly focused on the direct link between HR practices and different

organizational outcomes (Eaton, 2000; West, et al., 2006; Boxall and Steeneveld, 1999) while failing to discuss the process underlying the HR-performance link, even though this sector might be particularly suitable for these analyses (Batt, 2002). Indeed, also specific research on service-profit chain (Heskett, Jones, Loveman, Sasser and Schlesinger, 2008; Heskett, Sasser and Wheeler, 2008) emphasized the importance of "internal service quality", conceived in terms of high involvement job design and HR practices, to get customer satisfaction, loyalty and ultimately superior performance in service sector. However, there are still few studies that tested empirically the service profit chain model and provided evidence on the positive effects of HR practices and other intervening mechanisms, when predicting service organizations' performance (Xu and Van Der Heijden, 2005). Also, within the service sector, non profit organizations are a meaningful context to study the role of capabilities as a crucial mediating mechanism in the HR-performance link and as driver of competitive advantage. Capabilities research in service sector has mainly focused on for-profit organizations (Haas and Hansen, 2005; Zollo and Singh, 2004; Skagg and Snow, 2004; Jones et al., 1999). However, it might be relevant to point out the organizational capabilities, the internal mechanisms, through which the non-profit service organizations achieve superior performance (Pablo et al., 2007). This is due to the recent crisis in public funding and the new emphasis on the efficiency issue in management that have affected public and non-profit sector in Italy as well as in other western countries, by influencing especially cultural organizations (Townley, 2002; Pollitt and Bouckaert, 2000).

Concerning the second challenge posed by SHRM, this challenge refers to the empirical test of the effect of a differentiated HR architecture on organizational performance. Even though the existence and the relevance of the construct of HR architecture has been empirically supported (Lepak and Snell, 2002; Melian-Gonzales and Verano-Tacorante, 2004; Becker and Huselid, 2006), SHRM research has neglected to consider one of the main assumption underlying this construct and its link to organizational performance. The main novel presumption underlying the HR architecture is that managing different types of employees with different set of HR practices, employment and

psychological contract might lead to superior performance with respect to an undifferentiated approach to the workforce management. Indeed, according to Lepak e Snell "it may be inappropriate to simplify the nature of human capital investments and suggest that there exists a single "optimal" HR architecture for managing all employees. Rather, we believe that the most appropriate mode of investment in human capital will vary for different types of human capital" (1999: 33). However, while much of the strategic HR research has focused on the extent to which a set of practices is used across all employees of a firm, it has ignored that different "architectures" might exist for different employee groups within a firm (Becker and Huselid, 2006).

Furthermore, so far, empirical research on the HR architecture has mainly focused on testing just its nature (Lepak and Snell, 2002; Lepak, Takeuchi and Snell, 2003; Lepak et al., 2007), while completely neglecting the test of adopting a differentiated HR architecture on organizational performance. However, the use of a differentiated architecture was one of the main issues for the development of a more fine-grained theoretical rationale for the link between HR and performance (Lepak and Snell, 1999). Indeed, SHRM scholars have recognized that the rationale for the link between HR and performance was somehow under-theorized (Fleetwood and Hesketh, 2006; Wall and Wood, 2005; Wright et al., 2002). The architectural model by Lepak and Snell (1999) grounded the link between the HR architecture and organizational performance in the integration of RBV, transaction cost economics and human capital theories, by providing a deeply rooted explanation for the positive effect of the HR architecture (Becker and Huselid, 2006).

Accordingly, in order to fill the gaps included in the literature, two research objectives are identified and Italian non-profit, service organizations, operating in cultural industries are recognized as a suitable context to address these objectives.

The first research objective aims at testing the link among High involvement HR architecture (HIHA), organizational capabilities and performance. The second research objective aims at testing the effects on organizational performance of differentiating the HR architecture across different

types of employees within organizations. Both these empirical tests are carried out in a novel and suitable sample within the non-profit service sector: that of Italian museums.

These research objectives will contribute to the advancement of the SHRM, firstly, by expanding the knowledge on the challenge posed by this field regarding the empirical test of the intervening variables in the HR-performance link. Indeed, regarding the black box, there has been little effort to extend SHRM theory in a way that formally and empirically integrates the capabilities through which the HR system actually influences firm performance. Nonetheless, the investigation of the intervening capabilities in this process could clarify how HR management refers as a value creation mechanism in the organization and could lead to an effective integration of strategic literature in the field of SHRM, by providing a deeper theoretical foundation for the SHRM literature itself (Wright et al., 2001). Furthermore, both the capabilities literature itself and the SHRM studies on the "black-box" have not fully considered the non-profit service sector, notwithstanding its relevance (Boxall et al., 2003). Thus, this study contributes to the advancement of both these streams of research by defining the capabilities that mediate the HR-performance link in an unexplored and relevant sector and by testing their effects. Finally, this research gives a contribution to the service-profit-chain model's understanding, by providing insights on how the workforce management leads to superior performance in the service sector (Heskett et al., 2008).

Secondly, this study will offer the first empirical test of the relationship between a differentiated HR architecture and firm performance. These issues have been claimed as a priority in the SHRM research agenda, but they have not yet been carried out (Lepak et al., 2007; Becker and Huselid, 2006), even though the topic of differentiation in the workforce policies has acquired increasing relevance since 80s (Pfeffer, 1986).

Finally, this study aims at offering methodological contributions to the SHRM field, firstly, by contributing to the debate about causality in the relationship between HR and performance. Indeed, the analysis of intervening variables in the HR-performance link and the use of lagged data on performance are helpful to "rule out an alternative explanation for an observed HR-performance

link, such as reverse causation" (Becker and Gerhart, 1996: 793), which is one of the most debated issues in the investigation of the HR-performance link (Wright, Gardner, Moynihan and Allen, 2005). Moreover, this study addresses other methodological flaws that are frequent in the HR-performance link, such as that of adopting same respondents for the independent and the dependent variables and the lack of use of performance measures that are consistent with the analyzed business (Wall and Wood, 2005)

The second methodological contribution of this study concerns with the definition and measurement of the constructs of HIHA and capabilities, through the application of a formative measurement model to both these constructs. This study proposes an emergent definition and operationalization of capabilities based on the integration of different research streams and it applies it to the under-investigated sector of non-profit service organizations. Until now, capabilities literature has drawn from different theories, ranging from RBV, KBV, and evolutionary economics to organizational learning (Grant, 1996; Verona, 1999; Zollo and Winter, 2002). This multiplicity of approaches has created a fragmented picture of the definition and operationalization of the construct of capabilities and it has prevented the creation of a more comprehensive definition of the domain of capabilities. Our approach to capabilities argues about the potential overlap among the existing definitions and proposes a more inclusive view of the capabilities' construct domain. Moreover, this study offers insights on the still under-investigated mechanisms through which organizations achieve superior performance in a sector, the non-profit service one that has acquired increasing relevance in the last years (Pollitt et al., 2006)

Similarly, the use of the construct of "architecture" and the related operationalization is not a matter of referring to a more recent definition with respect to the construct of "HR system", but it provides a contribution to the advancement of SHRM as well. Indeed, no studies used the HIHA to examine the link between HR and performance. In addition, studies, focused on investigating the nature of the HR architecture, have selected some of the elements of the architecture itself, while neglecting others, without providing a clear rationale. For instance, some studies have considered

the employment modes (Lepak, Takeuchi and Snell, 2003), others have considered only employment modes and HR configurations (Lepak et al., 2007), and all of these studies have neglected the notion of psychological contract. In our study, I will contribute to overcome this flaw in literature, by using all the elements of the HR architecture and by testing how the dimensions of HR configurations, employment mode and psychological contract contribute to explain this construct.

From a managerial point of view, the empirical support to the performance effect of a differentiated HR architecture could legitimate HR managers to apply different HR architecture across employees, by weakening the widespread arguments in favour of HR systems that minimize status differences across employees (Pfeffer, 2005). In addition, managers have shared the view that HR could influence organizational outcomes and "they do not have to be persuaded that the quality with which they manage the workforce has strategic impact. What they now need is help in understanding how to generate and sustain those potential returns" (Becker and Huselid, 2006: 921). Indeed, they need to clarify which the intervening mechanisms in the HR-performance link are. Finally the definition of the nature and the effects of these intervening variables have consequences for the definition of the role and responsibilities of the HR function in the organization. Indeed, the emphasis of theoretical research on the mediating role of organizational capabilities implies the involvement of line managers, beyond the HR department, in managing the workforce (Becker and Huselid, 2006).

This study is organized as follows. In the first section I develop the arguments and formulate hypotheses about the relationship among HIHA, capabilities and performance. In particular, I elaborate a definition of the construct of organizational capabilities and its application to the non-profit service sector. This definition would contribute not only to better define the boundaries of the construct, but also to clarify the rationale for the link between HR and performance. In the second part I develop the literature review and formulate hypotheses on the issue of differentiation of the HR architecture within the organization and its performance effects. In the third part, in order to test

research hypotheses and the validity of the proposed formative measurement model for the HIHA and organizational capabilities, a latent structural equation modelling technique (PLS) is used and relative results and implications are presented.

Data for this longitudinal study has been gathered from a sample of 83 museums in Lombardia Region, representing about 71% of the Lombardia Region museum population (117 accredited museums), by surveying museum directors and employees.

Literature review and hypotheses

The HIHA-organizational capabilities-performance link

When considering the investigation of the HR-performance link, two main debates are still open. The first debate is concerned with the empirical test of the relationship among HIHA, capabilities and performance, a test that is still underdeveloped (Collins and Smith, 2006; Cheng and Huang, 2009) especially in service sector (Batt, 2002). The second one is related to the nature of the independent and of the intervening variables in this process. Indeed, extant theoretical research has not yet clarified and tested the boundaries of the construct of the architecture and the use of one or another definition and operationalization of this construct still depends on scholars' interpretation (Lepak and Snell, 2002; Lepak et al., 2007). Furthermore, research has pointed out the role of capabilities as mediating variables in the HR-performance link (Wright et al., 2001; Becker and Huselid, 2006). However, the construct of capabilities has not been unequivocally defined and operationalized, neither in the HR literature nor in the strategic literature (Wang and Ahmed, 2007). This issue is particularly relevant in our setting of analysis, the non profit one, since capabilities literature has mainly focused on for-profit, manufacturing and technology-based organizations (Zollo, Reuer and Singh, 2002; Tripsas and Gavetti, 2000). In addition, studies on capabilities carried out in service sector have focused on for-profit organizations (Haas and Hansen, 2005; Zollo and Singh, 2004; Skagg and Snow, 2004; Jones et al., 1999) and the only example of capabilities literature focused on non-profit service sector are related to health care organizations (Kim and Lee, 2006; Pablo et al., 2007).

In order to fill these gaps, firstly literature on the link between High involvement architecture and performance is analyzed, by emphasizing the discussion on the black-box. Before analyzing the rationale for and empirically testing the link among HIHA, capabilities and performance, a discussion of research on capabilities is carried out and a definition and measurement of capabilities that integrated the major theoretical streams on this issue are proposed.

These discussions contribute to the debate about the boundaries of HR architecture and of capabilities and they constitute the premises for the adoption of a formative, rather than a reflective measurement model in this study.

High involvement HR system and High Involvement architecture

Since the 1990s, SHRM research has supported the view that bundles, or systems, of HR practices have more influence on firm performance than individual practices working in isolation (Huselid, 1995; MacDuffie, 1995). In this regard, two HR practice alternatives have emerged in the literature: "transaction-based" or "control" HR practices, which emphasize individual short-term exchange relationships, and "commitment-based", "high involvement" HR practices, which focus on mutual, long-term exchange relationships (Arthur, 1992; Tsui, Pearce, Porter, & Hite, 1995). "Control" HR approaches aim to increase efficiency and reduce direct labour costs and rely on strict work rules and procedures and base rewards on outputs (Arthur. 1994). In this framework, rules, sanctions, rewards, and monitoring regulate employee behaviour (Wood & de Menezes, 1998). "High-involvement" HR systems have been defined in various ways, but they generally include three dimensions: high skill development; work designed so that employees have discretion and opportunity to use their skills in collaboration with other workers; and an incentive structure that enhances motivation and commitment (Appelbaum et al., 2000; Delery & Doty, 1996; Huselid, 1995; MacDuffie, 1995). Especially, the exact individual HR practices and work design principles that create a high involvement environment differ across companies and studies. However, they generally include a combination of employee selection practices that focus on creating internal labour markets, training programs and performance appraisals that emphasize long-term growth and the development of firm-specific knowledge, work design to favour collaboration and discretionary behaviours (Freud and Epstein, 1984; Delaney, Lewin and Ichniowski, 1989; Arthur, 1992; Tsui et al., 1997).

A growing body of evidence suggests that high involvement systems are more positively related to firm performance than practices that are transaction-based are. Arthur (1992, 1994) has found out that HR practices focused on enhancing employee commitment (e.g. decentralized decision making, comprehensive training, employee's participation) were related to higher performance. Conversely he also found that HR practices that focused on control, efficiency and reduction of employee discretion were associated with increased turnover and poorer manufacturing performance. Similarly, in a more recent study, Hayton (2003) has illustrated that discretionary HRM practices, offering incentives to employees for knowledge exchange and organizational learning, promote innovation and entrepreneurial performance. On the opposite, he also has illustrated that those traditional HRM practices, that clearly define job and monitor individual performance, are insufficient to promote entrepreneurial performance. Moreover, Rodriguez and Ventura (2003), in their study of Spanish manufacturing companies, have distinguished between "make" and "buy" HR systems. In the "make" system the organization invests in employees in exchange for long-term returns and is reluctant to terminate employment (commitment-based HR system). In the "buy" framework the external labour market constitutes the organization's main source of employees, human resource policies and practices have a market orientation and relationships between the organization and its workers tend to be short-term (transaction-based system). This study supported the argument of the positive effect of high involvement system, by illustrating that the human resource practices associated with a 'make' system – both in development and in compensation– are inversely related with employee turnover and that long-term development practices are beneficial for the organization's overall performance.

In more general terms, so far research has illustrated that, across a variety of industries (e.g. automotive assembly plants, steel companies and minimills, high technology firms, call centres) and countries (Bea et al., 2003; Ji, 2003), organizations with high involvement systems experience greater productivity, financial performance, and effectiveness than organizations with low involvement or control systems (e.g., Arthur. 1994; Delaney & Huselid. 1996; Huselid. 1995;

Ichniowski et al. 1997; MacDuffie, 1995; Wood & de Menezes, 1998; Youndt et al., 1996; Batt, 2002; Tsai, 2006; Kintana et al., 2006; Collins and Smith, 2007).

Concerning the rationale for the link between high involvement system and organizational performance, it hinges on the idea that it helps employees develop firm-specific human capital and skills, opportunities to use these skills and motivation to use them in the interest of the organizations (Batt, 2002; Collins and Smith, 2007). Indeed, "a bundle of overlapping HR practices provides employees with several occasions to acquire skills (for example, on-the job and off-the-job training, job-rotation and problem solving groups) and multiple incentives to boost motivation (for example extrinsic reward such as performance based pay and intrinsic reward from participating in decision making and good job design)". (MacDuffie, 1995: 1999). In particular, high involvement practices are essentially the levers by which a pool of human capital can be developed. Through selective staffing practices the firm seeks to identify individuals that possess relevant skills and abilities. Organizations also invest in the continuing skill development of their human capital pool through administering a variety of training aimed at increasing and maintaining each individual's job-related skills and providing development opportunities for individuals which broaden their skill base. Compensation systems are often used to attract individuals who possess the highest levels of skills. Finally, performance appraisal systems promote skill development through identifying specific skill needs of individuals (Collins and Smith, 2006). In addition, high involvement systems are the means through which firms seek to motivate employees to engage in discretionary behaviour that contributes to the achievement of the firm's goals. Firms can seek to distinguish applicants who are likely to be conscientious workers and who will be unlikely to engage in counterproductive behaviour that impedes organizational performance (Ones *et al.,* 1993). Similarly, training programmes allow the firm both to communicate proper behaviours to employees and to socialize employees into the norms and culture of the firm. Appraisal systems identify the extent to which individuals are engaging in both functional and dysfunctional behaviours

In order to analyze in a more detailed manner the performance effects of high involvement system and to illustrate criticalities in testing this link, Table 1 in appendix summarises research on this topic. To select the studies evaluated in the table, different criteria were used. Especially, studies appearing in regarded refereed journals were selected, in order to have the guarantee of choosing high-quality works. Then according to Wall and Wood (2005), selection was restricted to studies published from 1995 onwards, when the debate on the HR-performance link became a relevant priority in the HRM research agenda. Finally, studies that analyzed multiple HR practices were selected.

Table 1 aims to clarify i) the empirical settings where the analysis of the HR-performance link has been investigated more frequently ii) the definitions and measures of High Involvement system that have been adopted until now iii) the definitions of performance and the results of the analyses. Through Table 1, it is possible to clarify which the main flaws in the HR-performance link are in terms of context of analysis, measurement on the independent variables and research design. This type of analysis of extant research on the relationship between HR and performance is relevant when considering that, even though HR-performance link has referred as a hot topic in the SHRM for a long time (Becker and Gerhart, 1996), HR scholars themselves have pointed out various ambiguities in the test of this link. For instance, on the one side, Fleetwood and Hesketh (2006), drawing from critical realist philosophy, have pointed out the under-theorization of the HR-performance link and the inadequacy of the solution offered by the traditional "scientific approach" to investigate this relationship. On the other side, Wall and Wood (2005) and Wright and colleagues (2005) have pointed out that, within the scientific approach itself, there are flaws when testing HR-performance link, related to the measurement of dependent and independent variables, to the importance of adopting diverse measures of performance consistent with the nature of the business, and to the research design, that has rarely been longitudinal. Thus, an extensive analysis of the literature on this relationship is useful to better clarify the main ambiguities that are emerging in the HR-performance research and the contributions that the present study might offer.

Considering the setting of analysis, the link between high involvement systems and organizational performance has been investigated in a variety of sectors, ranging from multi-industry context to manufacturing and to service ones. Research based on multi-industry sample has been widely developed since the 90s (Huselid, 1995; Martell 1995; Huselid and Becker 1996; Huselid and Delaney, 1996; Harel, 1999 and 2003; Bae et al., 2000; Bae et al., 2003; Guthrie, 2000; Khatri, 2000; Guest, 2003; Bea et al., 2000 and 2003). Especially, Huselid and colleagues have widely analyzed the HR-performance link, by illustrating the association between the investment in high involvement systems with lower employee turnover, greater productivity and corporate financial performance (Huselid, 1995) and with employee productivity, cash flow, and market value (Huselid et al., 1997). Moreover Huselid and Becker (1996) have showed that, also when methodological cautions are considered to investigate causality in HR-performance link and the independent estimate of measurement error is adopted, one standard deviation increase in the use of HIHA raises the company market value per employee.

Outside the US context, in a multi-industry sample of 164 New Zealand firms, Guthrie has found out that firm competitiveness can be enhanced by utilizing a high involvement system; similarly, Harel (2005) in a multi-sector sample of Israeli organizations, has illustrated how a high involvement systems enhances employment opportunities for women, which, in turn, leads to organizational effectiveness. Finally, in a sample of companies representing all major industries in Singapore, Khatri (2000) has emphasized that high involvement systems have a stronger direct effect on profitability than sales growth and non-financial performance (quality, image/goodwill and efficiency of operations).

The relationship between high involvement systems and performance has been broadly analyzed in manufacturing companies as well (Kintana, 2006; Datta et al., 2000; Chandler, 2002; Cappelli et al., 2001; Addison 2002; Ahmad et al., 2003; Bjorkman et al., 2003; Lam et al., 1998; Ichniowski et al., 1997; Youndt et al., 1996; MacDuffie, 1995; Appleyard et al., 2000; Addison, 2001; Black et al., 2001; Wright et al., 2005). In particular, in this context, high involvement systems have been

found positively associated with labour productivity (MacDuffie, 1995; Ichniowski, et al., 1997; Datta et al., 2000; Addison et al., 2001; Black, et al., 2001; Cappelli et al., 2001), with operational performance (Kintana, 2006; Youndt, et al. 1997; Ahmad, 2000; Wright et al., 2005); quality of output (MacDuffie, 1995; Appleyard et al., 2000) and financial performance (Lam et al., 1998; Wright et al., 2005).

Recently this HR-performance link has been investigated in the service sector (Batt, 2002; Batt et al., 2002; West et al., 2006; Gelade et al., 2003; Rogg, 2001; Richard, 2001; Huang, 2000; Hoque, 1999). Especially, in banking industry it has been found out that a high involvement system has a negative effect on employees' turnover (Richard et al., 2001) and on a broad measure of performance including staff retention, customer satisfaction and clerical accuracy (Gelade, et al., 2003). In telecommunication establishments, Batt (2002) and Batt and colleagues (2002) have illustrated the positive effect of a high involvement system on sales growth and its negative effect on quit rates. In hotel industry, Hoque (1999) has emphasized the positive effects of high involvement systems on labour productivity, quality of service and financial performance. Finally, it has been showed that in the health care sector, the high involvement systems affects negatively patients' mortality (West et al., 2006). Notwithstanding the relevance of these studies, the amount of research on the HR-performance link in the service sector is sensibly lower than in the case of multi-sector and manufacturing industries and further research is needed to support the role of high involvement systems as a performance-enhancing driver also in this context (Boxall et al., 2003, Batt, 2002).

Concerning the national context of analysis of the high involvement systems -performance link, the relationship between HRM and organizational performance have been mainly investigated in the domestic operations of US firms. However, recently some scholars have focused on testing how high involvement systems affect performance in foreign subsidiaries located in transition economies (Fey and Bjorkman, 2001; Bjorkman et al., 2002; Park et al., 2003; Ngo et al., 1998). Other studies have investigated this link in domestic companies of Asian countries (Cheng and Huang 2009; Tsai,

2006; Khatri, 2000; Huang, 2000; Paul et al, 2003; Ji, 2003, Bea et al., 2000, 2003). Finally, a smaller number of studies have been carried out in Europe, with a main focus on UK companies (West et al., 2006; Guest et al., 2003; Addison et al., 2001; Richard et al., 2001; Hoque, 1999) and an increasing attention to Spanish ones (Kintana, 2006; Rodriguez and Ventura, 2003).

Thus, the existing research seems to suggest a strong interest and increasing support for the relationship between high involvement systems and performance. However, ambiguities are still there, when considering that this link does not hold always across the different studies, that the value of high involvement system as predictor of superior performance depends on the used measure of performance itself, that the issue of causality in the HR-performance link has not always been investigated through an appropriate research design (Wright et al., 2005) and that, while theoretical research has outlined the importance of using the construct of HR architecture, this dimension has not yet been investigated (Becker and Huselid, 2006).

To give examples of these criticalities, it is possible to observe that, in his investigation of Taiwan semiconductor industry, Tsai (2006) has not found out support for a positive link neither between individual HR practices nor between HR bundles and performance. In addition, the study by Chandler and colleagues (2002) has failed to find a direct relationship between organizational performance and neither intensive training nor group-based incentive compensation. Moreover, Richard and colleagues (2001) have emphasized how a high involvement system contributes to reduce turnover, but it does not predict increased productivity; Khatri (2000) has found out that high involvement system have a stronger effect on profitability rather than on sales growth and financial performance. Similarly, Ngo and colleagues have illustrated that these HR systems affect positively a wide range of organizational outcomes (net profit, development of new products/services, satisfaction of employees and retention of essential employees) but not sales. The analysis by Guest and colleagues has showed that HIHA is associated with lower turnover, but it does not affect firm's change in profitability. Furthermore, in exploring the issue of causality in the HR-performance link, Wright and colleagues (2005) have pointed out that "HR practices correlated

positively and significantly with operational and financial measures observed later. However, when comparing these relationships with those between HR practices and past or concurrent performance, the relative consistency across all these time periods suggests that the causal order could just as easily be reversed. Finally, the drastic reduction in observed relationships that occurs when controlling for past or concurrent performance provides further impetus for exercising extreme caution in inferring a direct causal impact of HR on performance" (2005: 433). Finally, when considering the definition high involvement work system, there is an increasing consensus that it involves selective staffing; work arrangements that enhance retention and motivation; work design to favour employees' discretion and opportunity to use skills in collaboration with other workers (Batt, 2002). Nonetheless, scholars have used very diverse measures to operationalize it and, above all, to the best of our knowledge, the emergent construct of HR architecture and, in particular of the high involvement architecture has never been used in the definitions and measurements included in the existing empirical studies on the HR-performance link. In such a way, HIHA refers as a superior driver of performance with respect to the more established dimension of High Involvement work system (Becker and Huselid, 2006). Notwithstanding its relevance, the performance effects of HIHA have not yet been tested.

Given the existence of those ambiguities, the importance of investigating the causal mechanisms through which HIHA influences performance has emerged as a compelling issue in the SHRM agenda (Becker and Gerhardt, 1996; Becker and Huselid, 2006).

Recent research in SHRM has developed the analysis of the "black-box" in the relationship between HR and business performance, by focusing on the mediating variables in this link (Collins and Smith, 2007). The analysis of these mediating mechanisms might contribute to the advancement of the SHRM literature, by clarifying the processes underlying the HR-performance link, by ruling out alternative explanations for it and by reinforcing the inference of a causal relationship (Batt, 2002).

Nonetheless, empirical research on the intervening variables in the HR-performance link is not yet fully developed and just a few studies have been carried out. Especially, SHRM research has called for the analysis of the organizational capabilities that mediate the HR-performance link to achieve a better integration of the HR and strategy literature: "following recent work in the strategy literature, we call for a new emphasis on strategy implementation as the focal mediating construct in SHRM. Specifically, we argue that it is the fit between the HR architecture and the strategic capabilities and business processes that implement strategy that is the basis of HR's contribution to competitive advantage" (Becker and Huselid, 2006: 899). Notwithstanding this call, extant studies have investigated the mediating organizational capabilities in the HR-performance link very seldom (Collins and Smith, 2007; Cheng and Huang, 2009). Especially, the work by Collins and Smith (2006) has been the first one to investigate the relevance of capabilities to explain the influence of High involvement work system on firm performance and to provide clear theoretical rationales for these relationships (Becker and Huselid, 2006). However, even though the authors opened up a way to further develop the theoretical and empirical link among HR, capabilities and performance, just another empirical study has been carried out until now within this framework (Cheng and Huang, 2009).

When considering research on the on this topic more in details, it emerges that a part of the extant studies have focused on the role of organizational climate as a mediating mechanism (Bowen and Ostroff, 2004). In particular, Rogg and colleagues (2001) have found out that climate, defined in terms of employee commitment, cooperation, collaboration and customer orientation, mediates the high involvement system-performance link in a sample of 351 franchise dealerships. The intervening role of climate, conceived as leaders, job goal clarity, job challenge, rewards, has been emphasized in a research in the retail banking industry as well (Gelade et al., 2001). Finally, Collins and Smith (2006) have illustrated the role of social climate defined in terms of trust, cooperation and shared codes. Other studies on the HR-performance link have focused on the mediating roles of organizational commitment (Ahmad, 2000). Some other works have emphasized the mediation

effect of helping employees develop their skills for performing jobs, of shaping their attitudes in the workplace and of motivating them to achieve organizational goals. According to this research, employee skills, attitudes and motivation are three major components of the ”black box” that generates firm competitiveness from HR practices (Park et al., 2003; Ramsey, et al. 2001). Finally, other streams of research have focused on the roles of employees' quit rates as mediating mechanisms (Batt, 2002; Batt et al., 2002).

More specifically, regarding those studies more related to capabilities as intervening variables in the HR-performance link (Collins and Smith, 2006; Cheng and Huang, 2009), both of them have focused on knowledge management processes as mediating mechanisms in the high involvement system-performance link and have found out support for their hypotheses. In particular, Collins and Smith have emphasized the role of knowledge-exchange/recombination processes, conceived in terms of workers' beliefs that exchange and combination would yield personal or organizational value and the extent to which they believed that employees could exchange and combine information. However, as the authors stated in their discussion, this study represent a first step in the direction of testing the effect of specific HR practices and capabilities. Indeed, the theoretical rationales for the diverse links in the study are mainly focused on organizational climate as a result of HRM and a driver of knowledge exchange processes, while the construct of capabilities and the related literature are mentioned and discussed just at the very end of the paper. Similarly, Cheng and Huang (2009) have explored the role of knowledge management capacity, defined in terms of knowledge acquisition, sharing and application processes. From a theoretical point of view, the authors framed the study in a very similar way with respect to Collins and Smith, with a clear emphasis on knowledge integration capacity but without discussing the framework of capabilities in a comprehensive way.

Thus, one the major challenges in testing the High performance system-performance links concern with the development of the black box and, especially, with the use of the HIHA and identification of the organizational capabilities within it. Moreover, while numerous studies on this

link have been carried out both in multi-industry and in manufacturing contexts, the test of this link in service sector and especially in the non-for-profit one has not been extensively carried out. In addition, the HR-performance link has been mainly investigated in US context, with a recent focus on Asian countries and transition economies. On the opposite, the European context has been less studied and UK companies represent the major source of data. Finally, it is still relevant to test the role of HIHA, when testing this relationship.

This research contributes to the advancement of SHRM by testing the HIHA-capabilities-performance relationship with a longitudinal study carried out in a sample of non-for-profit service organizations (museums) in Italy.

Introduction to the construct of capabilities

The concept of organizational capabilities has been debated from different theoretical perspectives, ranging from RBV (Helfat and Peteraf, 2003), organizational learning (Cohen and Levinthal, 1990; Hayton and Zahra, 2005), evolutionary economics (Winter, 2003) and managerial cognition (Tripsas and Gavetti, 2000) and knowledge based view of the firm (Kusunoki, Nonaka, Nagata, 1998; Grant, 1996). According to this multiplicity of approaches, organizational capabilities have been defined and operationalized in different ways. These definitions and operationalizations range from narrower constructs and measures, such as the organizational accumulated experience in a particular task or activity (Zollo, Reuer and Singh, 2002), or the degree of effectiveness of a strategic process (Subramanian and Venkatram, 2001; Zaheer and Bell, 2005), to more comprehensive definitions entailing accumulated experience, coordination and integration mechanisms, incentive systems, organizational practices (Pursue et al., 2004; Verona, 1999).

For instance, on the one side, McEvily and Marcus (2005) have defined capabilities as "the set of organizing processes and principles a firm uses to deploy its resources to achieve strategic objectives. The building blocks of capabilities consist of theories and frameworks, which structure knowledge and organize information. Managerial practices and techniques also are an important component of capabilities" (2005: 1034). To measure capabilities, they focused on capturing the extent to which the analyzed organizations implemented two strategic processes, TQM and pollution prevention, by emphasizing the dimension of routinized organizational practices. On the other side, Zollo and Singh (2004), in their study on US banking industry acquisition processes, focused on the dimension of knowledge and experience to define capabilities. Indeed, they measured "integration capabilities" in terms of knowledge codification and storing devices related to the banking acquisition process, by measuring whether or not the studied organizations used a set of document and manuals and quantitative models related to acquisition and when they started to use them.

Other studies focused on measuring capabilities with the results associated to a set of processes (Ethiraj, Kale and Krishnan, 2005; Jacobides and Hitt, 2004). For instance, Ethiraj and colleagues have defined capabilities as "firm's capacity to deploy resources (…) resting not only on implicit learning-by-doing processes but also on deliberate, proactive investments in building them" (2005: 26). In their operationalization of capabilities, they measured "client specific capabilities" and "project management capabilities" with the related output of these processes. The number of clients with whom the company has executed projects in the past for customer capabilities was used for client specific capabilities, and the number of in-process defects identified during the project execution phase and effort overrun were adopted for project management capabilities. Furthermore, Jacobides and Hitt (2004) in their study on mortgage banking industry have defined productive capabilities as "the operational efficiency of a portion of a production process" and they have measured it through labor productivity and operating margins. Some other studies, focused on pharmaceutical industry, (Afuah, 2002) identified capabilities with organizational ability to develop and utilize technological resources, such as patents, and measured those capabilities with the interaction between dummy variables representing the availability of a certain technology and firm's characteristics.

Finally, some empirical studies have developed a broader and more comprehensive approach to capabilities (Koen and Duyster, 2007; Darnall and Edwards, 2006; Dyer and Hatch, 2006). Koen and Duyster, (2007) defined alliance capabilities as "ability to internalize alliance management knowledge (…) essentially, we view alliance capabilities as a multilayered phenomenon: learning mechanisms (being organizational attributes such as an alliance department) are the building blocks of routines which again form the basis of a firm's alliance capabilities". The measure they proposed for capabilities focused on both the dimension of routinized practices and knowledge. Indeed, it entails 30 dummy variables to capture whether or not organizations implement tools for alliances (including knowledge storing devices, such as internet), practices for alliance management and functions dedicated to it. Other studies (Darnall and Edwards, 2006; Dyer and Hatch 2006) included

in their definition and measures of capabilities both the dimension of organizational practices and that of experience, knowledge accumulation in the practices themselves. Especially Darnell and Edwards (2006), in their study on environmental management system, defined capabilities in terms of pollution prevention and quality management practices and number of years of experience in those practices. Similarly Dyer and Hatch (2006) focused on knowledge transfer capabilities and considered both times spent in knowledge transfer and the related processes.

As a result of that variety of definitions and measures, there is still ambiguity on the construct of organizational capabilities and on how to operationalize it. By reviewing extant literature on capabilities, a fragmented picture of this construct emerges. Indeed, the choice of including a measure instead of another one has not always a clear rationale and the areas of overlaps between the different approaches are not exploited to give a more comprehensive view of the construct.

Moreover, from an empirical point of view, extant literature on organizational capabilities have focused mainly on manufacturing organizations (Zahra and Nielsen, 2002; Kusunoki, Nonaka, Nagata, 1998), and, in particular, on high-technology organizations (Tripsas and Gavetti, 2000; Hayton and Zahra, 2005; Zollo, Reuer and Singh, 2002), by pointing out the relevant capabilities to get competitive advantage in these sectors. Furthermore, the existing studies on capabilities in service sectors have focused on for-profit companies, ranging from banking and fund companies (Jacobides and Hitt, 2004; Zollo and Singh, 2004; Zaheer and Bell, 2005), software services ones (Ethiraj, Kale and Krishnan, 2005; Mayer and Salomon, 2006), food industry (Heugens, 2004) and professional service organizations (Jones et al., 1999). In addition, even when capabilities have been investigated in the cultural service sector, only for-profit organizations have been considered (Huygens et al., 2001, for an example on music industry; Lampel and Shamsie, 2003 for an example on movie industry). Accordingly, empirical research on capabilities in non-profit service sector is still under-developed, notwithstanding its importance to understand how organizations in this sector use their internal resources to improve their performance (Pablo et al., 2007). Indeed, non-profit service organizations are increasingly concerned with the need for achieving performance

improvement, while the internal mechanisms through which they get competitive advantage are still ambiguous (Knox and Gruar, 2006).

In order to illustrate clearly the evolution and the main issues about the construct of capabilities Table 2 in Appendix analyzes empirical contributions on this topic, by pointing out the theoretical frameworks, the settings, the definitions and the operationalizations that scholars have adopted. To select studies to be included in the table, we restricted our choice to reputable refereed journals; we selected studies published from 1994 onwards[1]; and we tried to cover, beyond the settings of manufacturing and high-technology companies, all the studies carried out in service sector, in order to give a clear picture of the definition and operationalization of capabilities in this less explored context as well. From this table, it emerges that the three main recurrent elements in the definition of capabilities are related to the area of "organizational practices", of their "reliability and routinezation" and of "knowledge accumulation and creation mechanisms".

We contribute to this discussion on organizational capabilities, firstly by providing a definition of capabilities based on the discussion and integration of the different theoretical frameworks and of the three identified elements that have analyzed it, and secondly by applying this definition to the unexplored industry of non-profit service cultural sector.

Definition of capabilities

Notwithstanding this multiplicity of approaches to the construct of capabilities, the integration of the existing definitions and operationalizations seems to agree on a definition of organizational capabilities as a set of 1) organizational practices, aimed at deploy resources for the achievement of an end result or an output, 2a) characterized by routinezation and by 2b) the existence of knowledge storing devices; 3) the source of these practices is organizational learning mechanisms. Especially, this broader definition draws upon the integration of the main theoretical frameworks that have

[1] In 1994, with the study by Henderson and Cockburn, the specific issue of capabilities' definition and measurement (issues that are crucial for our debate) came to prominence

studied the construct of capabilities: the resource based view, the knowledge based one, evolutionary economics and the organizational learning.

As it is apparent from Table 2, by relying on different theoretical approaches, studies on capabilities have focused only on some of these dimensions, such as organizational practices, more typical of the RBV approach (Darnall and Edwards, 2006; Verona, 1999), or the degree of experience or routinezation in a certain activity, more related to evolutionary economics and organizational learning (Zollo Reuer and Singh, 2002), or the mechanisms to accumulate and store knowledge, such as patents (Afuah, 2002), or documents, manuals and databases (Kusunoki et al., 1998), more coherent with a KBV of the firm. For example, in some studies, rooted in evolutionary economics, only the dimensions of learning and routinezation are considered and capabilities are measured through the number of years or the number of times that a certain activity was carried out (Zollo and Singh, 2004), while the dimension of organizational practices, more typical of the RBV and KBV approaches, are neglected. In such a way, the potential for a complementary and organic view of capabilities has been lost (Dosi et al., 2001; Kusunoki et al., 1998; Zollo and Singh, 2004)

The main argument for the integration of these theoretical lenses in defining organizational capabilities rely on the beliefs that these approaches have not formulated inconsistent assumptions on the boundaries of the construct of capabilities and that the integration of the main contributions to capabilities of these different approaches might lead to a more comprehensive view of capabilities themselves. By following the model developed by Gavetti and Levinthal (2004), theoretical frameworks within the strategic field (among which RBV, KBV and evolutionary economics were included) might be classified according to their assumptions on the individual choice processes (behavioural versus rational) and the level of analysis they adopted (structural versus situational). According to this model, evolutionary economics represents a "movement towards the middle" with respect to some aspects of the resource based view, since it implies that actions are not necessarily rational and there is not a presumption of equilibrium. Evolutionary economics might be figured out as an evolution with respect to RBV, rather than a theoretical

approach with incoherent assumptions. Especially the routine-based definition of capabilities within the evolutionary economics framework might be interpreted as a contribution to overcome some limits of the RBV, limits related to the inattention of RBV to the mechanisms by which internal resources actually contribute to competitive advantage and to how internal and external dynamics interact in yielding superior performance. Moreover, many early applications of the resource-based view of the firm and of knowledge based view had a similar flavour with respect to evolutionary economics and its conceptualization of capabilities (Dierickx and Cool, 1989; Prahalad and Hamel 1990; Collis and Montgomery 1995; Cohen and Levinthal 1990, Kogut and Zander 1992). Concerning organizational learning "learning processes are responsible for the evolution in time of two sets of organizational activities: one geared towards the operational functioning of the firm (both staff and line activities), which we will refer to as *operating routines;* the other dedicated to the modification of operating routines, which we identify with the notion *of dynamic capabilities"* (Zollo and Winter, 2002). Co-evolution of organizational learning mechanisms is the basis of the development of capabilities: organizational learning confers to capabilities their path-dependent and firm-specific features (Verona, 1999) and they are able to explain both the automatic and the deliberated organizational choices though which capabilities evolve (Zollo and Singh, 2004; Zollo and Winter, 2002). According to this view, the integration of these approaches in the definition and measure of capabilities would guarantee a more completed and non conflicting perspective on the construct.

Support for a more comprehensive and integrated view of organizational capabilities, that includes the three dimensions of practices, routinezation and knowledge I identified, is provided, in particular, by Grant's framework on organizational capabilities and knowledge integration (1996). The author has drawn upon a variety of research streams to build a complete framework to define the boundaries of the construct of organizational capabilities and their role to achieve competitive advantage. By building upon these research streams and by assuming knowledge as the single and key resource, Grant has defined organizational capabilities as follows: "integration of specialist

knowledge to perform a discrete productive task is the essence of organizational capabilities, defined as a firm ability to perform repeatedly a productive task, which related either directly or indirectly to firm's capacity for creating value through effecting the transformation of inputs into output" (1996: 377). In this definition, the dimensions of practices (productive task, related to creating value though transformation), of routinezation (repeatedly performed task) and of knowledge are present. Moreover, even though Grant's argument focuses on knowledge integration as the building block of organizational capabilities, consequences in terms of operationalization of his definition implies that not only knowledge, but practices as well have to be included in the measure of capabilities, as it is apparent from his examples of the capabilities architecture.

Support for this multidimensional approach to organizational capabilities comes also from the framework developed by Verona (1999) to define capabilities for successful new product development processes. By building on RBV and, especially on the approach of Dierickx and Cool, closer to evolutionary economics, the author has defined capabilities as "composed of knowledge and their wellspring is learning that takes place within the organization (…) they aim at deploying and coordinating different resources and they reside in routines that are intrinsically intangible" (1999: 133). In such definition, a broad view of capabilities, which goes beyond the single dimension of either knowledge or routinized practices, is present. Moreover, when coming to the definition of the capabilities that are crucial in the success of product development, the author proposed both routinized practices, such as "marketing mix activities", and knowledge, such as "technological complementarities" conceived as previously accumulated technological knowledge.

Thus, the contribution of our definition is in providing a comprehensive conceptualization and operationalization of organizational capabilities that integrate the extant literature in a consistent manner. As follows, I will briefly discuss the different part of this definition.

1) *Organizational practices*

The inclusion of organizational practices, which are relevant to achieve superior performance, in the definition and operationalization of capabilities have been widespread, especially in those studies rooted in RBV (McEvily and Marcus, 2005; Darnall and Edwards, 2006; Ethiraj et al., 2005; Peteraf and Helfat, 2003; Verona, 1999).

The concept of organizational practices in organizational capabilities literature entails those activities that, according to the context of study, are directly related to the execution of strategic business processes, such as R&D activities in pharmaceutical companies (Verona, 1999) or pollution prevention activities for companies where pollution prevention is strategically valuable (Darnall and Edwards, 2006). These activities are directly related to an end result or an output (Peteraf and Helfat, 2003), as it occurs when we think about the output of quality management activities (McEvily and Marcus, 2005).

This dimension of practices has been differently defined and operationalized in extant literature. In particular, two main approaches can be identified. The first one focuses on measuring directly the *organizational ability* to carry out certain practices (Subramaniam and Youndt, 2005; Subramaniam and Venkatraman, 2001), the second one focuses on the *extent to which* a certain practice is carried out (or whether it is carried out or not) (Zahra and Nielsen, 2002; Zaheer and Bell, 2005; Meyer and Solomon, 2006). For instance, on the one side, in their study on the relationship between intellectual capital and innovative capabilities, Subramaniam and Youndt (2005) have introduced the constructs of incremental and innovative capabilities as the capacity of the organization to reinforce and to extend its current expertise and product/service lines and to make current product/service lines obsolete. The authors measured these capabilities through a scale that directly asked about the "ability" of the organization to perform these two processes. In a similar way, Subramaniam and Venkatraman (2001) defined and measured new product development capabilities, by inquiring respondents on the "ability" of the organization to be responsive to market requirements, to be competitive in terms of price and to penetrate new overseas markets.

On the other side, some studies did not focus on the ability to perform a practice, rather they emphasized the extent to which these organizational practice existed in the organization. Zahra and Nielsen (2002) defined "manufacturing capabilities" in terms of managerial systems and technological sources for manufacturing and they measured it through scales to assess their level of implementation (i.e. item for technological sources: "this company licenses process technologies from other companies"). Mayer and Solomon (2006) focused on the dimension of practice as well, rather than that of abilities. However, they proposed a measure of "technological capabilities" based on dummies variables that assessed whether or not to perform an activity involved the used of some technologies. This approach to the use of dummy variables has been adopted in the already mentioned research by Koen and Duyster (2007) and it is consistent with others used in literature (e.g., Mayer & Nickerson, 2005).

In particular, when comparing the two approaches (ability to perform the practice versus the degree of implementation), the second one seems more coherent with the definition of capabilities focused on the concept of stable and routinized pattern of activities. Indeed, according to Peteraf and Helfat (2003), capabilities: "involve performing an activity, such as manufacturing a particular product, using a collection of routines to execute and coordinate the variety of tasks required to perform the activity (…). To say that an organization has a capability means only that it has reached some minimum level of functionality that permits repeated, reliable performance of an activity. Some versions of a capability are better than others". To express this dimension of activity whose reliability can be ranked according to how and the extent to which it is performed, focusing on the degree of implementation of the activity itself seems more appropriate than focusing on the direct "ability" to perform.

This type of operationalization seems more suitable, since it allows capturing the dimension of the practices and that of its reliability and routinezation. By following this approach, as it will be clearer in the next paragraphs, we propose an operationalization of museum capabilities based on a

set of dummy variables to assess whether or not museums carry out the set of practices constituting its organizational capabilities.

Even though the element of routinezation has been mentioned in this paragraph, as follows, it will be examined together with the other attribute of organizational practices included in our definition, that is, the presence of knowledge storing devices.

2a) *Routinezation* and 2b*) Knowledge storing devices*

Concerning the issue of routinezation, the extent to which organizational practices are capabilities depend on the degree of reliability and functionality they have reached (Winter, 2003; Zollo and Winter, 2002; Dosi et al., 2001).

Indeed, the element of routinezation is present only in those operationalizations of capabilities that entail the extent to which the organization has accumulated experience in a certain task (Darnall and Edwards, 2006) or where the extent to which these organizational practices are implemented is examined (Peteraf and Helfat, 2003; Mayer and Solomon, 2005).

On the one side, in some studies, the aspect of routinezation has been analyzed in isolation with respect to that of organizational practices. For instance, Boeker and Wiltman (2003), in their study of US semiconductor industry, identified "adaptive capabilities" with the experience of top management team (TMT) and they defined them with the amount of time that TMT has worked in the semiconductor sector. Similarly, Zollo, Reuer and Singh (2002) emphasized that capabilities "originate from the learning mechanism of "experience accumulation" and they involve the execution of known procedures" (2002: 132). The authors defined alliance capabilities in biotechnology industry with i) the experience with the alliance, ii) experience with the technology and iii) experience with the partner (experience is defined as the number of prior agreements with respect to the focal alliance). Finally, White (2000) identified technological capabilities in pharmaceutical industry with the prior experience of the organization with a focal pharmaceutical

compound and with a compound of the same family and he used dummy variable to code whether the firm has accumulated that type of experience or not.

Some other studies, as noted, included both the dimension of practices and routinezation, either by including in the measurement both practices and experience with the practices (Dyer and Hutch, 2006), or by including the extent to which practices are performed (Koen and Duyster, 2007).

However, the point that the building blocks of organizational capabilities include other elements beyond "patterns of stable activities" (Dosi et al., 2001) has been shared by different theoretical perspectives (Kusunoki et al., 1998; Henderson and Cockburn, 1994). In particular, existing contributions have pointed out the role of what we define as "knowledge storing devices". With this concept I indicate the mechanisms through which the organization stores its knowledge base and make it available to its members (Dosi et al., 2000; Verona, 1999).

The importance of including the dimension of knowledge storing devices in the definition of capabilities have been developed since the seminal work by Leonard Barton (1992), where, by relying on a KBV of the firm, the author identified "technical systems" as a component of firm's core capabilities: "knowledge embedded in technical systems, results from years of accumulating, codifying and structuring the tacit knowledge in peoples' heads" (1992:113). Examples of these technical systems were for example data bases of product tests conducted over decades.

Empirical research on capabilities has included measures for the presence of these devices in its operationalization. Indeed, the existence of customer databases in manufacturing organizations, (Kusunoki et al., 1998), of manuals related to the management of acquisition for organizations engaging in these activities (Zollo and Singh, 2004), of patents stocks in pharmaceutical companies (Afuah, 2000) are example of the use of this concept in the definition and operationalization of capabilities.

From a theoretical point of view, the importance of including these dimensions in the operationalization of capabilities is related to the fact that capabilities are "*learned* patterns of activities" whose development is related to the degree of organizational experience accumulation,

knowledge articulation and codification though storing devices (Zollo and Winter, 2003). Especially, according this framework, knowledge codification is carried out when individuals codify their understanding of performance implications of their actions in written tools, such as manuals, blueprints, spreadsheets, decision support systems, project management software. These process of knowledge codification and its related tools have a central role for capabilities, since "whatever the intentions motivating the codification effort, the process through which these tools are created and consistently updated implies an effort to understand the causal links between the decisions to be made and the performance outcomes to be expected, even though learning might not be the deliberate goal of the codification effort" (Zollo and Winter, 2003: 342). Thus, on the side, the presence of knowledge storing devices in the definition of capabilities is required since it captures the extent to which capabilities can be performed in a reliable manner and how capabilities could be nurtured. Moreover, the inclusion of these devices somehow reinforces the dimension of routinezation, since at the basis of the creation of knowledge storing devices, there is the accumulation of experience with a certain organizational practice. Finally the relevance of including knowledge storing devices in the definition of capabilities is also related to their feature of specificity with respect to the organizational context. Indeed, knowledge storing devices comprise the knowledge base of the organization (Kusunoki et al., 1992) and it "may become so deeply embedded in the knowledge of local groups within the firm that it become strategically important capabilities" (Henderson and Cockburn, 1994: 65).

Analyzing more in details empirical research including knowledge device, Henderson and Cockburn (1994) in their work on the measurement of competencies in pharmaceutical companies, together with the other dimensions of capabilities, have developed the construct of "local competence" and have measured it through the organizational stock of patents obtained in different research program. Another crucial research to understand the inclusion of knowledge storing devices from an empirical point of view is that by Kusunoki and colleagues (1998). The authors have defined local capabilities for new product development as "Technological Accumulation" and

"Database". Technological Accumulation is affected by the amount of individual technical knowledge in the form of patents as well as the amount of resources and time available for developing technical knowledge related to the selected product. Database is a variable to measure to what degree the firm's technical knowledge is accumulated as databases and/or documents available for the development of the selected product. Finally the already mentioned research by Zollo and Singh (2004) has defined capabilities in terms of the existence of knowledge storing devices and experience with them.

Thus, while the organizational practices are the basic dimension of the definition of capabilities, the degree of routinezation and the presence of related knowledge storing devices are their essential attributes, as it is apparent from the definition of Dosi and colleagues (2001). The dimension of knowledge storing device will be included as well in our measure of capabilities

3) O*rganizational learning mechanisms*.

The importance of organizational learning in capabilities literature has been widely recognized (Koen and Duyster, 2007; Grant, 1996; Gavetti, 2005; Verona, 1999). Recently, in their already quoted framework on learning and capabilities, Zollo and Winter (2002) have pointed out how operative and dynamic capabilities emerge from the co-evolution of learning mechanisms, classified from the less deliberated mechanism of experience accumulation, to more conscious and directed ones of knowledge articulation and codification.

This dimension of learning has been already captured by the element of routinezation and knowledge storing devices in our definition and we are not going to specify a third feature to be included in the definition of capabilities and to be measured. However, it is worthy to illustrate the theoretical argument for including learning in the discussion of the construct of capabilities.

The dimension of learning is essential to define the features of "rent-generating activities" of organizational capabilities and to clarify how capabilities might be originated and evolve (Grant, 1996; Helfat and Peteraf, 2003). On the one side, to identify in learning episodes the origins of

organizational capabilities implies to recognize their firm-specificity nature: "learning makes capabilities consistent with the properties of rent generation, since its evolutionary nature results both from the history of the firm—that is, path dependence—and from the location where it physically takes place— that is, firm specificity" (Verona 1999: 134). On the other side, to emphasize that capabilities are the related to learning processes allows understanding that they might owned by the organization with different degrees, depending on the extent to which capabilities are stable and reliable and on the extent to which they rely on knowledge devices to be performed. Moreover, this focus on learning is able to reconcile the view of capabilities as routinized, somehow automatic and stable organizational practices with a more behaviouralist approach to them that imply the possibility of a more deliberated evolution to guarantee organizational survival.

Capabilities in non-profit service sector, the context of Italian museums

The investigation of organizational capabilities is particularly relevant for the Italian museum sector. Indeed, the environment in which museums operate has changed rapidly in the last decade and museums have been pushed to be accountable for their performance (Moretti, 1999; Moore, 1994). This has been due to the crisis in public funding, the related financial cutbacks and the new emphasis on the issue efficiency in management that have invested public and non-profit sector in Italy as well as in other western countries (Pollit and Bouckaert, 2000). Moreover, this shift towards a major relevance of accountability and performance is also related to a more intense competition that museums have to cope with due to the broader range of attractive leisure pursuits (Paulus, 2003; Moore, 1994).

Accordingly, it is particularly relevant to point out the organizational capabilities through which museums can improve their performance and the mechanisms that originate them. A museum might be defined as "a non-profit making, permanent institution in the service of society and of its development, and open to the public, which acquires, conserves, researches, communicates and

exhibits, for purposes of study, education and enjoyment, material evidence of people and their environment" (ICOM[2] statute). Extant studies on museum sector suggest that museum core activities entail different dimensions, ranging from the management of the collection to the development of cultural events and the activities to enforce museum reputation towards its main stakeholders (Gilmore and Rentschler, 2002; Regione Lombardia, 2005). Concerning the museum core activities on its collection, they entail the processes of registering, inventorying and cataloguing collection, and the acquisition of new collection pieces. Moreover, the area of preservation is crucial and it entails the activities of evaluating the state conservation of the collection and of the building and the activities related to the restoring interventions. Concerning the activities more related to the development of cultural service, they include carrying out exhibitions, educational activities, seminars and other cultural events. When considering the activities related to build the museum status and reputation, processes such as the implementation of communication campaigns, the creation of advertising material and scientific publications might be mentioned (Regione Lombardia, 2005; Paulus, 2003; Carnegie and Wolnizer, 1996).

By relying on the integration of literature on organizational capabilities and of the main features of museum organizations, we suggest that the conceptualization of museum capabilities should include the construct of operational and reputational capabilities (Heugens, 2004)

Indeed, the construct of operational capabilities implies performing activities related to the operational functioning of the organization and to day-to-day problem solving (Peteraf and Helfat, 2003; Henderson and Cockburn, 1994). In the museum sector, operational capabilities include the activities of collection management, entailing the processes ranging from cataloguing, restoring to lending and acquiring new collection and the activities of service development, entailing the delivery of educational services, exhibitions and cultural events. The construct of reputational capabilities include organizational practices aimed at building museum reputation and image towards different stakeholders (Heugens et al, 2004), so reputational capabilities include activities

[2] ICOM is the international organisation of museums and museum professionals which is committed to the conservation, continuation and communication to society of the world's natural and cultural heritage, present and future, tangible and intangible.

such as the production of informative materials on the museum, more directed to potential and actual visitors, and the activities of publication aimed at building a reputation towards stakeholders such as museum professionals and the territorial communities. Reputational capabilities can be conceived as related to the implementation of a strategic activity as well, since in the service sector, and in particular in the non-profit one, reputation is a strategic asset (Rindova, et al., 2005). This is due to the intangibility of the delivered service, the non-utilitarian nature of service industries, or the impossibility of evaluating its quality before consumption (Caves, 2000), and to the importance of image to attract financial funding (Jobome, 2006). The difference between reputational and operational capabilities is due to the fact that, while operational capabilities are internal-oriented, reputational capabilities are external-oriented, since they include practices that are related to the management of external audiences, such as visitors, volunteers, donors, local authorities and professional community (Heugens, 2004).

To focus on these two sets of organizational capabilities allows capturing the main processes that literature on non-profit service organizations identified as the crucial ones to drive performance improvements. Indeed, the business model of non-profit organizations might be classified according to two major tensions that characterize these companies (Anheier, 2000; Anheier and Seibel, 1990). One of these tensions pushes non-profit organizations towards the internal efficiency in the management of organization's day-by-day critical processes and in the enactment of its value. On the other side, non-profit organizations focus on acquiring the external recognition of their role in the society, recognition that is particularly relevant even with respect to for profit organizations, due to the externalities that non profit ones are able to produce. Operational capabilities, defined in terms of management of collection and development of educational services fulfill the dimension of managing the internal processes through the museum carries out its cultural mission. Reputational capabilities entail the tension of building social recognition and the need of engaging a wider range of stakeholders with respect to for-profit organizations. In addition, these two sets of capabilities include the main value-creating processes that museum literature defined as decisive to explain

performance improvements in these organizations (Ames, 1994; Gilmore and Rentschler, 2002). Moreover, these dimensions fulfill the activities that the Italian museum accreditation scheme has pointed out as most valuable to improve organizational outcomes (Italian state law 112/1998; Lombardia Region, 2005).

Having defined the construct of capabilities and its application to non-profit service sector, I will define the rationale for the relationship between HR practices and organizational capabilities.

HIHA and capabilities

As far as the rationale for the role of organizational capabilities in the HR-performance link is concerned, extant research has proposed two consistent explanations. Firstly, existing studies have proposed the existence of a direct link between HR and capabilities, by pointing out that HR practices are responsible for skills acquisition, learning, trust and accumulation and creation of knowledge (Wright et al., 2001). Secondly, researchers have established a link between HR practices and capabilities, by assuming that HR practices could motivate employees to enact the desired behaviors and activities that are strategic for the organizational success (Chadwick and Capelli, 1998; Collins and Clark, 2003). According to these arguments, HR practices do not constitute by themselves a source of competitive advantage, but they contribute to create a human capital pool, endowed with the necessary skills and motivation they provide employees with the incentives to apply their knowledge and exchange it and they determine the alignment of the employees and firm's interests (Wright et al., 2001). In such a way, HR practices affect the enhancement of the firm's competence and the implementation of firm's strategic capabilities (Collins and Clark, 2003; Wright et al., 2001).

Especially, research has put the ground for considering the HIHA as a particularly effective mechanism to provide employees with the specific knowledge, motivation and incentives to enact organizational capabilities.

Within HIHA, High involvement HR configuration is able to create an environment that motivates employees to act in the best interest of their firm and that elicits behaviors that contribute to competitive advantage (Collins and Clark, 2003; Bowen and Ostroff, 2004). Collins and Smith (2006) illustrated that High involvement practices create a trustable and cooperative environment among employees, through the implementation of group-based incentives, of high opportunities for interaction and through the establishment of an employees' orientation to the organizational results rather than to the individual achievements. This type of environment is the one in which the alignment of employees' behaviors and organizational goals is more likely and in which the implementation of the required organizational capabilities could be expected. In addition, High involvement HR practices focus on selective hiring of employees with high skills, on a firm investment in initial training and on the design of work that provides employees with the opportunities for individual discretion and for learning through the collaboration with other employees (Batt, 2000). Moreover, these HR practices are composed of organization- based compensation plans, designed to increase knowledge sharing and the commitment to the organization (Collins and Smith, 2006). Thus, high involvement HR configurations, by stimulating knowledge exchange, integration and recombination (Cheng and Huang, 2009), are responsible for the enhancement of those learning mechanisms that are at the basis of capabilities' evolution (Zollo and Winter, 2002).

Moreover, HIHA includes employment security, through the implementation of long-term contract aimed at internally developing strategic employees. On the one-side, these open-ended, organization-focused arrangements are able to increase the employees' motivation to acquire organizational specific knowledge and to enact, in a reliable manner, the behaviors that are required by the organizations to achieve superior performance (Batt, 2002). On the other side, internally developing human capital through long-term contracts helps firms realize the benefits of their investment in employees in terms of their value-creating potential

Finally, when considering the dimension of psychological contract, relational psychological contract included in the HIHA implies an open-ended and long-term relation of mutual investment in each other by both the employee and the employer. In their theoretical model of psychological contracts underlying the diverse employees' work arrangements, Park and colleagues (2003) described the contract of "core" employees (defined as those employees with an understanding that the employment will be continuous or ongoing) in terms of a relational contracts characterized by higher dynamism, broader scope, less tangibility, greater social-emotional focus and higher long-term orientation, with respect to those of contingent employees. Especially, the authors specified implications of the creation of this type of relationship with core employees, by formulating proposition about its possible positive influence on employees' trust, identification, commitment toward the organization, innovative and extra-role behaviours. From an empirical point of view, it has been found out that, when established with permanent and core employees, this type of employee-employer relation lead to superior employees' performance, in term of task and extra-role performance, intention to stay and absenteeism, and more favourable attitudes, in terms of commitment and trust in co-workers (Tsui et al., 1997). According to this view, the establishment of a relational psychological contract might induce employees to behave in the interests of the organization and to enact with high performance and commitment those organizational processes, capabilities that are crucial for the organization to achieve superior performance.

A final consideration to capture the effect of HIHA architecture on organizational capabilities is that the architecture, differently from HR configuration or employment contract considered in isolation, implements a wider set of coherent processes that are aligned with the employees' human capital characteristics. Thus, the use of this complex HR system to manage those employees whose human capital is most instrumental for the success of core processes in the organization makes the HR architecture an effective tool to enhance the implementation of organizational capabilities.

Thus, according to our definition, organizational strategic capabilities entail both the knowledge-, the motivational- and the behavioral dimensions that HIHA is able to enhance. Indeed our

definition of capabilities entails organizational practices, directly related to the execution of strategic business processes, enacted with a certain degree of routinezation and reliability, characterized by knowledge storing devices and stemming from learning mechanisms. According to this view, the following hypothesis is formulated:

Hp1): the higher the level of HIHA, the higher the level of a) operational capabilities b) and reputational capabilities

Capabilities and museum performance

Regarding museum performance, the integration of museum literature and research on non-profit organization suggests to consider as measure of performance the number of visitors (Paulus, 2003; Mairesse and Eeckaut, 2002; Carnegie, G. & Wolnizer, P. 2000; Anderson, 2002); the number of volunteers (Anderson, 2002; Balabanis, Stables and Philps, 1997); the extent to which the museum generates revenues from its program activities with respect to external sources of funding (financial autonomy ratio) (Paulus, 2003); the extent to which the museum is able to attract private funding in the forms of donations and sponsorships (donors funding ratio) (Jobome, 2006; Callen and Falk, 1993)[3]

On the basis of the review of literature on motivations to visit, to volunteer and to donor, I will provide rationales for the links between capabilities and each measure of museum performance.

3 Extant research on museum and non profit service includes in this measure also the ability to attract public funding, since, in other western countries, also the ability of attract public funding might be considered as a sign of a good museum performance (Callen and Falk, 1993; Hallok, 2002; Paulus, O. 2003). However, even though the way through which Italian public institutions fund museums is shifting towards more meritocratic criteria (Lombardia Regional law, 1/2000), nowadays public funding still relies on a logic of assistance, that is detached from any consideration of museum efficiency or cultural quality. According to this view the higher the extent to which museums relies on public funding, the lower their ability to survive on the basis of their own activities. Thus we have not included public funding in the measure of the museum ability to attract other source of funding beyond their own daily activities. However, we have considered it in the evaluation of museum financial autonomy.

Number of visitors: exiting research on museum visitors have highlighted different dimensions of their motivation. In particular, the dimension of "to be given food for thoughts", of "enriching your life" and of "learning something" have been pointed out (Jansen-Verbeke and van Rekom, 1996). On the other side, by enlarging this perspective, Thyne (2000) has emphasized the role of learning, of the social motivations (related both to the possibility of staying with children and doing something with them and of spending time with family and friend in general), of the sense of accomplishment (because you have done something that is socially recognized as a good action) and a sense of belongingness (visiting the museum is useful to reduce the sense of being an outsider in a certain place). According to this view, I infer that operational and reputational capabilities are relevant to explain the number of museum visitors. Indeed, operational capabilities are related to the quality of the cultural services that the museum is able to carry out, since they include activities ranging from managing and enriching the collection to the implementation of exhibitions and these dimensions have an impact on visitors' learning and social motivations. Moreover reputational capabilities are able to improve museum image and museum reputation and visibility, by satisfying the need for a sense of accomplishment and belongingness, since the experience of visiting might be socially recognized. Accordingly we formulate the following hypothesis

Hp2: The higher the level of a) operational capabilities and of b) reputational capabilities, the higher the number of visitors

Number of volunteers: research on volunteers has emphasized different factors underlying motivations to volunteering, motivations that go beyond the traditional explanations based on altruistic beliefs. In particular these factors are related to the three main areas of social recognition, of social interactions, of skills development and competence acquisition seeking (Clary et al., 1998; Holmes, 2003; Hibbert, Piacentini and Al Dajani, 2006). According to these dimensions, I infer that operational and reputational capabilities affect the number of volunteers. Indeed, operational

capabilities are able to give a signal about the richness and healthiness of museum operative functioning and they might increases the perception of opportunities of learning and acquiring competences. Reputational capabilities might affect social recognition needs, by increasing museum institutional reputation. Accordingly, we formulate the following hypothesis:

Hp3: the higher the level of a) operational capabilities and b) reputational capabilities the higher of number of volunteers

Financial autonomy: the issue of financial autonomy, in terms of the extent to which the organization acquires its financial resources from its program activities with respect to external sources of funding, has been widely proposed as a measure of performance in museum literature (Paulus, O. 2003; Carnegie and Wolnizer, 2000). Also literature on non-profit organizations has proposed financial autonomy measures as indicators of performance (Berckley and Van Horn, 2002).

Since the measure of financial autonomy includes revenues generated from core museum program activities, I infer that operational and reputational capabilities influence financial autonomy. Indeed, operational capabilities improve the ability of museums to get resources from core activities (such as temporary exhibitions), by affecting the quality of museum collection management and the extent to which museums develop cultural services and events. On the other side, reputational capabilities affect financial autonomy by improving museum status and awareness and, in such a way, by increasing museums' ability to attract possible clients for their services..

Hp4: the higher the level of a) operational capabilities and b) reputational capabilities, the higher the financial autonomy ratio

Private donors' funding: research on donations to non-profit organization has emphasized as major factors of motivations donors' familiarity and awareness of the organization (Schlegelmilch, 1989) and the efficiency and effectiveness with which the organization carries out its mission (Bendapudi et al., 1996). In particular, research on membership and donations in museum field has highlighted also the role of philanthropic motivations related to art and, in general, to heritage preservation (Paswan, 2004). According to the complexity of these motivations, related to reputational, managerial and cultural issues, we infer that operational and reputational capabilities influence donors' funding ratio.

Hp5: the higher the level of a) operational capabilities and b) reputational capabilities the higher the donors' funding ratio

As discussed above, SHRM has argued that organizational capabilities represent mediating variable in the HR-performance link. In this study, I have proposed that HIHA influences museum capabilities, and that these capabilities have a significant effect on museum performance. Therefore, we expect that museum capabilities mediate the relationship between HR practices and museum performance.

Hp6) a) operational capabilities and b) reputational capabilities mediate the relationship between the level of HIHA and the number of visitors

Hp7) a) operational capabilities and b) reputational capabilities mediate the relationship between the level of HIHA and the number of volunteers

Hp8) a) operational capabilities and b) reputational capabilities mediate the relationship between the level of HIHA and the museum financial autonomy ratio

Hp9) a) operational capabilities and b) reputational capabilities mediate the relationship between the level of HIHA and the donors' funding ratio

Differentiated HR architecture and organizational performance

As noted, research in SHRM has widely investigated the link between the use of High Involvement HR systems and a variety of organizational outcomes, including financial performance, employee turnover, and commitment (Huselid, 1995; Whitener, 2001). Nonetheless, these studies have assumed that employees constitute an internally coherent group to which an undifferentiated set of HR practices might be applied.

However, the assumption that, within the organization, employees are segmented according to the strategic value of their skills and knowledge has received support since the 80s. In particular, research on the antecedents of employee make-or-buy choices and work arrangements has contributed to sustain the skills-based segmentation criterion, by highlighting that organizations utilize a variety of approaches to allocate their workforce, and that the mode of workforce's allocation depends on the specificity of human capital (Pfeffer and Cohen, 1984; Davis-Blake and Uzzi, 1993). Indeed, Pfeffer and Cohen (1984), in their analysis of the antecedents of internal labour market (ILM), have found support for an explanation of ILM based on workers' skills specificity. Even though their focus was on a power- and institutional-based explanation of ILM, their analysis confirmed that the level of human capital specificity of the workforce positively affected the extent to which organizations used the ILM. Similarly, Davis-Blake and Uzzi (1993), in their analysis of the determinants of employee externalization, have found out that when the level of informational complexity and skills specificity of the job were high, externalization and the use of temporary workers were less likely.

By integrating the explanation of employee make-or-buy choices based on human capital theory, with transactions cost economic and resource based view perspectives, Lepak and Snell (1999) have proposed the model of HR architecture, a framework aligning each employee group with a coherent set of HR practices and work arrangements. According to the HR architecture, employee groups are defined on the base of the uniqueness and strategic value of their human capital and HIHA has to be used to manage employees with highly valuable and unique human capital.

Especially, Lepak and Snell have distinguished among four types of HR architecture depending on the combination of high/low level of uniqueness/strategic value of employees' human capital. When employees' human capital is both valuable and unique (corresponding to the group of "core" employees) the HIHA is the appropriate one: in this configuration, organizations encourage significant mutual investment on the part of employers and employees in developing critical firm skills with log-term involvement and investment; they may loosely define jobs to allow for change and adaptation and may base staffing decisions on employee potential rather than simply current knowledge and skills. They might sponsor career development and mentoring programs to encourage employees to build idiosyncratic knowledge that is more valuable to the firm than to competitors.

When employees' human capital is highly strategic, but not unique, the organizations acquire this human capital on the market and, in order to manage it, they may strive to establish a "symbiotic" employment relationship based on the utilitarian premise of mutual benefit; the HR configuration is likely to emphasize staffing and deploying skills for immediate contribution.

When employees' human capital is generic and not strategic, the HR architecture aims at buying it externally: temporary employments, leasing arrangements, and other forms of contract work are used for this category; individuals have specific performance requirements and limited organizational involvement; firms will concentrate on enforcing rules and regulations, upholding specific provisions regarding work protocols, and ensuring conformance to standards.

When employees' human capital is unique, but not strategic for the firm, organizations might establish alliance, where both parties can capitalize on the other's specialized knowledge—gaining value from the human capital as well as transferring knowledge—without incurring the entire costs of internal employment; firms may create true "partnerships" that focus on mutual investment in the relationship and build trust among involved parties; HR systems that encourage collaboration and information sharing are also required.

The theoretical rationales for this alignment of employees' human capital features and the way they are managed rely on an *efficiency* reasoning rooted in transaction cost economics, RBV and human capital theories: in order to get superior performance, long-term investments and "make" choices should be done just for those employees who are in charge for strategic business processes and who have the competences to contribute to superior performance with added-value (Lepak and Snell, 1999). Their key insight is that not all employees, or employee skills, are inherently strategic, and that employees with different roles in the value creation process ought to be managed differently.

One of the main implications underlying this model is that, in order to achieve competitive advantage, a *differentiated* HR architecture can be adopted not only across different firms, but within organizations. According to the principle of a differentiated architecture, employees' "make-or-buy" choices are driven by the objective of retaining and developing those employees whose skills are strategic and unique for the firm. On the other side, firms should develop more short-term and transactional work arrangements for the other non-strategic employees' segments, depending on the value and uniqueness of their skills (Delery and Shaw, 2005).

Together with the exploration of the strategic capabilities in the HIHA-performance link, SHRM scholars have defined the empirical test of the relationship between the use of a differentiated architecture and firm performance a priority in the SHRM agenda: "A clearer articulation of the "black box" between HR and firm performance is the most pressing theoretical and empirical challenge in the SHRM literature. This requires a new emphasis on integrating strategy implementation as the central mediating variable in the HR-firm performance relationship (…) It highlights the significance of a *differentiated* HR architecture not just across firms but also within firms. (Becker and Huselid, 2006: 915). Notwithstanding this relevant call, so far research has focused on testing whether or not the use of different architectures across firms exist (Lepak and Snell, 2002; Melian-Gonzales and Verano-Tacorante, 2004); just one study has analyzed the existence of a differentiated architecture within firms (Lepak et al., 2007); and few empirical studies

have analyzed the performance effects of using a differentiated workforce management strategies, but they have not carried out a proper test of the link between a differentiated architecture and organizational performance, by focusing only on certain elements of the architecture, such as employment contracts (Lepak, et al., 2003; Fey et al., 2001; Rodriguez and Ventura, 2003).

Especially, the issue of the *existence* of different employee groups and the need to manage them through different HR configurations, according to the HR architecture model, has received theoretical (Delery and Shaw, 2005; Becker, Huselid and Beatty, 2005; Kang, Morris and Snell, 2007) and empirical support (Lepak and Snell, 2002; Lepak et al., 2007; Melian-Gonzales and Verano-Tacorante, 2004).

Indeed, theoretical research has agreed that, within the organization, differences in HR systems are directly related to the strategic value of employee performance in a particular job, and that to invest in HIHA system across all the employee groups might be inefficient to get competitive advantage (Delery and Shaw, 2005). According to Delery and Shaw (2005), a "necessary condition for competitive advantage is a low voluntary turnover rate among the strategic workforce", not across all the employees (2005: 168). In order to support their argument, the authors mentioned the cases of Wal Mart and McDonald's, where the competitive advantage of the firms is related to their ability of blending strategic and non-strategic workforces, by managing them through different HR systems. In such a way, these companies ensure the retention and development of core-employees, while permitting a higher turnover of the non-strategic ones.

Similarly, Becker and colleagues (2005), by building on and extending the idea of the differentiated HR architecture, have introduced the concept of "strategic workforce customization" in the workforce strategy (2005: 42). The strategic workforce customization implies the design of different HR systems for different employee groups, instead of having one single workforce strategy. The further step with respect to the original architectural model is that the customization of HRM systems is related to the segmentation of organizational strategy in different strategic processes, calling for different types of human capital and competences. Furthermore, the model of

workforce customization (Becker, Huselid and Ulrich, 2005), has emphasized the importance of identifying "A" and "B" processes, "A" and "B" positions and different HR strategy for them to get competitive advantage. The assumption underlying this model is that there are activities with different strategic value and that the knowledge to implement these activities is stably concentrated in a specific employee group rather than disseminated across all employees.

A further support to the issue of a differentiated HR architecture comes from the model by Kang and colleagues (2006), which is based on the integration of the SHRM and organizational learning perspectives. This model extends the concept of the HR architecture in order to clarify its implication for the organizational knowledge-exploration and exploitation strategy. Nonetheless, the core assumptions about the HR architecture are kept and used to extend the contribution of the architectural approach to the management of knowledge flows and value creation. According to the authors, employee groups may implement different relational archetypes (entrepreneurial versus cooperative) to deal with internal and external partners, and create value for the organization. Thus, different sets of HR practices are identified to foster the different relational archetypes. Coherently with the logic of HR architecture, given the strategic nature of the two relational archetypes and the specific and complex nature of the human capital they require, the model assumes that these sets of HR practices "do not expand to all employee groups. They are assumed to help core employees interact and build relationship with others (internal and external partners)".

As noted, from an empirical point of view, research has mainly proved just the existence and the nature of the HR architecture (Lepak and Snell 2002; Gonzales and Tacorante 2004; Lepak et al., 2007). Lepak and Snell (2002) have carried out a first empirical test of the construct of HR architecture, by testing the existence of different HR systems and employment modes across different employees groups. The study supports the idea that employees are segmented according to their human capital features, since the value of employees' human capital is reflected in choices about whether to use internal versus external employment modes. Moreover, the findings suggest a pattern that pairs HR configurations with employment groups and modes in distinct ways.

In a similar way, Gonzales and Tacorante (2004) have investigated whether or not, across different employees groups, the "best HR practices" are used together with other HR practices. According to the architectural approach, the authors have found out that the majority of the companies in the sample have identified the four groups by Lepak and Snell (1999) in their workforce. Moreover, their results has highlighted that differentiation in the application of HR practices depends on the value and uniqueness of the employee group's human capital. Thus, the study has supported the view that the best HR practices are not applied equally to all employees and that, depending on the group, they are used in conjunction with other HRM practices.

A further empirical test related to the issues of HR architecture is the study by Lepak and colleagues (2007). In this study, the authors examined a universal perspective to the HR architecture, as well as a contingent one, where the universal perspective implies that the exposure of core employees to high investment human resource management (HIHR) is always greater than the exposure of support employees. On the other side, the contingent perspective implies that this differentiation across organizations is conditional upon some contingencies. While the results do not support the universal view of the architecture, they provide evidence for the fact that the industry might be a significant contingency to predict the degree of differentiation of HR practices across employee groups. Indeed, core employees receive greater exposure to HIHR systems than support employees in non-manufacturing firms, where there is more room for core employees to use their discretion and to contribute to organizational goals. Even though the original theoretical formulation of the HR architecture by Lepak and Snell (1999) was more concerned with debating the 'best practice' approach and it has not included explicitly this contingent view (Lepak and Snell, 1999), empirical research has emphasized the value of a contingent approach to HR architecture (Lepak, et al., 2003; Lepak et al., 2007).

Only the study by Lepak, Takeuchi and Snell (2003) might be considered as a closer attempt of testing the performance effects of the architecture. However, the authors have considered only one aspect of the architecture, the employment contract, and they have not checked its matching with

the human capital attributed of the employees. The authors have carries out a test, based on the integration of the HR architecture argument and literature on employment flexibility. The objective of their work is to examine the effect of the simultaneous use of different employment modes on firm performance. Even though the authors have not included the identification of the four employee groups in their empirical tests, and although they have not checked their matching with the employment modes, their findings support the 'architectural' view that organizations might benefit from using different employment modes across its employees. Indeed, the implicit assumption underlying this test is that, since employees have different degree of skills specificity and strategic value, it might be advantageous for the organization to invest in their work arrangements in different ways.

The empirical study of Fey and colleagues (2001) and that by Rodriguez and Ventura (2003) might be mentioned as well when considering the performance effects of workforce management differentiation. Those studies are not at all rooted in the framework of HR architecture, however they might be mentioned as sources of empirical support for the positive effects of differentiating the workforce strategy to get superior performance. The research by Fey and colleagues, on western subsidiaries located in Russia (2001) has showed that Western firms should realize that their performance is influenced by different HRM practices for managerial and non-managerial employees. The study has neither clarified if, in the context of analysis, managerial and non managerial employees own different typology of human capital nor it has classified the corresponding HRM practices in different groups. Nevertheless, it provides evidence that a differentiated HR strategy within firms is required to get superior performance.

Similarly Rodriguez and Ventura (2003) in their study of Spanish manufacturing systems have pointed out that both "make" and "buy" HRM choice might exist in the same organizations and that these different choices might affect performance in a diverse way, with "make" choice being the major driver of overall superior performance in the context of analysis. Again in the study there is no classification of employees' human capital features and no reasoning about the fit between these

features and the HRM used to mange them. However, it represents a first step in the development of test of differentiated architecture since it breaks the holistic view of a unitary workforce management strategy.

Even though the architectural framework has been supported and extended through a variety of theoretical and empirical contributions, three major shortcomings in its empirical test and theoretical formulation can be so far identified. Firstly, extant studies were mainly concerned with providing descriptive evidence for the existence of the HR architecture (Lepak and Snell, 2002; Gonzalez and Tacorante, 2004; Lepak et al., 2007) and the existing empirical tests of the performance effects of a differentiated approach to the workforce management did not rely properly on the HR architecture theoretical framework (Lepak et al., 2003; Fey al al., 2001; Rodriguez and Ventura, 2003). Secondly, research is focused on studying differentiation across companies and studies have mainly focused on the appropriate architecture for core employees (Kang et al., 2007; Collins and Clark, 2005). Nevertheless, scholars have highlighted the importance of testing the effect of differentiation on performance (Becker and Huselid, 2006) and of considering the *differentiating* management of the both core and non-core employee groups *within* the organization, when studying the HR-performance link (Delery and Shaw, 2005). The third shortcoming is related to the fact that, as noted, existing research has not used a definition and operationalization of architecture coherent with its theoretical formulation, by neglecting some dimensions of this construct, while selecting others.

In order to fill this gap in the theory, I will formulate and test hypotheses about the relationship between the HR architecture and organizational performance in the Italian museum context. The novelty of this approach relies on two dimensions. This is the first attempt to investigate the relationship between the degree of differentiation of the HR architecture, for both core and non-core employees, within organizations, and organizational performance. In this setting of analysis, differentiation influences positively performance through two main effects. Firstly, differentiation produces efficiency in the human capital "make-or-buy" choices. This cost-effective workforce

strategy affects performance, by generating slack resources to be invested in employees who enact firm strategic processes (Delery and Shaw, 2005) and by reducing organizational dependencies from external sources of funding. Secondly, the efficiency in the workforce strategy has a "signaling" effect that is relevant for the performance of those organizations, like the service ones, whose products are intangible and can not be judged before they are delivered (Balabanis et al., 2003). The quality of museum management processes might be considered as a proxy of its ability to offer a rich learning experience, of the quality of its cultural activities and ultimately of its reputation (Paulus, 2003). As noted, these elements are among the ones that drive motivations to visit, to volunteer, to donate and to sponsor, that are the drives themselves of museum performance (Carnegie and Wolnizer, 1996).

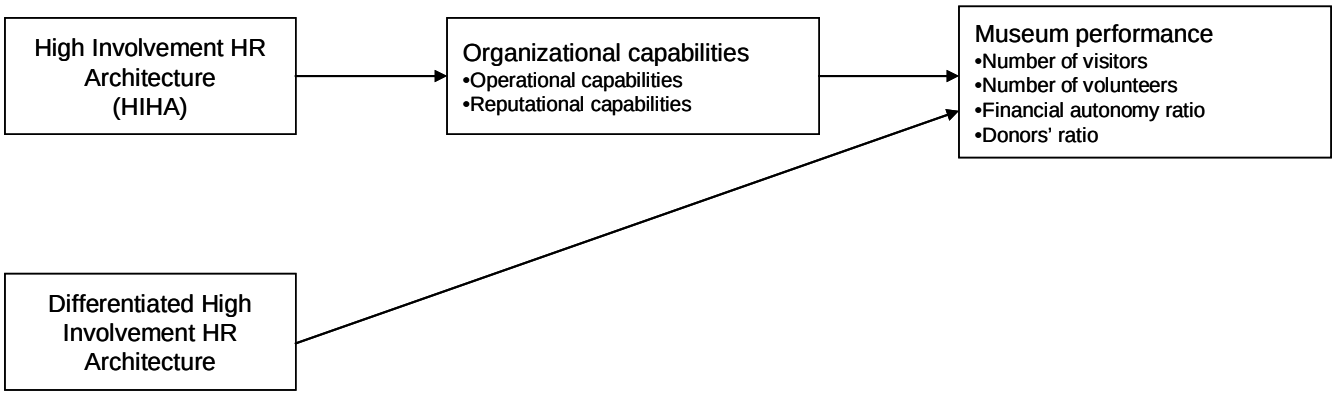
Secondly, this study includes all the elements of the original model of the HR architecture, that are the HR practices, psychological contract and employment mode, and that have been neglected until now in empirical investigations. Finally, this research is carried in a suitable setting for this type of analysis, when considering the contingencies that Delery and Shaw (2005) pointed out to define the contexts where differentiation across employees groups might be meaningful: task interdependence, organizational culture, and technology. According to the authors, technological interdependence between strategic and non-strategic employees increases the utility of designing a common HR system for the different groups. Concerning organizational culture, when culture is characterized by a sense of sameness among employees, a coherent set of HRM systems across employee groups might be more beneficial for a firm's competitive advantage than the adoption of a differentiated one. Finally, technology should also be considered, since it may modify the skills and abilities of worker and, in such a way, their human capital features and their employee group. Italian museum industry is appropriate for this analysis since the task interdependences among the two categories of employees is minimal and the organizational culture, still concerned with the relevance of status and positions, does not represent an obstacle to differentiation (Regione Lombardia, 2005). Furthermore, in museum setting, the classification between core and support

employees is highly institutionalized and known, since it has been coded since the first Italian state law on the museum accreditation process (Italian state law 112/1998).

In formulating the following hypotheses, the assumption is that the higher the difference in the use of the HIHA (entailing HR practices, psychological contract and employment contract) between core and support employees, the more we are close to the implementation of a differentiated HR approach and to HR architecture[4]. Accordingly, I will formulate the following hypothesis about the relationship between HR architecture and museum performance:

Hp10): the higher the difference in the use of HIHA between core and support employees, the higher the museum a) number of visitors; b) number of volunteers c) financial autonomy ratio; d) donors funding ratio.

The theoretical model is depicted in the following figure (Fig.1):



[4] To support the legitimacy of using the difference in the use of HIHA and to apply it to the core and support employee groups as a proxy of the extent to which the HR architecture is implemented, see Lepak and colleagues (2007).

Methodology

Research process and sample

As noted, Italian museums refer as a suitable setting to investigate the role of HR management and organizational capabilities to explain organizational performance. Indeed, the museum sector has been recently characterized by pressures to increase museum accountability and results, due to the financial cutbacks in public funding and the competition with other emergent leisure pursuits (Moore, 1994; Moretti 1999, 2001; Bodo, 2003). These pressures make the investigation of the internal mechanisms through which museums can achieve superior performance a relevant issue to be investigated (Pablo et al., 2006). This consideration is even stronger, when considering the increasing importance of service organizations and especially of the non-profit ones in western countries and especially in the European ones (Pollitt et al., 2006; Pollit and Bouckaert, 1995) and the fact both in SHRM and in strategic field these organizations are still under-investigated. Especially, Lombardia Region museums are a fruitful setting to investigate these dynamics. Indeed, Lombardia was one of the first regions in Italy to recognize the value of people development to improve museum performance and to identify the competence requirements and the responsibilities of the crucial professional roles in museum management (Regione Lombardia, 2005 and 2005a). Furthermore, Lombardia Region was the first one to launch a process of accreditation that pushed museums towards increasing and increasing level of accountability and efficiency (Garlandini, 2006).

Thus, a part of the data for this research project comes from the Lombardia Region database for museum annual accreditation process. To complete the data that the Region collected, additional data were gathered in early 2008 through an e-mail questionnaire survey, on behalf of both Bocconi University and Lombardia Region. The assistance of the Region was crucial for the data collection, indeed, the region has built a strong reputation toward museums and it has developed deep relationships with them. Indeed, in the last years, the promotion of the accreditation scheme and the

creation and the update of the database have required multiple contacts between museums and the Region itself. Thus, the collaboration of the Region has contributed to create a climate of trust and it has represented an incentive for museum to respond to the questionnaire. Moreover, Lombardia Region accepted to take part in the phase of the telephonic recall and the joint presence of Bocconi University and Region has guaranteed the effectiveness of this phase as well.

Variables in the e-mail questionnaire included items about the HR practices and psychological contract, the Region database included data on employees' education, job training and employment contracts, on organizational capabilities and on museum performance. According to literature, the time lag between the independent and dependent variable might be plausible to assess causality in the HR-performance link (Collins and Smith, 2007), especially since it was possible to control for past museum performance, that is one of the main concerns when testing the HR-performance link (Wright et al., 2005).

The problems related to common method variance in this research is limited since, according to the requirements for the museum accreditation scheme, items in the regional database had to be assessed by the respondent that was most knowledgeable about them. In particular, the respondent for the HR practices, employment mode, employees' level of education and hours of job training is the director of the museum. The respondents for the psychological contract were museum employees. The respondents for the items related to different capabilities are the employees that are more informed about these processes, according to the requirements of Lombardia Region for the accreditation process[5].

As noted, valid observations on 83 museums in Lombardia Region were collected, representing the 71% of the population of the regional museums. Museums in the sample have an average of 19 employees; in particular the average of core employees group is 3.7, while the average number of support employees is 15.3.

[5] The curator, the responsible of security and the responsible for educational service are asked about items on operational and reputational capabilities

This study checks the possibility of non-response bias by comparing the characteristics of the respondents to those of the original sample. The calculated t-statistics for the annual number of visitors (t = 1. 18), for the annual number of volunteers (t = 0.47), for the financial autonomy ratio (t = 0.50), for the donors funding ratio (t= 0.61), for the number of metres available for exhibitions and laboratories (t = 1.57) and for the opening days (t = 1.41) are all statistically insignificant, suggesting that there are no significant differences between the respondent and non-respondent groups.

Data analysis and Measures

In order to test the validity of the model and research hypotheses, PLS, a latent structural equations modelling technique, was utilized. PLS uses a component based approach to estimation that places minimal demands on sample size and that does not depend on having multivariate normal distributions or interval scales. So it was the ideal analytical tool for this research. PLS was chosen also because it permits analysis of both the measurement model and the structural model. (Lewis, et al., 2003) and because it allows latent constructs to be modelled as either formative or reflective indicators. "Reflective indicators *reflect* an unmeasured latent construct that is deemed to exist before it is measured, and are invoked to account for the observed variances and covariances. Formative indicators are used to form a super ordinate construct (used as categorization and measurement devices for complex phenomena) where the individual indicators are weighted according to their relative importance in forming the construct" (Teo et al., 2003: 30)

It is particularly relevant to point out that a formative, rather than a reflective measurement model was adopted (Edwards and Bagozzi, 2000) for the independent and mediating variables in the research hypotheses in this study. Theoretical considerations behind the adoption of a formative or reflective model are related with three main issues: i) the nature of the construct, ii) the direction of causality, iii) the characteristics of indicators (Coltman, Devinney, Midgley and Venaik, 2000).

Considering the nature of the construct, in a reflective model, the latent construct exists (in an absolute sense) independent of the measures used. In contrast, in a formative model the latent construct is dependent upon a instrumentalist interpretation by the researcher. "For example, the human development index (HDI) does not exist as an independent entity. Rather, it is a composite measure based on three dimensions of human development: health, education and income (UNDP 2006). Any change in one or more of these components is likely to cause a change in a country's HDI score" (Coltman et al., 2000: 5). Concerning with the direction of causality, reflective models assume that the causality flows from the construct to the indicators; whereas in the case of formative models, it is the reverse and a change in the indicators results in a change in the construct under study. Considering the characteristics of indicators, in a reflective model change in the latent variable must precede variation in the indicator and the indicators all share a common theme and can be interchanged with other indicators that are likely to be elicited by the same construct. In a formative model, the indicators define the construct, the domain represented by the construct is sensitive to the number and types of indicators selected to represent the construct. Hence, adding or removing an indicator can change the conceptual domain of the construct.

Beyond these considerations, research has illustrated that, while the application of a reflective measurement model has been usually preferred to a formative one in the literature, formative measurement models might be more plausible and fruitful, even with those constructs that most scholars have previously measured reflectively, such as "market orientation" (Coltman et al., 2005). The main assumption underlying this reasoning is that the reflective model has been usually adopted without questioning and analyzing deeply the characteristics of the constructs and of their indicators, analysis that seems to lead to the adoption of a formative approach more likely than to the use of a reflective one.

When considering our construct of HIHA and that of organizational capabilities, the adoption of a formative model is more appropriate than a reflective one. In particular, in this study, HIHA and operational and reputational capabilities are operationalized as formative constructs formed from

formative sub-constructs[6]. Indeed, the HIHA does not exist as an independent dimension; it is based on the components of HR configuration, employment mode and psychological contract. As it is evident from Table 1, this categorization has been developed and recently defined by SHRM scholars, with an increasing consensus in the field on how these dimensions should be labelled. Accordingly, it is unlikely that the innate characteristics of HIHA cause changes in the HR configuration and in the employee-employer relationships. Thus, the direction of causality is from the various measures to the construct, rather than the construct causing the measures to change. Finally, it is not still clear, considering extant research on HIHA, if its indicators share a common domain and if they might be interchangeable with other dimensions as it should be in a reflective framework. Moreover, those empirical studies that have used the framework HR architecture, but that have included just some of these its three components, while excluding others (Lepak and Snell, 2002), have not provided any clear discussion of the consequences of these measurement choices on the domain of the construct of architecture itself. Thus, it is still uncertain that the construct domain of HR architecture is insensitive to the number and typology of indicators that are included. In addition, for instance, it is not necessarily true that a change of the HR practices indicator in a particular direction would lead to a change of the employment contract in the same direction (Chin, 1998). According to this view, the adoption of the reflective model is not taken-for-granted and the use of the formative approach is more plausible.

In a similar way, HIHA's sub-construct of High Involvement HR practices might be operationalized as a formative construct as well, even though extant research has always taken for granted its reflective nature. Indeed, the high involvement HR configuration refers as a super ordinate construct that describe a complex phenomenon rather than a latent construct that exists before it is measured, as it happens for reflective constructs. By analyzing the numerous operationalizations of the construct, it is seems related to the operationalist approach of the researcher in the different setting of analysis rather than something that exists even before it is

[6] For the HIHA, only the HR practices is conceived as a formative construct; employment and psychological contracts are single-item indicators.

measured by it indicators. The high Involvement HR configuration does not exist independently from its indicators of skill requirements, work design and incentives that cause or form it. To assess its formative rather than reflective nature, it is possible also to consider that, for instance, a reduction of the hours of training on the job would affect negatively the High involvement HR configuration. However, a negative change in the global High Involvement HR configuration does not necessarily imply a reduction of the hours of job training. Thus, the direction of causality is more likely to go from the indicators to the HR configuration than the other way around. Furthermore, the different operationalizations of the construct do not always include the same typology of indicators and the consequences on the domain of the construct of choosing some indicators rather than others have not yet been clarified. Thus, as it is for the architecture, it is not clear, from a theoretical point of view, that the domain of the HR configuration is insensitive to the typology of indicators as it would be in the reflective framework.

When analyzing our construct of organizational capabilities, the formative framework is more suitable than the reflective one as well. By analyzing the review of capabilities measures in table 2, it is apparent that the construct of capabilities does not exist independently from the used measures. The construct emerged through the interpretation and the development by the scholars, especially when considering the emergent definition that is provided in this study of operational and reputational capabilities. According to this approach, it is unlikely that the latent construct of operational capabilities determine variations in its measures of collection management and service development and that these measures are exchangeable with others belonging to the same domain without changing the boundaries of the construct itself. In addition, the domain of operational capabilities is sensitive to the number and typology of indicators that are used. Indeed, for instance the removal of collection management capabilities from the definition of the operational capabilities implies a change in the domain of operational capabilities themselves, that would not represent any more the museum day-by-day functioning. A similar reasoning holds also for the sub-constructs of capabilities, since their operationalization is emergent, depending on a constructivist and

operationalist interpretation by the researchers involved in this study. The construct of collection management does not exist independently from its indicators related to inventorying, registering, restoring, cataloguing, lending and acquiring the collection. Moreover, a variation in one of the indicators (say inventorying) does not imply necessarily a similar directional change in the other indicators (say registering or cataloguing)

It is important to note that PLS does not directly support second order factors and that in order to examine the measurement and the structural model, a two-step procedure, as the one already adopted by Agarwal & Karahanna, (2000) is required.

Thus, the analysis strategy in this research involved a two-stage approach, since the formative measures for the independent and the mediating variables include, as noted, formative latent sub-constructs. So, according to Agarwal & Karahanna (2000), first the measurement model was examined to define the size, sign and significance of the outer weights of the formative sub-constructs. Next the structural model was analyzed, by using global factor scores for the indicators of HIHA, operational and reputational capabilities.

Having defined this premise about the adopted model of analysis, variables and measures will be described in the following paragraphs.

Dependent variables: museum performance

To assess museum performance different measures were adopted: i) the number of visitors, as the total annual number of visitors; since the variable is a count one, its logarithmic transformation was adopted ii) number of volunteer, as the total annual number of volunteers; its logarithmic transformation was adopted as well iii) financial autonomy, as the ratio between revenues from program activities (including exhibitions, educational services, conferences and cultural events, copyright on merchandising etc, room rental, bookshops and restaurants) and total revenues (including all the previous revenues and public and private funding) iv) donors and sponsors'

funding ratio as the ratio between private donations and sponsorships and total revenues (including all the sources of revenues).

Independent variables: High-involvement HR architecture

As noted, HIHA was operationalized as a formative construct formed from the dimensions of High-involvement HR practices, employment mode and psychological contract (Lepak and Snell, 1999; Lepak and Snell, 2002). In order to test the hypotheses about the HIHA-capabilities-performance link and about the differentiated HIHA-performance link, data on HIHA were collected both on core and on support employees. The museum directors were asked to rate the extent to which the different dimensions of HR configurations were used for the groups of core and support employees separately. Furthermore, they were asked to identify employees from the two groups to get responses on psychological contract. In such a way data on the three components of HIHA architecture were obtained for both the two groups.

When considering the test of the HIHA-capabilities-performance relationship, the values of dimensions of HIHA for core employees were considered, according to other recent studies on high performance work system (Collins and Smith, 2006). When testing the link between the differentiation of HIHA across core and support employees, an index for HIHA differentiation was created, as it will explained.

Having defined the general approach, in the following paragraph the measures composing HIHA are described.

Employee groups

In order to identify the core and support employees' groups, the procedure suggested in the literature for this type of studies (Lepak and Snell, 2002; Lepak et al., 2007) was followed and it was adapted to the context of Italian museums, where the distinction between core and support groups has been codified and shared for a long time. Respondents were provided with the list of

museum professions belonging to the core and two the support groups[7]. In museum setting, it is possible to identify professions belonging to the two groups with enough reliability. Indeed, the difference between core and support employees in Italian museum setting has been widely institutionalized, because of the increasing attention on the codification of role and competences of museum personnel at Regional level (Regione Lombardia, 2005) and because of the national legislation on the museum accreditation scheme that have classified museum professional families (Italian state law 112/1998). According to this framework respondents were asked to rate their responses on High Involvement HR practices, by distinguishing between core and support employees.

High-Involvement HR practices

We operationalized High Involvement HR practices, by creating a measure including the dimensions of high skill requirements; work designed to enhance discretionary behaviors and collaboration, and incentive to enhance motivation (Batt, 2002; Batt et al., 2002).

For the dimension of skills, for each group, I used the data on the education of each member of the group (Batt, 2002) and I combined it with the percentage of employees for each level of education. Education was coded as a variable assuming values between 1 and 5, ranging from 1 = secondary school ("diploma di scuola media inferiore" in the Italian system) to 5 = PhD, master or other titles. Considering for instance the group of core employees, firstly, the percentage of core employees for each level of education was identified and this percentage was multiplied for the relative value of the educational level. The result is an index that takes into account both how many people within the core group have a certain level of education and the value of the level of education. I finally computed a weighted mean of those indexes. Computed in such a way, this final mean allows museums with a high number of core employees with a high education having a higher score than others.

[7] The curator, the responsible for educational service and the responsible for the security of collection and of the building will be included in the list for core employees, while the museum custodians, restorers, librarians, photographers, archivists, marketing and administrative personnel are presented as examples of support employees

For the dimensions of work design, I used items both for the dimension of discretion on task, work method and pace of work and both for the extent to which employees are involved in team working (MacDuffie, 1995 and Batt, 2002). Especially, discretion was measured by asking to the respondent the extent to which employees groups have discretion (1= no control, 5=complete control) over the following dimensions: tasks, tools, work methods, pace of work, schedules, and vacations. Team working was measured with two items to assess the extent to which the respondent agreed on the involvement of employees in team working and the use of self directed team (employees are involved in regular problem solving groups, employees are involved in self-directed groups).

The dimension of incentive structure includes training and performance monitoring. For the measuring of training, I used the measure proposed by Batt (2002) and I adopted the number of days of job training that the employees receive in a year. Since this measure was highly skewed on the right, I took its logarithmic transformation. For performance monitoring, by keeping the logic of a performance evaluation system committed to the employees development, I adapted the item by Collins and Smith (2006), reflecting the extent to which the organization evaluate employees to develop them.

Before computing a global score for the High involvement HR configuration useful for the test of the structural model, the weights and the significance of its indicators were analyzed. Especially, the analysis revealed that items on work design (especially those including indicators on discretion on tasks, tools, method, pace, vacations) and the item on performance monitoring assumed the highest weights and significance[8].

To calculate High involvement HR configuration index, the indicators were transformed to z-scores and the mean value was computed.

[8] Discretion on task: weight 0.79, $p < 0.01$; on tools: weight 0.75, $p < 0.01$; on methods: weight 0.59, $p < 0.01$; work pace: weight 0.86, $p < 0.01$; on schedule: weight 0.14 $p < 0.05$; on vacations: weight 0.91 $p < 0.01$. Team working, weight 0.10 $p < 0.05$; self-directed team: weight 0.13, $p < 0.05$. Performance monitoring, weight: 0.44, $p < 0.01$. Human capital: weight 0.34 $p < 0.05$; training 0.09 $p < 0.1$)

Employment modes

To assess the employment mode, according to literature (Batt, 2002) data on the characteristics of the museum employment contracts were used. In particular, contracts were classified depending on the four dimensions long-term/short-term and part-time/full-time. For each employee group, a dummy variables with value 1 was created if employee's contract was hired with a long-term, full-time contract, with value 0 if the otherwise. At the end, the percentage of employees that were hired with a full-time, long-term contract for each employee group was computed.

Psychological contract

The measure of psychological contract has been widely debated in literature (Rousseau and Tijoriwala, 1998). For our operationalization, a content measure of psychological contract was used, based on a nominal classification that distinguishes four types of contracts: transactional, relational, hybrid/balanced, transitional/uncertain. These forms are based on two key features of exchange agreements: the agreement's anticipated duration and the specificity of the connection between performance and rewards.

- *Transactional:* of limited duration with specified performance requirements (e.g., working on a short-term project).
- *Relational*: open-ended arrangement, involving a mentoring relationship, encouraging significant mutual investment on the part of employers and employees, with not completely defined performance requirements, in order to elicit a wide range of employee behaviours.
- *Balanced*: open-ended relationship with well-specified performance requirements that are subject to change over time (e.g. collaboration on successive projects with clearly defined products and timetables).
- *Transitional or unstable:* no commitments regarding a future relationship along with no explicit performance requirements. Transitional situations do not necessarily function as psychological contracts creating a sense of obligations individuals rely on and feel obliged

to keep. Instead they represent a breakdown or transition phase in the arrangement between parties

According to the procedure tested by Wade-Benzoni and Rousseau (2006) employees were provided with the definition of the four typologies of psychological contract, without label, and they were asked to choose the description that most fits their work relationship with the museum. Eventually, according to the procedure tested by the two authors, a dummy variable with value 1 if the chosen contract is the relational one, 0 if the contract is one of the other three was created. Then I computed the percentage of employees that have evaluated their contract as relational in the two groups of core and support employees. As discussed above, since the distinction between support and core employees is well established in museum industry, it was straightforward to assign the response to the right group, once I knew the position of the respondent.

This measure of the psychological contract permits the assessment of general content of the contract, but it lacks the specificity of the contract terms. However, since our objective is to assess the indicators of the overarching construct of HIHA rather than to deepen the analysis of the psychological contract, the evaluation of the psychological contract as a whole rather than of its specific terms fits our objectives better.

Mediating variables: museum capabilities

According to the proposed definition of capabilities, each measure of capabilities has to include the dimension of the organizational practices, of its reliability and of knowledge storing devices. Museum capabilities were defined in terms of operational capabilities and reputational capabilities. Both operational and reputational were operationalized as formative constructs formed from formative sub-constructs, where the formative sub-constructs were “collection management” and “service development” for operational capabilities, and “communication” and “publication” for reputational capabilities. As noted, PLS does not support the second order factors, thus firstly

analysis of items' outer weights and their relative significance were analyzed. Afterwards, a global factor score for each sub-construct was created and was used to test the structural model.

The measures of capabilities were discussed with museum field experts and directors, in order to have further evidence, beyond the analysis of literature, that they are the appropriate measure for the constructs I have pointed out and that these construct of capabilities are the relevant ones in museum management.

As it will be clearer in the following paragraphs, indicators for operational and reputational capabilities were measured by computing the percentage of activities and knowledge storing (coded as a set of dummy variables) that a museum carries out. The use of this measure allows taking into account the dimensions of practices, of their reliability and routinezation, and of knowledge that were identified in the theoretical discussion of capabilities. The use of the percentage based on the aggregation of dummy variables implies the assumption that the activities and the knowledge storing devices composing capabilities are complementary. Indeed, the fact that one of these dimensions had a 0 value did not make the total score dropping to 0. This means that when one of these elements is missing in a museum, this does not imply that the museum does not have the capabilities at all, but that it has worse capabilities with respect to the other museums.

Operational capabilities: the construct of operational capabilities implies performing activities related to the day-to-day functioning of the organization (Peteraf and Helfat, 2003; Henderson and Cockburn, 1994). In the museum sector, operational capabilities include the activities of collection management and of museum service development (ICOM statute, Paulus, 2003).

Collection management

Collection management includes the processes of registering; of inventorying; of photographing; of cataloguing; of lending and acquisition and of restoration of the collection.

For each of those dimensions, museums were asked whether they carry out that specific practice or not and if they realize archival documents, manuals, databases for these practices (for a complete

list of collection management practices, see the Appendix). Each response was coded as 1 if the museum carries out the practice or if it has a knowledge storing device for it; otherwise the response was coded as 0. The analysis of weights and significance of the indicators revealed that collection registering and collection restoration had the highest weights with respect to the other significant indicators[9].

The measure of collection management capabilities correspond to the percentage of collection management practices and related knowledge storing devices that the museum implements As noted, this type of operationalization allows taking into account the three dimensions of organizational practices, of knowledge storing devices and of routinezation. While the inclusion of practice and knowledge dimensions is evident, the degree of routinezation and reliability is captured by the extent to which the museum carries out the diverse practices (Peteraf and Helfat, 2003).

Service development

Service development includes carrying out temporary exhibitions, library services, conferences, seminars, educational services, cultural events, on-line services. As for collection management, museums were asked whether they carry out those specific practice or not and if they realize archival documents, manuals, databases for these practices (for a complete list of service development practices, see the appendix). Each response was coded as 1 if the museum carries out the practice or if it has a knowledge storing device for it; otherwise the response was coded as 0. The analysis of outer weights and significance illustrated that the indicator for exhibition had the highest weight with respect to the other significant indicators[10]. The measure of collection management capabilities correspond to the percentage of service development practices and related knowledge storing devices that the museum implements.

[9] registering: 0.71 $p < 0.05$; weight 0,60 $p < 0.05$; cataloguing: 0,23 $p < 0.01$; lending and acquisition: weight 0.58 $p < 0.01$; photographing: weight 0.15 $p < 0.05$, restoration: 0.76 $p < 0.01$; knowledge devices: 0.56 $p < 0.05$)

[10] exhibition: weight 0,75 $p < 0.01$; library services: weight 0,35 $p < 0.01$; conferences: weight 0.19 $p < 0.01$; seminars: weight 0.21 $p < 0.01$; educational services: weight 0.18 $p < 0.01$; events: weight 0.10 $p < 0.05$; on-line services: weight 0,32 $p < 0.05$; knowledge devices: weight 0.44, $p < 0.05$

Reputational capabilities: in the construct of reputational capabilities, those measures that reflect how a museum engages in building its reputation towards different stakeholders, that are visitors, donors and sponsors, local authorities and professional communities are included. According to this view, both the dimension of communication activities and that of publications are relevant, since they allow museums giving a signal of both its managerial and cultural legitimacy.

Communication

Communication includes carrying out fidelity plans for visitors and members, diffusing information about museum activities through touristic guides, creating advertising materials[11]. Again responses were coded as dummy variables and the final measure is the percentage of communication practices and related knowledge devices that the museum implements.

Publication

As for the other dimensions of capabilities, for publication, museums were asked whether they have published in scientific journals, in non scientific one and in volumes[12]. Responses were coded as dummy variables and the percentage of publication activities for each museum was computed.

Control variables

Performance at t (with respect to t+1, when the performance measures are collected): in order to assess the causality of the HR-capabilities-performance link, I needed to control for the effects of all performance variables at the time t, when the independent and mediating variables are collected. Thus I used, as control variables, the past number of visitors, of volunteers, the museum financial autonomy ratio and donors' ratio.

Geographical location: I created a dummy variable for the geographical location of the museums, in terms of whether they are located in a "Capoluogo di Provincia"[13] or in the territory of

[11] fidelity plans: weight 0,89, $p < 0.01$; information: weight 0,51, $p < 0.01$; advertising materials weight 0.68 $p < 0.05$; knowledge device: weight 0,18 $p < 0.05$

[12] Publication in volume: weight 0.94 $p < 0.01$; in journals: weight 0.24 $p < 0.01$; in magazines: weight 0.23, $p < 0\text{-}05$; knowledge weight 0.32, $p < 0.05$)

the province. The rationales underlying this variable is that a museum located in the "Capoluogo" might benefit from the presence of a greater number of tourists, higher proximity to other educational or cultural institutions, such as universities and research centers, richer municipalities and higher visibility than those located in the territory of the Province.

Size: I used as variable to control for the dimension of the museum, the space, in terms of m^2, that is available to exhibit the collection and organize events. This is because bigger museums, in terms of physical dimensions, might have chances to guest a bigger number of visitors and they have a higher potential for organizing cultural activities than smaller museums.

Opening days: Variability in the opening days might influence museum performance, by affecting the number of visitors, the range of services that can be developed and offered, the awareness about the museum.

Results

Hypotheses' testing was performed by examining the size, the sign, and the significance of the path coefficients and the weights of the dimensions of the constructs.

Tab 3 shows descriptive statistics and correlations of the study variables. Tables 4-7[14] illustrate the results for the mediating role of capabilities in the relationship between HIHA and museum performance measures. Tables 9-12 illustrate results for the performance effects of using a differentiated HIHA for core and support employees.

Concerning the mediation test, following Baron and Kenny's (1986) three step procedure, firstly the relationship between HIHA and museum performance, secondly the one between HIHA and strategic capabilities, and finally the link between HIHA and performance, controlling for organizational capabilities are shown. Moreover, results are presented separately for each dependent

13 In Italy, Public Administration system is composed of Regions that are further divided in Provinces and Municipalities. Lombardia Region is composed of 11 Provinces, each with its "Capoluogo". The term "Capoluogo di Provincia" represents the major city, for historical, commercial and cultural reasons, in the corresponding Province

14 In order to test and present results, the procedure adopted by Teo and colleagues (2003) was followed, by illustrating the control model (model 1), the theoretical model (model 2, 3, 4) and the full one (model 5).

variable, in such a way it is possible to carefully observe how much HIHA and capabilities contribute to explain the different performance indicators.

Tables 4 shows the results of the mediation test, when the number of visitors is considered as dependent variable. As shown in model 2, HIHA was significantly related to museum number of visitors ($\beta = 0{,}112$, $p < .01$). As shown in model 3 and 4, in the second of the three steps, significant relationships between HIHA and operational capabilities ($\beta = 0{,}377$, $p < .01$) and HIHA and reputational capabilities ($\beta = 0{,}356$, $p < .01$) were found out. Finally, I examined the change in the effect of HIHA, when organizational capabilities were added in the regression predicting the number of visitors. Results in model 5 support the argument that operational and reputational capabilities mediate the link between HIHA and performance. Indeed the effect of HIHA dropped to nonsignificance and the size of the effect is reduced (from $\beta = 0{,}112$ to $\beta = 0{,}01$).

Table 3

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1 Visitor_2008	8,96	1,46	1,00																				
2 Volunteer_2008	1,92	1,15	0,11	1,00																			
3 Autonomy_2008	0,33	0,31	0,31**	0,23**	1,00																		
4 Donors_2008	0,36	0,32	0,03	0,12	0,15	1,00																	
5 High Involvement HR Practices_core	0,00	1,00	0,18**	0,15	0,10	0,28**	1,00																
6 Employment Mode_core	0,51	0,34	0,32**	0,28**	0,23**	0,14	0,19	1,00															
7 Psychological Contract_core	0,41	0,27	0,12**	0,20**	0,19**	0,16	0,15**	0,13*	1,00														
8 High Involvement HR Practices_support	0,00	1,00	0,01	0,10	-0,14	-0,12	0,22*	-0,21**	0,02	1,00													
9 Employment Mode_support	0,16	0,27	0,28**	-0,18**	-0,10	0,16	0,08	0,22**	0,05	0,09	1,00												
10 Psychological Contract_support	0,19	0,26	-0,21**	0,16	-0,09	0,04	-0,12**	0,07	0,11**	0,25**	0,06	1,00											
11 Collection Management	0,73	0,15	0,35**	0,12	0,05	0,11*	0,16**	0,10	0,11	0,01	0,01	-0,27**	1,00										
12 Service Development	0,58	0,16	0,32**	0,19**	0,01	0,09	0,22*	0,04	0,09	0,17**	0,15**	0,07	0,19**	1,00									
13 Communication	0,86	0,18	0,24*	0,31**	0,11*	0,18**	0,13**	0,07	0,03	0,09	0,01	-0,14	0,11	0,09	1,00								
14 Publication	0,47	0,31	0,22**	0,37**	0,27**	0,31**	0,25*	0,08	0,07	0,04	0,03	-0,12	0,13**	0,45**	0,14*	1,00							
15 Visitor_2007	8,89	1,58	0,82**	0,17	0,42**	0,17	0,13**	0,31**	0,01	-0,10	0,27*	-0,24**	0,28**	0,28**	0,04	0,12	1,00						
16 Volunteer_2007	1,85	1,03	0,07	0,84**	0,23**	0,07	0,10	0,45**	0,19**	-0,08	-0,14	0,12	0,19**	0,14	0,26**	0,16	0,10	1,00					
17 Autonomy_2007	0,30	0,27	0,06	0,16	0,48**	0,18**	0,11	0,12*	0,12**	0,15	0,12*	-0,19*	0,13	0,14*	0,12**	0,06	0,09	0,06	1,00				
18 Donors_2007	0,30	0,33	0,11	0,15	0,06	0,19**	0,16**	0,15**	0,07	0,02	0,14*	-0,13*	0,09	0,11	0,10	0,23**	0,15**	0,03	0,38**	1,00			
19 Geographical Location	0,37	0,47	0,46**	-0,19**	0,18	0,10*	0,02	0,28**	0,11	-0,15**	0,38**	0,03	0,23**	0,28**	0,09	0,12**	0,47**	-0,26**	0,09	0,20**	1,00		
20 Opening Days	6,84	4,00	0,26**	0,07	0,12	0,26**	0,08	0,23**	0,04	0,05	0,37**	0,04	0,02	0,22**	0,13**	0,20**	0,20**	0,05	0,03	0,04	0,18**	1,00	
21 Size	6,73	1,45	0,41**	0,23**	0,01	0,25**	0,03	0,27**	0,13**	0,06	0,24**	0,28**	0,06	0,27**	0,02	0,10	0,44**	0,11	0,10	0,04	0,24**	0,42**	1,00

Table 4

	Model 1 (Dep. variable: visitors)	**Model 2** (Dep. variable: visitors)	**Model 3** (Dep. variable: operational capabilities)	**Model 4** (Dep. variable: reputational capabilities)	**Model 5** (Dep. variable: visitors)
Past_visitors	0,77**	0,74**	0,05	0,30**	0,73**
Geo Location	0,11**	0,10**	0,18**	0,14**	0,07**
Opening days	0,08**	0,08**	0,19**	0,07	0,05**
Size	0,03	0,01	0,17**	-0,01	0,03
HIHA		0,11**	0,38**	0,36**	0,01
Reputational Cap					0,09**
Operational Cap					0,11**
R-squared	0,72	0,74	0,25	0,32	0,76

Table 5 shows the results of the mediation test, when the number of volunteers is considered as dependent variable. As shown in model 2, HIHA was significantly related to the number of volunteers ($\beta = 0{,}276$, $p < .01$).In the second of the three steps, HIHA was significantly related to operational capabilities (table 9; $\beta = 0{,}255$, $p < .01$) and reputational capabilities (table 10; $\beta = 0{,}445$, $p < .01$). Finally, results in model 5 support partially the argument that operational and reputational capabilities mediate the link between HIHA and museum number of visitors. Indeed, once controlled for reputational and operational capabilities, the size of the HIHA is significantly reduced (from $\beta = 0{,}276$ to $\beta = 0{,}15$), but its effect remain significant, even if reduced ($\beta = 0{,}15$, $p< .05$). Thus, when examining museum number of volunteers, both operational and reputational capabilities partially mediate the relationship between HIHA and performance.

Table 5

	Model 1 (Dep. variable: volunteers)	**Model 2** (Dep. variable: volunteers)	**Model 3** (Dep. variable: operational capabilities)	**Model 4** (Dep. variable: reputational capabilities)	**Model 5** (Dep. variable: volunteers)
Past_volunteers	0,70**	0,60**	0,04	0,04	0,64**
Geo Location	-0,03	-0,01	0,27**	0,14**	-0,07**
Opening days	0,04**	0,07**	0,15**	0,11	0,06**
Size	0,08**	0,06**	0,11**	0,10**	0,04
HIHA		0,28**	0,26**	0,45**	0,15*
Reputational Cap					0,15**
Operational Cap					0,09**
R-squared	0,51	0,58	0,19	0,28	0,60

Table 6 shows the results of the mediation test, when the financial autonomy ratio is considered as dependent variable. As shown in model 2, HIHA was significantly related to museum financial autonomy ($\beta = 0,309$, $p < .01$). In the second of the three steps, HIHA was significantly related to operational capabilities (table 13, $\beta = 0,436$, $p < .01$) and reputational capabilities (Table 14, $\beta = 0,113$, $p < .01$). In model 5, the effect of HIHA was examined, together with the effect of operational and reputational capabilities. The size of HIHA is reduced and its effect remain significant, but decreased (from $\beta = 0,309$ to $\beta = 0,22$, $p < 0.05$). Moreover, the effect of operational capabilities is not significant. Thus, when considering museum financial autonomy, the relationship between HIHA and financial autonomy itself is partially mediated just by reputational capabilities.

Table 6

	Model 1 (Dep. variable: autonomy)	**Model 2** (Dep. variable: autonomy)	**Model 3** (Dep. variable: operational capabilities)	**Model 4** (Dep. variable: reputational capabilities)	**Model 5** (Dep. variable: autonomy)
Past_autonomy	0,38**	0,34**	0,02	0,06	0,43**
Geo Location	0,02	0,01	0,28**	0,19**	0,06
Opening days	-0,04	-0,11**	0,06	0,06	-0,07
Size	0,06	0,08**	0,13**	-0,02	0,09**
HIHA		0,31**	0,44**	0,11**	0,22*
Reputational Cap					0,19**
Operational Cap					0,02
R-squared	0,14	0,24	0,32	0,15	0,26

Table 7 shows the results of the mediation test, when the donors' funding ratio is considered as dependent variable. As shown in model 2, HIHA was significantly related to donors' ratio (β = 0,298, p < .01). Moreover, as shown in model 3 and 4, HIHA was significantly related to operational capabilities (β = 0,437, p < .01) and reputational (β = 0,101; p < .01). Finally results in model 5 support the argument that the effect of HIHA on donors' ratio is mediated by organizational capabilities. Indeed, when controlling for reputational and operational capabilities, the effect of HIHA dropped to nonsignificance and the size of the effect is significantly reduced (from β = 0,298 to β = 0,105).

Table 7

	Model 1 (Dep. variable: donors)	**Model 2** (Dep. variable: donors)	**Model 3** (Dep. variable: operational capabilities)	**Model 4** (Dep. variable: reputational capabilities)	**Model 5** (Dep. variable: donors)
Past_donors	0,14**	0,12**	0,01	0,12	0,10**
Geo Location	0,04	0,05	0,28**	0,23**	0,07
Opening days	0,33**	0,32**	0,05	0,27**	0,34**
Size	0,28**	0,28**	0,12**	0,04	0,29**
HIHA		0,30**	0,44**	0,10**	0,10
Reputational Cap					0,17**
Operational Cap					0,10**
R-squared	0,14	0,23**	0,32	0,27	0,26

The measurement model was estimated as well, by considering the outer weights for the formative measures of HIHA, operational and reputational capabilities. For HIHA, we found out that the dimension of the High Involvement HR practices was the most relevant and significant (HR practices, weight: 0,75 p < 0.01; psychological contract, weight: 0,22 p < 0.05, employment contract, weight: 0,44 p < 0.05). For operational capabilities, service development was more significant and relevant than collection management to explain the construct (service development, weight: 0,62 p < 0.01; collection management, weight: 0,41, p < 0.05). Finally, when analyzing reputational capabilities, publication had an higher weight with respect to communication (publication, weight: 0,61, p < 0.01, communication, weight: 0,14 p < 0.01)

The following table gives an overall view of the results of hypotheses testing

Table 8

Hp 1)a HIHA-operational capabilities link	Supported
Hp 1b) HIHA- reputational capabilities link	Supported
Hp 2a) operational capabilities-visitors	Supported
Hp 2b) reputational capabilities-visitors	Supported
Hp 3a) operational capabilities-volunteers	Supported
Hp 3b) reputational capabilities-volunteers	Supported
Hp 4a) operational capabilities-autonomy ratio	Not supported
Hp 4b) reputational capabilities- autonomy ratio	Supported
Hp 5a) operational capabilities-donors' ratio	Supported
Hp 5b) reputational capabilities- donors' ratio	Supported
Hp 6a) HIHA-operational capabilities-visitors	Supported
Hp 6b) HIHA-reputational capabilities-visitors	Supported
Hp 7a) HIHA-operational capabilities-volunteer	Partial mediation supported (Partial mediation supported)
Hp 7b) HIHA-reputational capabilities-volunteer	Partial mediation supported (HIHA has still direct effect)
Hp 8a) HIHA-operational capabilities-autonomy ratio	Not supported
Hp 8b) HIHA-reputational capabilities-autonomy ratio	Partial mediation supported (HIHA has still direct effect)
Hp 9a) HIHA-operational capabilities-donors' ratio	Supported
Hp 9b) HIHA-reputational capabilities-donors' ratio	Supported

Having tested the model about the black-box in the HIHA-performance link, results for the hypothesis about the performance effects of a differentiated HIHA between core and support employees are described as follows.

In order to carry out this investigation, first the existence of a significantly differentiated exposure of core and support employees groups to the HIHA had to be examined, and then hypotheses about the differentiation-performance link can be tested.

Thus, an index of HIHA differentiation was computed both for core and support employees, by taking the average of the indicators of the three dimensions composing this construct. The existence of a differentiated architecture for core and support employees implied that the use of HIHA for core employees would be greater than the use of HIHA for support employees. To test this

assumption, paired *t*-tests on the HIHA index was run, because we were interested in comparing HIHA for core and support within museums (Lepak et al., 2007). The results indicated a significant difference between HIHA use for core and support employees ($t = 14.78$, $p < .01$).

Having confirmed the existence of a higher exposure of core employees to HIHA with respect to support employees, the hypothesis that the higher the use of a differentiated architecture, the higher the museum performance was examined. To test these hypotheses, an index of HIHA differentiation was created by computing the difference between the HIHA for core and support employees.

Table 9-12 show results for the hypotheses about the performance effects of differentiation in the use of HIHA[15]. Especially, the use of a differentiated HIHA has a positive effect on the number of volunteers ($\beta = 0{,}17$, $p < .01$); on the financial autonomy ratio ($\beta = 0{,}18$, $p< 0.01$) and on the donors' ratio ($\beta = 0{,}14$, $p< .01$), but it has no effect on the number of visitors ($\beta = -0{,}03$, p n.s.).

Table 9

	Dep. Variable: Visitors
Past_visitors	0,77**
Geo Location	0,11**
Opening days	0,08**
Size	0,03
HIHA_diff	-0,03
R-squared	0,73

Tab 10

	Dep. Variable: Volunteers
Past_volunteers	0,68**
Geo Location	-0,04
Opening days	0,05**
Size	0,08**
HIHA_diff	0,17**
R-squared	0,58

[15] The "control model" with only control variables is not shown anymore for presenting these results, since it has already been analyzed in the previous set of hypotheses

Tab 11

	Dep. Variable: Autonomy
Past_autonomy	0,36**
Geo Location	0,01
Opening days	-0,04
Size	0,06**
HIHA_diff	0,18**
R-squared	0,21

Tab 12

	Dep. Variable: Donors
Past_donors	0,08**
Geo Location	0,06
Opening days	0,35**
Size	0,29**
HIHA_diff	0,14**
R-squared	0,19

Discussion and conclusion

The objective of this study was to elaborate and to test a model on how HIHA influences organizational performance, by addressing two important issues in the SHRM research agenda (Becker and Gerhart, 1996; Becker and Huselid, 2006). Especially, in the first part of this research, hypotheses about the intervening variables in the HIHA-performance link were tested, by emphasizing the role of organizational capabilities as key mediators in this relationship. The second part of the research was focused on testing the effects on performance of using a differentiated HIHA for core and support employees groups within Italian museums.

Concerning with the issue of the black-box, we developed a model by defining the HIHA in terms of a set of HR practices, employment mode and psychological contract, according to the model proposed in the 90s by Lepak and Snell (1999). We then elaborated and applied the construct of organizational capabilities to the Italian museum sector and we developed a definition and operationalization of capabilities for this type of non-profit, cultural service industry, definitions

and measures that, to the best of our knowledge, was still missing in capabilities literature. Thus, we elaborated a theoretical rationale for the mediating role of these organizational capabilities in the HIHA-performance link and we tested empirically that link.

Through this research, we extended literature on SHRM in different ways. Firstly, our findings support the widely claimed, but not yet tested argument that SHRM researchers must explore mediating firm capabilities to fully understand the role of HR practices on firm performance. Furthermore, we tested the effect of HIHA and not only of HR practices on organizational performance, by addressing recent recommendations about the urgency of applying this construct when predicting organizational performance (Becker and Huselid, 2006). Moreover, we extended the literature on SHRM to a new context and new set of employees by examining the effects of the HIHA on employees from museum organizations

Especially, results from our analysis show that HIHA had a significant and positive effect on all museum performance indicators and on both museum operational and reputational capabilities, even after controlling for all the third relevant explanations of museum performance. Secondly, they show that the effects of HIHA on performance were either fully or partially mediated by museum organizational capabilities. More in details, when considering, as performance indicators, the number of visitors and the donors' ratio, the effect of HIHA is fully mediated by museum capabilities. When the number of volunteers and the financial autonomy ratio are considered, museum capabilities partially mediated the HIHA-performance link.

In particular, operational capabilities did not mediate the relationship between HIHA and the financial autonomy ratio, this link being mediated only by reputational capabilities. This findings might be interpreted considering that the financial autonomy ratio expresses the ability of the museum to generate revenues from its program activities with respect to other external sources of funding, where the program activities of the museum include generating revenues from activities such as temporary exhibitions, conferences, seminars, laboratories and events. That reputational capabilities, and not operational ones, do affect financial autonomy might be due to the fact that the

museum attractiveness for stakeholders able to pay for museum services should be related to the museum capabilities of increasing its status and awareness (reputational capabilities) rather than to its capacity of managing and exhibit its collection (operational ones). Considering that the coefficients of operational capabilities (even though when these capabilities are a significant mediators) are always lower than the ones of reputational capabilities, in future research it might be recommendable to investigate further the drivers of visiting, of volunteering, of donating and of buying services from non-for profit organizations.

In terms of theoretical implications, one of the contributions of this study is that of examining the role of HR architecture, as a value creating mechanism to get superior performance. This issue is particularly relevant, when considering that, even though the metaphor of HR architecture was introduced to advance the understanding of the link between workforce management and superior performance (Lepak and Snell, 1999), research on this topic investigated just the existence of the architecture without testing its relationship with performance (Lepak and Snell, 2002). Becker and Huselid strongly emphasized this gap in the SHRM field: "The architectural metaphor is important because it highlights the locus of value creation in SHRM, however, here has been little effort to extend SHRM theory in a way that formally integrates the mechanism through which the HR architecture actually influences firm performance. We need more theoretical work on the "black box" *between* the HR architecture and firm performance" (Becker and Huselid, 2006: 903). Our research contributed to address this issue by investigating the link between the architectural framework, composed of HR practices, employment and psychological contract, and performance.

Another contribution related to HR architecture is that, through the use of a formative measurement model, it was possible to adopt a measurement model closer to the nature of super ordinate construct of architecture and to define if and to what extent each of the three components of HR architecture proposed by Lepak and Snell (1999) contributes to explain the construct of architecture itself. We discovered that the three components were all significant and that the HR

practices dimension has the highest weight with respect to psychological contract and employment arrangement.

Secondly, this study contributes to the advancement of the SHRM by supporting the view that the positive effect of HIHA on organizational performance is, at least, partially mediated by organizational capabilities (Wright and Boswell, 2002). According to our findings, there is support for the arguments that HIHA is able to provide employees with skills, motivations and opportunities to contribute the behaviours and acquire the firm-specific knowledge required to support their organizations' capabilities and ultimately organizational performance (Collins and Smith, 2006). According to our findings, HIHA can be considered a mechanism that enables employees to improve how the core organizational processes, that are conductive of superior firm performance are carried out. Indeed, it is particularly interesting to point out that HIHA had always a positive and significant effect on both operational and reputational capabilities. Moreover, when considering the debated issue of causality in the HR-performance link, this study adopted many cautions regarding causality. First of all, our focus on the mediating mechanism in this relationship allows controlling directly for the third explanations in the HIHA-performance link. Furthermore, the use of relevant control variables, and especially of past performance, and the collection of lagged data on firm performance enabled us to state with some confidence that HIHA and organizational capabilities led to superior performance. Regarding the use of control variables, it is relevant to point out that the effect of HIHA on performance is significant, even after having controlled for previous performance. The large percentage of variance explained by past performance supported the relevance and the criticality of controlling for this variable when testing the link between HR and performance (Wright et al., 2005). Finally, measurement problems related to colleting HIHA from a single source (Gerhart, Wright, McMahan, & Snell, 2000) could be limited in this research since we gathered data on the HIHA from different sources.

Furthermore, this study enriches the debate about the role of HRM to get superior performance in service sector, debate that has become even more relevant with the emergence of the service-profit-

chain model (Heskett, et al., 2008; Hallowell et al., 1996). In particular, in this study we provided empirical evidence of the effects on organizational performance of HR policies and practices that enhance employees' ability to deliver results to customers and stakeholders. In such a way, we offered one of few empirical tests of the relevance of what service-profit-chain model literature defines as "internal quality" to get competitive advantage and we provided this evidence for a relevant but unexplored side of the service sector, the non-profit one.

A further theoretical contribution is related to the issue of organizational capabilities. In our analysis, with respect to other studies on the black-box, the investigation of the mediating mechanisms in the HIHA-performance link is rooted in the strategic literature and in the capabilities framework. In such a way, on the one side, this study provides a definition of capabilities that contributes to integrate the major research streams on this topic and to offer a more comprehensive view of capabilities. On the other side, with a deeper discussion of the construct of capabilities, this study contributes to the integration of the field of strategy and of SHRM. Moreover, this study contributes to the advancement of both these streams of research by investigating the construct of capabilities and its antecedents and consequences in an unexplored setting both for SHRM and capabilities literature.

However, our results about the role of capabilities shed light on one of the possible limitations of out study, that of not having controlled for other potential mediators that may explain the relationship between HR practices and firm performance in this context. As noted, the hypothesis about the relationship between operational capabilities and financial autonomy ratio was not supported. This finding might imply that different capabilities, that we did not examine, affect that performance indicator. This argument would call for a more fine-grained picture of the diverse capabilities that drive the different performance measures. By further analyzing this issue, it would be possible to end up with a more "segmented" and explicative model of which types of capabilities affects the different performance indicators.

A final limitation of this study emerges, when considering that a formative measurement model was adopted to examine constructs and sub-constructs of both independent and mediating variables. Even though the application of the formative approach relied on the discussion of how HIHA and capabilities have been so far operationalized, it might be recommendable that future research to test the appropriateness of this measurement model also in other databases (MacKenzie, Podsakoff, Jarvis, Burke, 2005) in order to offer further evidence of its validity and to better shed lights on its implications on the structural model. Moreover, extant research has usually adopted multiple indicators to measure constructs rather than summated or averaged scale, while our research, due to the presence of latent sub-constructs and to the characteristics of the analytic tool, has adopted averaged scale as indicators (Agarwala and Karahanna, 2000). It might be interesting for future research to further discuss the theoretical assumption of the formative model for the sub-constructs as well and to check the implications of the adoption of a reflective one.

This research has practical implications as well, since it shows the concrete effect that HIHA might have, in particular, on the ability of museums of attracting private funding and on its capacity to reduce their dependence from external sources. Even though its effect was al least partially mediated by organizational capabilities, our results showed that one standard-deviation increase in HIHA yields to a 29,8 percent increase in the donors ratio and a 30,9 percent increase in the autonomy ratio. Moreover, this research shows the processes though which HRM refers as a value creation mechanism within the organization, by giving to non-profit service organization a concrete picture of the organizational practices that HRM leverages to get superior performance and of the organizational practices that are more relevant, when considering different types of performance indicators.

Concerning with the test of the performance effects of a differentiated HIHA, results of this research shows that, in the analyzed setting, core employees were significantly more exposed to the use of HIHA with respect to support employees. In such a way, the existence of a differentiated HIHA was supported in the Italian museum field. Having defined the implementation of the

differentiated architecture, this research moved forward to test its performance implications. Our findings supported the view the higher exposure of core employees to HIHA with respect to support employees influences positively the number of volunteer, the financial autonomy, the donors' ratio, but not the number of visitors. Indeed, the degree of the HIHA differentiation has a positive and significant effect on the fist three variables, even after having controlled for museum past performance, while it has not any significant effect on visitors.

These results partially support the argument that, in order to get returns from the investment in HIHA, this investment should be directed more towards those employees that are highly valuable for the implementation of company's strategy and whose knowledge is firm specific and easily substitutable, than towards those employees whose firm skills' specificity and strategic relevance is lower. Differentiation guarantees that just the employees who are in charge for the success of the organization and who have the competences to effectively contribute to it are managed through an HR system oriented to internal development, to build commitment and to enforce retention. According to this framework, differentiation implies superior performance that is driven by *efficient* investments in the workforce management

Nonetheless, our results show that the positive effect of differentiation might depend on the type of performance indicators that is considered. In particular, the non significant effect of differentiation on the number of visitors might be interpreted considering the level of interest and of exposure that the different museum stakeholders (stakeholders that drive the diverse indicators of performance) have with respect to the museum internal processes. Volunteers, donors, sponsors and other private and public buyers of museum services have more visibilities on the internal, less evident managerial processes of the museum with respect to visitors. Indeed, the motivations for volunteers, donors and sponsors for donating or acquiring museum services might be related to the museum managerial philosophy, while the same assumption is not true for visitors. In fact, as previously noted, differentiation might affect museum performance through both a direct and indirect effect and the indirect effect might provide a rationale to explain why the number of visitor

is not affected by HIHA differentiation. The direct positive effect of differentiation on performance is concerned with the *efficiency* rationale, we have already pointed out (Lepak and Snell, 1999). Concerning with the indirect effect, differentiation might be interpreted as a "signal" that the museum values and develops its core competence (identifiable with core employees), and that, in such a way, it is an institution able to offer learning opportunities, which are relevant to explain motivations to volunteer. Furthermore, differentiation might contribute to build a strong museum image for donors and sponsors, image based on the ability of managing efficiently the workforce and of economically preserving its strategic human assets. Thus, it might be arguable that differentiation is not significant to explain the number of visitors, because visitors, differently from volunteers and donors for instance, do not have access and are not interested in receiving "signals" about the internal process of museum workforce management, since visitors are basically interested in having access just to the "external" management of the museum. Nonetheless, differentiation is significant to explain performance indicators that are driven by the actions of those stakeholders who have access and who build their motivation to buy museum service also on the observation of more internal museum processes.

Nonetheless, this investigation contributes to the discussion about the use of a differentiated architecture within organizations, by offering the first test of its relationship with organizational performance. The topic of segmenting employees according to the value of their human capital and the implications of managing different employees group through different arrangements have been increasingly discussed in literature, especially in terms of consequences on employees "make or buy" choices (Pfeffer and Cohen, 1984; Lepak, Takeuchi and Snell, 2003; Broschak and Davis-Blake, 2006). With the emergence of the construct of HR architecture (Lepak and Snell, 1999), the discussion on workforce management differentiation has been much more rooted in the field of SHRM and its relationship with organizational performance has become a compelling issue. Nonetheless, so far our study is the first empirical contribution on the effect at organizational level of a differentiated architecture.

A first limitation of our study is that we just know that there is a difference in the use of HIHA between the two employees groups. However, we do not know if the lower exposure of support employees to HIHA implies the implementation of a different HR architecture for them and how this workforce management strategy might influence support employees behaviours and ultimately performance.

Moreover, while this study is focused on the direct link between differentiation and organizational performance, it neglects to evaluate how differentiating the workforce strategy affects other dimensions that literature has identified as relevant to explain the outcomes of blending employees that are managed in a different way. (Davis-Blake, Broschak, George, 2003; Broschak and Davis-Blake, 2006; Davis-Blake and Uzzi, 1993). Especially, Broschak and Davis-Blake (2006) investigated the effects of this heterogeneity in the work force management on employees' relations with their supervisor, on social relations with peers, on willingness to assist others and on intention to exit their organization. This research has found out that heterogeneity in employment arrangement increased helping behaviour among group members and that, for workers in higher positions the presence of temporary workers improved co-worker relations and reduced turnover. However, the study has also pointed out that heterogeneity evoked negative social and psychological reactions among group member toward supervisors. Thus, future research should look at how employees' social relations and behaviour might intervene in the relationship between a differentiated HR architecture and organizational performance.

Notwithstanding the increasing attention recently dedicated to a contingent view of differentiation (Delery and Shaw, 2005; Lepak et al., 2007), another limitation of this study is related to the adoption of a "universal" approach to differentiation. Indeed, we assumed that our sample was homogenous in the application of differentiation and that there were not any museums' characteristics that might explain a higher implementation of differentiation in some museums than in other ones. However, neither existing empirical on this contingent view of the architecture has yet clarified which the relevant conditions for the use of differentiation might be. For instance,

Lepak and colleagues (2007) have tested the role of firm strategy, HR philosophy and industry as conditions under which differentiation in the management of core and support employees might more likely. Nonetheless, they have found out support just for the role of industry, by pointing out that core employees received significantly greater exposure to HIHR systems than support employees in nonmanufacturing firms, while there was not significant difference between the two groups in the manufacturing one. Thus, even though it might be interesting that future research focuses on pointing out other relevant contingencies to explain when an higher level of differentiation it is more likely, one point of strength of this study is that of investigating the relationship between differentiation and performance in a nonmanufacturing setting, the one where extant research has showed that differentiation was a relevant issue.

Conclusion

In conclusion this research gives a more complete picture of the link between HR and performance, by testing hypotheses on the black-box and on differentiation. Moreover, it offers the ground for a deeper integration of the SHRM and of the strategic field, by discussing and testing the boundaries of emergent constructs such as HR architecture and organizational capabilities in a non-profit sector and by testing their relationships.

Our findings urge scholars to further examine the issue of capabilities in the HR-performance link and of heterogeneity in the workforce management, especially in the non-profit service sector. The peculiarities of this context of analysis offer stimuli to think about the relationship between HR and performance in a more "segmented" way, by carefully analyzing that there might be a very specific relationship between certain HR combination and certain performance indicators.

References

Addison JT, Belfield CR. (2001). Updating the determinants of firm performance: Estimation using the 1998 UK Workplace Employee Relations Survey. *British Journal of Industrial Relations, 39*, 341–366.

Afuah, A. (2002) Mapping technological capabilities into product markets and competitive advantage: the case of cholesterol drugs, *Strategic Management Journal* 23: 171-179

Agarwala T. (2003). Innovative human resource practices and organizational commitment: An empirical investigation. *International Journal of Human Resource Management, 14*, 175–197.

Agarwal, R. & Karahanna, E. (2000) Time files when you are having fun, cognitive absorption and beliefs about information technology usage, MIS quarterly, 24: 655-694

Ahmad S, Schroeder RG. (2003). The impact of human resource management practices on operational performance: Recognizing country and industry differences. *Journal of Operations Management, 21*, 19–43.

Ahneier, H. (2000) Managing non-profit organisations: Towards a new approach, Civil Society Working Paper 1

Ahneier, H. & Seibel, W. (1990) The Third Sector: Comparative Studies of Nonprofit Organizations, Walter de Gruyter & Co.

Appleyard M., Brown C. (2001) Employment practices and semiconductor manufacturing performance. *Industrial Relations, 40*, 436–471.

Arthur JB. (1994). Effects of human resource systems on manufacturing performance and turnover. *Academy of Management Journal, 37*, 670–687.

Bae J, Chen S, DavidWan TW, Lawler JJ,Walumbwa FO. (2003). Human resource strategy and firm performance in Pacific Rim countries. *International Journal of Human Resource Management, 14*, 1308–1332.

Bae J, Lawler JJ. (2000). Organizational and HRM strategies in Korea: Impact on firm performance in an emerging economy. *Academy of Management Journal, 43*, 502–518.

Balabanis, G., Stables, R. & Phillips, H. (2003) Market orientation in the top 200 British charity organizations and its impact on their performance, *European Journal of Marketing,* 8:583-603

Batt R, Colvin AJS, Keefe J. (2002). Employee voice, human resource practices, and quit rates: Evidence from the telecommunications industry. *Industrial & Labor Relations Review, 55*, 573–594.

Batt R. (2002). Managing customer services: Human resource practices, quit rates, and sales growth. *Academy of Management Journal, 45*, 587–597.

Batt. R. (2002) Strategic Segmentation in Frontline Services: Matching Customers, Employees, and Human Resource Systems, CAHRS Working Paper Series, Cornell University

Becker, B. & Huselid, M. (2006) Strategic Human Resources Management: Where Do We Go From Here? Journal of Management, 898-925.

Becker, B. E., & Huselid, M. A. (1998) High performance work systems and firm performance: A synthesis of research and managerial implications. Research in Personnel and Human Resource Management, 53-101.

Bennett N, Ketchen J, David J, Schultz EB. (1998). An examination of factors associated with the integration of human resource management and strategic decision making. *Human resource management,37*, 3–16.

Bjorkman I, Xiucheng F. (2002). Human resource management and the performance of Western firms in China. *International Journal of Human Resource Management, 13*, 853–864.

Black SE, Lynch LM. (2001). How to compete: The impact of workplace practices and information technology on productivity. *Review of Economics & Statistics, 83*, 434–445.

Boxall, P. (2003) HR strategy and competitive advantage in the service sector, *Human Resource Management Journal*, 13: 5-20

Caligiuri PM, Stroh LK. (1995). Multinational corporation management strategies and international human resource practices: Bringing IHRM to the bottom line. *International Journal of Human Resource Management, 6*, 494–507.

Callen, R., & Falk, H. (1993) Agency and efficiency in non profit organizations: the case of specific "health focus" charities, *The Accounting Review*, 66: 48-65

Cappelli P, Neurmark D. (2001). Do 'high-performance' work practices improve establishment-level outcomes? *Industrial&Labor Relations Review, 54*, 737–775.

Carnegie G. D., &. Wolnizer P. W. (1996) Enabling accountability in museums, *Accounting, Auditing & Accountability Journal,* 9: 84-99.

Chandler GN, Keller C, Lyon DW. (2000). Unraveling the determinants and consequences of an innovation-supportive organizational culture. *Entrepreneurship: Theory & Practice, 25*, 59–76.

Chandler GN, McEvoy GM. (2000). Human resource management, TQM, and firm performance in small and medium-size enterprises. *Entrepreneurship: Theory & Practice, 25*, 43–57.

Cohen W., & Levinthal, D. (1990) Absorptive Capacity: A New Perspective on Learning and Innovation, Administrative Science Quarterly,

Collins C. & Clark K. (2003). Strategic human resources practices and top management team social networks: An examination of the role of HR practices in creating organizational competitive advantage. *Academy of Management Journal, 46*, 740–751.

Collins, C. J., & Smith, K. G. (2006) Knowledge exchange and combination: The role of human resource practices in the performance of high technology firms, *Academy of Management Journal*, 49: 544-560.

Cooke WN. (1994). Employee participation programs, group-based incentives, and company performance: A union non-union comparison. *Industrial & Labor Relations Review, 47*, 594–609.

Darnall N. & Edwards D. (2006) Predicting the cost of environmental management system adoption: the role of capabilities, resources and ownership structure, Strategic Management Journal , 4, 301 - 320

Davis-Blake, A. & Uzzi, B. (1993) Determinants of Employment Externalization: a Study of Temporary Workers and Independent Contractors, Administrative Science Quarterly, 195-223

Davis-Blake, A., Broschak, J. & George, E. (2003) Happy together: how using non standard workers affects voice, exist and loyalty among standard employees., Administrative Science Quarterly, 46. 475-485

Delaney JT, Huselid MA. (1996). The impact of human resource management practices on perceptions of organizational performance. *Academy of Management Journal, 39*, 949–969.

Delery JE, Doty DH. (1996). Modes of theorizing in strategic human resource management: Tests of universalistic, contingency and configurational performance predictions. *Academy of Management Journal, 39*, 802–835.

Delery, J., & Shaw, J. (2005) The strategic management of people in work organizations: review, synthesis, and extension, in Ferris G. eds., Research in Personnel and Human resource Management; Elsevier

Ethiraj, Kale and Krishnan, (2005) Where do capabilities come from and how do they matter? A study in the software services industry, Strategic Management Journal, 256-274

Fey CF, Bjorkman I, Pavlovskaya A. (2000). The effect of human resource management practices on firm performance in Russia. *International Journal of Human Resource Management, 11*, 1–18.

Fey CF, Bjorkman I. (2001). The effect of human resource management practices on MNC subsidiary performance in Russia. *Journal of International Business Studies, 32*, 59–75.

Fleetwood S. & Hesketh, A. (2006) HRM-performance research: under theorized and lacking explanatory power, International Journal of Human Resource Management, 17: 1977-1993

Fulmer IS, Gerhant B, Scott KS. (2003). Are the 100 best better? An empirical investigation of the relationship between being a "great place to work" and firm performance. PERSONNEL PSYCHOLOGY*, 56*, 965–993.

Garlandini, A. (2006) L'intervento delle regioni a favore dei musei: uno scenario in profondo cambiamento, Aedon, 2

Gelade GA, Ivery M. (2003). The impact of human resource management and work climate on organizational performance. PERSONNEL PSYCHOLOGY*, 56*, 383–404.

Gomez-Mejia LR. (1988). The role of human resources strategy in export performance: A longitudinal study. *Strategic Management Journal,9*, 493–505.

Grant, R. (996) Toward a knowledge-based theory of the firm, Strategic Management Journal, 17: 109-122

Guest DE, Michie J, Conway N, Sheehan M. (2003). Human resource management and corporate performance in the UK. *British Journal of Industrial Relations, 41*, 291–314.

Guthrie JP, Spell CS, Nyamori RO. (2002). Correlates and consequences of high involvement work practices: The role of competitive strategy. *International Journal of Human Resource Management, 13*, 183–197.

Guthrie JP. (2001). High-involvement work practices, turnover, and productivity: Evidence from New Zealand. *Academy of Management Journal, 44*, 180–190.

Haas J. & Hansen O. (2005) When using knowledge can hurt performance: the value of organizational capabilities in a management consulting company, Strategic Management Journal, 26: 1 - 24

Harel G., Tzafrir S., & Baruch Y. (2003). Achieving organizational effectiveness through promotion of women into managerial positions: HRM practice focus. *International Journal of Human Resource Management,14*, 247–263.

Harel G., & Tzafrir S. (1999). The effect of human resource management practices on the perceptions of organizational and market performance of the firm. *Human resource management, 38*, 185–199.

Harris L., & Ogbonna E. (2001). Strategic human resource management, market orientation, and organizational performance. *Journal of Business Research, 51*, 157–166.

Harter JK, Schmidt FL, & Hayes TL. (2002). Business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes: A meta-analysis. *Journal of Applied Psychology, 87*, 268–279.

Hayton J. & Zahra, S. (2005) Venture team human capital and absorptive capacity in high technology new ventures, International Journal of Technology Management, 31: 256-274

Helfat C. & Peteraf, M, (2003) The dynamic resource-based view: capability lifecycles, Strategic Management Journal, 997 – 1010

Henderson R. & Cockburn, I. (1994) Measuring Competence? Exploring Firm Effects in Pharmaceutical Research, Strategic Management Journal, pp. 63-84

Heskett, J., Jones, T., Loveman, G., Sasser, W & Schlesinger, L. (2008). Putting the Service-Profit Chain to Work, Harvard Business Review, July-August 2008

Heskett, J. Sasser, W. & Wheeler, J. (2008) *Ownership Quotient: Putting the Service Profit Chain to Work for Unbeatable Competitive Advantage*, Harvard Business Press

Heugens, P, & van Riel, C. & Van den Bosch F. (2004) Reputation Management Capabilities as Decision Rules, Journal of Management Studies. 809 - 825

Hoque K. (1999). Human resource management and performance in the UK hotel industry. *British Journal of Industrial Relations, 37*, 419–443.

Huang T. (2000). Are the human resource practices of effective firms distinctly different from those of poorly performing ones? Evidence from Taiwanese enterprises. *International Journal of Human Resource Management, 11*, 436–452.

Huselid MA, Becker BE. (1997). The impact high performance work systems, implementation effectiveness, and alignment with strategy on shareholder wealth. *Academy of Management Proceedings,* 144–148.

Huselid MA. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal, 38*, 635–672.

Huselid, M., Becker, B, & Beatty, R. (2005) *Workforce Scorecard: Managing Human Capital to Execute Strategy*, Harvard Business School Press Books

Ichniowski C, ShawK, Prennushi G. (1997). The effects of human resource management practices on productivity: A study of steel finishing lines. *American Economic Review, 87*, 291–313.

Jacobides M., & Hitt, L. (2004) Losing sight of the forest for the trees? Productive capabilities and gains from trade as drivers of vertical scope, Strategic Management Journal, 26 Pages 1209 – 1227

Ji, Li. (2003). Strategic human resource management and MNEs' performance in China. *International Journal of Human Resource Management, 14*, 157–173.

Kang, S., Morris, S. & Snell, S. (2007) Relational Archetypes, Organizational Learning, and Value Creation: Extending the Human Resource Architecture, *Academy of Management Review*, 236-256

Keltner, B. & Finegold, D. (1999) Market Segmentation Strategies and Service Sector Productivity, *California Management Review*, 41: 84-102

Khatri N. (2000). Managing human resource for competitive advantage: A study of companies in Singapore. *International Journal of Human Resource Management, 11*, 3–36.

Kusunoki, Nonaka & Nagata, (1998) Organizational Capabilities in Product Development of Japanese Firms: A Conceptual Framework and Empirical Findings, *Organization Science*, Vol. 9, 699-718

Lam LW, White LP. (1998). Human resource orientation and corporate performance. *Human Resource Development Quarterly, 9*, 351–364.

Lepak D.P., & Snell, S.A. (1999) The human resource architecture: toward a theory of human capital allocation and development, *Academy of Management Review*, 1: 31-48.

Lepak, D. & Snell, S. (2002) Examine the Human Resource Architecture: the Relationship among Human Capital, Employment, and Human Resource Configuration, Journal of Management, 517-543

Lepak, D., Takeuchi, R. & Snell, S. (2003) Employment Flexibility and Firm performance: Examine the interaction effects of Employment Mode, Environmental Dynamism and Technological Intensity, Journal of Management 681-703

Lepak, D., Taylor, S, Teklab, A, Marrone, J., & Cohen, D. (2007) An examination of the use of high investment Human resource systems for core and support employees, Human Resource Management, 223-246

Lincoln JR, Kalleberg AL. (1996). Commitment, quits, and work organization in Japanese and U.S. plants. *Industrial & Labor Relations Review, 50*, 39–59.

MacDuffie JP. (1995). Human resource bundles and manufacturing performance: Organizational logic and flexible production systems in the world auto industry. *Industrial & Labor Relations Review, 48*

MacKenzie, S., Podsakoff, P, & Jarvis, C. (2005) The Problem of Measurement Model Misspecification in Behavioral and Organizational Research and Some Recommended Solutions, Journal of applied psychology, 90:710-730

Mairesse, F. & Vanden Eeckaut P. (2002) Museum Assessment and FDH Technology: Towards a Global Approach, *Journal of Cultural Economics*. 26: 261-286.

Martell K, Carroll SJ. (1995). Which executive human resource management practices for the top management team are associated with higher firm performance? *Human resource management, 34*, 497–512.

Martin G. & Hetrik, S. (2005) Corporate reputations, Branding, and People Management. Elsevier

Mastering audience segmentation, (2007) Melcrum Publishing

Matias-Reche, F. & Fuentes-Fuentes, M. (2006) The internal labour market and the employment of temporary help workers in Spain, Personnel Review, 35: 378-396

McEvily B. & Marcus, A. 2005. Embedded ties and the acquisition of competitive capabilities, Strategic Management Journal 1033 – 1055

Melian-Gonzalez, S., & Verano-Tacorante, D. 2004. A New Approach to the Best Practices Debate: Are Best Practices Applied to All Employees in the Same Way?, Human Resource Management, 56-75

Moore, K. (1994) *Museum Management*, London: Routledge

Moretti, A. (1999) *La produzione museale*, Torino: Giappichelli.

Ngo H, Turban D, Lau C, Lui S. (1998). Human resource practices and firm performance of multinational corporations: Influences of country origin. *International Journal of Human Resource Management, 9*, 632–652.

Pablo, A., Reay, T., Dewald J. and Casebeer, A. Identifying, Enabling and Managing Dynamic Capabilities in the Public Sector, *Journal of Management Studies*, 687-708

Park HJ, Mitsuhashi H, Fey CF, Bj¨orkman I. (2003). The effect of human resource management practices on Japanese MNC subsidiary performance: A partial mediating model. *International Journal of Human Resource Management, 14*, 1391–1406.

Paul AK, Anantharaman RN. (2003). Impact of people management practices on organizational performance: Analysis of a causal model. *International Journal of Human Resource Management, 14*, 1246–1266.

Paulus, O. 2003. Measuring museum performance: a study of museums in France and United States, *International Journal of Art Management*, Fall, 50-63

Pfeffer, J. & Cohen, Y. 1984. Determinants of internal Labour Market in Organizations, Administrative Science Quarterly, 29: 550-572

Pfeffer, J. & Cohen, Y. 1984. Determinants of internal Labour Market in Organizations, Administrative Science Quarterly, 550-572

Pollitt, C. & Bouckaert G. (1995) *Quality Improvement in European Public Services*, *Concepts, Cases and Commentary*, Sage

Pollitt, C. & Bouckaert G. 2000. *Public management reform*, New York: Oxford University Press

Pollitt, C, Van Thiel, S. & Homburg, V. (2006) *New Public Management in Europe, Adaptation and Alternatives*, Palgrave Macmillan

Ramsay H, Scholarios D, Harley B. (2000). Employees and high performance work systems: Testing inside the black box. *British Journal of Industrial Relations, 38*, 501–531.

Regione Lombardia. 2005. Accreditare i Musei, l'Esperienza della Lombardia, IRER

Regione Lombardia. 2005a). La carta nazionale delle professioni museali, IRER

Richard OC, Johnson NB. (2001). Strategic human resource management effectiveness and firm performance. *International Journal of Human Resource Management, 12*, 299–310.

Rodrıguez JM, Ventura J. (2003). Human resource management systems and organizational performance: An analysis of the Spanish manufacturing industry. *International Journal of Human Resource Management,14*, 1206–1226.

Rogg KL, Schmidt DB, Shull C, Schmitt N. (2001). Human resource practices, organizational climate, and customer satisfaction. *Journal of Management, 27*, 431–450.

Rousseau, D. 2001. The Idiosyncratic Deal, Flexibility versus Fairness?, Organizational Dynamics, 29: 260-273

Shaw JD, Delery JE, Jenkins, J, Douglas G, Gupta N. (1998). An organization-level analysis of voluntary and involuntary turnover. *Academy of Management Journal, 41*, 511–525.

Skagg and Snow, 2004. The Strategic Signaling of Capabilities by Service Firms in Different Information Asymmetry Environments, Strategic Organization, 2: 271–291

Townley, B. 2002. The role of competing rationalities in institutional change, *Academy of Management Journal*, 45: 163-179

Tripsas, M. & Gavetti, G. (2000) Capabilities, Cognition, and Inertia: Evidence from Digital Imaging, Organization Studies

Verona G. 1999. A Resource-Based View of Product Development, Academy of Management Review 1999, 1: 132-142

Wall T. & Wood, S. (2005) The romance of human resource management and business performance, and the case for big science, Human Relations, 54: 429-462

Way SA. (2002). High performance work systems and intermediate indicators of firm performance within the US small business sector. *Journal of Management, 28*, 765–785.

Welbourne TM, Andrews AO. (1996). Predicting the performance of initial public offerings: Should human resource management be in the equation? *Academy of Management Journal, 39*, 891–919.

West MA, Borrill C, Dawson J, et al. (2002). The link between the management of employees and patient mortality in acute hospitals. *International Journal of Human Resource Management, 13*, 1299–1310.

West, M., Guthrie, J., Jeremy, D., Borrill, C., & Carter, M. 2006. Reducing patient mortality in hospitals: the role of human resource management, *Journal of Organizational Behavior*, 27: 983-1002

Winter, S. 2003. Understanding dynamic capabilities Strategic Management Journal, 24: 991 – 995

Wright P. & Boswell, W. 2002. Desegregating HRM: A Review and Synthesis of Micro and Macro Human Resource Management Research, *Journal of Management*, 247-276

Wright PM, Mccormick B, Sherman WS, Mcmahan GC. (1999). The role of human resource practices in petro-chemical refinery performance. *International Journal of Human Resource Management, 10*, 551–571.

Wright, P., Gardener, T., Moynihan, L., & Allen, M. 2005. The relationship between Hr practices and firm performance: Examining causal order, *Personnel Psychology*, 58: 409-446

Wright, P.M., Dunford, B.B., & Snell, S. 2001. Human resources and the resource based view of the firm, *Journal of Management*, 701-721.

Xu, Y. & Van Der Heijden, B. (2005) The Employee Factor in the Service-Profit Chain Framework: A Study Among Service Employees Working Within a Leading Chinese Securities Firm, Journal of International Consumer Marketing, 18: 136-155

Youndt MA, Snell SA, Lepak DP. (1996). Human resource management, manufacturing strategy, and firm performance. *Academy of Management Journal, 39*, 836–866.

Youndt, M. & Snell, S. 2004. Human Resource Configurations, Intellectual Capital, and Organizational Performance, *Journal of Managerial Issues*, 337-360

Zaheer, A. & and Bell, G. 2005. Benefiting from network position: firm capabilities, structural holes, and performance, Strategic Management Journal , 809 - 825

Zahra, A. & Nielsen, A. 2002. Sources of capabilities, integration and technology commercialization, Strategic Management Journal , 377–398

Zollo, M. & Singh, R. Deliberate learning in corporate acquisitions: post-acquisition strategies and integration capability in U.S. bank mergers, Strategic Management Journal, 25: 1233-1256

Zollo, M., Reuer J., & Singh, H. 2002. Interorganizational Routines and Performance in Strategic Alliances, Organization Science, 701-713

Appendix

Table 1: literature review on High Involvement Hr system-performance

Citation	Context of analysis	Definition and Measure	Results
Tsai, 2006	Semiconductor design firms in Taiwan	Definition: "HPWS uses a fundamentally different managerial approach form the traditional hierarchical or burocratic approach to achieve high performance through people. It includes practices such as job flexibility, team working and employee participation" (p. 1513) Measures: HR questions were based on the 1998 workplace employee relations survey. Especially, HR managers were asked to indicate whether they have employed the following nine practices: personality test; competency test; formal off-the-job training for most employees; profit-related payment; employee share-ownership scheme; group performance-related pay; profit sharing; team working for most employees; and guaranteed job security. Their answers were recorded as '1' if companies had implemented certain policies and practices and '0' if they had not done so.	No support for a positive relationship between individual and bundles of HR practices (only empowerment is positively related to performance)
Kintana et al., 2006	Spanish manufacturing firms	Definition: "set of best practices, with the potential to boost firm performance by developing a more talented and committed workforce. These include selective staffing, stability in the employment relationship, compensation scheme linked to group performance, above average compensation, flexible job assignments, self-directed work team, extensive training, high level of communication and fair treatment" Measure: staffing, a list of six criteria that may be considered in the selection process: age, experience, training, personality, capacity to work in teams, and capacity to learn, and asked which of these occupy first and second place in the firm's priorities, The variable staffing, therefore, takes its maximum value (3) if the two criteria employed are among personality, training, capacity to work in teams, or ability to learn; Pay level is a dummy variable that takes a value of 1 if the pay level is above that of competitors and 0 otherwise. Incentives is a dummy variable that takes a value of 1 if the plant uses incentives linked to quality standards or to group or firm performance, and 0 when the plant uses either incentives based on individual performance or none at all. Employment security is measured as the percentage of total employees that are not temporary. Job rotation is a discrete variable that takes one of four values: 0 when there is no job rotation, 1 when workers are able to perform different jobs but do not usually change jobs, 2 when job rotation is applied with some frequency but always between jobs in the same section, and 3 when job rotation is quite frequent and may even involve moving between sections. Self-directed teams is the percentage of employees involved in self-managed teams; Training is measured as the yearly average number of hours of formal training provided by the firm to one employee. Finally, communication is the percentage of employees involved in improvement groups	HPWS influences positively operational performance (the relationship is moderated by technology)

Delaney and Huselid, 1996	590 for-profit and non-for profit firms from the national organizations survey	Definition: "performance enhancing or progressive human resource management" that include employee participation and empowerment and job design, team based production system, extensive employment training, performance contingent incentive compensation. Measure: selectivity in staffing, number of applicants considered for each position filled by the organization for three different position; extensiveness of training, 3 items assessing whether the organization has organized job training in the past two years and how many employees; incentive compensation, 3 items for how important job performance is in determining earnings for the three groups; work structure, the level at which organizational decisions rest; internal labor market, 5 item that capture the existence of opportunities for promotion from within; vertical hierarchy, number of occupational level between the highest and the lowest jobs	HRM practices including selecting staffing, training and incentive compensations (not as a bundle) are positively related to perceptual measure of organizational performance. Results do not support the hypothesis that complementarities among HRM practices enhance organizational performance
Batt, 2002	Call centers	Definition "high involvement work systems" generally include three dimensions: relatively high skill requirements; work designed so that employees have discretion and opportunity to use their skills in collaboration with other workers; and an incentive structure that enhances motivation and commitment. They can be conceptualized along three dimensions based on prior research: skill level, work design, and involvement-enhancing HR incentives. Measure. To capture basic skills requirement basic skill requirements, a skill index based on the mean of two variables was created: (1) the number of years of formal education of the typical (median) core employee and (2) the number of years of formal and on-the-job training needed for a new employee to become proficient. For the work design index, two measures for individual discretion and two for employee collaboration in teams were used. Discretion over work methods included eight questions assessing degree of influence over tasks, tools, work methods, pace of work, schedule, vacation. Ongoing training indicated a firm's commitment to developing employees and was measured by the number of weeks of training a typical core employee received each year. Pay was the natural logarithm of the median annual base pay of the core workforce. Employment security was the percentage of the core workforce that was permanent and full-time, as opposed to part-time or contingent.	Greater use of high-involvement practices is associated with higher sales growth in customer service. The relationship is mediated by quit rates and moderated by the typology of customer base
Datta et al., 2005	Publicly traded firms in the manufacturing sector (two-digit SIC code 20–39) having a minimum of 100 employees and $50 million in sales were included	Definition: *high-performance* or *high-involvement human resource systems* are systems of human resource (HR) practices designed to enhance employees' skills, commitment, and productivity. these systems include practices such as rigorous selection procedures, internal merit-based promotions, grievance procedures, cross-functional and cross-trained teams, high levels of training, information sharing, participatory mechanisms, group-based rewards, and skill-based pay. Measure: the use of 18 practicesis assessed. Estimates were obtained of the proportion (0–100%) of members of each of two groups, "exempt" and "nonexempt" employees, who were covered by each high-performance work system practice. Using the number of employees in each group, a weighted average for each practice was computed. The mean of these 18 weighted averages represented a firm's high-performance work systems score	High performance work system affects positively organizational labor productivity. Industry characteristics moderate this relationship
Guthrie et al., 2002		Definition: 'high involvement', 'high commitment', 'high performance' or 'sophisticated' work practices, the common theme in this developing literature	results indicate that . rms adopting more of a differentiation strategy also opt to utilize higher levels of high involvement

		is an emphasis on utilizing a system of management practices giving employees the skills, information, motivation and latitude resulting in a work force which is a source of competitive advantage Measure. Composite of twelve items: use of internal promotions, use of performance (versus seniority) based promotions, use of skill-based pay, use of group-based (i.e. gainsharing, pro. t-sharing) pay, use of employee stock ownership, use of cross-training or cross-utilization, average amount of training provided, use of training focused on future skill requirements, use of employee participatory programmes, use of information sharing, use of attitude surveys, and use of teams. Estimates of the proportion of each employee group (group A, group B) covered by each high involvement practice (0–100%) were obtained. Using the number of employees in each group, a weighted average for each practice was computed. These scores were then converted to z-scores	work practices. Moreover, for . rms pursuing a differentiation-oriented strategy, higher levels of high involvement HR practices are associated with increasing levels of productivity. Thus, within the limitations outlined above, this study supports a contingency explanation for HIWP effectiveness wherein the implementation of a differentiation-oriented competitive strategy may increase the need for a committed, skilled workforce and, by extension, the utility of high involvement work practices.
MacDuffie, 1995	Automotive assembly plants	Definition: "Innovative HR practices can be distinguished between those that affect the organization of work and the way work tasks are carried out (called Work Systems) and those that reflect firm-level human resource policies affecting employees at all levels (called HRM Policies)" Measures. Work organization: Work Teams, Problem-Solving Groups, Employee Involvement or Quality Circle groups), Employee Suggestions Made and Implemented, Job Rotation, Decentralization of Quality-Related Tasks; HRM policies: Recruitment and Hiring, Contingent Compensation, Status Differentiation, Training of New Employees, Training of Experienced Employees	Flexible production plarits with team-based work systems, high-commitment" HR practices (such as contingent compensation and extensive training),outperformed mass production plants. Variables capturing twoway and three-way interactions among the bundles of practices are even better predictors of performance
West et al., 2006	52 hospitals in England	Definition: HRM practices affect performance by enhancing employees' knowledge/skills and commitment and by providing them with the discretion necessary to capitalize on these skills and commitment (see e.g., of research in other sectors Arthur, 1992; Batt, 2002; Datta et al., 2005; Guthrie, 2001; Huselid, 1995; Neal et al. (2005); Patterson et al., 2004) Measure: it includes items reflecting hospital policy and practice with respect to training, performance management, participation, decentralization, involvement, use of teams, employment security, and investor in people status.	The use of knowledge enhancing HRM practices was found out to reduce patient mortality
Collins and Smith, 2006	US High technology firms	Definition: commitment-based HR Practices focus on mutual, long-term exchange relationships, companies following a commitment-based approach implement practices that collectively demonstrate a long-term investment in their employees. The exact individual HR practices that create a commitment-based environment differ across companies and studies, but they generally include a combination of employee selection practices that focus on creating internal labor markets and assessing fit to the company rather than on specific job requirements; compensation practices that focus employee motivation on group and organizational performance indicators; and training programs and performance appraisals that emphasize long-term growth, team building, and the development of firm-specific knowledge Measure: 16 items representing three sub-dimensions to measure commitment-based HR practices: internal labor markets and selection based on fit to the company; group- and organization-based incentives; and training programs and performance appraisals based on long-term growth, team building, and	Commitment-based HR practices lead to superior performance through the enhancement of social climate and knowledge exchange processes

		development of firm-specific knowledge.	
Collins and Clark, 2003	73 high-technology firms	Definition: "networkbuilding" HR practices includes mentoring, incentives, and performance appraisals to encourage the development of business relationships Measure: include training, performance assessment, and rewards designed to help and encourage top managers to build relationships with internal and external stakeholders	Significant relationships between the set of network-building HR practices and both sales growth .01) and stock returns
Park et al., 2003	Japanese multinalional corporation subsidiaies operating in the United States and Russia	Definition: HR practces are not named as "high erformance", but the definition includes practices whose aims are to develop the skills or human capital of employees, incentive systems that tie individual and group rewards to organizational performance, performance-contingent pay, HR practices that are aligned with the strategic needs of the organization Measure 'HR System', that indicates a synergistic system *of* HR practices, this system consists of three aspects: (1) pertbrmance-oriented praetices. (2) strategic alignment of practices and (3) employee skills-enhancing practices.	Positive effects of a synergistic system of HR practices on organizational performance. this effect is mediated by helping employees develop their skills for performing jobs, shaping their attitudes in the workplace and motivating them to achieve organizational goals. employee skills, attitudes and motivation are three major components of the 'black box' that generates firm competitiveness from HR practices. This research implies that changes in employee skills, attitudes and motivation that are caused by HR practices precede increases in firm performance.
Fey et al., 2001	101 foreign-owned subsidiaries in Russia	Definition: high performance work system includes employee development; feedback systems, and pay/organization Measure: the respondents in the present study were asked the following: "to what extent are each of the following HRM practices used for managers in your firm. Please choose a number between 1 and 5, where l='to a little extent' and 5='to a great extent'." For employees development, these items are included: Technical training; Non-technical training; Non-entry jobs filled from within firm; Assisting in career planning; Job security. Feedback systems: Information-sharing programs; Complaint resolution system; Attitude surveys. Pay organization: Performance appraisals; Group/company performance in pay; Teamwork; Decentralized decision making; Interdepartmental communication	Relatively strong support for the existence of the existence of a relationship between firm practices and the performance of Russian subsidiaries oi' Western corporations. different HRM practices for managerial and non-managerial employees are found to be significantly related to firm performance
Gelade et al., 2003	Branch network of a retail bank	Definition: the HRM includes staffing level (as a proportion of the overall workload), working hours (represented by the proportion of overtime), and professional development (represented by the percentage of staff with customer service qualifications). Measure: Staffing level (actual staff level minus theoretical staff establishment), as a percentage of the theoretical staff establishment;. Overtime as The percentage of overtime hours worked per month. Professional development as The percentage of BDG staff certified as competent in the provision of customer service	the data were compatibie with a modei in which HRM decisions have both a direct and an indirect influence on performance. In this modei, HRM decisions exert their indirect effect by enhancing or depressing the work climate, which, in turn, produces subsequent changes in DMU performance
Harel et al., 1999	Random sample of 215 organizations from the public and private sectors— each employing 200 or more workers, included in the Israeli's business directory	Definition: "HR best practices" include six practices consistently considered to be strategic and universalistic HR practices. They are (1) recruitment; (2) selection; (3) compensation; (4) employee participation; (5) internal labor market; and (6) training Measure: Recruitment was measured by the number of candidates (logarithm) that the company considered in the past year for any available position in three areas: (1) production/service/planning; (2) staff positions; and (3) management. Selection was measured by an instrument composed of 12 items, in which respondents were asked to evaluate the importance attributed by the company to selection tools and tests; *employee participation* variable was measured on two	The results indicate that organizations that invest more in training ($r = .48$, $p < .01$), base compensation on performance ($r = .43$, $p < .01$), encourage employee participation ($r = .47$, $p < .01$), and use the internal labor market for the purpose of recruitment and employee mob ility ($r = .23$, $p < .05$), have significantly higher organizational performance. The second dependent variable—*market performance*—was found to be related significantly to selection activities ($r = .24$, $p < .05$), to training ($r = 53$, $p < .01$), and compensation ($r = .44$, $p < .01$);

		dimensions: the degree of influence of employees on various issues that we called "participation impact", and on the organizational level at which decisions on HRM are made, which we called "participation in HRM issues". An instrument of 10 items was used in which respondents were asked to rank at which organizational level final decisions were actually made regarding issues such as the number of workers, advancement, salary level, vacation days, work schedules, and so forth; *Internal labor market* was measured in this study by the average of three i tems that asked respondents to indicate the importance attributed by the organization to its employees as a source of internal recruitment for rank and file employees, professional employees, and managerial positions; training was measured in this study,, using a six-item instrument that asked respondents to indicate the percentage of employees in the organization who received systematic and formal training	
Cheng et al., 2009		Definition: "innovative human resource practices" include training, recruitment, selection, and employee involvement Measure: it entails five aspects, including staffing, training, participation, performance appraisal, and compensation with development of a sixteen-item scale. The staffing factor consists of three items regarding selectivity in hiring, selection for expertise and skills, and selection for future potential (α=0.815). The training factor includes four items to indicate the availability of formal training activities, comprehensive training policies and programs, training for new hires, and training for problem-solving ability (α=0.897). The participation factor consists of three indicators reflecting the degree to which firms allow the employees to make decisions; provide the employees the opportunity to suggest improvements into their work; and value the voices of the employees (α=0.762). This study uses three items, including developmental focus, results-based appraisal, and behavior-based appraisal, to measure the performance appraisal factor (α=0.903). The compensation factor includes three items that address the degree to which there are profit sharing, incentive pay, and the link between performance and reward (α=0.934).	Results indicate that strategic HR practices relate positively to knowledge management capacity, which in turn relate positively to innovation performance. The findings show support for the mediating effect of knowledge management capacity on the relationship between strategic HR practices and innovation performance
Hoque, 1999	200 hotels in UK	Definition and measure: HR practices are names as high-commitment management or high performance work system. Measure refers to term and conditions of employment, recruitment and selection, training, job design, communication techniques, pay systems (22 practices, the extent to which they are used is measured)	Support for the contingency view of the relationship between HRM and performance (no significant relationship between HRM and performance when there is a cost reduction strategy). Further performance results are achieved when HRM are used in a mutually cohesive bundle than individually.
Huang 2000	sample consists of the members of two professional human resource management associations in Taiwan	Definition: "strategically oriented HRM" include efforts that focus on improving employees' skills and abilities, such as the provision of comprehensive training and development programmes, design and implementation of incentive compensation and management-performance Systems, Employee participation systems, intemal labour markets and term-based production systems, provision of job security and other forms of employment protection Measure: a section of the questionnaire was designed to accumulate information regarding an organization's approach to human resource management in five categories: planning, staffing, compensation, appraisal and training and development. To measure the HRM approaches of the responding firms, three	Those companies performing well are more likely than poorer performers to integrate their HR functions with business strategies, to devolve HR activities to line managers, to adopt formal and explicit planning procedures and longterm planning, and to link their HR planning and business planning closely. As for staffing practices, evidence shows that the better a company's performance is, the more likely the company will be to provide all around experience and broad career paths for its employees. In addition, it is more likely to explicitly spell out job duties for its employees. However, there is no significant difference between companies at different performance levels

		to six questions were presented for such functional aspects of human resource management. (1) to what extent is the HR function involved in major strategic decisions made in the company? (2) To what extent are HR functions and activities devolved to line managers and departments? (3) To what extent is human resource management in your company determined by explicit, formal planning procedures? (4) How closely is HR planning linked to business planning? And (5) Do short-term considerations or long-term prospects most influence your HR planning?	in regard to sources of labour, number of promotion ladders and promotion criteria. As for approaches to performance appraisal, findings indicate that highly effective Taiwanese firms tend to integrate the job-appraisal function more thoroughly with other aspects of HR management and to use more long-term and group-oriented criteria than less-effective firms do. the functional area of training and development, it is found that firms that perform well are more likely to address their training and development activities on a long-term basis
Huselid et al., 1997	US firms from a wide range of industries	Definition: "strategic human resource management" include designing and implementing a set of internally consistent policies and practices that ensure a firm's human capital contributes to the achievement of its business objectives. They are defined in contrast with technical HRM. Measure: Teamwork, Employee participation and empowerment, Workforce planning—flexibitity and deployment, Workforce productivity and quality of output, Management and executive development, Succession and development planning for managers, Advance issue identification/strategic studies, Employee and manager communications, Work/family programs'*	Significant relationships hetween strategic HRM effectiveness and employee productivity, cash flow, and market value
Huselid, 1995	US firms from a wide range of industries	Definition: *High Performance Work Practices,* including comprehensive employee recruitment and selection procedures, incentive compensation and performance management systems, and extensive employee involvement and training Measure: 13 item including practices in the areas of personnel selection, performance appraisal, incentive compensation, job design, grievance procedures, information sharing, attitude assessment, and labor-management participation, intensity of its recruiting efforts (selection ratio), the average number of hours of training per employee per year, and its promotion criteria (seniority versus merit) (each item is measured by assessing the % of employees who have access to the practice itself"	Support for the hypothesis that investments in such practices are associated with lower employee turnover and greater productivity and corporate financial performance
Ichniowski, et al., 1997	Finishing lines owned by 21 companies	Definition: "innovative work practices" include compensation, recruiting and selection, team-based work organization, employment security, flexible job assignment, skills training, and communication procedures. We also include two traditional labor relations indicators: the union status of the line and a grievance rate variable Measure: Incentive pay: profit sharing, line incentives; recruitment and selection: high screening; team work: high participation, multiple team, formal team practice; employment security: flexible work assignment: job rotation; skill training: high train, low train; communication: information sharing, meet worker, meet union; labor relations: union, low grievance.	innovative HRM practices raise worker productivity. Moreover, systems of innovative HRM practices have large effects on production workers' performance, while changes in individual employment practices have httle or no effect
Wright et al., 1999		Measure: Selection was measured with six items entitled 'selective staffing'. Sample items from this scale were 'How extensive is the employee selection process for the operator job; Training was measured with seven items entitled 'comprehensive training'. Sample items from this scale were 'How extensive is the training for operators?; Compensation was measured with seven items entitled 'equitable rewards'. Sample items from this scale include 'How would you rate pay levels for operators in your facility relative to competitor facilities in the nation; Appraisal was measured with nine items they entitled	HR practices positively affect the skills and behaviours of operators, and the impact of these practices on refinery performance is strongest when they are paired with a system that allows operators to participate in the govemance of day-to-day activities. these results indicate that the most effective approaches to managing human resources in petro-chemical refineries are either to invest simultaneously in both HR practices and participation programmes or to invest in neither;

		'developmental appraisal'. Sample items for this scale include 'How much effort is given to measuring employee performance in your facility?'; Employee participation was measured with ten items that asked the HR respondents to indicate the degree to which operators participated in a variety of activities such as 'resolving customer-generated problems (employee participation in not included in the HR measure; however, the test reveals that when it is used jointly with HR practices, their global effect on performance is higher)	the lowest financial performance is observed when managers invest in only one or the other
Harel et al., 2003	230 organizations employing 200 or more employees was selected at random from the 1995/6 *Israeli Business Directory,*	Measure: "high-quality Hr practices" Recruitment was measured by the number of candidates (logarithm) that the company had considered in the past year for any available position (a = .73), Selection was measured by an instrument composed of twelve items in which respondents were asked to evaluate the importance attributed by the company to selection tools. Compensation was measured by an instrument composed of four items that investigated the relationship between income of jobholders and their job performance. Employee participation was measured by assessing the level of influence and impact employees have on several organizational issues, such as investment in new equipment, workflow, quality, etc. To measure this practice we used the same measure as Lawler *et al.* (1992). HR decision making was measured through an instrument composed of ten items relating to the hierarchy level of HRM decision making in the organization. Internal labour market was measured by the average of three items. Respondents were asked to indicate the importance attributed by the organization to its employees as a source of internal recruitment for staff positions, supervisory positions and high managerial positions. Lastly, training was measured as in Lawler *et al.* (1992). using an instrument of six items that asked respondents to indicate the percentage of employees in the organization who had received systematic and formal training in a variety of skills in the past year.	high-peribrmance HRM practices enhance employment opportunities for women, which, in turn, leads to organizational effectiveness
Youndt et al., 1996	97 US manufacturing plants	Measure: the index for human capital enhancing HR practices are measured through items for selective staffing, selection for technical and problem solving skills, comprehensive training, training for technical and problem slving skills, developmental and behaviour based appraisal system, external equity, group incentive, skill based pay and salaried compensation	The effect of capital-enhancing HR practices on performance is stronger when firms link human capital enhancing system with quality manufacturing strategy
Huselid et al., 1996	Cross-sectional sample of US companies	definition: "high performance work system" measure includes item belonging to the dimension of employee skills and work organization and employee motivation. Meausure: 13 item from Huselid 1995 (for each hr practice, the proportion of workers who have access to it has to be assed by respondents)	Based on mdependent estimates of the measurement error, the study estimates that a one standard deviation increase in our measure of high performance work systems raises the market value of the corporation by approximately $15,000 per employee
Ramsay, 2000	The paper utilizes data from the 1998 Workplace Employee Relations Survey (WERS98)	Definition: "high performance work system" implies managements ceding a degree of control to employees and introducing a range of progressive methods which increase employee welfare. These include measures such as involvement programmes, teambased work, enhanced training and development, forms of gain-sharing and high-wage reward systems Measure: Each HPWS variable was a scaled composite of multiple items which were either dichotomous responses indicating the existence of a practice, management reports of the proportion of non-managerial employees covered by the practice, or management attitudes towards the practice's effectiveness:	results confirm the relationship between HPWS-style practices and a number of measures of workplace performance. However, the widely held assumption that positive performance outcomes from HPWS flow via positive employee outcomes has been shown to be highly questionable

		upward communication, downward communication, performance related scale, profit-sharing scheme, employee share ownership, problem solving group, consultative committee, representation union involvement, employee consultation, job control, formal team structure, formal training, ILM, sophisticared recruitment and selection, job security, performance appraisal, family friend practices, diversity management, grievance procedure.	
Ahmad et al.,	Data collected from plants operating in four countries and three industries are used for the empirical analyses. The countries are Germany, Italy, Japan, and the USA; In each of these countries, plants were randomly selected from three industries: automobile, electronics, and machinery	Definition: HRM practices that have the potential to improve and sustain organizational performance. These practices include emphasis on employee selection based on fit with the company's culture, emphasis on behavior, attitude, and necessary technical skills required by the job, compensation contingent on performance, and employee empowerment to foster team work, among others (pfeffer's seven practices model is used as reference) Measure: employment security: The number of employees who have been laid off during the past 5 years/number of employees in the organization)×100; selective hiring: A scale of six items measuring the degree of cooperation between manufacturing and human resources in designing job descriptions and staffing activities and A scale of five items measuring the importance given to a prospective employee's attitudes and behavior toward teamwork and problem solving during the selection process; use of team: A scale of five items used to assess the effective use of teams on the shop floor and a scale of three items that measures the extent to which supervisors encourage and facilitate workers to work as a team; compensation contingent on performance: This measure checks whether group incentive plans (Y/N) and profit sharing plans (Y/N) are used in the organization. Y=Yes=2 and N=No=1; extensive training: A scale of three items to measure if employees' on the job skills and knowledge are being upgraded in order to maintain a work force with cutting edge skills and abilities; status difference, information sharing: A scale of three items to measure the efforts made by management to communicate the plant's competitive strategy to all employees	The mediating effect analysis revealed that most of HRM practices impact operational performance indirectly through organizational commitment
Guthrie, 2001	multi-industry sample of 164 New Zealand firms	Definition; "system of management practices giving employees skills, information, motivation, and latitude and resulting in a workforce that is a source of competitive advantage" Measure: Responding organizations were assessed in terms of their relative use of the following practices: internal promotions, performance- (versus seniority-) based promotions, skill-based pay, group-based (gainsharing, profitsharing)pay, employee stock ownership, employee participatory programs, information sharing, attitude surveys, teams, cross-training or cross-utilization, and training focused on future skill requirements. In addition, estimates of average hours of annual training provided to employees were obtained. These items are measured with a lickert scale and estimates of the proportion of each employee group covered by each high-involvement practice (0-100%) were obtained to compute a weighted average	analysis supports arguments and previous results suggesting that firm competitiveness can be enhanced by utilizing high-involvement work practices. Turnover is adversely associated with productivity when the use of these practices is high and, conversely, turnover is positively associated with productivity when use of the practices is low.
Bjorkman et al., 2002	sixty-two manufacturing Chinese-Western joint ventures and wholly owned subsidiaries located in	Definition: rigorous recruitment and selection processes, performance-contingent compensation systems, extensive development and training activities and commitment to employee involvement are generally considered parts of high-performance work systems	support for the hypothesized positive effects of HRM practices and HRM-strategy integration on organizational performance. Together with previous research on HRM and firm performance our results indicate that investments in and

	different parts of the People's Republic of China	Measure: the proportion of new hires for which an analysis of the desired personal skills/ competencies/characteristics had been carried out prior to the selection decision, the proportion of new hires undergoing selection tests, the average number of persons interviewing new hires, the number of days of training for new employees in their first year, the average number of days of training for old employees per year, the extent to which merits were used to determine promotion (on a 5-point Likert scale), the proportion of employees regularly undergoing a formal performance appraisal at least once per year, the average merit and bonus increment based on individual performance appraisals per year, the proportion of jobs for which a job analysis had been made, the proportion of employees covered by attitude surveys at least once per year and the proportion of employees who were part of a regular information-sharing system.	attention to HRM pay off in terms of their effect on firm performance. Our results differ to some extent in terms of the strength of the effects of HRM system versus HRM-strategy integration on firm performance: while earlier studies have offered more support for a HRM system effect on performance, in our study HRM-strategy integration was a stronger predictor of performance
Addison, et al., 2001	UK establishments. the study is a replication of the study by Fernie and Metcalf, on the basis of WER90 and WER98	Definition: "employment involvement, contingent pay, representation" Measure: there are two ways to measure the construct, the first one is a replication of Fernie and Metclaf's measure; the second one uses for employee involvement, problem-solving group, briefing groups, meeting between top management and the entire workforce, downward communication through the management chain; For pay, two types of profit-sharing and three forms of share ownership; for representation, four types of bargaining environment	Findings are different from the ones by Fernie and Metcalf. In the study with the measure of Fernie and Metcalf: determinants of productivity, significant association for contingent pay and representation, efforts to boost employee involvement are not significant. For change in productivity: all measures of employee involvement are significant, union recognition is significant. With the finer measure, for productivity and change in productivity, only briefing groups and problem-solving are significant. None of the component of profit-sharing is significant
Welbourne et al., 1996	136 non financial companies that made their initial public offerings	Definition: "human resource value", degree to which companies value employees as a specialized asset; HR practices; organization-based reward, Measure: for human resource value, dummies indicating if company's strategy mission cited employees as strategic assets; training program for specific knowledge; officer with responsibility for human resource management; regular used of full time employees rather than temporary ones. Organizational reward: stock options, profit-sharing, other incentives for all employees; stock options only for top management.	Survival analysis showed that companies using organizational based compensation and valuing their employees are more likely too survive. Compensation program that link employee wages to the success of the organization have a negative and significant sign.
Appleyard et al., 2001	Semiconductor companies in US, Europe, Asia	Definition: "high performance work system" Training for production workers that develops the skills used in their tasks (e.g., problem solving and maintenance) and continuous education for engineers; The participation of the trained personnel in work activities that target efficient problem solving and manufacturing improvements; Collaboration that facilitates interaction and sharing of knowledge across all job categories. Measure: days of initial training; number of maintance and statistical control activities that each fab carries out for three categories of employees; typology of teams, autonomy and pervasiness of teams	training is associated with high performance. Which occupations receive training and when the training is given appear to be important. The continuous training of engineers, measured by the training received in the first 3 years, is associated with reduced defect density and higher stepper throughput. Initial training of technicians is associated with improving line yield and direct labor productivity. Overall, the training of engineers and technicians improved both quantity and quality variables
Shaw et al., 1998	trucking organizations	(Here, HR practices are analyzed individually and not as a bundle) Definition: HRM investment strategy (associated with voluntary turnover) include high pay, job stability, employee monitoring, working conditions, justice. HRM associated with involuntary turnover: staffing: *selection ratio* addresses how choosy an organization is in hiring employees; use of *valid selection procedures* should lead to fewer bad hires; training: *training* employees in requisite	the specific HRM practices that predict quit rates are quite different from those that predict discharge rates, and the interaction of selection procedures and the selection ratio is a potent predictor of discharge rates

		skills; monitoring: *training* employees in requisite skills Measure: *Average pay was* measured as the dollar amount specified in response to the question "On average, how much does a *typical* driver earn per year?"; The attractiveness of the *benefits* plan was assessed through three Likert-type agree/disagree items, (Our drivers have a better benefits package than other drivers in the industry. Our drivers could get a better benefits package in another trucking company, Our benefits package helps us attract good drivers); *Job stability* was measured with two Likert-type agree/disagree items with seven response options (We guarantee drivers a certain amount of *pay* every pay period, We guarantee drivers a certain amount of *work* every pay period). *Training* was measured with one item; "How many hours of formal training does a typical driver receive in a year?" Responses were transformed into logarithms for analysis. *Procedural justice* included three Likert-type agree/disagree items (We rule on disputes only after we investigate all sides of the issue thoroughly. Drivers have a chance to answer any complaints made against them. Our company has formal procedures to ensure that drivers are treated fairly); *Electronic monitoring* consisted of three items asking respondents the percentage of trucks in their fleets with "on-board computers," "satellite tracking," and "on-board systems to communicate witb dispatcbers." The mean of these percentages served as the measure. *Performance appraisal* was measured as the number of times per year the company conducted formal performance appraisals for drivers. *Time on the road* was measured as the reverse of the number of times drivers were typically routed home each month. The *selection ratio* was the number of drivers hired during the past year divided by the number of individuals (We have many people to choose from when hiring drivers. We have so many applicants that we don't have to recruit actively)	
Rogg et al., 2001	351 franchise dealerships engaged in selling and servicing the products of a single large automotive manufacturer	Measure: measure consisted of 28 items; 16 of these items required that the respondent simply answer "Yes" or "No" indicating the practice was being followed by the organization. Three items required the use of a six-point scale indicating the percentage of employees affected by a particular employment practice. The six-point response scale ranged from 0% to 100%. The items included the percentage of "employees for whom formal written job descriptions were available." the percentage of "employees who had received formal performance reviews in the last 12 months," and the percentage of "employees who review their formal written job descriptions in their first week on the job." Responses to nine items were made on five-point response scales ranging from "Strongly Disagree" to "Strongly Agree." These items included questions about the degree to which pay was linked to performance, the extent to which formal mechanisms were used to recognize employee performance, and the nature of company training programs	evidence for the hypothesis that human resource practices influence. Organizational climate which in turn influences customer satisfaction Indices. the HR practices-organizational outcome relationship was mediated by climate
Rodriguez et al., 2003		Definition: HR systems are classified in "make" and "buy" systems. Buy: employees are hired to meet specific organizational needs at whatever level in the hierarchy they exist. Rewards are based on performance, reflecting output obtained by employees rather than position or organization, and placing special emphasis on external equity. Moreover, the organization dismisses employees (including managers) as labour demand fluctuates. Make: compensation policies	Turnover: The human resource practices associated with a 'make' system – both in development (factor 1) and in compensation (factor 2) – are inversely related with employee turnover. Productivity: mechanistic compensation practices associated with the 'make' system, have a negative effect on productivity. What may be deduced, at least, is that the organic

		emphasize internal consistency rather than external equity. Performance measures also have an internal focus, which implies that behaviour and processes are given more importance than the worker's performance level. the organization invests in employees in exchange for long-term returns and is reluctant to terminate employment Measure: fifteen scales were utilized (composed of a total of forty-six items), describing practices relating to staffing, performance appraisal, compensation and training. The result of the factorial analysis was the grouping of the different variables into two factors denominated 'development practices' and 'compensation practices'	compensation practices associated with the 'buy' system are more beneficial from the perspective of this organizational result Overall performance: long-term development practices, associated with a 'make' system, are beneficial for the organization's overall performance. The practices grouped under this factor – extensive training programmes, long-term development, socialization, job security, among others – probably increase the firm's capacity to attract and retainhighly qualified employees. With respect to factor 2, relating to compensation practices, it is not significant
Richard et al., 2001	US Banking industry	Definition: SHRM effectiveness stems from the . rm building human resource complexities through innovations such as teambased job designs, flexible workforces and employee empowerment. perceptions of how well the HRM function developed firm's employees to support its business needs including facilitating teamwork, communications, and involvement, enhancing quality, and developing talent to serve the business in the future' Measure: items include: employee participation and empowerment; teamwork; workforce planning-flexibility and deployment; advanced issue identi. cation-strategic studies; management and executive development; succession and development planning (managers); workforce productivity and quality of output; and employee and manager communications	support for the argument that . rms with higher levels of SHRM effectiveness experience performance gains. However, depending on the performance measure some effects worked directly to influence performance. effective HR system may contribute to turnover reductions. HR effectiveness did not appear to contribute signi. Cantly directly to increased productivity
Paul et al, 2003	Indian software industry	Measure: The complete instrument consists of sixty-three items spread over the nine dimensions, such as selectivity in hiring, valuedbased induction, comprehensive training, team-based job design, total approach to compensation, employee-friendly work environment, development-oriented appraisal, career development and employee ownership.	there are forty paths, originating from HR practices, to organizational financial performance, no single HR practice directly affects financial performance, but every HRM practice influences financial outcomes indirectly through one or more intervening variables and operational performance dimensions. This calls for an integrated approach to linking HRM practices with organizational performance. Mere focus on direct HRM–performance linkage may not reveal the mechanism through which HRM system operates
Ngo et al., 1998	MNCs from US, Japan, UK, Hong Kong operating in Hong Kong	Definition: HRM practices include structural training and development, retention-oriented compensation, diversity management. Measure: The first factor, which included items measuring the firm's training and development practices and formalization of human resource procedures was labelled *structural training and development* (seven items, alpha=.72). These items are sometimes considered characteristics of an intemal labour market orientation (Peck, 1994) and the firm's willingness to invest in human capital. The second factor, labelled *retentionoriented compensation,* included items measuring the firm's compensation practices and items measuring the firm's philosophy and practices to reduce turnover (increase retention) of employees (seven items, alpha=.64). The third factor, labelled *senioritybased compensation,* included two items (alpha =.49) indicating that compensation was tied to seniority and the job title. This scale reflects the firm's emphasis on hierarchical status. The fourth factor, *diversity,* included two items (alpha=.46) measuring the extent to which the staff was composed of expatriates and how diverse it was in terms of demographic characteristics.	the set of HR practices explained significant variance in all of the indicators of firm performance except for sales. Examination of the regression coefficients indicates that firms that provided more structural training and development created more new products, had more satisfied employees and had higher sales. In addition, firms higher in retention-oriented compensation reported greater profit, more new products (statistically significant at the .1 alpha level), more satisfied employees and greater retention of employees. Neither diversity nor seniority-based compensation was significantly related to any of the performance measures. None the less, taken in sum, such results indicate that HR practices are related to firm performance, with structural training and development and greater usage of retention-oriented compensation as particularly important

Martell et al., 1995	randomly selected group of 450 business units from Fortune 500 companies	Definition: HRM policy areas include: (1) selection (including selection criteria referring to managerial skills, personal characteristics, and tenure); (2) compensation (forms of pay/bo-nuses, equity, frequency and methods of calculating bonuses); (3) evaluations (performance criteria and methods, frequency of both formal and informal appraisals); and (4) training (participation in both formal and informal programs). Measure: *Staffing:* Source of TMT executives (inside or outside the company), the emphasis on ten diverse managerial skills and eight innovative personality characteristics in selecting executives,^ and the desirability of tenure with the company. *Performance evaluation:* Emphasis on outcomes (as opposed to process) when evaluating TMT executives, the use of four objective performance criteria and five subjective performance criteria,^ the frequency of formal evaluations, the frequency of informal evaluations, and the extent to which evaluation results were factored into other EHRM decisions (bonuses, promotion, etc.). *Compensation:* The market competitiveness (external equity or salary leadership) of TMT executives' compensation, internal salary equity within the TMT, whether bonuses were paid, bonus frequency, bonus amounts paid last year to TMT executives, the emphasis on individual incentives when determining bonuses, and the subjectivity of bonus calculations (whether a formula was used). *Training:* TMT executive participation in formal and informal training programs (including professional development such as attending conferences) both in- and out-of-house over the previous 12 month period.	In this study certain executive human resource management practices for members of the top management team were found to be related to strategic business unit performance In examining TMT staffing practices, higher firm performance was associated with placing a strong emphasis on personality attributes associated with innovation and creatività In terms of compensation practices, a positive relationship was found between performance and having compensation levels for the TMT managers that were market competitive among performance appraisal, there were multiple objective and subjective criteria in evaluating the TMT member's performance and the use of the results of the performance evaluation in making other EHRM judgments, such as pay and promotion decisions
Lam et al., 1998	firms from fourteen manufacturing industries in the United States.	Definition: HR *orientation* is "a systematic organizational effort to attract, retain, and develop competent and committed human resources," Measure: To what extent is the company characterized by (a) effective recruitment of valued employees? (b) above-average compensation and fringe benefits? (c) extensive training and development programs? (seven-point scale on these items)	Significant financial payoiT's were found among companies that strongly emphasized recruitment, compensation, and training and development. Through a strong HR orientation, companies enjoy a more competent and committed workforce, thus creating a sustainable competitive advantage that rivals will find difficult to surpass
Khatri, et al.,2000	200 of the largest companies representing all major industries in Singapore	Definition: "practices around work involvement and participation in decision-making processes of front-line employees in the organization", HR practices covering four major HR functional areas of recruitment/selection, training/ development, performance appraisal and compensation/benefits were included in the study. In addition, relevant HR practices commonly considered to improve company performance from HR planning and employee participation/involvement Measure: The recruitment and selection scale included four items: use of employment tests, performing validation studies on selection methods/instninients. providing realistic job previews and conducting structured and standardized interviews. The employee relations/participation scale was adopted from Delery and Doty (1996) and included three items: "employees are allowed to make decisions', "employees are asked to participate in decisions', and "employees have open communication with supervisors'. The perfonnance-appraisal scale was constructed using the following two items: (1) supervisors discussed performance with their subordinates, and (2) appraisal process involved consultation between the supervisor and his or her	Results provide a weak support for the hypothesis that the amount of HR practices varies according to the organizational strategy Surprisingly, our findings on the direct influence of HR practices on perfomiance suggest that HR practices have a stronger direct effect on profitability than sales growth and non-financial performance (quality, image/goodwill and efficiency of operations).

		subordinates.The compensation scale was made up of four items: (1) performance in the job as important in detennining earnings of employees. (2) promotion based primarily on seniority (reverse-coded), (3) company has comprehensive flexible benefits scheme and (4) company reviews benefits regularly. Five items comprised the training and development scale: (1) employees of the company go through training programmes every few years, (2) company has formal training programmes to teach new employees skills to perform their jobs, (3) training needs analysis. (4) cost-benefit analysis of training programmes, and (5) evaluation of training programmes. The HR planning scale included nine items: (I) HR department as integral part of company's strategic planning process. (2) HR activities aligned with overall corporate strategy, (3) HR department has explicit statement of its mission and goals. (4) HR accorded an important role in the company, (5J HR has as much say in corporate matters as other departments, (6) HR activities fully integrated with each other, (7) the head of the HR department participates in executive/steering committee meetings, (8) the extent of information flow between HR department and other departments, and (9) the treatment of HR function as a specialized ftmction	
Jayaram et al., 1999	first tier suppliers to the Big 3 in North America	Definition: Innovative HR practices include _1. top management commitment; _2. communication of goals; _3. employee training; _4. cross functional teams; _5. cross training; _6. employee autonomy; _7. employee impact; _8. broad jobs; _9. open organizations; and _10. effective labor management relations Measure: ¯ Top Level Management Commitment to Cost Reduction; ¯ Top Level Management Commitment to Total Quality Management, Top Level Management Commitment to Flexibility; Top Level Management Commitment to Time-Based Competition; Communication of Goals Relative to Cost Reduction; Communication of Goals Relative to Total Quality Management; Communication of Goals Relative to Flexibility ¯ Communication of Goals Relative to Time-Based Competition; ¯ Formal Employee Training to Support Cost Reduction; Formal Employee Training to Support Total Quality Management; Formal Employee Training to Support Flexibility; Formal Employee Training to Support Time-Based Competition; Cross-Functional Teams to Support Cost Reduction; Cross-Functional Teams to Support Total Quality Management; Cross-Functional Teams to Support Flexibility; Cross-Functional Teams to Support Time-Based Competition; *Broad Jobs*: Job design that permits employees to do many different things at work, using a variety of skills and talents; *Cross Training/Job Rotation*: Training employees to do more than one job to enable job rotation; *Employee Autonomy*: Allowing employees to decide on their own how to go about doing their work; *Employee Impact*: Ensuring that action is taken on employee input or suggestions; *Labor–Management Relations*: A set of practices to foster a long-term cooperative labor–management relationship that permits things such as flexible job assignments; *Open Organizations*: Lean staff, open horizontal communications, and a relaxation of traditional hierarchy	_1. cost performance is engendered by HRM-Cost and, to a lesser extent, by HRM-Flexibility initiatives; _2. quality performance is associated with HRM-Quality initiatives; _3. flexibility performance is engendered by HRM-Flexibil-ity and HRM time initiatives_positively.followed by HRM-Quality initiatives_inversely.; and_4.time performance is related to HRM-Time and HRMGeneric initiatives
Ji, 2003	China's soft-drinks and electronics industries	Definition: HR management practices are considered along four dimension: labour intensity, long-term employment, average pay, level of education (where,	tbis study sbows that a low-cost-oriented strategy is more likely to lead to short-term and temporary employment, lower

		a high score on these dimension is a signal of implementing high performance work system) Measure: *Educational level* was tested by the ratio of number of employees with a university degree to all employees in a given firm; *Average pay per employee* was tested by a ratio of total salary paid to employees to total number of employee; *Average equipment per employee* was tested by a ratio of total equipment value to total number of employees; *proportion of managers* was measured by a ratio of managers to all employees in a given firm. Finally, tbe flrms' *long-term employment* policy was measured by a ratio of long-term employees (i.e. those who have an employment contract for more than a year) to all employees, including sbort-term and temporary employees	education level in the workforce, less monetary income to employees and a higher proportion of managers and supervisors among the total workforce. All these factors may lead to a higher turnover rate and lower productivity among employees in developing markets firms' HRM policy seems to have less effect on firm profitability, i.e. ROA
Chandler et al., 2000	66 small to medium-sized manufacturing companies	Definition: two practices are considered, extensive training and group-based compensation Measure: training, the number of hours of training per year the average employee received; compensation, how pay was linked to performance for operating-level employees in their organizations. profit-sharing plans are defined as those that divide a predetermined proportion of profits among employees	The study failed to find a direct relationship between organizational performance and either training or group-based incentive compensation. However, we confirmed our two hypotheses about the moderating effects of these two HR practices on the successful implementation of a TQM strategy
Cappelli et al., 2001	Manufacturing establishments	Definition: "employee involvement is the central concept behind virtually all of the studies examining high-performance work systems and organizational performance", so high performance work system include self-managed teams, suggestion systems, job rotation, supportive training, complentary compensation practices Measure. self-managed teams: What percentage of non-managerial and non-supervisory employees are currently involved in self-managed teams; job rotation: Wbat percentage of non-managerial and non-supervisory employees are currently involved in job rotation; meeting: What percentage of non-managerial and non-supervisory workers are involved in regularly scheduled meetings to discuss work-related problems; cross training: does ypur establishment provide cross training?; team work training: doeas you establishment provide training on team work?; pay for skill: Wbat percentage of your employees receive pay for skill or pay for knowledge; profi-sharing: *Does y our company have a projit-sharing.bonus, or gain-sharing plan for any of the following categories or workers (yes/no) ?* Tecbnical/technical support, office/ clerical/sales/custoiner service, or production	work practices transferring power to employees, often described as "high-performance" or "high road" practices, raise labor costs per employee, suggesting that tbese practices raise employee compensation, wbich represents a cost to employers. The evidence is also consistent with tbese practices raising productivity (sales per employee), al-though the statistical case for arguing that they do so is weak, especially in the longitudinal estimation. Furthermore, we generally fmd no effect of these high-performance work practices on labor efficiency high-performance work practices raise employee compensation without necessarily harming the overall profitability and competitiveness of the firms that implement them. When considering the bundle of practices, the effectcs are weak and statistically insignificant
Black et al., 2001	US private establishment with more than 100 employees	Definition: high performance work system include the use of TQM, employee voice, profit sharing, recruitment strategies, Measure: TQM, Benchmarking; Number of managerial levels; number of employees per supervisor; Proportion workers in self-managed teams; log number of employees in training; voice: unionized, proportion of workers meeting regularly in groups; profit sharing: for managers and supervisors, for production, clerical, technical; recruitment strategies: grades a top priority in recruitment, communication a top priority in recruitment	Unionized establishment s that have adopted human resource practices that promote joint decision making coupled with incentive-based compensation have higher productivity than other similar nonunion plants, whereas unionized businesses that maintain more traditional labor management relations have lower productivity. Finally, plant productivity is higher in businesse s with more-educate d workers or greater computer usage by nonmanagerial employees
Huselid et al., 1996	Cross sectional samples of US companies	Definiton: the common theme in best practices is to generate a skilled, flexible and motivated workforce and best practices might be grouped in three area, employee skills, employee motivation and Organizational structure. Employee skills and organizational structure focus on the development of organizational	Based on the independent estimate of measurement error, the study estimates that one standard deviation increase in the use of High performance work system raises market value of the company by 15000 dollar per employees

		capabilities through employee skill development and through the provision of organizational structures that allow skilled and motivated employees to contribute to performance. Employee mmotivation identifies with the emphasis on pay for performance and merti-based philosophy in the organization Measure: skills and structure: what proportions of employees are included in formal info sharing/hold jobs that have been included in formal job analysis/is regularly administrated attitude survey/participate in quality work life curcle/is eligible for company incentive plans/how many hours of training per year do experienced workers receive. Motivation: what proportion of workforce has their merit increase determined by performance appraisal/receive formal performance appraisal/is promoted base primarily on merit	
Batt, et al., 2002	Establishment in us telecommunication industry	Measure: cost-cutting human resource practices, we included five items: downsizing, electronic monitoring, parttime workers, temporary employees, and variable pay. Downsizing is measured by taking the number of core employees displaced in the past five years as a percentage of the current core work force, Electronic monitoring is the percentage of a typical employee's daily work time that is electronically monitored; Contingent staffing includes the percentage of the work force that is and part-time, as opposed to permanent and full-time. Variable pay is the percentage of pay of the typical core employee. commitment-enhancing HR practices, we measured three dimensions: training, internal mobility opportunities, and pay. Training is the number of weeks of training received by the typical core employee,, measure of internal mobility opportunities is the percentage of core employees who were promoted from within the company or transferred from other departments or business units, Pay is the ratio of median pay to the local cost of living.	Each of the five practices included in cost-cutting HR independently is associated with increased quit rates considering commitment-ehnancement, both internal mobility opportunities and a higher ratio of pay to the local cost of living significantly reduce quit rates. Training, by contrast, is not associated with any statistically significant difference in quits
Bea et al., 2003	random sample of firms in Korea, Taiwan, Singapore, Thailand,	Definition: The high-performance work system **(HPWS)** is typically characterized by significant delegation of authority to lower-level employees ('empowerment'), extensive training and development of these employees, reliance on pay-for-performance (significant contingent or 'at risk' pay), broadly defined job responsibilities and employee participation in non-work aspects of organizational decision making Measure: HR flow subscale, six items on utilize extensive selection and training procedures and high job security; The *work systems subscale* covers job design and control types. Firms at the upper end of this scale tend to use broadly defined jobs with enriched designs, team-based work organization and employee autonomy; *reward system subscale* reflects the degree of the linkage of performance and pay level and the presence of employee ownership programmes; *employee influence subscale* measures the extent to which employees, as stakeholders, are involved in decision making in job-related and organizational issues	HPWSs tend to have a positive effect on perceived organizational performance, after controlling for other organizational characteristics, in a sample of both locally owned and foreign firms operating in four significant East and Southeast Asian economies
Bea et al., 2000	Subsidiaries of MNCs and local firms operating in Korea	Definition: High-involvement HRM strategy starts with management philosophies and core values that emphasize the significance of employees as a source of competitive advantage. Highinvolvement work systems promote attachment and commitment on the	Firms with high scores on valuing HRM and people as a source of competitive advantage were more likely to have high-involvement HRM strategies. These variables also had positive effects on firm performance. In addition, firms with high-

		part of employees to their organizations, thus providing incentives to go beyond minimum performance expectations. In addition, high-involvement HRM strategies that enhance the acquisition, development, and retention of high-quality employees further promote organizational effectiveness. Measure: extensive training, Amount of money spent on training, Opportunity for training, Availability of different kinds of training, Systematically structured training process, High priority on training, Extensive training for general skills; empowerment, minimum status differentials for egalitarianism, Engagement in problem-solving and decisions, Extensive transference of tasks & responsibilities, Providing chances to use personal initiative, Permitting enough discretion in doing work, Participation in very wide range of issues, Very cooperative and trustful climate; highly selective staffing, Very extensive selection efforts, Great amount of money spent selection, Hire people with general rather than specific skills, Great effort to select right person, High selection criteria in firm, Great importance is placed on staffing process, Provides job security, Focus on long-run employee potential; performance based pay, Seniority-based rewards practices (R), Wide range in pay within same job grade, Close tie of pay to individual/group performance; Broad job design, Mostly simple and repetitive job designs (R), Clearly defined jobs and duties for long time (R), Broadly designed jobs requiring a variety of skills	involvement HRM strategies had better performance
Guest et al., 2003	UK firms, 60% in manufacturing and 40% in service	Definition: high-commitment HR practices covered nine areas: recruitment and selection, training and development, appraisal, financial flexibility, job design, two-way communication, employment security, internal labour market, single status and harmonization and quality Measure: 48 items were a mix of estimates of the proportion of the workforce experiencing each practice and some dichotomous variables	The study showed a positive association between the use f HRM and lower turnover and profitability, but no association between HR and profitability. The test of whether the presence of more Hr practices results in a change in performance shows no significant results
Wright et al., 2005	Petro-chemical refinery companies	Measure: nine items with yes/no responses, selection: 1. Applicants undergo structured interviews (job related questions, same questions asked of all applicants, rating scales) before being hired. 2. Qualified employees have the opportunity to be promoted to positions of greater pay and/or responsibility within the company. 3. Applicants for this job take formal tests (paper and pencil or work sample) before being hired; training, On average how many hours of formal training do employees in this job receive each year; pay for performance and performance evaluation: 5. Employees in this job regularly (at least once a year) receive a formal evaluation of their performance. 6. Pay raises for employees in this job are based on job performance. 7. Employees in this job have the opportunity to earn individual bonuses (or commissions) for productivity, performance, or other individual performance outcomes; participation: 8. Employees in this job are involved in formal participation processes such as quality improvement groups, problem-solving groups, roundtable discussions, or suggestion systems. 9. Employees in this job have a reasonable and fair complaint process	HR practices correlated strongly, positively, and most often significantly with operational and financial measures observed later (both early and late). when comparing these relationships with those between HR practices and past or concurrent performance, caution flags arise. The relative consistency across all these time periods suggests that the causal order could just as easily be reversed Finally, the drastic reduction in observed relationships that occurs when controlling for past or concurrent performance provides further impetus for exercising extreme caution in inferring a direct causal impact of HR on performance

Table 2: Empirical works on capabilities

Citation	Theory	Setting	Definition of capability	Operationalization
Kale and Singh, 2007	Knowledge based perspective	US-base firms (computer, pharmaceuticals, communication, electronics)	The alliance learning process is akin to a higher-order dynamic capability. This is because it enables firms to achieve greater alliance success by helping develop or improve lower-order partnering skills to manage different phases or aspects in alliances more successfully.	Alliance learning process: Scale for articulation, codification, sharing, and internalization of alliance management knowhow
Ray, Barney, Muhanna, 2004	Resource based view	North America Insurance companies	-Resources and capabilities are used interchangeably and refer to the tangible and intangible assets firms use to develop and implement their strategies -'Business processes' are actions that firms engage in to accomplish some business purpose or objective. Thus, business processes can be thought of as the routines or activities that a firm develops in order to get something done (Nelson and Winter, 1982; Porter, 1991). Examples of business processes include the process for acquiring supplies and other raw materials (the theory is that resources and capabilities are antecedents of business processes rather than of business performance)	Resource and capabilities in customer service sector: scale for service climate, for IT knowledge related to customer, for technology resources in customer service Business process: scale for customer service quality, customer retention, technology resource in customer service
Darnall and Edwards, 2006	Institutional theory and "management literature"	Organizations that documented their environmental management systems	Capabilities are complementary (to EMS) if they facilitates the implementation the process. For example, an organization's embedded expertise with complementary knowledge-based processes, such as -quality-based management system -inventory control management systems -prior experience with pollution practices may assist the development of more advanced environmental management processes.	Experience with quality-based management systems whether company had implemented Total Quality Management principles (TQM) prior to EMS adoption or ISO 9000 quality-based management systems Facilities' pollution prevention practices were measured by whether they had participated in pollution prevention activities prior to adopting an EMS. Pollution prevention activities were defined as any materials substitution, process changes, or other activities that minimized waste production
Zaheer and Bell, 2005	RBV and network theory	Canadian mutual fund companies	Innovativeness capability: the tendency of a fund company to lead the industry at introducing new products, new services, and adopting new technology that enables new products or services	Scale measuring the extent to which each fund company tends to lead the industry in introducing products and services and adopting new technologies. The validity of the scale is tested by measuring the correlation of the scale with the number of new products and technology that the organizations have launched in the last years
Afuah, 2002	RBV	pharmaceutical drug companiesengaged in cholesterol drug development	The assumption is that customers' valuation of a product is a function of the characteristics of the product. These characteristics are, in turn, a function of the capabilities that undergird them. In pharmaceutical companies, Each firm has certain firm-	Technological capabilities are measured with the interaction of a technology variable and a firm Dummy variable. For example, Merck's technological capabilities in STATIN are measured by STATIN*MERCK. Recall that in developing drugs using one of the technologies, each firm has its

			specific technological resources (e.g., patents, skilled engineers, stock of knowledge in the form of databases, product or engineering designs, specialized plants and licenses, etc.) that it uses to offer products with desirable characteristics. A firm's technological capability, then, is its ability to use these resources to combine/recombine components, linkages between the components, methods, processes and techniques, and underpinning core concepts to offer products	own patents, knowledge base, organizational structure, integration of know-how, and people. It has its own capabilities
Ethiraj, kale and Krishnan, 2005	RBV and generally defined "research on capabilities"	Project level data form a firm in global software service	They adopt of definition of capabilities as something different from resources: 'resources consist . . . of know-how that can be traded, financial or physical assets, human capital, etc. whereas capabilities refer to a firm's capacity to deploy resources. They point out relevant capabilities in Indian software industry: 1) Client-specific capabilities are a function of repeated interaction with a given client across multiple projects over time. 2) Project management capabilities are acquired through deliberate and persistent investments in infrastructure (systems and processes) and training to improve the firms' software development processes. They reflect technical capabilities in software design, development, and execution. The development of these capabilities rests not only on implicit learning-by-doing processes but also on deliberate, proactive investments in building them.	1) Client specific capabilities: -Repeated clients are a proxy measured by counting the number of client with whom the company has executed projects in the past -a database on clients is used to estimate a client fixed effect by including a dummy variable for each client 2) Project management capabilities: -number of in-process defects identified during the project execution phase. -effort overrun, i.e., difference between actual person-months required to complete the project and person-months that were initially estimated -the extent of schedule slippage, i.e., delay in project completion date.
Dyer and Hatch, 2006	Evolutionary economics and RBV	US automotive suppliers	Firm routines are the basis of firm capabilities and knowledge assets are embedded in firm routines. (Their focus is on the inter-organizational routines that might allow or prohibit knowledge transfer. Firm's competitive advantage may be contingent on the *inter-organizational* routines which constitute the network 'context' linking the firm's production system to the systems of its customers and suppliers, i.e. it may be possible for a buyer to exploit its knowledge assets by sharing them with suppliers in return for lower cost and/or higher quality inputs)	The term capability is not used in the measure session. Their focus in on practices allowing knowledge transfer -Time spent on knowledge transfers. This was measured by having the plant manager identify the average number of days per year that personnel from this customer visited to exchange technical information and provide assistance -Quality assistance. Supplier respondents were asked to report on the extent to which they had received quality assistance from each customer -Inventory/cost assistance. The extent to which each customer provided inventory assistance
McEvily and Marcus, 2005	RBV, knowledge based view of the	Job shop manufacturers	Competitive capabilities are the set of organizing processes and principles a firm uses to deploy its resources to achieve	The relevant competitive capabilities are defined according to interviews with experts of the studied field. Accordingly, they are:

	firm		strategic objectives. The building blocks of capabilities consist of theories and frameworks, which structure knowledge and organize information. Managerial practices and techniques also are an important component of capabilities	-Pollution prevention capabilities, measured through three items adapted from a national survey on pollution prevention -TQM, measured with three items capturing the use of statistical process control charts to provide operators with feedback (TMQ is a proxy for the competitive capability of "minimization of variations in production processes via quality management"
Subramaniam and Venkatram, 2001	KBV and RBV	Multinational companies (in particular, their transactional new product development teams)	Transnational new product development capability as 'the ability to consistently and successfully introduce new products simultaneously in multiple country markets.' They focus on consistency of new product introductions, since random or sporadic new product successes will not enable firms to achieve or maintain market dominance. They qualify these introductions as successful, since market success is a key measure of any business process capability. include simultaneity of introductions, since the integration of product development activities across countries and the development of products that concurrently meet the requirements of several countries are essential to the concept of transnational new product development	Measure of transactional new product development capabilities include: (a) frequency of new product introductions (b) order of market entry (c) simultaneous entry in multiple markets (d) the ability to be responsive to market requirements, (e) the ability to be competitive in terms of price and (f) the ability to penetrate new overseas markets (one item for each of these elements to rate with respect to competitors)
Jacobides and Hitt, 2004	TCE, "competitive approach to integration"	Mortgage banking industry	Distinction between productive and governance capabilities. -productive capabilities of a firm (productive efficiency or 'zero-order capabilities) are (the operational efficiency of a portion of a production process -capabilities of governance are the ability of a particular firm to use integration or the market to create value by linking these stages	Productive capabilities: capabilities by labor productivity (output per labor input) and operating margin (revenue less total cost). Governance capabilities are not operationalized since they do not enter in the hypotheses
Zollo and Singh, 2004	KBV	US banking industry	Integration capabilities with respect to the issue of acquisitions: -experience in acquisitions -extent of knowledge codification from previous acquisitions	Integration capabilities are operationalized in terms of knowledge codification: this construct is measured as the sum of acquisition tools developed by the acquiring firm at the time of the focal acquisition, by asking whether the following items were developed and, if so, when they were developed: Documents/Manuals: Due diligence checklist. Due diligence manual. Systems conversion manual. Affiliation/integration manual, Systems training manual,' Products training manual. Quantitative Models: Financial evaluation. Staffing models,

				Product mapping, Training/Selftraining packages, Project management
Tripsas and Gavetti, 2000	Evolutionary economics and managerial cognitions	Digital imaging firm	No clear definition	The examples of capabilities from this quantitative study are the processes and activities that the organization carries out and that it beliefs to be successful in that moment. Examples of capabilities: instant film technology, manufacturing, mass market distribution.
Subramanian and Youndt, 2006	Literature on innovation and different forms of capital	public, single business-unit organizations with more than 100 employees	Innovative capabilities -incremental innovative capability is defined as the capability to generate innovations that refine and reinforce existing products and service -radical innovative capability is the capability to generate innovations that significantly transform existing products and services	-Incremental innovative capability was measured with a three-item scale assessing an organization's capability to reinforce and extend its current expertise and product/service lines -Radical innovative capability was measured with a three-item scale assessing an organization's capability to make current product/service lines obsolete
White, 2000	TCE, resource dependency, organizational capabilities	Chinese state owned pharmaceutical companies	Capabilities, routines, know-how are defined interchangeably -Technological expertise gained from producing another compound in the same therapeutic category of the focal one - Prior experience in independent R&D with respect to the focal compound	Capabilities: -dummy coded as 1 if the focal compound was in the same therapeutic category i in which the firm had a previously approved compound -dummy indicating whether the firm had been recorded as the sole research organization for a compound in any therapeutic category prior to the focal compound
Mayer and Salomon, 2006	TCE and RBV	Service contracts from a large information technology (IT) service provider,	Two types of capabilities are conceived (no clear definition, relevant technological capabilities are identified through interviews with people in the studied company): -technological and productive: 1) working on mainframes and hardware that the firm manufactured 2) servicing mainframes from other vendors 3) Programming capabilities 4) service nonmainframe IT hardware -governance capabilities (not related to the knowledge base of the organization, but to the management of organizational relationships)	Technological capabilities: 1) the Firm's hardware was a dummy variable coded 1 if a project involved working on Compustar-manufactured hardware and 0 otherwise 2) The variable mainframe was therefore coded 1 if a contract involved working on a mainframe computer and 0 otherwise + 3) dummy that takes value 1 if project primarily involved programming tasks, 0 otherwise 4) dummy variable coded 1 if a project involved working on hardware from another vendor and 0 otherwise.
Smith, Collins and Clark, 2003	KBV and network theory	US high-technology firms	Organization's knowledge creation capability is defined as the extent to which TMTs and knowledge workers have access to one another and other stakeholders, are capable of combining information and knowledge into new knowledge, and perceive value from the exchange and combination process.	15 five-point scaled questions to measure the extent to which respondents had access, were capable, and anticipated value from the exchange and combination process

			The elements of these capabilities are (1) have *access* to people or groups with specialized information (access to parties); (2) be able to *absorb and combine* information that has been exchanged (combination capability); (3) *anticipate value* from the exchange and combination process.	
Koen and Duyster, 2007	Capabilities literature, organizational learning and evolutionary economics	Information and communication technology (ICT), ICT services, financial services, other services (e.g. consultancies), pharmaceuticals and biotechnology, chemicals, other manufacturing, and public sector, e.g. education and non-profit organizations	Alliance capability is defined as a higher-order resource which is difficult to obtain or imitate and has the potential to enhance the performance of the firm's alliance portfolio. This higher-order resource consists of or is captured by learning mechanisms. firm's alliance capability can thus be seen as its ability to internalize alliance management knowledge Essentially, we view alliance capabilities as a multilayered phenomenon: learning mechanisms (being organizational attributes such as an alliance department) are the building blocks of routines which again form the basis of a firm's alliance capabilities As a result, a firm's alliance capabilities are embedded in organizational routines, which are repetitive activities that a firm develops in order to deploy its resources in alliances	Alliance capabilities are operationalized as a sum of its alliance mechanisms. The 30 mechanisms investigated are all measured by single-item dummy variables (functions (existence of alliance department), tools (internal alliance training, use of internet to spread knowledge), control or management processes (rewards or bonuses for alliance managers) or external parties (use of financial experts))
Pursue et al., 2004	RBV, decision making literature, reputation management literature	Dutch food industry	Organizational capability is defined as the organization's ability to accomplish some specific desired result, R. This implies that we can express organizational capability with respect to a certain task as a single dummy variable: either the organization has the *R* capability and can therefore produce the outcome ($XR = 1$), or it lacks such a capability and is thus unable to produce it ($XR = 0$). In fact, this teleological aspect of organizational capabilities is so commonly accepted that most capabilities are denoted by the organizational outcome they are meant to produce, such as: marketing capabilities. However to operationalized capabilities with their outcome is reductive, so the paper aims at pointing out the chain of capabilities development from individual to organizational outcomes. Capabilities are theorized as decision-rules that starts at individual level. Individual action, by itself, could not guarantee the achievement of the desired organizational outcomes, because of bounded rationality and delegation within the organization. Accordingly coordination mechanisms (as a remedy to bounded rationality) and incentive systems (as a remedy to	From their qualitative study, the description of the concept of capabilities emerge: They identify four capabilities, (1) dialogue, (2) corporate silence, (3) advocacy, and (4) crisis communication. They give a definition of these capabilities in terms of the -individual actions they imply (i.e. managers engage in all sorts of communication activities) -coordination mechanisms (i.e. coordination of dialogue activities occurs by engaging in face-time) -incentive systems (i.e. encouragement of information sharing and redistribution of responsibilities) For each of these characteristics, the corresponding decision rules are found out (i.e. for individual actions, "provide stakeholder with information proactively)

			delegation) are proposed as dimensions to complement individual action in the definition of capabilities. Individual action, coordination mechanisms and incentive system, the building blocks of capabilities, have their correspondence in decisions.	
Diaz, 2007	industrial organization, new institutional economics and the capability-based view	firms in the Spanish meat industry	capabilities among firms arise by a path-dependent learning process, as each firm chooses its own way of doing things and solving problems Firms create capabilities by a historical, unique and sometimes unconscious process of learning, and therefore knowledge accumulated and articulated inside organizations responds to different and specific conditions	Similarity between capabilities is measured, rather than capabilities. However, this variable is estimated using three items that measure the similarity between the machinery, tools, and knowledge or experience required to manage or carry out the two stages in the production process under analysis
Luo, 2002	Dynamic capabilities literature	MNE manufacturing subsidiaries in China	Capability exploitation concerns the extent to which a firm exploits rent-generating resources that are firm specific, difficult to imitate, and able to generate abnormal returns.' Capability building involves the extent to which a firm commits to building new capabilities through leaming from other organizations, creating new skills, or revitalizing existing skills in new situations. Combinative Capability implies the ability to integrate and synthesize internal resources and external leaming and apply both to the competitive environment Capabilities deployment allows firms avoiding the misalignment of capability exploitation and building with environmental and organizational dynamics	Capabilities exploitation is measured through three items that have the following form: a. To what extent do you think your foreign parent has committed and exploited its following strategic resources that are rare and firm-specific for operations in China? (a) product and process technologies, (b) industrial or intellectual property rights, or (c) managerial & organizational skills The question is repeated for strategic resources that are difficult to imitate and that generate abnormal returns Capabilities building a. To what extent do you think your parent company has been committed and dedicated to leaming and absorbing the following capabilities needed for local operations from other organizations? (a) product and process technologies, (b) industrial or intellectual property rights, or (c) managerial and organizational Skills. The question is repeated for new skills and creation and application of skills in new situations.
Ramiro, 2002	RBV	A Latin America stock exchange	-Resources are firm specific assets and competencies controlled and used by firms to develop and implement their strategies. They can be either tangible (e.g., financial assets, technology) or intangible (e.g., managerial skills, reputation) -Capabilities are a firm's abilities to integrate, build, and reconfigure internal and external assets and competencies so that they enable it to perform distinctive activities. Capabilities evolve according to the external context of the organization and its strategic orientation and availability of	Key capabilities are identified through a case study research. In particular, their evolution with respect to the external and internal context of the organization is pointed out. Key capabilities in the phase of establishing the strategic direction of a company: -capabilities to strategize, they are based on deep insights into trends in industry, business, technology, demographics, and regulations as well as internal core capabilities and resources. Processes sustaining this capability are: learning from past

			resource as well.	experience, absorbing knowledge as a unified group at the top, training -Capability to be flexible: is the capability of a firm to prepare for the execution of a strategy, while being highly responsive to surprises. It is fundamental when the strategic direction has bee identified, but experimentation is still required. The capability to be flexible depends on the control capacity of management and the changeability of the organization. Processes sustaining it are experimenting and integrating resources in to activities -capability to integrate knowledge and engender trust. This capability is relevant when strategy has to be institutionalized Processes sustaining them are: gaining internal commitment, strengthening external relationships, investing in complementary assets
Gavetti, 2005	Evolutionary economics and managerial cognition	Simulation and example from Polaroid case	"To be capable of some thing is to have a generally reliable capacity to bring that thing about as a result of intended action" Capabilities have been shown to accumulate gradually within organizations, and to be highly specific to the context in which they develop The objective is to show whether a behaviour that is premised on a logic of consequences might be included in the notion of capabilities, that is, whether cognitive and more automatic search processes could be considered jointly. Moreover, the dimension of organizational hierarchy is supposed to affect the development of capabilities	Beliefs about a certain strategic model and the position in the organizational hierarchy from which these beliefs are elaborated influence the type of capabilities as mush as local search driven by routine does.
Boeker and Wiltman, 2003	Life cycle model applied to new ventures development topic	Sample of semiconductor firms in the area of Silicon Valley	Capabilities are conceptualized at the level of top management teams, even though their measure is at organizational level (the reasoning is that TMT with certain capabilities are more to change the TMT itself when required). Capabilities are defined as "capabilities to adapt" and identified with top management experience and diversity	Top management experience: it is an organization-level variable that measured the average amount of time that current top managers had worked in the semiconductor industry Top management functional diversity was measured using an entropy measure, where Pi is the percentage of top managers in the ith functional area across the four functional areas.
Kusunoki, Nonaka, Nagata, 1998	KBV	Publicly traded manufacturing firms in Japan	organizational capability consists of various types of knowledge that are created and accumulated within the firm: knowledge base (functional knowledge embodied in a specific group); knowledge frame (linkages of individual units of knowledge and their priorities); knowledge dynamics	Local capabilities (knowledge base - reflecting the richness of the firm's knowledge base): -Technological accumulation, affected by the amount of individual technical knowledge, in the form of patents as well as the amount of resource to develop technical knowledge related to a product.

			(dynamic interactions in which individual units of knowledge are combined)	-Database, aimed at measuring to what degree the firm's technical knowledge is accumulated as database or documents available for the development of a product. Architectural capabilities (knowledge frame – strategies and organizational structures that determines a stable configuration of individual units of knowledge): -Self-sufficiency, aimed to define to what degree the firm develop product technologies required for developing the selected product -HWPM structure, it indicates the degree of influence of product development planning group over the functional group involved in product development -Task specialization, it captures organizational structure for pursuing technical knowledge in each of functional disciplines Process capabilities (knowledge dynamics): -Communication, it focuses on interaction of knowledge within the development department and among functional groups -Leader's involvement, it focuses on the degree to which product development leader influences working level subordinates in the development and other functional departments -Shared experience, it focuses on the experienced based interaction that occurs through interfunctional transfer of individuals
Hayton and Zahra, 2005	Organizational learning theory,	All US based high technology new ventures that issue IPO	Absorptive capacity: definition by Zahra and George	Human capital (proxy for firm's absorptive capacity): average number of advanced degrees in science held by members of the TMT, average number of years experience in the same or similar industries, average number of years experience in executive positions
Zollo, Reuer and Singh, 2002	Evolutionary economics	biotech and pharmaceutical firms engaged in strategic alliances	Capabilities originate from the learning mechanism of "experience accumulation" and they involve the execution of known procedures.	Experience with the alliance: number of prior agreements with any partner or any subject Experience with the technology: number of prior agreements with any partner in the product area similar to the one of the focal agreement Experience with the partner: number of the prior agreements with the same partner
Zahra and Nielsen, 2002	RBV	Manufacturing companies	Manufacturing capabilities are defined in term of managerial system (HR) and technology sources, both in their internal and external dimension	Internal Manufacturing sources: Internal manufacturing based HR (i.e. this company offers extensive training in modern manufacturing techniques) and internal manufacturing technological sources (i.e. this company relies on internally

				developed process technology). External Manufacturing sources: external manufacturing based HR (i.e. this company has used outside consultants in its manufacturing operations) and external manufacturing technological sources (i.e. this company licenses process technologies from other companies)
Henderson and Cockburn, 1994	RBV	Pharmaceutical companies	"Component competence" or the local abilities and knowledge that are fundamental to day-to-day problem-solving. "Architectural competence" or the ability to use these component competencies—to integrate them effectively and to develop fresh component competencies as they are required	Component competence: -firm specific expertise in a disciplinary area (stock of patents) -firm specific expertise in a disease area (stock of patents) Architectural competence -PROPUB, criteria promotion based on scientific publications -CROSS, problem-solving within the cardiovascular research programs appeared to be characterized by the frequent exchange of information across disciplinary or disease area boundaries. -GLOBAL, indicates whether global research was managed as a seamless whole under a single director. -DICTATOR, indicates whether resource allocation within research was entirely controlled by a single individual.
Huygens et al., 2001	RBV and evolutionary economics	Music industry	Capability is the capacity to deploy both tangible and intangible resources, including managerial resources via distinct organizational and managerial process. Four categories of capabilities are pointed out: managerial, input-, transformation- output-based capabilities. Managerial capabilities point at search behaviour to do with cognitive structure that underlie strategic vision, the input capabilities concerns with search behaviour aimed at acquiring specialized assets, the third category involves innovation and organizational learning, the last category refers to tangible and intangible assets	It is a qualitative study. Examples for each dimension of capabilities (in the paper they are declined according to the competitive regime) Managerial capabilities: consumer preference for celebrity and consumer preference manipulation Input based capabilities: marketing promotion budget, compact roster of celebrities. Transformation capabilities: avant-guard marketing campaigns and economic rationale costs vs revenues Output based capabilities: network of distribution channel and network of jukebox contracts
Jones et al. 1999	RBV and network theory	Professional service firms that engage in building constellations to carry out their strategy	Capabilities are a set of differentiate skills, complex routines and complementary assets that are difficult to imitate. In professional service, skills are the professionals' technical knowledge and creative sills; routines are stored in clients relationships and complementary assets consist of relational assets of status and structural holes	Proposal for operationalization Distinctive expertise can be measured as the depth of experience of the firm in an area (i.e. number of healthcare facilities built) Client routines can be measured through by the degree to which services are customized and the cost of switching off is high for the customer Status might be measure as affiliation to high status partner and recognition form high status peer