# An evidence-based review of e-HRM and strategic human resource management

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## ABSTRACT

One stated purpose of electronic human resource management (e-HRM) is to make the HRM function more strategic. The goal of this paper is to examine the research on e-HRM to provide evidence-based guidance to researchers and practitioners on the relationship between e-HRM and strategic HRM. We review 40 studies published from 1999 to 2011 using integrative synthesis as our evidence-based methodology. Results reveal that theoretical and empirical research in this area is still at an early stage. We find no empirical evidence showing that e-HRM predicts strategic outcomes. There is evidence suggesting that strategic HRM predicts e-HRM outcomes and that the relationship appears context dependent, however, research designs are not sufficient to establish causal direction. Our review highlights the need for more empirical studies on e-HRM and strategic HRM outcomes at a macro level.

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# 1. Introduction

Both strategic human resource management and electronic human resource management (e-HRM) are relatively new research streams. Strategic HRM literature emerged about 30 years ago (Lengnick-Hall, Lengnick-Hall, Andrade, & Drake, 2009) and early e-HRM studies begin appearing around 1995 (Strohmeier, 2007). Interestingly, both research streams invoke potentially transformational outcomes for the role of human resource management within organizations. In the strategic HRM literature, scholars focus on strategic outcomes such as organizational performance (Becker & Huselid, 1998), strategic alignment (Schuler & Jackson, 1987), and competitive advantage (Wright, Dunford, & Snell, 2001). In the e-HRM practitioner literature, e-HRM suppliers often assert that internet-based technological innovations are important in realizing the outcomes predicted in the strategic HRM literature (e.g. www.SAP.com, CedarCrestone).

Stated organizational goals for e-HRM investments include cost reduction through streamlining HRM operations (Marler, 2009), improved effectiveness through providing better delivery of HRM services (Ruël, Bondarouk, & Looise, 2004) and transformation of the HRM function to a strategic business partner (Lepak & Snell, 1998). Given the prominent role accorded strategic outcomes in the e-HRM literature, it is important that researchers and practitioners have a clear picture of the accumulated research evidence to date on this presumed relationship. Without clear evidence of the strategic role of e-HRM, practitioners may incorrectly estimate the benefits of implementing certain types of e-HRM systems, leading them to either make investments that are unlikely to bring the expected returns or to avoid investments that may lead to a significant advantage. This disconnection between research evidence and practice is not unique to e-HRM. As noted by Rousseau, Manning, and Denyer (2008) neither practitioners nor management scholars in a variety of disciplines are consistently able to leverage the scientific evidence available to make effective choices. Consequently, what has become known as the evidence-based management (EBM) movement is intended to motivate research syntheses that will permit more effective use of research data (Olivas-Luján & Rousseau, 2010; Rousseau et al., 2008).

The purpose of this study, therefore, is to apply an integrative evidence-based framework (Rousseau et al., 2008) to examine empirical studies on e-HRM in order to ascertain what e-HRM and strategic HRM relationships are supported across studies. The e-HRM field may particularly benefit from the application of EBM analytical frameworks because of the multi-disciplinary nature of the field and the divergent research approaches used (Olivas-Luján & Rousseau, 2010).

Our EBM approach begins with a summary of key theoretical perspectives, which serves as the foundation for identifying the relationships we expect to observe among our focal constructs. We use our review of theoretical perspectives to derive definitions of our key constructs: e-HRM and strategic HRM. We next combine the theoretical perspectives on both technology in organizations and strategic HRM to propose types of research questions and the underlying relationships we would expect to see in the empirical literature on e-HRM. We then describe the evidence-based methodology we used for systematically selecting our sample of published empirical and case study evidence on the nature of the relationship between e-HRM and strategic HRM. We describe this sample in terms of which research question and underlying relationship each study exemplifies. In the final section, we synthesize the evidence, noting common themes and gaps in our knowledge, and where future research might be fruitfully directed.

This paper offers three primary contributions to the literature on e-HRM. First, we conduct a rigorous, evidence-based review of the many different types of published empirical studies conducted in the e-HRM field to establish what is known about the strategic use of e-HRM in organizations and where there are unresolved questions and gaps in the literature. Second, this paper links major theoretical streams in both organizational technology and strategic HRM to the use of e-HRM in organizations. Third, we propose twelve research questions derived from linking these major theoretical streams and propose future research directions where there are noted gaps in a research domain. This provides a strong theoretical foundation for moving forward in this research stream.

## 2. Theoretical framework

### 2.1. Technology research and e-HRM

In their review of the information technology research published in the top management journals (The Academy of Management Journal, The Academy of Management Review, Administrative Science Quarterly, and Organization Science), Orlikowski and Scott (2008) note an astounding paucity of research on information technology in the management literature.

> "Consider that from the point of view of organizational phenomena, technology seems to be everywhere in the world of practice…Technology has arguably become an integral aspect of most business operations…and it is hard to think of any contemporary organization that does not, at some level, depend on some kind of technologies…Yet a quick perusal of the academic management literature would suggest that from the point of view of organizational research, technology is largely absent from the world of organizing (p. 434)."

Orlikowski and Scott (2008) group the literature in their review into two streams. The first stream, technological determinism, reflects an underlying positivist paradigm in which technology is a distinct independent measurable variable that has predictive consequences in organizations. The second stream treats technology as an emergent concept that evolves over time and context and thus reflects a more post-positivism perspective.

In the first and earliest stream of literature, technology is a "distinct entity that interacts with various aspects of the organization" (Orlikowski & Scott, p. 439). Technology is an independent variable having a range of effects at different levels of analysis (individual, group, enterprise, and inter-organizational) on multiple organizational outcomes as the dependent variable (Orlikowski & Scott, 2008). This research stream takes a deterministic perspective, in that technology is a causal factor that is expected to create predictable, theoretically-determined consequences.

Research based on the technology acceptance model (TAM) falls into this deterministic stream. The underlying assumption of this model and its variants (Marler & Dulebohn, 2005; Venkatesh, Morris, Davis, & Davis, 2003) is that information technology, measured as perceptions of its perceived usefulness and ease of use, is an independent variable that affects individual attitudes and behavior (Davis, 1989). While infrequently published in the four journals reviewed by Orlikowski and Scott (2008), there are hundreds of empirical studies in the information science literature based on TAM that empirically identify and validate various individual, organizational and technological factors associated with a person's intention to use new information technology in many different contexts. Only recently has this model been applied in an e-HRM context (Marler, Fisher, & Ke, 2009; Marler & Dulebohn, 2005), demonstrating that when employees perceive e-HRM technology to be useful and easy to use, they are more likely to actually use it.

An important subcategory of this deterministic stream of technology research represents studies that are based on a reverse deterministic relationship. Thus, technology is the dependent variable. The independent variables in this stream are organizational and individual decisions or behaviors that affect information technology outcomes. In this research, called the organizational imperative perspective (Orlikowski & Scott, 2008) or the 'strict voluntarism' perspective (Strohmeier, 2009), information technology as the outcome is a product of managerial choice. Information technology is designed and implemented to meet organizational goals. For example, organizations purposefully deploy e-HRM to consolidate HRM tasks geographically, streamline processes, and minimize redundancy (Farndale, Paauwe, & Hoeksema, 2009).

The second broad stream of research identified in Orlikowski and Scott's review focuses on dynamic interactions between people (or organizations) and technology over time. It is less deterministic, viewing technology as part of a "complex process through which organizing is accomplished" (p. 446). Technology is no longer a discrete entity and thus no longer a quantifiable independent or dependent variable. Instead, technology is emergent and not fully determinate. As Orlikowski and Scott (2008) state,

> "The issues studied in this stream include research regarding the interplay between aspects of technology and various elements of organizational life, such as what meanings emerge to make sense of a new information system (e.g. Prasad, 1993), how do technological implementations entail the mutual adaptation of technology and organization (Leonard-Barton & Deschamps, 1988), how does the use of electronic media get shaped by existing cultural norms and practices (e.g. (Markus, 1994), how do technologies serve as boundary objects to afford knowledge sharing across disparate communities (Bechky, 2003), how does the design and use of technology shift the nature of work (e.g. (Boudreau & Robey, 2005)" (p. 446).

Strohmeier (2009) classifies this second stream of research as 'moderate voluntarism' or a moderated organizational imperative, in which there are multiple actors and interests that interact to create an outcome that is not entirely predictable. For example, conflicts of interests between senior management and lower level employees who may be downsized could change the effect of information technology in ways that are quite different than originally intended by either actor. In this theoretic paradigm, technology is not an objective external force that has deterministic impacts on organizational structure (Markus & Robey, 1988; Orlikowski, 1991), but is an entity, resource or an organizational process that emerges from operating in a particular organizational context.

In summary, based on the writings of Orlikowski and Scott (2008) and Strohmeier (2009), we have identified three meta-theoretical perspectives on technology in organizational research; technological determinism, organizational imperative, and technology as a process. We use these three categories to organize our review of the e-HRM literature.

## 2.2. e-HRM construct definition

Early definitions of e-HRM appear to fit with any of the three meta-theoretical perspectives. The two most cited definitions are provided by Strohmeier (2007) and Ruël and colleagues (Ruël et al., 2004). Ruël et al. (2004) first proposed an early definition in which they define e-HRM as a way of implementing HRM strategies, policies and practices in organizations through the conscious and directed support of and with the full use of web technology. Strohmeier (2007) expanded this definition to be more specific about the technological and organizational contexts, defining e-HRM as the application of information technology for both networking and supporting the interaction of at least two individual or collective actors in their shared performing of HR activities.

Both these definitions treat e-HRM as an entity (the technological aspects) and a process ('shared performing' and 'a way of doing'). One problem with such definitions is the possible confusion that arises 'when technology and organization are allowed to share the same semantic domain' which then makes it difficult to decide where technology stops and organization begins (Barley, 1988). Orlikowski and Scott (2008) challenge the notion of a singular definition of technology as inherently problematic and suggest it may be more useful to consider the term as theoretically and historically contingent.

We must also consider the relationship between e-HRM and human resource information systems, or HRIS. The distinction between e-HRM and HRIS is that a HRIS tends to be limited and affects only those individuals working in or with the organization's HR function. In addition, HRIS is an older concept, pre-dating the emergence of networking and internet-based communications technology. In contrast, e-HRM represents an internet-based information technology that reaches all employees, at all levels within an organization (Ruël et al., 2004). Thus, we consider HRIS to be part of e-HRM to the extent it includes internet-based information technology; however, e-HRM is a broader construct in that it is not limited to individuals or processes attached to the HR function within an organization.

With these definitional challenges in mind, we adopt the perspective underlying existing definitions in the emerging e-HRM literature in which information technology is a physical entity (e.g., hardware, software and communication network infrastructure) that is separate from individuals but at the same time incorporates organizational processes such as HR activities. Thus, in this study e-HRM consists of configurations of computer hardware, software, and electronic networking resources that enable intended or actual HRM activities (e.g., policies, practices, and services) through individual and group-level interactions within and across organizational boundaries.

## 2.3. The strategy literature and strategic HRM

Most organizational strategy research offers some rationale to account for performance differences across organizations or to account for strategic differences that presumably have an impact on organizational performance (Barnett & Burgelman, 1996). There are a number of perspectives and associated theories in strategy research (see Ghemawat, Collis, Pisano, & Rivkin, 2001), separate from the strategic human resource literature, which we group into three categories: 1) the industrial organizational economic perspective (five forces model, strategic positioning, and contingency theory), 2) the resource-based view (human and social resources, organizational capabilities), and 3) evolutionary or dynamic perspectives on strategy (strategic search/ formulation, dynamic capabilities, path dependence, strategic variation and selection). From the strategic HRM perspective, Lengnick-Hall et al. (2009) identify three chronological stages in which different research themes predominate and drive the strategic human resource agenda. We map these three stages onto and draw from the three strategic research categories identified above.

Early strategic HRM literature, according to Lengnick-Hall et al., emphasized a contingency perspective in which the focal point was fit between HR policies and practices and various strategy elements. This stage of strategic HRM research was primarily influenced by the dominant theoretical paradigm in the strategic literature, the industrial organizational (I/O) economic perspective. Researchers adopting an I/O economic perspectives on strategy focus on the external environment (e.g., industry and intra-industry) in which companies compete. Industry characteristics define the performance potential for companies based on the industry in which they operate and then within an industry, a firm's strategic positioning determines the extent to which it successfully competes to achieve competitive advantage. Porter's five forces model became the standard framework for describing industry characteristics (Porter, 1980). Within industry groups, strategic positioning, such as the generic Porter business strategies (Porter, 1985) best address industry challenges. The extent to which a firm's internal business activities fit and reinforce its strategic positioning determine whether competitive advantage is achieved.

Within this perspective, to achieve competitive advantage a firm's HR management activities (that represent supporting business activities) should be designed to fit the firm's chosen or emergent business strategy. Hence, the early stage strategic HRM literature focused on the importance of fit or vertical alignment with business strategy. Performance outcomes depended on fit between the business strategy and HR structure and activities, a form of contingency theory. Researchers adopted this contingent theoretical perspective to explain the way in which HRM activities could be strategic. In this research stream, outcomes of interest were either some degree of consistency with the firm's generic business strategy (interim outcomes) or firm performance (the ultimate outcome) which was contingent upon fit between HRM activities and business strategy.

For example, research used contingency theory to predict what bundles of HRM practices an organization should have based on intended strategic positioning or past business strategic patterns (Schuler & Jackson, 1987). Later developments focused on which configurations or bundles of HRM activities best supported a particular business strategy. In this research stream, strategic HRM not only required vertical alignment with a firm's business strategy but each activity also needed to be aligned with and

reinforce the other HR activities (Lepak, Liao, Chung, & Harden, 2006). Researchers proposed various additional theories to predict which bundle of human resource activities would be the most effective (Delery & Doty, 1996). Configurational theories suggested bundles varied by business strategy or by industry. Universalistic theories claimed a one-size fits all perspective in which one bundle of best practice HRM activities would effectively support any business strategy. (Delery, 1998; Huselid, Jackson, & Schuler, 1997; Lepak et al., 2006; Pfeffer & Veiga, 1999; Snell, Shadur, & Wright, 2001; Wright, 1998).

The second stage of strategic human resource research wrestled with an emphasis of HR as a source of important strategic contributions (Lengnick-Hall et al., 2009). Rather than focusing on fit, research in this stage looked at the development of human capital, social capital, organizational capital, intellectual capital and knowledge management systems as key outcomes. The focus of this stream of literature was on mediators and outcomes of the strategic HRM phenomena.

The second stage of strategic HRM research drew heavily on the resource based-view (RBV) theoretical paradigm. Focusing on internal resources rather than external market positioning, the RBV paradigm (Barney, 1991) suggests competitive advantage can be achieved from a firm's internal resources and capabilities under certain conditions. The RBV theory asserts that to be sources of competitive advantage, internal organizational resources and capabilities must be a) value producing, b) rare, c) imperfectly imitable and d) without strategically equivalent substitutes (Barney, 1991).

From this perspective, HRM could be strategic either as a specific capability or as instrumental in developing resources (e.g., human capital) that are value producing, rare, imperfectly imitable and without strategically equivalent substitutes (Wright et al., 2001). In fact, many authors have argued that the presence of a high-quality HRM "bundle" fits the RBV criteria quite well; it contributes value to the organization through productive, engaged employees, it is quite rare, it is hard to imitate because it is based primarily on knowledge resources, and there are no strategically equivalent substitutes.

More recently, a third line of strategic HRM research considers factors beyond fit, alignment, or resource development, focusing on the importance of effective execution of HR policies and practices and ensuring that the strategic intent is realized (Lengnick-Hall et al., 2009). In this newer stream, divergence between intended and implemented strategic HRM practices suggest the possibility that the outcomes of a strategic HRM bundle or practice might vary depending on what decisions are made and what paths are taken in implementation. What actually is enacted may differ from the plan in unintended ways due to the varying interests and cognitions of organizational decision makers and system users, varying cultural interpretations and constraints, and other environmental or contextual factors that are idiosyncratic to a point in time or decision path.

Underlying this more recent stage of the evolving strategic human resource literature are strategic theoretical perspectives that have a more biological or evolutionary flavor (Lengnick-Hall et al., 2009). Organizational systems are complex interdependent entities that interact with the external environment in ways that are either favorable or unfavorable for survival. Evolutionary strategic perspectives introduce the component of time and change into the strategic landscape and focus on understanding how strategic outcomes develop dynamically. Over time, the strategic landscape changes and in order to sustain competitive advantages, firms must adapt to or manage changing environmental conditions. Evolutionary strategic theorists also view strategic responses to specific problems or opportunities that occur in the environment to be rationally bounded, which departs from the highly rationalized, maximizing behavior assumed by I/O economists (Gavetti & Rivkin, 2007).

The focus is on patterns of strategic change, rates of strategic change, and selection processes that may be context sensitive and path dependent. Some firms adapt and others do not. Which outcome emerges depends on selection processes and path dependencies that limit or expand future options. Thus taking an evolutionary perspective on strategy means developing dynamic models that allow for patterns of change, variation in outcomes, and context sensitive selection within and among organizations (Barnett & Burgelman, 1996).

From an evolutionary perspective, multiple strategic HRM outcomes can emerge as equally viable and that depend on particular contexts that favor some outcomes or adaptations over others. Such a view maps onto research that suggests several different configurations or bundles of HR practices exist and appear to be equally viable as a strategic HRM outcome and indeed multiple configurations may exist within one firm depending on selection processes that might vary by employee group (Lepak & Snell, 1999; Tsui, Pearce, Porter, & Tripoli, 1997)

To summarize, there are three strategic meta-theoretical perspectives that map nicely onto the three stages of strategic HRM research identified by Lengnick-Hall et al. (2009). The I/O economic perspective is similar to the first stage of strategic HRM research with its focus on fit between HR practices and business strategy. The RBV perspective parallels the second stage of HRM research, focusing on what and why HR resources and bundles lead to positive organizational performance outcomes. Finally, the strategic evolution perspective is similar to the third stage of HRM research, explaining how the expected outcomes of strategic HRM may vary depending on what decisions are made and what paths are taken in implementation. We use these three categories to further guide our review of the e-HRM literature.

### 2.4. Strategic HRM construct definition

Similar to what we saw with the technology literature and definitions of e-HRM, we now must examine the definitions of strategic HRM and how they fit with these different treatments of organizational strategy. As with research on technology in organizations, what emerges is an appreciation for how the concept changes over time.

An early and widely accepted definition of strategic HRM is "the pattern of planned human resource deployments and activities intended to enable an organization to achieve its goals" (Wright & McMahan, 1992, p.298). This definition fits within the I/O economics perspective in that HRM represents a set or pattern of activities that support a particular strategic goal. The definition also subsumes the notion of human resource bundles or configurations, as patterns of activities that develop over time

into steady states supporting successful adaptation. It focuses on the intended element of strategic HRM, but allows for the possibility that, consistent with the strategic evolution perspective, strategic outcomes are emergent.

Lepak and Shaw's (2008) literature review of strategic HRM in North America builds on this definition. They identify several specific distinguishing features of strategic HRM. First, strategic HRM is a macro-level concept in that it should aggregate to a company, business unit or establishment level of analysis and have macro-level consequences such as organizational performance. Second, strategic HRM focuses on HRM activities as an interdependent system, a bundle of HR practices (e.g. patterns of activities) that fit with each other and are vertically aligned with business strategy and other environmental pressures (industry, national culture, regulatory and economic). Third, reflecting the influence of all strategic perspectives, strategic HRM emphasizes organizational performance outcomes, which are at this point broadly defined. This definition appears rather proscriptive, stating what strategic HRM should be rather than describing how it presently exists. It is also specifically targeted toward the second stage of strategic HRM with its focus on the interdependent bundle of HRM activities.

To proceed with our evidence-based review, we needed a broad definition of strategic HRM that will encompass the different definitional and theoretical perspectives reviewed above. Consequently, for the purpose of the present study we define strategic HRM as an interdependent bundle of planned or emergent human resource activities that are intended to achieve positive organizational outcomes.

## 2.5. Proposed research questions: combining e-HRM and strategic HRM

In considering the multiple theoretical perspectives in both the e-HRM and strategic HRM domains, we must, therefore, also consider a variety of possible theoretical relationships to help frame and direct the evidence-based analysis of the e-HRM literature. In Table 1 we summarize these possible relationships between e-HRM and strategic HRM. Each row of the table represents an underlying technological theoretical perspective (deterministic, organizational imperative, and process). Each column represents a strategic theoretical perspective (I/O economics, RBV, and strategic evolution). Thus, each cell in Table 1 represents a combination of a technological and strategic theoretical perspective. Within each cell, we then propose a high level research question that synthesizes these two meta-theoretical perspectives and is applied to e-HRM and strategic HRM. We also indicate whether e-HRM and strategic HRM are independent variables, dependent variables or emergent and interdependent given the proposed research question.

Summarized in Table 1, therefore, are proposed research questions which are derived from intersecting theoretical perspectives. For example, from an I/O economic perspective, we identify three different types of research questions with respect to the relationship between e-HRM and strategic HRM that vary depending on the three different underlying meta-theoretical technological categories. Whether e-HRM is an independent, dependent or emergent variable depends on the underlying theoretical technological perspective and is thus indicated in the relevant cell in Table 1.

Three research questions falling into the I/O economic strategy category, the first row of Table 1, includes:

Does e-HRM affect HRM's alignment with business strategy (determinism)?
Does strategic HRM affect the nature of e-HRM that is deployed (organizational imperative)?
How does e-HRM change strategic HRM goals and how do strategic HRM goals change the e-HRM that is deployed (technology as a process)?

Three research questions reflecting an RBV perspective related to e-HRM and varying by the underlying meta-theoretical technological categories include:

Is e-HRM a resource or capability that creates competitive advantage or better organizational performance (determinism)?
Does the value of a firm's human capital affect what HR activities are included in the firm's e-HRM configuration (organizational imperative)?
How does e-HRM become a strategic capability and how does strategic HRM turn e-HRM into a strategic capability (technology as a process)?

Finally, taking a strategic evolutionary perspective, the following three research questions are posed:

Does the adoption of e-HRM across companies result in different patterns or pace change in strategic HRM (deterministic)?
Does the process used to implement an e-HRM system affect whether e-HRM achieves the firm's strategic goals (organizational imperative)?
How do employees' adaptations of e-HRM change strategic HRM and how do managers' strategic HRM choices lead to changes in e-HRM (technology as a process)?

## 2.6. Institutional theoretical perspective

Although not specifically considered part of the traditional strategic research domain, organizational theorists and sociologists are increasingly involved in researching the efficacy of organizational structures and their effects on organizational performance or survival (Tolbert & Zucker, 1996). Institutional theories describe social forces apart from economic forces that may shape the performance of a firm. Thus we decided to include an institutional theoretical perspective as an additional theoretical domain.

**Table 1**
Theoretical perspectives on e-HRM and strategic HR.

| Theoretical perspectives | Technological determinism | Organizational imperative | Technology as a process |
|---|---|---|---|
| I/O Economic perspective | Does e-HRM affect HRM's alignment with business strategy?<br>IV: e-HRM<br>DV: Fit with HR or business strategy | Does strategic HRM affect the nature of the e-HRM that is deployed?<br>IV: Strategic HRM<br>DV: e-HRM | How does e-HRM change strategic HRM goals?<br>How do strategic HRM goals change e-HRM? |
| Resource-based view | Is e-HRM a resource or capability that creates competitive advantage/better performance?<br>IV: e-HRM<br>DV: Competitive advantage/performance | Does the value of a firm's human capital affect what HR activities are included in the firm's e-HRM?<br>IV: Human capital<br>DV: e-HRM activities | How does e-HRM become a strategic capability?<br>How does strategic HRM turn e-HRM into a strategic capability? |
| Strategic evolution | Does adoption of e-HRM across companies result in different patterns or pace of change in strategic HRM?<br>IV: e-HRM adoption<br>DV: Patterns of change in strategic HRM | Does the process used to implement an e-HRM system affect whether e-HRM achieves the firm's strategic goals?<br>IV: Selection process<br>DV: e-HRM outcomes | How do employees' adaptations of e-HRM change strategic HRM?<br>How do managers' strategic HRM choices lead to changes in e-HRM? |
| Institutional theory | Is an e-HRM investment made to legitimize the strategic HRM function?<br>IV: e-HRM investment<br>DV: Legitimated strategic HRM function | Does strategic HR invest in e-HRM to conform to normative or regulatory pressures?<br>IV: Regulatory or social pressure<br>DV: e-HRM adoption | Does the development of e-HRM functionality reinforce strategic goals, conformance with social norms, or to comply with regulatory regimes?<br>Can e-HRM, as a technological innovation, result in the institutionalization of strategic HRM? |

Institutional theory applies a sociological lens to organizations and organizational structures and examines whether, why, and how they become an accepted and unquestioned part of the structure (i.e. institutionalized). An institutionalized organizational structure, such as a bureaucratic hierarchy or a human resource management function is taken for granted by members of a social group as efficacious and necessary and therefore serves as an important causal source of stable patterns of behavior. For example, the HR function within an organization may become institutionalized over time so that its necessity and presence is never questioned. The premise of early institutional theoretical research was that organizational structures existed because they played an important role in solving organizational problems necessary for the survival of the firm. New structures must be believed to have some positive value for the organization, or decision-makers typically would not allocate resources to altering or creating new formal structures (Tolbert & Zucker, 1996).

Meyer and Rowan (1977) challenged this underlying functionalist premise of institutional theory to suggest formal organizational structures need not only serve a rational functional role but could also serve symbolic purposes. Thus formal structures might also signal an organization's commitment to rational efficient standards but actually not be efficient. For example, structures could evolve to increase perceptions of legitimacy independent of efficacy such as having a unit responsible for managing operational safety. Such action may be taken in response to external pressures such as the passage of legislation or the development of strong social norms within an organizational network (Tolbert & Zucker, 1996). Another implication of this aspect of institutional theory is that in some cases formal structures may act only as symbols and be decoupled or loosely coupled with actual, everyday activities and behaviors (Tolbert & Zucker, 1996).

Research questions that emerge out of the intersection of institutional theory and the three meta-theoretical technological perspectives provide interesting and alternative explanations for the relationship of e-HRM and strategic HR (see Table 1). A proposed research question taking an institutional theoretical lens and intersecting it with a technological deterministic perspective is:

Does an e-HRM investment legitimize the strategic HRM function?

From an organizational imperative perspective, the following research question is proposed

Are strategic HR investments in e-HRM made to conform to normative or regulatory pressures?

Finally, a process-based question research question proposed is

How does the development of e-HRM within an organization reinforce strategic goals, conformance with social norms or compliance with regulatory regimes?

To determine which of these questions are being posed in the extant research and what evidence published empirical research provides concerning the many possible relationships between e-HRM and strategic HRM, we now turn to our evidence-based review methodology.

## 3. Evidence-based methodology

In this study, we use integrative synthesis, an accepted evidence-based methodology, to summarize and make sense out of the existing research literature on e-HRM and strategic HRM (Rousseau et al., 2008). Integrative synthesis involves the collection and comparison of evidence involving two or more data collection methods (Rousseau et al., 2008). It investigates patterns across published research studies, compensating for single-study weaknesses in research design to improve the internal and external validity of the various research findings. Integrative synthesis typically employs predetermined questions and selection criteria. Critical selection criteria include the relevance and construct validity of indicators obtained by different methods, all tapping what is presumed to be the same phenomenon. This method often pursues multiple questions allowing the review to address issues difficult to examine in the context of a single study. It can be an especially useful technique with a field like e-HRM that is still emerging, in which the field has not converged on an accepted set of research paradigms or methods. Integrative synthesis is not meta-analysis. It relies on judgment of the researchers, but around a structured framework and set of questions.

Below we define our research methodology in detail following the procedures described by Rousseau and colleagues, and Dibbern and colleagues (Dibbern, Goles, Hirschheim, & Jayatilaka, 2004; Rousseau et al., 2008).

### 3.1. Integrative synthesis

The key question framing our integrative synthesis is: What e-HRM and strategic HRM relationships are present and supported across studies? In our review of the evidence addressing this question, we examine the many possible relationships between these two constructs using Table 1 as a guide. More specifically, we ask: what meta-theoretical technological perspective underlies the causal ordering of the key constructs in this study? Does the empirical evidence support the causal order of the relationship?

We also note if and how strategic HRM is conceptualized in each of the papers and the explicit or implicit strategic HRM perspective. Is it based on I/O economic notions of strategic contingency theory, alignment and fit; on human capital, HR capabilities strategic outcomes, and competitive advantage; or on concerns with processes and intended versus realized strategic outcomes?

## 3.2. Sample selection

To identify an appropriate sample of published research evidence to include in our integrative synthesis, we started by searching for all published articles related to e-HRM in the past twelve years (1999–2011). We searched in the primary business and psychology indexed databases, utilizing ABI Inform/Proquest, Business Source Premier, and PsycArticles. We developed an extensive list of search terms used in the field. Table 2 presents the search terms used and the number of articles identified using each of the search terms. Articles were coded based on the search term with which they were first located. Several of the articles were matched with multiple search terms but we did not code the additional matching search terms. We identified ten additional articles by scanning reference lists of recently published research (e.g., Strohmeier, 2009). In total, we identified 85 published research articles related to e-HRM in the 1999–2011 time frame.

Next we applied several criteria to identify the set of articles most relevant to our research methodology and questions. Based on guidance presented by Rousseau and colleagues and Dibbern and colleagues (Dibbern et al., 2004; Rousseau et al., 2008) we decided to retain only those articles that (Allen, Mahto, & Otondo, 2007) were in peer reviewed publications, to provide some control on research quality, (Alleyn, Kakbadse, & Kakbadse, 2007) included quantitative or qualitative data (no purely conceptual studies), (Ball, 2001) fit our definition of e-HRM as reviewed above, and (Barley, 1988) addressed the use of e-HRM in an organizational setting rather than taking a pedagogical approach of teaching students about e-HRM. At this stage, we did not consider the extent to which the articles explicitly or implicitly addressed strategic HRM. This screening process resulted in 40 articles that met all criteria.

The articles used as the foundation for our analysis are marked with an asterisk in the reference list. The next step in our methodology was to organize the evidence by underlying technological meta-theoretical foundation and strategic perspective.

## 3.3. Categorization by theoretical framework

We first organized our sample of e-HRM published studies by meta-theoretical technological paradigm, identifying if the study approached the technology question from a perspective based on a) technological determinism, b) organizational imperative, or c) technology as a process. We then identified the dominant strategic HRM approach, using the three strategic perspectives identified above as a guide (I/O economics, RBV, and strategic evolution). In some cases, the strategic orientation was not explicit. In these cases, we used our judgment to infer an implicit strategic perspective. We also identified studies that focused on an institutional theoretical perspective in which e-HRM might simply be used to achieve legitimacy, to conform to increasingly complex regulatory compliance requirements or to comply with cultural normative pressures.

Finally, we noted the level of analysis taken in the empirical study. Research in e-HRM can be conducted at both individual and group levels of analysis. However, strategic HRM is primarily a group-level phenomenon. Lepak and Shaw (2008) specifically call attention to this distinctive aspect of strategic HRM that it is a macro-level concept in that it should aggregate to a company, business unit or establishment level of analysis and have macro-level consequences, such as organizational performance. Thus, ideally empirical evidence in support of a relationship between e-HRM and strategic HRM would be conducted at company, business unit or establishment level of analysis. We took a broader approach in this analysis, including studies if they shed light on a potential macro-level relationship. For example, a study could examine an individual's perception of the strategic value of e-HRM, or could test the potential value of a particular feature of an e-HRM system such as electronic performance appraisal. Thus, rather than removing all micro-level studies from consideration we noted the level of analysis used and described the intended relationship between individual level findings and macro-level strategic concepts.

## 3.4. Categorization by empirical approach

For research to effectively inform evidence-based management, we must be confident in the conclusions drawn from each study. There are four types of relationships between key constructs that research must address in order to meet satisfactory empirical standards and form the foundation for effective research syntheses (Rousseau et al., 2008). These four relationships are typically referred to as conclusion validity, internal validity, construct validity, and external validity. Conclusion validity establishes whether there is a relationship between two constructs. Internal validity establishes whether this relationship is

**Table 2**
Articles identified using specified search terms.

| Search term | Number of articles identified |
| --- | --- |
| B2E and HRM | 1 |
| e-HR | 6 |
| e-HRM | 14 |
| ERP and HRM | 2 |
| HRIS | 31 |
| HRM and internet | 4 |
| Self-service | 7 |
| Virtual HRM | 1 |
| Web-based HRM | 11 |

causal, and if so, the direction of causality. Construct validity investigates whether measurement of the key constructs is sufficient to adequately assess the relationship. Finally, external validity establishes how generalizable the relationship is and whether there are contextual contingencies that might affect the observed relationship. We classified our sample of studies by the type of relationship that received the most attention. Finally, we evaluated the empirical approach used to gather data and/or test the predicted relationships within the specified level of analysis. Cross sectional samples and variance-based statistical analyses help establish conclusion validity, construct validity and external validity. Longitudinal samples, experimental designs and process-based statistical analyses better establish causal relationships or internal validity.

### 3.5. Categorization procedure

The two authors of the paper independently reviewed and categorized half of the papers each. We then reviewed the categorizations completed by the other person, discussing and coming to agreement on all categorizations. We initially disagreed on the categorization for six of the 40 papers, agreeing on 85% of the papers. The consensus categorization results are presented in Table 3.

## 4. Results

The results of the categorization process are presented in Table 3. Note that the column totals within a category (e.g., strategic HR perspective) do not necessarily add to 40 because some of the articles were categorized into multiple categories. We begin by discussing empirical approaches. We then describe in more detail the theoretical categorizations.

### 4.1. Empirical approaches

Twenty-four of the studies (60%) were conducted at the macro level of analysis. In terms of research design, 40% of the studies (n = 16) used the case study approach. Five of those case studies were longitudinal. Most of the quantitative studies (92%) were cross-sectional in nature; only four were longitudinal. Five of the studies were experimental, looking at how individuals would react to particular elements of e-HRM systems (e.g., Dineen, Ash, & Noe, 2002; Lukaszewski, Stone, & Stone-Romero, 2008; Dineen & Noe, 2009). This variation in research design is generally a positive feature of this set of papers, as each approach has strengths in answering specific kinds of questions. At early stages of an area of inquiry, it can be very useful to play different approaches off one another, even alternating approaches to better understand the phenomena being studied. Unfortunately, we did not see this cross-fertilization of research approaches, with research groups pursuing a particular approach to the exclusion of others.

#### 4.1.1. Validity
We examined factors related to construct validity, internal validity, and external validity in each of the studies to help evaluate the existing evidence regarding e-HRM and strategic HRM. First, no studies were able to establish solid internal validity, and therefore none supported causal ordering, at the macro-level of analysis. Of the 40 studies examined, 24 were at a macro-level of analysis. Of these, only 11 provided empirical evidence for a correlational relationship between e-HRM and strategic HRM. None, by our estimation, provided appropriate empirical support for establishing causal ordering.

Construct validity varied widely across the studies. Some studies used well-established measures for their constructs and performed structural equation modeling to demonstrate good fit of their measurement models, giving us more confidence in their measures (Allen et al., 2007; Dineen, Ling, Ash, & DelVecchio, 2007; Dineen & Noe, 2009; Marler, 2009; Marler, Liang, & Dulebohn, 2006). Others relied on measures developed by others when using an industry-wide survey (Parry, 2011; Strohmeier & Kabst, 2009). While we applaud the use of large samples across industries, it is critical to ensure that core concepts such as the presence of an HR strategy are adequately measured. We also question the construct validity of some measures of e-HRM implementation (Strohmeier & Kabst, 2009) such as binary measures.

Naturally, external validity was limited in the case study and experimental papers. We observed the typical trade-offs apparent in HRM research in that the studies with stronger construct and internal validity typically had weaker external validity. One factor that appears to limit external validity for all the papers is differences in e-HRM systems that are not always specified. Having a clear system for describing and categorizing key features of e-HRM systems would likely help with generalizing results across situations and studies.

### 4.2. Theoretical categories and relationships

Half of the 40 studies (n = 20) took the determinism perspective. Of the remaining 20 studies, 13 represented an organizational imperative perspective, while only seven considered technology as a process.

Within these three categories, studies adopted a variety of strategic theoretical perspectives, although RBV was the least used perspective from the strategy literature. Only ten of the studies (25%), however, included an explicitly measured strategic HRM construct either as a dependent or independent variable. Below we discuss the results in greater detail, summarizing and reviewing the research evidence according to the theoretical categorization and proposed research questions depicted in Table 1.

**Table 3**
Categorization of studies.

| Study | Year | Technological epistemology | | | Technological determinism | | | | | Organizational imperative | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Strategic HR perspective | | | | | | | | | |
| | | Determinism | Organizational Imperative | Technology Process | I/O economic | RBV | Strategic | Institutional theory | None | I/O economic | RBV | Strategic evolution | Institutional theory | None |
| Allen, Mahto, & Otondo | 2007 | 1 | | | | | | | 1 | | | | | |
| Alleyne, Kakabadse, & Kakabadse | 2007 | 1 | | | 1 | | | | | | | | | |
| Ball | 2001 | | 1 | | | | | | | 1 | | | | |
| Bell, Lee, & Yeung | 2006 | 1 | | | | | 1 | | | | | | | |
| Bondarouk, Ruë, & van der Heijden | 2009 | 1 | | | 1 | | | | | | | | | |
| Buckley, Minette, Joy & Michaels | 2004 | 1 | | | | | | | 1 | | | | | |
| Dery and Wailes | 2005 | | | 1 | | | | | | | | | | |
| Dineen and Noe | 2009 | 1 | | | | | | | 1 | | | | | |
| Dineen, Ash, & Noe | 2002 | 1 | | | | | | | 1 | | | | | |
| Dineen, Ling, Ash, & DelVecchio | 2007 | 1 | | | | | | | 1 | | | | | |
| Dineen, Noe & Wang | 2004 | 1 | | | | | | | 1 | | | | | |
| Ensher, Nielson, & Grant-Valone | 2002 | 1 | | | | | | | 1 | | | | | |
| Farndale, Paauwe, & Hoeksema | 2009 | | 1 | | | | | | | 1 | | | | |
| Florkowski and Olivas-Lujan | 2006 | | 1 | | | | | | | | | | 1 | |
| Haines and Lafleur | 2008 | 1 | | | 1 | | | | | | | | | |
| Hooi | 2006 | | 1 | | | | | | | | | | 1 | |
| Hussain, Wallace, & Cornelius | 2007 | 1 | | | | | | 1 | | | | | | |
| Lengnick-Hall and Moritz | 2003 | | 1 | | | | | | | 1 | | | | |
| Lukaszewski, Stone, & Stone-Romero | 2008 | | | 1 | | | | | | | | | | |
| Marler, Fisher, & Ke | 2009 | 1 | | | | | | | 1 | | | | | |
| Neary | 2002 | 1 | | | | | | | 1 | | | | | |
| Ngai and Wat | 2006 | 1 | | | | | | | 1 | | | | | |
| Ngai, Law, Chan & Wat | 2008 | | 1 | | | | | | | | | | | 1 |
| Olivas-lujan, Ramirez, & Zapata-Cantu | 2007 | | 1 | | | | | | | | | | 1 | |
| Panayotopoulou, Vakola, & Galanaki | 2007 | | 1 | | | | | | | 1 | | | | |
| Parry | 2011 | | 1 | | | | | | | | | 1 | | |
| Parry and Tyson | 2011 | 1 | | | | | | | 1 | | | | | |
| Payne, Horner, Boswell, et al. | 2009 | 1 | | | | | | | 1 | | | | | |
| Ruël, Bondarouk, & Looise | 2004 | | 1 | | | | | | | 1 | | | | |
| Ruel, Bondarouk, & Van der Velde | 2007 | 1 | | | 1 | | | | | | | | | |
| Strohmeier and Kabst | 2009 | | 1 | | | | | | | 1 | | | | |
| Tasley and Newell (a) | 2007a,b | | | 1 | | | | | | | | | | |
| Tasley and Newell (b) | 2007a,b | | | 1 | | | | | | | | | | |
| Tansley and Watson | 2000 | | | 1 | | | | | | | | | | |
| Tansley, Newell, & Williams | 2001 | 1 | | | 1 | | | | | | | | | |
| Teo, Lim & Fedric | 2007 | | 1 | | | | | | | 1 | | | | |
| Voermans and Van Veldhoven | 2007 | | 1 | | | | | | | 1 | | | | |
| Wiblen, Grant, & Dery | 2010 | | | 1 | | | | | | | | | | |
| Wickramasinghe | 2010 | 1 | | | | | | | 1 | | | | | |
| Zhang and Wang | 2006 | | | 1 | | | | | | | | | | |
| Totals | | 20 | 13 | 7 | 5 | 0 | 1 | 1 | 13 | 8 | 1 | 0 | 3 | 1 |

**Table 3** (*continued*)

| Study | Technology as process — Strategic HR perspective | | | | | Strategic HRM construct | Level of analysis | | Empirical approach | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | I/O economic | RBV | Strategic evolution | Institutional theory | None | Explicit | Macro | Micro | No theory/ Exploratory | Correlated | Causal | Construct validity | External validity | Cross sectional | Longitudinal | Case study-descriptive |
| Allen, Mahto, & Otondo | | | | | | | | 1 | 1 | | 1 | | | 1 | | |
| Alleyne, Kakabadse, & Kakabadse | | | | | | | | 1 | | | | | | | | 1 |
| Ball | | | | | | | 1 | | 1 | 1 | | | | 1 | | |
| Bell, Lee, & Yeung | | | | | | 1 | | | | | | | | 1 | | |
| Bondarouk, Ruë, & van der Heijden | | | | | | 1 | | 1 | | | | | | | | 1 |
| Buckley, Minette, Joy & Michaels | | | | | | | 1 | | 1 | | 1 | | | | 1 | 1 |
| Dery and Wailes | | | 1 | | | | 1 | | 1 | | 1 | | | | 1 | 1 |
| Dineen and Noe | | | | | | | | 1 | 1 | | | 1 | | 1 | | |
| Dineen, Ash, & Noe | | | | | | | | 1 | 1 | | | | | 1 | | |
| Dineen, Ling, Ash, & DelVecchio | | | | | | | | 1 | 1 | | | | | 1 | | |
| Dineen, Noe & Wang | | | | | | | | 1 | | 1 | 1 | | | 1 | | |
| Ensher, Nielson, & Grant-Valone | | | | | | | 1 | | 1 | | | | | | | 1 |
| Farndale, Paauwe, & Hoeksema | | | | | | 1 | 1 | | | | | | | | | 1 |
| Florkowski and Olivas-Lujan | | | | | | | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | |
| Haines and Lafleur | | | | | | 1 | 1 | | | 1 | | | | 1 | | |
| Hooi | | | | | | | 1 | | 1 | 1 | | | | 1 | | |
| Hussain, Wallace, & Cornelius | | | | | | 1 | 1 | | | 1 | | | | 1 | | |
| Lengnick-Hall and Moritz | | | | | | 1 | 1 | | | 1 | | | | | | 1 |
| Lukaszewski, Stone, & Stone-Romero | | | | | 1 | | | 1 | | 1 | | 1 | | 1 | | |
| Marler, Fisher, & Ke | | | | | | | | 1 | | 1 | 1 | | | 1 | 1 | |
| Neary | | | | | | | 1 | | 1 | | 1 | | | | 1 | 1 |
| Ngai and Wat | | | | | | | 1 | | 1 | 1 | | | | 1 | | |
| Ngai, Law, Chan & Wat | | | | | | | 1 | | | 1 | | | | 1 | | |
| Olivas-lujan, Ramirez, & Zapata-Cantu | | | | | | 1 | 1 | | 1 | | | | | | | 1 |
| Panayotopoulou, Vakola, & Galanaki | | | | | | | 1 | | | | | | | 1 | | |
| Parry | | | | | | | 1 | 1 | | 1 | | | | 1 | | |
| Parry and Tyson | | | | | | | 1 | | | | | | | 1 | | 1 |
| Payne, Horner, Boswell, et al. | | | | | | | | 1 | | 1 | 1 | | | | 1 | |
| Ruël, Bondarouk, & Looise | | | | | | | 1 | | 1 | | | | | | | 1 |
| Ruel, Bondarouk, & Van der Velde | | | | | | 1 | | 1 | | 1 | 1 | | | 1 | | |
| Strohmeier and Kabst | | | | | | 1 | 1 | | | 1 | | | | 1 | | |
| Tasley and Newell (a) | | | | 1 | | | | 1 | | | 1 | | | | 1 | 1 |
| Tasley and Newell (b) | | | | 1 | | | | 1 | | | 1 | | | | | 1 |
| Tansley and Watson | | | | 1 | | | | 1 | | | | | | | 1 | 1 |
| Tansley, Newell, & Williams | | | | | | | 1 | | | | | | | | | 1 |
| Teo, Lim & Fedric | | | | | | | 1 | | 1 | | | | | 1 | | |
| Voermans and Van Veldhoven | | | | | | 1 | 1 | | | 1 | 1 | | | 1 | | |
| Wiblen, Grant, & Dery | | | 1 | | | | 1 | | | | | | | | | 1 |
| Wickramasinghe | | | | | | | | 1 | | 1 | | | | 1 | | |
| Zhang and Wang | | | | | 1 | | 1 | | 1 | | 1 | | | | 1 | |
| Totals | 0 | 0 | 2 | 3 | 2 | 10 | 24 | 16 | 11 | 19 | 12 | 6 | 1 | 23 | 9 | 16 |

### 4.3. Technological determinism and E-HRM

Half of the studies we examined (n = 20) have an underlying deterministic perspective in which e-HRM is viewed as a causal agent that affects one or more outcomes of interest. At the macro-level, the outcomes of interest were achievement of organizational goals, perceptions of the HR function's strategic effectiveness, line manager satisfaction, and HRM support of organizational strategy. At the micro-level of analysis there were many different outcomes: individual perceptions of HRM's strategic effectiveness, intention to use e-HRM, attitude toward e-HRM and improved recruiting outcomes. We discuss these studies grouped by research question category: I/O economic perspective (5 studies), RBV (no studies), evolutionary strategy (1 study), and institutional theory (1 study). We also categorized 13 studies that did not have any discernible strategic perspective.

#### 4.3.1. Does e-HRM affect HRM's alignment with business strategy?

Despite much of the rhetoric in the popular press or vendor advertising claiming that e-HRM makes HRM more strategic, the empirical evidence supporting this perspective is extremely weak. Five studies fell into the technological determinist category but only two studies were at a macro-level of analysis. Of these two, one found a significant and positive relationship between e-HRM and strategic HRM and the other found no relationship.

Haines and Lafleur (2008) found a positive relationship between the degree of IT support of HR activities and HR manager perceptions of the organization's HR strategic effectiveness, however, the sample was cross-sectional. They also found a positive relationship between IT support of HR activities and the quality of HR's strategic and change agent roles as assessed using Ulrich and Brockbank's measure of strategic business partner and change agent role performance (Ulrich & Brockbank, 2005). In contrast, Tansley, Newell, and Williams (2001) conducted a longitudinal case study examining the implementation of an HR module of a large scale integrated enterprise-wide administrative software system in a major UK engineering company. Top managers hoped that "HR specialists would attempt to 'add value' to the business by working more collaboratively with line managers" (p. 358). Their observations over a 10 month period indicated these expectations were not met.

At the individual level of analysis, three cross-sectional studies explicitly investigating whether there was a relationship between e-HRM and strategic HRM also provided mixed evidence concerning any perceptual relationships between e-HRM and strategic HRM. Ruël, Bondarouk, and Van der Velde (2007) found that employee participation in the development stage of e-HRM implementation predicted employee perceptions of e-HRM quality and that e-HRM quality predicted employee perceptions of strategic HRM effectiveness. Alleyn et al. (2007) applying the customer service satisfaction profit chain model (Heskett, Sasser, & Schlesinger, 1997) combined with the concept of met expectations, found that met expectations for e-HRM was positively related to satisfaction with the HR function. In contrast, a follow-up qualitative study by Bondarouk, Ruël, and van der Heijden (2009) found little evidence that implementation of an e-HRM system focused on career development within the Dutch Ministry had any effect on line managers' and employees' perceptions of human resource manager's strategic orientation or effectiveness.

#### 4.3.2. Does adoption of e-HRM result in different patterns or pace of change?

Only one study was categorized in this cell of the theoretical framework. Bell, Lee, and Yeung (2006) examined how implementation of e-HRM caused changes in the competencies required of HR staff. Results suggested that HR staff in organizations with substantial e-HRM implementations needed increased competency in knowledge of the business, functional HR delivery, and technology expertise. These changes in competency requirements were not necessarily a planned outcome of the e-HRM implementation. Respondents also consistently reported that e-HR has enabled "their HR staff to focus more attention on serving as a strategic business partner" (Bell et al., 2006, p. 300–01).

#### 4.3.3. Is an e-HRM investment made to legitimize the strategic HRM function?

One study looked at whether e-HRM was used to legitimize the HR function by making it appear more professional. Hussain, Wallace, and Cornelius (2007) argued that HR managers used e-HRM to improve their professional image within the organization. The emphasis on image, therefore, suggests a concern for legitimization in addition to strategic effectiveness.

#### 4.3.4. Determinism and an indeterminant strategic focus

While it was a relatively straightforward process to categorize the selected e-HRM studies by technological perspective, categorizing them by strategic perspective was less clear cut. Thirteen studies had a deterministic technological perspective but with no discernible strategic orientation. Many of these studies presented an assumption in the introduction of the paper that the use of e-HRM in organizations would provide strategic value, and then proceeded to hypothesize and test specific effects of e-HRM applications.

Two of the thirteen were case studies within one organization. Buckley, Minette, Joy, and Michaels (2004) used the case study methodology to study the implementation of a recruiting system in a publishing company, finding that implementation of the new system was associated with financial savings. Using a similar approach, Neary (2002) described the process undertaken by a large organization that was implementing some specific e-HRM applications, including performance management and succession planning. The organization had expected that implementing the e-HRM applications would allow them to use their HR data more strategically, and Neary concludes that this goal was reached but without empirically verifying this.

Two studies were based survey results of employees in one organization. Payne, Horner, Boswell, Shroeder, and Stine-Cheyne (2009) studied the implementation of a specific e-HRM application, a web-enabled performance appraisal system, in a large

university. In contrast with expectations, Payne et al. found that employees perceived the web-based performance appraisals to be of lower quality. Marler et al. (2009) found that managerial pressure predicted effective employee use of self-service of a newly implemented e-HRM within another large university.

Four papers took a cross-organizational perspective, looking at outcomes of adopting e-HRM across firms. Ngai and Wat (2006) collected data from a sample of firms in Hong Kong, looking at perceptions of HRIS benefits and costs since implementation. Improved data use was high on the list of benefits, while the lowest rated benefit was actually enhancing firm competitiveness. Similarly, Wickramasinghe (2010) examined the adoption of eHRM in a sample of Sri Lankan firms, finding that acceptance of eHRM systems and usage were higher when users perceived the system as less complex and experienced social influence to use it. User satisfaction was also positively associated with cost savings. Ensher, Nielson, and Grant-Valone (2002) described the key trends in e-HRM after interviewing various HR managers but reported no specific evidence that HR had become more strategic as the result of e-HRM. Parry and Tyson (2011) used a case study approach to examine the use of eHRM in ten firms, finding that four of the firms had stated goals to improve HRM's strategic orientation as a result of eHRM implementation. Seven of the case study firms described strategic outcomes but had only anecdotal evidence to support these claims.

The remaining research in this category represented experimental and quasi-experimental papers on particular HRM activities at the individual level of analysis. Dineen and colleagues (Dineen, Noe, & Wang, 2004; Dineen et al., 2002; Dineen et al., 2007; Dineen & Noe, 2009) examined the impact of an e-HRM recruitment application. Across these four studies, they consistently found that the used of e-HRM technology can make web-based recruiting more efficient and effective by using the technology to provide feedback to potential applicants, enhance applicant trust in e-recruiting systems, and prevent an overload of unqualified candidates. Allen et al. (2007) found similar results with their study of e-HRM based recruiting practices.

Again, all these studies implicitly assumed that the use of e-HRM would in the aggregate yield positive HRM activities in support of organizational goals. However, none provide direct evidence supporting this assumption.

## 4.4. E-HRM as an organizational imperative

With this perspective, researchers are focused on understanding what social agents determine how a technology is developed and designed and whether and how it is deployed. Thus e-HRM is a strategic outcome of strategic HR and not the other way around. One third of the studies we reviewed (n = 13) took an organizational imperative perspective and of these, eight of these studies represented an I/O economic perspective. Three had an institutional theory perspective and one used the RBV. Also no study fits into a strategic evolution category within the organizational imperative genre of studies. One paper in this category utilized no implicit or explicit strategic theoretical approach. This study looked at organizational size as a predictor of the top reasons why an organization would chose to implement e-HRM (in this study, defined as using the internet for HR purposes). Contrary to expectations, there were no differences based on organizational size (Ngai, Law, Chan, & Wat, 2008).

### 4.4.1. Does strategic HRM affect the nature of the e-HRM that is deployed?

Lengnick-Hall and Mortiz (2003) used short case studies of three major companies to illustrate how strategic HRM actions designed to support strategic objectives affected e-HRM implementations. All three of the case studies indicated that as a result of establishing strategic objectives ahead of time, the resulting e-HRM implementations helped the firms realize their strategic objectives to support a cost-focused strategy while enhancing service.

The remaining studies in this category were conducted outside the U.S. and therefore in very different economic and institutional contexts. In one of the earliest studies of e-HRM in the UK, Ball (2001) surveyed small and medium sized firms in the UK to determine how intranets and expert systems were being used to support HRM activities. Ball's survey results suggested that in 1998, e-HRM was still being used to automate administrative transactions and not used as a tool to support more strategic decision-making. Similarly, in Europe, organizations seem not to be as strategically focused about e-HRM deployments as reported in the U.S. In an early exploratory case study of existing e-HRM systems in four large multinational and one large domestic organization based in Belgium, Ruël et al. (2004) noted that in these organizations, the links between strategic HRM and e-HRM outcomes were not clear and that instead information technology was being used to manage administrative transactions rather than to enhance strategic effectiveness. Strohmeier and Kabst (2009) conducted a macro-level study of the factors related to organizations adopting e-HRM across Europe, finding a positive correlation between strategic HR in organizations and the adoption of e-HRM. This finding provides some support for the organizational imperative perspective, although the relationship is correlational and not causal.

Two exploratory studies, one in Hong Kong (Teo, Lim, & Fedric, 2007) and one located in Greece (Panayotopoulou, Vakola, & Galanaki, 2007) examined reasons why firms used e-HRM. Both studies found the key reasons/predictors related to a desire to improve communication between HR and employees and between managers and employees. Teo et al. (2007) looked to see if innovation, organizational, and environmental characteristics of the firm would impact adoption of e-HRM systems. Findings suggested that the organizational characteristics were related to adoption while other strategic predictors such as competitive pressure were not.

In a more recent study Farndale et al. (2009) explored HR shared service centers (SSC) used by 15 firms located in the Netherlands. As Farndale and colleagues note, "Ultimately, the decision to create an SSC is largely a factor of corporate strategy. The decision to bring HRM administrative tasks into a single location to provide services across business divisions or locations indicates a certain desire on behalf of the organization to consolidate its field of operations." Interestingly, contrary to the authors'

expectation that the technology would free HR employees to spend more time strategically supporting line managers, they found the deployment of e-HRM resulted in less use of local HR generalists by line managers.

Finally one study from the micro-level perspective examined the relationship between attitudes toward the HR function and e-HRM. In a study in which attitude toward e-HRM was the dependent variable, Voermans and Veldhoven's (2007) study of employees of Philips, a Dutch multinational, found that perceptions of the quality of HRM as a strategic business partner predicted employees' positive attitude toward e-HRM. On the other hand, they also found if the HR function was expected to advocate for employee welfare, then this expectation was associated with a lower opinion of the e-HRM system.

The various studies reported here suggest a range of managerial reasons for implementing e-HRM. Few suggest that e-HRM is a way to specifically meet strategic HR objectives and evidence for this appears to occur largely in a U.S. context (e.g. Lengnick-Hall & Mortiz, 2003). In other international contexts, the relationship between strategic HRM and e-HRM appears more emergent than explicit. The research designs for these studies, however, are primarily based on qualitative data. Additional quantitative and longitudinal evidence is needed to support causal ordering implied by assuming an organizational imperative approach.

### 4.4.2. Does the value of a firm's human capital affect what HR activities are included in the firm's e-HRM configuration

One study combined the organizational imperative and RBV approaches to examine the value that eHRM could bring to the HR function with an eye toward enhancing competitive advantage. Parry (2011) used cross-organizational data from the 2003 Cranet survey to examine the relationship between various aspects of human capital and the use and sophistication of e-HRM systems. Firms in which HR took a more strategic role tended to use a wider range of eHRM activities. Firms that outsourced more HR activities tended to have more sophisticated eHRM systems, and interestingly, when line management performed more HR tasks, eHRM systems were less sophisticated. RBV was not directly tested in the study, as firm performance was not measured.

### 4.4.3. Does HR strategy include investing in e-HRM to conform to normative or regulatory pressures?

Particularly in non-U.S. contexts, regulatory regimes and cultural norms may influence how e-HRM is implemented. Combining the organizational imperative and institutional perspectives allow us to examine how interactions among organizational actors and their environment may influence whether or not an organization chooses to adopt e-HRM technology.

Olivas-Lujan and colleagues conducted two studies examining various cultural factors affecting implementation of e-HRM. Olivas-Lujan, Ramirez, and Zapata-Cantu (2007) case studies of 4 large Mexican multinationals examined how national infrastructure and culture impacted the implementation of e-HRM in globally competitive firms. They found that external global competitive pressures to improve HR's cost efficiency and strategic role trumped cultural preferences for more social or face-to-face exercise of HR's activities. These findings are consistent with other case studies which indicate when top management sets a strategic mandate, individual resistance to change is not supported (e.g. Lengnick-Hall & Mortiz, 2003; Ruël et al., 2004). Thus national cultural imperatives do not appear to play a strong role in coercing or changing how e-HRM was implemented. These findings are consistent with the empirical analysis conducted by Florkowski and Olivas-Luján (2006) in which they found evidence of mimetic-isomorphism pressures to use IT in their HRM activities among large firms. Analyzing adoption patterns over time in 216 firms located in the U.S, Canada, Ireland and the UK, they found that both internal contagion and external factors such as HRIT vendors and consultants significantly explained the pattern of e-HRM adoption over time. Differences across countries in how these factors affected adoption rates over time, however, were not found.

On the other hand, Strohmeier and Kabst (2009) found that companies located in former Eastern European countries were actually more likely to have adopted e-HRM than Western European countries. Hooi, (2006) examined a different set of internal factors when studying the adoption of e-HRM in small and medium sized firms in Malaysia, finding that employee attitudes, which are influenced by cultural norms, were partially responsible for the low rates of e-HRM adoption among the companies in the sample. However, direct comparisons were not made between the attitudes of Malaysian employees and those in Europe, Mexico, or the U.S. so we do not know if this represents an important difference in cultural norms.

Also, although cultural norms played a less significant role, Olivas-Lujan et al. (2007) found that differences in a country's technological infrastructure (e.g. Mexico) constrained one company's use of e-learning to enhance its employees' customer service skills and behaviors. Rather than use the internet to access remote business units, the firm had to use container trucks to transport its computer-based e-learning system to employees.

### 4.5. E-HRM as a process

The third category of technology research focuses on dynamic interactions between people (or organizations) and technology over time (Orlikowski & Scott, 2008). In this section, we examine the relationship between e-HRM and strategic HRM in which e-HRM emerges from a strategic HRM process. Overall, only seven of the 40 studies were found to use this approach to technology. Two papers incorporated the strategic evolution approach while three used an institutional theory perspective. Two papers that fell into this technology category had no discernible underlying strategic HRM perspective (Lukaszewski et al., 2008; Zhang & Wang, 2006).

### 4.5.1. How does the development of e-HRM change strategic HRM and how do adaptations in strategic HRM change e-HRM?

Dery and Wailes (2005) conducted a case study analysis of three firms that were implementing SAP to examine how implementation of this technology would affect the work performed by HR departments. They found that each of the HR departments reacted differently to SAP over time and that whether intended strategic outcomes were achieved depended on the

cultural norms of the user groups. Their primary conclusion was that the implementation of e-HRM technology alone does not make HR more strategic. The outcome depends on how the users of the technology, in this case primarily HR employees, interact and adapt to the technology and that intended strategic outcomes depended on the cultural norms of the user group. Wiblen, Grant, and Dery (2010), also using the case study methodology, found that the implementation of a standard HRIS package after a firm had used a customized HRIS package resulted in shifting definitions of talent management within the firm.

### 4.5.2. Does the development of e-HRM within an organization reinforce strategic goals, conformance with social norms or compliance with regulatory regimes?

Two case studies by Tansley and Newell (2007a,b) provided a detailed context for understanding the complexity of e-HRM implementation. They studied two different development teams to examine factors that facilitate realizing the intended goals of e-HRM. They found that implementation of the technology depended on political negotiations over competing self-interests rather than managing convergent goal-oriented rational behavior. Another case study by Tansley and Watson (2000) examined how strategic exchange processes impacted the individuals involved in an HRIS development project. These case studies clearly illustrated how social norms and coercive actions from multiple organizational actors could enhance or detract from the rational goal-oriented development and implementation of e-HRM.

## 5. Discussion

Using integrative synthesis, we examined primary research studies on e-HRM over the last 12 years to describe and evaluate the empirical evidence concerning the relationship between e-HRM and strategic HRM. Our integrative synthesis employed predetermined questions and selection criteria. Our questions were derived from a synthesis of relevant information technology and strategy theoretical perspectives. This evidence-based approach is especially useful with a field like e-HRM that is still emerging and has not converged on an accepted set of research paradigms or methods. Our evidence-based examination of e-HRM and strategic HRM relationships across 40 studies in peer-reviewed literature published over the last 12 years reveals several interesting themes and avenues for scholars to explore in future research.

In fitting our 40 studies into our framework illustrated in Table 1, we found several interesting patterns. First, e-HRM is still at an early stage when compared to either the general information technology literature or strategy literature. Information technology research has evolved over time away from taking a simple deterministic perspective to treating technology in organizations as a more nuanced concept that evolves over time and is context dependent (Orlikowski & Scott, 2008). In our review of e-HRM studies, the majority of studies do not appear to reflect this same evolution, with only 18% of the studies treating technology as an emergent and complex construct. Instead, the clear majority of studies applied a deterministic perspective. However, these studies also generally concluded that the phenomena being studied were more complex and context dependent.

Similarly in the strategic domain, e-HRM studies reflected very early stage strategic HRM perspectives. Either the study's underlying theoretical perspective loosely represented an I/O economic strategic perspective, or no theory was evident and the strategic nature of e-HRM simply assumed. Consistent with the early stage of these cumulative e-HRM studies, we also noted that while many of the studies suggested that e-HRM would be a valuable resource, only one study explicitly adopted a RBV perspective and then did not assess the impact of eHRM on organizational performance. This may be because some scholars argue that technology is not a resource that meets the necessary criteria for competitive advantage because it is too easily imitated (Barney, 1991). More recently, however, research suggests that view may depend on the type of technology, where some technologies are easier to imitate than others (Ray, Muhanna, & Barney, 2005).

Relatedly, no studies directly examined the relationship between e-HRM adoption and any kind of organizational performance measures such as competitive advantage, organizational performance, reduced costs, or improved HR outcomes such as increased human capital, reduced turnover or increased organizational commitment or job satisfaction. Why such gaps in the literature exist is perplexing. It may indicate a problem researchers face in gaining access to macro-level data. It may also be that e-HRM investments are more symbolic and therefore organizations fail to track measurable outcomes (Hussain et al., 2007; Ruël et al., 2004). It may be organizations believe vendors' claims that e-HRM investments are strategically important and therefore fail to verify this independently. Vendors may also have proprietary datasets that demonstrate this relationship which have not and cannot be published in a scientific forum. Clearly there is a need for more empirical evidence concerning this claimed relationship, particularly given the size of investments in e-HRM that are currently undertaken by many organizations (e.g. $241 per employee (CedarCrestone)).

As developed in our literature review, from a theoretical perspective, our evidence-based framework suggests that the nature of the relationship between e-HRM and strategic HRM depends on the assumed theoretical perspective. A majority of the studies in this review took a technological deterministic perspective, positioning e-HRM as an independent variable predicting outcomes such as employee perceptions of HRM services, improved HR processes, and so on. Interestingly, our review of the evidence suggests that despite much of the rhetoric in the popular press or vendor advertising claiming that e-HRM makes HRM more strategic, there is little scientific evidence to support this claim. Of 40 studies that met review criteria, only six studies tested this particular relationship. None of these studies involved research designs that could substantiate causal direction. Further, of these six only three were at an organizational level of analysis and only one of these two found a significant and positive relationship between e-HRM and strategic HRM. Three studies explicitly examining perceptions of e-HRM and strategic HRM conducted at the individual level of analysis also provide mixed results.

None of these studies specifically examined any strategic outcomes such as fit with business strategy, improved employee productivity, or better performance. All focused on perceptual measures of e-HRM and of strategic HRM effectiveness. In sum, the evidence in support of e-HRM as an independent agent creating a positive change for HR is extremely weak.

The evidence supporting the organizational imperative perspective on technology is slightly more compelling. Here cumulative evidence suggests that e-HRM is an outcome of strategic decision-making by senior managers. Interestingly, much of this research is on organizations outside the U.S. In organizations outside of the U.S (e.g., the UK, Mexico, Belgium, the Netherlands, Greece, Eastern Europe, Sri Lanka, and Hong Kong), however, e-HRM is not implemented to achieve typical strategic outcomes (e.g. competitive positioning or performance) but primarily to improve employee welfare such as increased HR services and better communication.

Although few studies treated e-HRM as a process rather than a construct, either as an independent or dependent variable, this is an emerging area of research that could shed more light on the relationship between e-HRM and strategic HRM (Orlikowski & Scott, 2008). The descriptive evidence from these case studies suggests an implementation process that is complex and contested. The process of selecting and implementing e-HRM reveals the importance of senior managerial support, having clear strategic HRM objectives going into the implementation, and knowing how to deal with employee resistance to changing routines. Our results therefore suggest that a fruitful avenue for future research is to consider taking an evolutionary strategic perspective, to collect evidence over time and to consider important contextual variables such as competing interests, social, cultural, and infrastructural constraints.

Reinforcing the notion of e-HRM as a process whose outcome is not completely predictable, another common theme in many of these studies is the importance of contextual factors on outcomes of interest. Even when these contextual factors were not the specific focus of the study, several researchers concluded that the relationship between e-HRM and strategic HRM depends on the degree of involvement in design and implementation of e-HRM (Alleyn et al., 2007; Ruël et al., 2007); the perceived usefulness of the e-HRM technology (Marler et al., 2009; Voermans & Veldhoven, 2007; Marler et al., 2006); degree of managerial involvement and political power of implementation team members (Marler et al., 2009; Tansley et al., 2001), and social coercive forces and national contexts (Florkowski & Olivas-Luján, 2006; Olivas-Lujan et al., 2007; Strohmeier & Kabst, 2009). Strohmeier and Kabst (2009) argued that national context directly affects adoption and use of e-HRM due to national differences in human resource management laws, education systems, industrial relation systems, legislation addressing storage and use of electronic data, and level of economic development.

### 5.1. Gaps and future research

Our examination of the current published empirical research reveals at least four gaps in this research stream. The first noticeable gap in the literature is the somewhat limited rigorous application of theory to the research questions. Almost a third of the studies we reviewed were exploratory and lacking specific theoretical foundation to guide the research. We need a stronger theoretical foundation for e-HRM research in general to help make sense of the literature, strengthen the research conducted, and facilitate effective accumulation of knowledge. The theoretical perspectives described in this paper and summarized in Table 1 should help researchers to best identify the appropriate strategic perspectives for their topic of study.

A second gap we note is the lack of attention to strategic outcomes. We found there was generally an assumption of the strategic value of the e-HRM system, but few studies directly examined the assumption. In our opinion, this relationship is not well enough established to consider it a well-founded assumption. Thus, future research designs should consider where possible the measurement of strategic outcomes such as better knowledge management, more productive human capital, better organizational performance and so on. The research questions listed in Table 1 may also help provide a guide for developing studies that can help address this important, core concern of how e-HRM may actually affect firm performance.

The third gap we identified in the literature is a lack of studies that apply or empirically examine e-HRM from a resource-based view. Although early RBV researchers discounted information technology as a resource with characteristics necessary to add value to an organization, recent research challenges this generalization (Ray et al., 2005). Developing value from e-HRM should be possible if the organization uses e-HRM to acquire and develop superior human capital and to produce organizational knowledge, social networks that promote information sharing, and organizational processes that produce innovative responses in competitive markets (Marler, 2009). Empirical work is greatly needed to test these theoretically-supported relationships.

Finally, more macro-level and longitudinal quantitative studies are needed. Although causal ordering depends on espoused theoretical perspective, our review of the current empirical e-HRM literature suggests the field's approach to data collection and analysis needs to change to truly answer questions about the relationship between e-HRM and strategy. Of the 26 studies that were quantitative in nature only 11 provided evidence at the macro-level of analysis and only ten of the studies explicitly measured the existence or nature of strategic HRM. Only four studies outside of the case study approach included longitudinal data. Cross sectional analyses can only establish a correlational relationship between e-HRM and strategic HRM. None of the studies reviewed here provided appropriate empirical support for establishing causal ordering. This makes it difficult to disentangle issues of causality in the relationship between e-HRM and strategic HRM. Certainly, true experimentation is difficult to achieve in organizational settings, particularly when looking across multiple organizations. It is unlikely we could ever find an industry group that would allow random assignment of e-HRM systems. However, a quasi-experimental approach (Cook & Campbell, 1979) looking at staggered implementation of e-HRM across divisions or work units may be possible and could provide useful evidence at that level.

## 6. Conclusion

In conclusion, this evidence-based review of the intersection between e-HRM and strategic HRM has led us to three primary findings in the literature: 1) there is very limited systematic empirical evidence concerning whether e-HRM is related to strategic outcomes, particularly organizational performance; 2) there is considerable evidence indicating contextual factors are likely to be key moderators of the relationship between e-HRM and strategic HRM outcomes; and finally, 3) there are considerable gaps in the cumulative literature that need to be addressed in order to provide strong guidance to practitioners. There are many opportunities to continue to refine this important area of research, and we believe this review provides both an empirical foundation and theoretical framework for moving ahead.

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