

# A Delphi Study on E-HRM: Future Directions

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***Abstract.** This paper explores empirically future developments in information and communication technology (ICT) and its implications for human resource management (HRM). The paper applies the Delphi method and draws on a panel of anonymous experts comprising e-HRM academics from Europe and e-HRM practitioners from Finland. Findings indicate that developments in social media are believed to have several major implications for HRM in the future.*

**Keywords:** E-HRM, ICT, future studies, Delphi method

## 1 Introduction

*No one can predict the organization of the future. No one can predict the course of the HR profession. No one can predict how HR practices will change in the future. Thinking about the future, however, helps us to prepare it. Thinking about the future may lead to innovative insights. Thinking about the future may help to change today's HR practices in positive ways.* [65] Much of the change today and even more of it in the future will be driven by information and communication technology (ICT). This is becoming more and more the case for human resource management (HRM) processes as well. According to [17], HRM adopted ICT somewhere between the late 1970s and early 80s and was used for administrative tasks like payroll solutions. From the early 1980s the focus has shifted from single applications to more complicated HR portals. A survey conducted in 2009 -2010 reported companies broadening the scope of their electronic HRM applications [11], it seems that companies are ready to invest more in e-HRM technology in order add value.

Considering the fact that practitioner reports provide evidence that e-HRM is a common feature in organizations [12], e-HRM research still remains silent about changes in HRM practices due to the introduction of e-HRM. Studies generally examine single e-HRM applications, focusing on the changes in HRM processes and functions following automation [7]; [59] and reliable empirical data on the consequences of e-HRM are lacking. According to [60] *research is asked to provide a general understanding of e-HRM consequences that support practice in its decisions and shed light to (on) the potential negative consequences of e-HRM adoption for various stakeholders.* In addition, [54] calls for e-HRM research to look at *the consequences of technical developments and process streamlining for the design and conduct of international HRM activity in companies.* This study tries to answer these and other similar calls for research [53], [54], [59] by applying the futures perspective and extracting expert opinion about future developments in ICT and their implications for HRM.

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Overall, future studies within the field of HRM have not received much scholarly inquiry compared to the ICT field [46]. Management studies using the Delphi method have focused on future tools used in corporate management [51] and the future of knowledge management systems [46]. The Delphi method has also been used as a more practical business approach [2]; [15]; [25]. Indeed, it seems that the Delphi method has been applied and critically discussed most in studies on healthcare (see e.g. [6]; [21]; [27]; [35]; [41]; [42]).

The scattered evidence concerning HRM future studies varies from the field of strategic HRM [30] towards developing new tools for HRM futures analysing [49] and survey predicting future HR trends [22]. Moreover, Delphi studies in HRM include human resource development (HRD) [40], country-specific studies [33] and a workplace stress study among HR professionals [34]. According to our search from scholarly databases, published books, various e-HRM conference proceedings, latest HRIS reviews [39]; [47], e-HRM review [59] and review on Delphi studies [46] future studies in the field of e-HRM are non-existent. This is somewhat alarming as future directions are extensively and successfully studied in other disciplines. We suggest this method could contribute to e-HRM as it has contributed to other streams of business research during last decades.

In light of the above, this paper aims to identify key future developments in ICT between 2010- 2015 and their implications for HRM. More specifically, the study investigates implications for three aspects of HRM – how HRM is organised and delivered, the roles played by HR, and the knowledge and skills needed by HR professionals. The implications for HRM in multinational corporations (MNCs) and the identification of additional unexpected ICT developments that might influence HRM were also studied. The contribution of this cross-disciplinary study can be argued on three fronts. Firstly, based on assumption that research lags behind the use of ICT in business, this research tries to be proactive in predicting ICT implications for HRM. Secondly, this study raises debatable issues for the integration of the futures' conceptual frameworks and theorizing future research questions. Finally, this research offers a basis for the development of HRM strategies and policies by practitioners based on the trends identified.

The next section introduces the concept and history of e-HRM and summarises the current debate about the extent to which e-HRM is having or will have a 'transformational' impact on HRM. Future studies in general and the Delphi method are then discussed, which leads into the description of the present study's data collection. Following the presentation of the study's findings, the final section concludes with some managerial implications and areas for further research.

## **2 E-HRM**

The term e-HRM has been referred to with different labels. For example, alternatives to e-HRM in the academic literature include, virtual HRM [29], web-based HRM [50] and human resource information systems HRIS [47]. The concept of e-HRM has also been defined in several ways. From the 1980s "specialized information system within the traditional functional areas of the organization, designed to support the planning, administration, decision-making, and control activities of human resource management" [17] to widely used definition from [59] "planning, implementation and application of information technology for both networking and supporting at least two individual or collective actors in their shared performing of HR activities". This research defines e-

HRM as “an umbrella term covering all possible integration mechanisms and contents between HRM and Information Technologies aiming at creating value within and across organizations for targeted employees and management.” [7]. Whilst the term HRIS is sometimes used interchangeably with e-HRM, we distinguish between the use of ICT in HRIS and e-HRM in line with [38]. Whereas HRIS refers to the automation of systems for the sole benefit of the HR function, e-HRM is concerned with the application of internet and web-based systems, and more recently mobile communications technologies, to change the nature of interactions between HR professionals, line managers and employees from face-to-face relationships to ones that are becoming increasingly mediated by technology [38].

The actual business case for the adoption of e-HRM technology has been argued on number of fronts. For example, e-HRM can increase efficiencies by reducing HR transaction costs and headcount. E-HRM can also substitute physical capability by leveraging digital assets, i.e. HR information can be used flexibly on an infinite number of occasions at little or no marginal cost. In addition, the effective use of integrated e-HRM systems can transform the HR “business model” by freeing up the HR function to provide strategic value to the business that it previously could not do [31]. Furthermore, organization can benefit from improved cross-group learning and knowledge sharing practices through a common information base where HR staff can benefit from improved career development. Finally, there can be better customer satisfaction through better service specification and overall better management of information [8]; [60].

The benefits of e-HRM have been studied to some extent and [7] suggest halting studies about cost reduction and a ‘magic’ transformation of an HR department into a strategic unit because of the introduction of e-HRM assuming organizations are definitely silent whether their HR departments are more strategic because of the e-HRM. To support this, [37] reports that a administrative HR function is unlikely to become more strategic with the introduction of e-HRM. On the other hand, e-HRM can become more strategic as a consequence of an existing strategic HR function. In general, it seems e-HRM literature often draws on managerialist rhetoric or ‘pro-innovation bias’ [59], about the expected ‘transformational’ impact, a debate which has been going on since 1980s.

## **2.1 Introduction to e-HRM eras**

In this section we discuss trends in the past in order to highlight the kinds of things that might be important in the future. One can analyse the historical trends of HR from different viewpoints: the evolution of HRM as a professional and scientific discipline, as an aid to management, as a political and economic conflict between management and employees. Since the scope of this article is in the field of e-HRM and early developments in this field began late 1970s and early 1980s, we will examine the developments of HR and ICT since 1980s.

The period *from 1980 to 1990* has been described as the *cost-effectiveness* [26], *polite and police* [18] and *communication* [65] era. During this period HR had four core activities which were staffing, development, appraisal and rewards [65] and there was growing realization that people costs were a significant part of company budgets, some companies estimating them being 80% of their total costs which led to the need for HR to justify its existence and the overall functional focus shifted from employee administration to employee development and involvement. To improve effectiveness and efficiency in terms of service delivery, cost reduction and value-added services, HR departments came under pressure to harness technology that was becoming cheaper and more powerful [26]; [18].

During the early 1980s payroll vendors began to emerge, offering technology and in some cases the possibility to outsource the personnel function and promoting ERP solutions which could combine personnel data and payroll applications [3]. In the late 1980s small- and medium-sized firms could start to afford computer-based HR systems that were run by increasingly user-friendly microcomputers that could be shown to be cost-effective. [26] [36] described the automation of HR tasks and processes during the mid-1980s as being the first steps which attracted the attention among HR scholars. Research topics covered ergonomics and usability, job design, organizational design and the role of users. In terms of academic interest, during late 1980s attention turned to the phenomena of textualization information and concerns about spiralling IT costs [36].

The period from 1990 to 2000 has been described as the era of *technological advancement and the emergence of strategic HR* [26] or the *partner phase* [18]. The economic landscape underwent radical changes throughout the 1990s with increased globalization, technological breakthroughs (particularly internet-enabled web services) and hyper competition. HR process re-engineering exercises became more common and more frequent with several initiatives such as right-sizing of employee numbers, reducing layers of management, reducing bureaucracy, autonomous work teams and outsourcing [26]. The personnel department was transformed into the ‘human resources department’ and the role of HR was moving beyond automated payroll and benefits transactions to, for example, recruiting talent and talent management via HRIS solutions [18]. However, [3] recognizes HRIS falling short of their promised visions during the “pre-Windows” era. Still, these developments did lead to the HR or workforce scorecard [4]; [24] as well as to an increased emphasis on return on investment of the HR function and its programs [10]. Companies were able to offer employees a way of connecting their own HR information via the intranet and implement e-HRM strategies by streamlining HR processes. In short, HRIS applications enabled operational efficiency, cost reductions and control [3].

In the late 1990s vendors began to offer basic “HR portal” solutions which would bring together in one place tasks relating to career decisions, personal information, and personal development. [18] argues this phase putting HR in the position of not only helping to run the business better, but also of partnering with other business divisions. According to [36] the growth of internet, as the main technological development of this era, opened the way to connect computers across countries and ERP systems created the opportunity to integrate databases “into a seamless whole for real-time transaction processing and decision making”. The ‘final stage of total digitalization’ in the 1990s arrived when HR professionals and ICT specialists joined forces and developed electronic information systems “that moved HR decision making from drawers to computer” [31]. In addition to previous developments, outsourcing became a hot topic during the late 1990s in search for strategic partnerships [36] – a theme that takes us to the next era.

Finally, from the year 2000 to the present, [66] argues the beginning of the 21<sup>st</sup> century the purpose of HR has been to “create value” for key stakeholders (e.g. employees have right set of competencies, employees are committed to organization and communities in which organizations participate have more confidence in the organization’s ability to deliver on its social responsibilities) In terms of e-HRM, [18] describes this *player phase* as aiming for “creating strategic value”. The 21<sup>st</sup> century HR function was required to measure its impact on productivity, data mining and making decisions about talent. Technical solutions were often outsourced and HR’s technical solutions supposed

to be strategic which then enabled a more productive and focused workforce. During this era it has been common to adopt a portal strategy that potentially enables collaboration across and outside of the business. During this era HR has increasingly turned to talent management with integrated software which combines recruiting, maintaining talent pools, personal data and information on personal networks; and to greater and greater extents doing all this wirelessly.

Companies in the 21<sup>st</sup> century can be broadly said to have adopted at least one of the following e-HRM technologies: HR functional applications, integrated HR suite applications, interactive voice responses (IVR), HR intranet applications, Employee Self-Service (ESS) and Manager Self-Service (MSS) portals, HR extranet applications or HR portals [19]. [56] suggests technological changes influencing e-HRM during the end of this decade will include intelligent self-service systems, interchangeable devices, cognitive software, nanotechnology and the convergence of the internet, digital TV and the wireless technology communication into “vibrant network”.

Indeed, social media, or “web 2.0” as a “vibrant network” has been suggested by some scholars [28]; [20]; [39] to be the potential technology that will have a major impact on HR. According to [20] the term social network has been widely used in the web context in recent years. It is often associated with the term Web 2.0. Whereas Web 1.0 fitted into a scheme of “author to readers”, Web 2.0 tends to reduce hierarchies by allowing readers to become real actors and be the centre of information exchange. In terms of social media and HR then, the potential tools for HR are, for example, blogs, social networks (e.g. LinkedIn), virtual worlds, video platforms (e.g. Youtube) and wikis [28]. Research concerning social media and HR seems to be non-existent [39] except for a few preliminary studies focusing on social media and recruitment [28]; [39]. The lack of research regarding social media is surprising as the report from [11] argues that social media is going mainstream in corporate world. Other recent consultancy surveys also support this view [43]; [44].

To sum up, this historical analysis of trends showed the role of e-HRM in the company has changed over time from being primarily concerned with routine transactional HR activities to dealing with complex transformational ones. Transactional activities are the routine bookkeeping tasks, for example, changing employees address whereas transformational activities are those action that are intended to “add value” (e.g. training programs) [26]. These transactional and transformational activities result in variety consequences, a debate to which we now turn.

## **2.2 Consequences of e-HRM: current debates**

Consequences, especially positive consequences (such as reducing costs and speeding up processes) are the foundations of e-HRM adoption and therefore an important topic to study. At the time of writing there appears to be little consensus on the consequences of e-HRM. For analysing consequences we will review the work of [57]; [60] and [53] - [54].

[57] suggests e-HRM can result functional consequences such as increasing organizations ability to access, collect and disseminate information. In addition they may give individuals greater access to information about job opportunities, benefits and performance feedback. Nevertheless, [57] argues such systems may lead to a number of dysfunctional consequences. For example, e-HRM may decrease social interactions and negatively affect the quality and accuracy of information about organizational expectation, incumbent performance and compensation. In addition, they may decrease

the degree of perceived control of incumbent and increase the degree to which the systems are viewed as invasive of privacy. As a result system acceptance may suffer, leading to reduced effectiveness. Related to [57], [56] reviewed the functional and dysfunctional consequences of using e-HRM to attract, select and manage the performance of employees. The conclusion was that many e-HRM systems are developed Western cultures and consequently the HR processes inherent in these systems are rooted in Western cultural values (e.g. meritocracy, individualism). As a result, e-HRM system may be less effective when used in nations with different cultures.

Additionally, [60] views consequences as used information system (IS) potentials. In terms of origin of consequences, it is supposed that there is no single way of using a given HR system but a spectrum of usage possibilities that for instance differ in intention, intensity, and skilfulness among a large range of other aspects. Indeed, regarding whether e-HRM adoption result is an 'innovation or irritation' [50] depends on where one stands. For example, HR headcount reduction, which is often the case for e-HRM adoption, can have potentially damaging consequences for knowledge transfer, line managers expecting personal HR service, and for those HR staff displaced by the reduction [38] According to [60] consequences are divergent there exists possibility to choose from a usually broad spectrum of offered usage possibility that is generally made responsible for divergent consequences. Furthermore, consequences change dynamically. While the technological contribution to consequences remains constant over a period of time, i.e. as long as the corresponding information system is not modified, the organizational contribution of occurring consequences, i.e. the kind of usage, of course can change.

[60] suggests consequences being (un-)expected and (un-)desired. Often, actual occurring consequences are desired and expected. For instance, the desired consequences of cheapening and accelerating recruiting system can be anticipated in the run-up to using a certain recruiting system. As argued before, these expected and desired consequences form the central reason for using e-HRM systems. However, unexpected and undesired consequences may also occur. For example, intended misuse of individual users may constitute a serious variety of unexpected usage. Intended misuse can range from smaller fraudulences such as fudging one's own attendance data within a self-service system to malicious sabotages such as launching viruses that attack the information system. This kind of usage will also yield unexpected and undesired results. In terms of researching the consequences, [60] suggests consequences research based on the suggested concept implies several complications and adds complexity to consequences research; therefore we did not specify this concept further to respondents participating Delphi panel. In regards to this concept, we simplified our focus on future consequences to HR staff and HR function in MNCs and in methodological terms our purpose was to keep the questions as simple as possible.

According to [53] the main change has been that HR now considers whether organization has good HR systems in place and whether this gives them capability to deliver people-related services without them having to pass through the hands of the HR function. However, implementation has been fraught with problems because the process of implementing e-HRM across countries is under-theorized and especially because the e-HRM consequences for HR managers and HR function are not well understood [54]. With this in mind [53] presents four ICT developments are impacting companies HRM success and potential unique competitive advantage; the advent of shared service thinking, the removal of various intermediaries in the delivery of HR services, the

continued adoption of ERP system and finally, the e-enablement of HR service delivery and more towards self service models. [53], [54] argue these developments will have significant impact on existing international HR functions and HR personnel's work and suggest that e-enablement of HR in MNCs can consequence in fragmentation HR function.

For global 'e-enabled' HR in MNCs then, [53] suggest the following developments will take place. Firstly, e-enablement of more transactional work HR work and more sophisticated HR practices such as parts of the selection process or the appraisal and performance process. Secondly, current online access rights and limited update rights used as a stepping stone to managers authorizing pay changes and performance management data and to employees providing not only actual data about their preferences but also more dynamic and interactive information around skills and personal aspirations. Thirdly, computing power being directed at developing what are called "proactive pull technologies" (systems that allow individuals to see the consequences of their decisions, of decision-support mechanisms to assist managers in areas of discipline, training and selection) and finally, mass customization of terms and conditions as variations and combinations can be recorded and monitored. It is debatable whether these developments become real or not, but we argue that at least some of the developments can be scientifically predicted with the use of Delphi tool, which is presented next.

### **3 Method**

#### **3.1 Delphi Study**

Overall, the purpose of the forecasting Delphi study is to obtain consensus from a panel of experts using repeated answers from questionnaires and controlled feedback. The core of the Delphi technique is that a pool of experts deals with a certain problem that lies in the future. For example, forecasting Delphi could be used to forecast future economic, social, labour and organizational conditions to help organization design HRM programs for the next five year or more [34]. There are also variations like policy Delphi where only opposing views are debated and consensus is not necessarily the desired goal [63]; [64].

In other words, the method used allows the grouping and subsequent analysis of the ideas of experts in order to gain a closer understanding of issues that would not be offered by other qualitative or quantitative studies. The reasons for conducting Delphi study has been summarized by [16]. Firstly, there is no other group communication process than can elicit the same data; secondly, the researcher can identify and access the "experts" to discuss this problem; and finally, the researcher can forecast the type of results that may be obtained from these experts through the Delphi method [32], [68]. In addition, [63] identifies four possible research objectives that call for the use of Delphi studies. Firstly, Delphi studies can be used to explore or expose underlying assumptions or information leading to differing judgments. These can also be used to seek out information which may generate consensus on the part of the respondent group. The third use of Delphi studies relates to the correlation of informed judgments on a topic spanning a wide range of disciplines. Finally, Delphi studies are valuable in educating a respondent group as to the diverse and interrelated aspects of a topic.

There are no set rules for Delphi studies [18]; [27] although they are characterised by a structured process of questionnaires or rounds of discussion until a group consensus is reached [6]; [21]. As mentioned earlier, these questions are discussed by a panel of

“experts” or oracles, hence the Delphi name. The popularity of this method arises especially because it can be conducted semi-anonymously amongst respondents who are geographically dispersed. For example, from the field of public relations research, [61] study covered 13 nations in Asia-Pacific and study by [67] included between 22 and 25 European countries, therefore method it suitable for this study’s purposes as well. A Delphi study typically has two or three rounds of contact with the experts in which comments are first elicited, then summarised and returned for further discussion. The reality is that most Delphi studies are completed by a third and final round because of time constraints, participant fatigue, funding for the research and the design of the study [27]. Similarly to [46], Delphi studies can include follow-up telephone interviews with each panel member.

The experts, panel members, are selected for the perceived expertise they can contribute on the research question. According to [51] panel members must be selected from stakeholders who will be directly affected, experts with relevant experience and facilitators in the field under study. In addition, [55] suggests the composition of the panel relating to the validity of the research results. Panel size can range from few to fifty of even hundred [54]. Research on Delphi performance has suggested that groups with 10-20 have had more accurate predictions than larger 50 + member groups. [9]; [13] In addition, some studies have found errors decreasing with larger groups [35]. Panel members are always anonymous. The various reasons for this include: an expert making a commitment to a stand then being reluctant to change it, the different academic standings of the participants, not losing face, and elimination of the usual biases found in present society such as gender, racial, and age biases. Anonymity of responders allows consensus to take place without the undue influence of rank, power, personality or persuasive speaking which is common to group meetings [9]; [16].

### **3.2 Data Collection**

The process used in this study involved 24 experts: 11 HR managers from 11 organizations, and 13 academics from 11 universities around Europe. In selecting the respondents, the main criterion used was to find respondents who have expertise on e-HRM systems. More specifically, most of the academic members held position of assistant professor or above and have published e-HRM related research in international journals. Practitioners were mostly e-HRM consultants with business expertise of more than five years.

We followed the approach of [40]; [52] and [69] who distinguished three separate stages with answer ranking described in Figure 1. The first stage is labelled as the brainstorming phase, where respondents generate lists of relevant items by replying to research questions. In the present study, after collecting contact information in academic seminar and professional e-HRM future workshop, respondents were sent an e-mail invitation to participate in the study which also contained an explanation of the process. The e-mail also contained the Delphi instrument where respondents were asked to respond to the following six open-ended questions.

Q1: What development(s) in ICT will influence HRM between now and the year 2015?

Q2: What implication(s) will these developments in ICT have for how HRM is organised/ delivered in firms between now and the year 2015?

Q3: What implication(s) will these developments in ICT have for the role played by HR between now and the year 2015?

Q4: What implication(s) will these developments in ICT have for the kinds of knowledge and skills needed by HR professionals between now and the year 2015?/

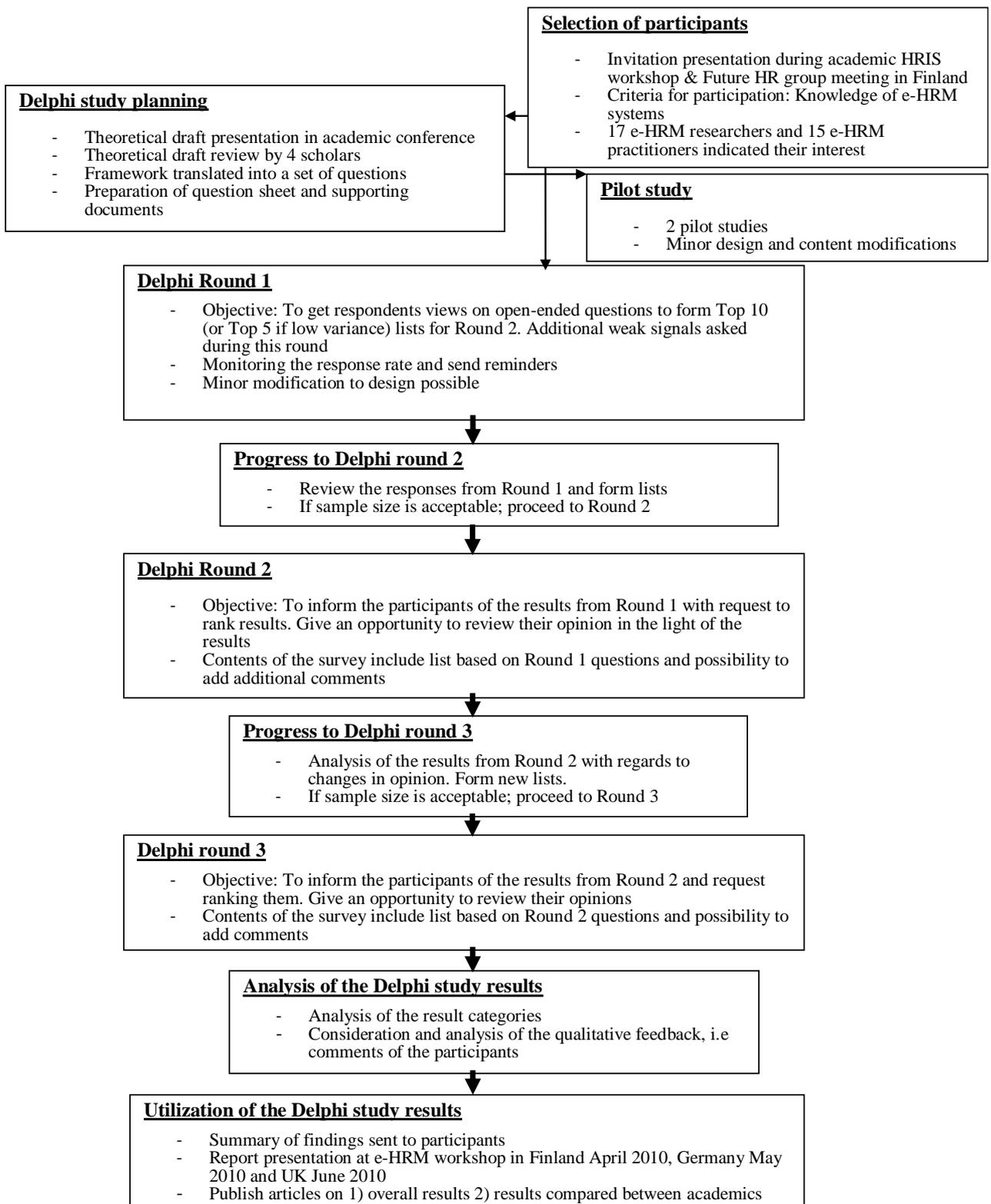
Q5: What implication(s) will these developments in ICT have for HRM in the context of multinational corporations between now and the year 2015?

Q6: Finally, please describe 1-3 unexpected ICT developments that might influence HRM between now and the year 2015?

A three-week time frame was assigned to round one and a reminder letter was sent after the two weeks. Final responses arrived five weeks after invitation during December 2009 and 78% of invited respondents responded to the first round. At this stage, data was analysed by grouping similar items together. Duplicates were removed and data was reviewed by three independent researchers not participating as panel members.

The second round was conducted during January 2010. [52] and [69] describe round two as the narrowing down phase, where respondents were asked to identify items which they considered to be most important from responses to stage one. The panel members were contacted individually by e-mail with a direct URL link to the round two survey site, an explanation of the procedure for responding, and the time line for this round. In round two, the issues raised in round one were presented and the participants were asked to rank the importance of these issues and introduce additional ones after reviewing their peers' suggestions and rationales. For rankings, the participants were asked to rank five responses which they considered to be most important from responses to stage one. Response rate for round two was 100 % (n=24).

In the present study, the relative importance of each of the items in the instrument was calculated according to the indications of the respondents and all the items formed the basis for round three. [52] and [69] suggests the third stage as the ranking stage where respondents are asked to rank items in order of importance from responses to stage two. Third round was conducted during March 2010 and 23 respondents participated (response rate 96 %) and ranked the five most important items based on round two rankings. The analysis of this round forms the basis of the results and findings section that follows, 5 being highest value and 0 lowest. Kendall's Tau ( $\tau$ ) (-1 = total disagreement, 1= total agreement) was used to measure the degree of consensus among respondents between round two and three [40].



**Figure 1: Delphi process**

## 4 Results and findings

RQ1. *What development(s) in ICT will influence HRM between now and the year 2015?*

Of the 23 respondents who completed the final round, the increased use of Web 2.0 / social media ( $\tau = 0.148$ ) was the highest ranked response. Increased use of mobile communication technology ( $\tau = 0.219$ ) was ranked second and increased interaction between audio and visual technologies ( $\tau = 0.302$ ) was ranked as being the third most important development in ICT influencing HRM between now and 2015 (see Table 1). Respondents had broadly similar views during regarding the importance web 2.0 / social media (quotations presented are from round 2). For example:

*“Social media are already influencing HR and I think that it is just the beginning. HR department must adapt to this phenomena.”, researcher*

*“Web 2.0 is becoming much more widely diffused and its advantages along with mobile will converge to produce a new HR business model”, practitioner*

Technological development	Mean rank (5=highest)	Overall rank	Standard deviation
Increased use of Web 2.0 (social media)	4,3	1	1,55
Increased use of mobile communication technology	3	2	1,53
Increased interaction between audio & visual technologies	1,82	3	1,3
Increased use of SaaS (software as a service)	1,56	4	1,72
Shift from document centric to communication centric	1,34	5	1,52
Increased data processing speed	1,08	6	1,44
Virtual worlds become common practice	1,04	7	1,22
The possibility to easily change the database and update information	0,69	8	1,52

Note: Top 3 Kendall's  $\tau = 0,223$

**Table 1. Development(s) in ICT that will influence HRM**

RQ2. *What implication(s) will these developments in ICT have for how HRM is organised/ delivered in firms between now and the year 2015?*

The three most important implications (see Table 2) were that, firstly, social media and collaboration will fundamentally change the competence and knowledge management paradigm ( $\tau = 0.3$ ), secondly, HR departments will become more virtual (fragmented nets of changing external providers, HR professionals, line managers and employees) ( $\tau = 0.337$ ). Thirdly, HR will become more decentralized by giving more responsibilities to local managers and employees with negative Kendall's tau ( $\tau = -0.118$ ) which means respondents disagreed on this ranked topic. Respondents commented most ranked answers with following comments:

*“Social media utilization will be broad and deep. This is revolution, not evolution! ”, practitioner*

*“There are parallel centralization/decentralization trends. Many tasks of administrative HR performance by in-house HR function will move to line and centralized/outsourced services. There has been talk about this for the last 15 years. It is slowly happening. Number 1 may describe the direction, but 2015 comes fast. Fundamental change in paradigm requires more time. If the statement had been 'social media and collaboration*

*start changing competence and knowledge management paradigm' I would strongly agree", researcher*

*"Major changes in the HR and how it will be perceived is done by business. Majority of companies still try to solve the same issues with the same tools and behaviors as today. However, agile companies (10%) have drastically gained competitive edge in implementing technologies to automate HR business and bring business intelligence reporting tools close to business users (executives, managers, HR, controllers etc.)", researcher*

Implications for how HRM is organised/delivered	Mean rank (5=highest)	Overall rank	Standard deviation
Social media will fundamentally change management paradigm	2,82	1	2,2
HR departments will become more virtual	2,78	2	1,95
HR will become more decentralized	2,65	3	1,77
A mostly automated HR function	2,13	4	1,42
Increased devolution of HRM to the line	1,52	5	1,44
Completely bought HRIS service, managed by provider	1,08	6	1,59
HR will be more centralized	0,65	7	1,52
ICT developments as such will not have an impact on HR	0,47	8	1,44
HRM will become more and more a managerial burden	0,43	9	0,94
Nothing much changes, HRM issues are not easy to measure	0,3	10	1,06
SaaS will enable but also necessitate a different HRM approach	0,26	11	0,86

**Note:** Top 3 Kendall's  $\tau = 0,173$

**Table 2. Implication for how HRM is organised / delivered in firms**

**RQ3. What implication(s) will these developments in ICT have for the role played by HR between now and the year 2015?**

Responses to implications for the role played by HR (Table 3) indicate, firstly, conventional HR departments seem to lose some of their influence, recognition and resources and for HR departments that open up to ICT developments power and recognition will increase ( $\tau = 0,166$ ). Secondly, HR will drive things like organizational agility (through performance management, learning and collaboration) while traditional HR administration is already tackled and ready for optimization ( $\tau = 0,029$ ) and finally HRM practices will be more useful for line managers; new cadre of middle and senior managers capable and prepared to handle people issues ( $\tau = 0,004$ ).

*"HR activities will differentiate in companies more and more. There will be advanced HRs but unfortunately will not do progress at all.", researcher*

*"There are several HR functions that do now believe that a new generation of line managers are people-centric enough to understand that they need to take responsibility for these issues. Much has been said about the capability of HR Business Partners. Everyone knows that it is the capability of line managers to handle these issues on which the overall success ultimately depends.", researcher*

Implications for the role played by HR	Mean rank (5=highest)	Overall rank	Standard deviation
Conventional HR departments will lose their influence	2,61	1	1,92
HR will drive things like organizational agility	2,52	2	1,8
HRM practices will be more useful for line managers	2,26	3	1,88
Higher employee satisfaction with HR services	1,82	4	1,55
Not much will change, 2015 still talking strategic partner	1,43	5	2,04
HR will play active role in the design & development of ICT	1,39	6	1,75
Not many implications; HR will still want to work with people	0,95	7	1,52
HR will become a strategic partner	0,78	8	1,27
ICT platforms lead to a HR information market places	0,47	9	1,08

Note: Top 3 Kendall's  $\tau = 0,066$

**Table 3. Implications for the role played by HR**

RQ4. *What implication(s) will these developments in ICT have for the kinds of knowledge and skills needed by HR professionals between now and the year 2015?*

Interestingly, two most ranked options for this question were among the most agreed of all answers in this study. First ranking for knowledge and skills needed by HR professionals was knowledge of social networking, importance of social networking, and ability to work in a 'virtual' network ( $\tau = 0,458$ ). Second highest ranking for skills and knowledge needed was statistics and business analytics faster, deeper, more insightful about sourcing, buying and managing service providers ( $\tau = 0.645$ ). Thirdly ranked skill was statement "knowledge of what the technologies can do is important, but more important is their capacity to handle all of the new data that will become available, especially on engagement and knowledge sharing" ( $\tau = -0,323$ ). Respondents commented ICT skills and knowledge being critical future skill for various reasons:

*"Social networking is a mindset - important to have that mindset in a world where being connected is core, such a mindset is needed", researcher*

*"ICT people don't take ownership and that is why HR have be on top of HR related ICT issues" practitioner*

Implications for knowledge & skills needed by HR professionals	Mean rank (5=highest)	Overall rank	Standard deviation
Knowledge of social networking, realizing importance of SN	3,21	1	1,78
Statistics & business analytics: insightful about sourcing	2,08	2	2,06
Capacity to handle all data that will become available	1,95	3	1,74
Combination of HR expertise with core IT literacy	1,82	4	1,89
HR professionals are consultants, need consultancy skills	1,52	5	1,87
Understanding how ICT changes work in organizations	1,47	6	1,72
More general education will be required,	10,8	7	1,9
HR professionals will need to have a good sense of time	0,82	8	1,64
Understanding present essential trends	0,65	9	1,52
HR service providers will be fewer in number,	0,65	10	1,43
Requires highly skilled, and consequently higher paid individuals	0,6	11	1,26
No administrative knowledge, creativity is the most important	0	12	0

Note: Top 3 Kendall's  $\tau = 0,26$

**Table 4. Implications for the knowledge and skills needed by HR professionals**

RQ5. *What implication(s) will these developments in ICT have for HRM in the context of multinational corporations between now and the year 2015?*

Respondents ranked social media being the most important implication in the multinational context. According to this most ranked statement, “social media will have far-reaching implications for staff: sharing of confidential information; its use in recruitment; training and educational issues; ethical issues” ( $\tau = 0.326$ ). Second most important trend identified by respondent was multinational corporations will particularly use ICT to better control and evaluate their subsidiary companies ( $\tau = 0.111$ ) Finally, respondents ranked “multinational organizations will outsource operational HRM on a global basis to a larger extent. This includes payroll. Global HRIS solutions implemented in the last 5-10 years are the enabler. This development has started and it will be accelerated” being third important ( $\tau = 0.254$ ). Comments regarding MNC context reflected the complex field where MNCs operate:

*“MNEs will use ICT and Web 2.0 to help resolve the integration-responsiveness problem. Technology will enable MNEs to integrate and decentralize simultaneously”, researcher*

*“Although there will be huge complexity in implementation, as local cultural factors and differences in subsidiary power impact the pursuit of a globally consistent HR delivery model, the inevitable pull for corporate HR is that this enables them to redraw 'the line in the sand' between standardisation (as opposed to optimisation) of HR systems” researcher*

Implications for HRM in the MNC context	Mean rank (5=highest)	Overall rank	Standard deviation
Social media will have far-reaching implications for staff	3,3	1	2,03
MNC will particularly use ICT to control and evaluating	3,17	2	1,33
MNCs will outsource operational HRM to a larger extent	2,17	3	1,99
Data privacy issues will become more severe	1,43	4	1,72
Subsidiary units will become more locally responsive	0,86	5	1,71
Companies that have SAP will enhance solutions with SaaS add-ons	0,86	6	1,51
Systems such as SAP and Oracle will be out of use	0,69	7	1,32
It will tend to strengthen the notion of standardization	0,69	8	1,55
Because of the investments made, ICT developments have only a minor influence	0,6	9	1,37
Its not ICT, its institutional context that surrounds the attractiveness of sourcing	0,52	10	1,03
SAP or Oracle will be a driver towards convergence of HRM	0,52	11	1,08
There will be no difference. Social networking will remove the borders	0,26	12	0,91

Note: Top 3 Kendall's  $\tau = 0,23$

**Table 5. Implications for HRM in the context of multinational corporations**

RQ6. *Finally, please describe 1-3 unexpected ICT developments that might influence HRM between now and the year 2015*

According to respondents rankings on unexpected ICT developments, virtual job fairs will become common practice ( $\tau = 0.173$ ) Second ranking indicated that major ERP systems as in-house systems become history and next generation HRIS solutions will replace existing ERP solutions ( $\tau = 0.202$ ) and thirdly, companies like Google begin to dominate providing free ERP solutions ( $\tau = 0.173$ ). Comments on top three rankings:

*“Number 1 is not even unexpected. It is expected”, practitioner*

*“I am waiting the moment, when Facebook, Google or LinkedIn actually will provide similar components for free as traditional ERP vendors like SAP or Oracle sell nowadays based on normal licence fees. However, SAP and Oracle most probably need to fight against these free-software companies and re-think their money-making strategy. I am quite*

*convinced that convergence between ERP and social media will continue to develop and therefore will impact dramatically HR and ICT in the coming 5 years time. Whatever will happen, it is benefiting companies in obtaining user-friendly and cost-efficient solutions.”, practitioner*

*“Technology will make physical interviews obsolete especially in advanced economies as applicants will prefer online methods to 'shop' for their best company.” researcher*

Unexpected ICT developments that might influence HRM	Mean rank (5=highest)	Overall rank	Standard deviation
Virtual job fairs will become common practice	2,87	1	2,26
Major ERP systems as in-house systems become history	1,96	2	2,01
Companies like Google begin to dominate	1,8	3	1,8
End of conventional job interviews. Recruiting via Skype	1,52	4	1,75
International standards for HR data	1,09	5	1,85
Geotagging leads to monitoring and tracking practices	0,87	6	1,42
Social media is used to 'control' staff	0,82	7	1,43
Reaction against online communication by new generation	0,82	8	1,43
Consultation technologies democratise business programmes	0,69	9	1,39
Standardized HR services leads to stronger isomorphism	0,65	10	1,36
Internet collapse / internet becoming very unsafe	0,52	11	1,03
Effort and error free HRIS implementation	0,43	12	1,23
Internal HRIS organizations are ramped down	0,22	13	0,73

**Note:** Top 3 Kendall's  $\tau = 0,182$

**Table 6. Unexpected ICT developments that might influence HRM**

## 5 Discussion and Conclusion

A review of e-HRM developments since 1980s and e-HRM consequences debate reveals that e-HRM is an emerging, fast evolving, and important area of research. The developments on this area will have great impact on the future of the HR field. To shed light on the futures' developments of e-HRM, this study applied the Delphi method to survey a mixed academic and practitioner panel of e-HRM experts through a three-round issue identification and consensus-building process.

Critical issues were suggested and ranked in six areas. We looked what ICT developments will influence HRM, what implications these developments have for how HR is organised/ delivered in firms, what the implications ICT has for the role played by HR and finally we looked what implications ICT has for the kinds of knowledge and skills are needed by HR professionals in the future. We also looked into two additional topics: firstly, what implications will developments in ICT have for HR in the context of multinational corporations and finally we looked for additional weak signals that might influence HRM in the future. Among the issues raised and later rated in both round two and round three, a acceptable consensus was reached in all areas ( $\tau > 0$ ). Overall, 5 issues received a strong mean ranking of 3 or above and thus emerged as the most critical issues across researched topics.

Main finding in this study was the importance of social media. Increased use of web 2.0 technology was the highest ranked of all answers therefore we suggest this technology will have major impact on HRM in the future. In addition, respondents indicated social media and collaboration will fundamentally change the competence and knowledge management paradigm with highest ranking to

research question two. For the implications for the role played by HR then, our results suggest that with the use of social media conventional HR departments will lose their influence, HR will drive things like organisational agility and HR will be more useful for line managers. With these results in mind, [14] analyzed social media trends affecting business and argued the use of social media tools will continue to grow rapidly and this will provide business community with new and innovative ways to explore the rapidly changing business environment. According to consultant surveys, organizational support for social media is increasing. The use of wikis for knowledge sharing is supported in 13 %, the use of internal blogs in 14 % and the use of social media tools for recruiting is reported in 9 % of US organizations [11]. Knowledge of social networking, importance of social networking, and ability to work in a 'virtual' network was also ranked above mean three for question four thus supporting our argument regarding the importance of social media's implications for HRM and HR personnel. Similarly with [5], we suggest this ICT transformation is reshaping the competencies that define HR professionals success.

Interestingly, the third ranked issue of Google dominating ERP market in final research question became close to reality when during time of publishing this paper traditional print-media reported Google holding a conference and selling its cloud computing services — like e-mail and business software — to executives of large corporations [58]. However, previously mentioned or any other future technological developments should not be taken granted, as [48] notes that “*speed of technological progress will probably not be determined by technological capability but by culture*” and keeping global operations in mind, HR is generally regarded to be most culture- and institution specific function [62]. To examine future trends in HRM and ICT one must look within countries, since labour laws differ from country to country and thus could have a significant impact on any new developments in HRM for that country. In IHRM literature we have learned that there are some similarities in terms of HRM trends across other countries (e.g. focus on the cost effectiveness) [26] We did not find institutional factors affecting futures' development, instead our findings in MNC context suggest that social media will have strong influence on staffing and MNCs will particularly use this technology for better control and evaluation.

The main contribution of our work was the theoretical contribution to the field of e-HRM research. This study was a successful pilot study which tested Delphi method across countries with experts from many e-HRM fields. With this in mind, and similarly with [59], we suggest researchers to adapt these kinds of non-traditional methods when studying the cross-disciplinary field of e-HRM.

### **5.1 Limitations and future research**

Our study was not without limitations; however these limitations offer fruitful venues for future research. Firstly, in order to make use of technology and reduce time delays we chose to use e-mail and web-portal to conduct this study. We found the return of the Delphi responses was much slower than expected. Our conclusion from this experience is that that we should perhaps learn again writing with pen and with paper and conduct this kind of research in academic workshops or seminars or even via traditional mail.

Secondly, marketing function has been argued as the most advanced “user” of social media [14]. While marketing professionals are actively and regularly

participating in social networks on a weekly basis, their usage of a variety of existing social media tools seems to remain infrequent [1]. The current level of adoption of social media tools by marketing professionals seems to be still fairly low while the majority of acknowledges that participation in social networks is important to their business and career. With these findings from more people sensitive business field in mind, we might assume social media and HRM still being part of technological hype? Therefore we courage researchers to seek more knowledge on social media's impact to HRM.

Thirdly, present study had a positivist orientation, and critical questions regarding negative aspects of e-HRM were not widely addressed. Therefore future research could seek knowledge on negative aspects of ICT and HRM. Finally, this research will mature in very short period of time. Therefore this research could be repeated over time with similar methods and samples so that there would be a rolling benchmark of the issues and topics that contribute to develop the e-HRM body of knowledge.

## **5.2 Managerial Implications**

As suggested, the increasing use of ICT in HRM will influence they way people in organization look at the nature and role of HRM and develop their skills. With HRM data and reports now being readily available on desktop, will managers interact less with the HR department which is actually ICT department? See it being less important and only develop their ICT skills? If that is so, we encourage managers to think how this will affect the attitude of HR professionals toward their jobs and profession. Will HR professionals resist adoption of latest technology if they perceive that technology lessens status? Finally, managers should not be too optimistic on social media. We recommend managers to consider the "dark side" of this technology (i.e. where employees are too open, for example, with micro-blog posting) when implementing new e-HRM systems, policies and practices

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