EXPLORING INTERACTIONS BETWEEN HRM, TECHNOLOGY AND ORGANIZATIONAL STAKEHOLDERS RELATED TO ACHIEVING SUSTAINABLE E-HRM

A STUDY ON E-HRM STAKEHOLDERS' PERCEPTIONS AND NEEDS RELATED TO E-HRM IMPLEMENTATION

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MASTER THESIS BUSINESS ADMINISTRATION
HANNAH METHORST

UNIVERSITY OF TWENTE.

COLOPHON

PREFACE

Looking back at my time being a student at the University of Twente, I realize that I have benefitted greatly from the experience. My master thesis in particular has not only been a challenge, but also an encouragement. Over the past 12 months, I have learned to apply theoretical knowledge to a practical problem.

Working with various stakeholders has been an instructive experience as well, as they were willing to share their time and expertise with me. With their help, I was not only able to find a relevant research-topic: exploring interactions between HRM, technology and organizational stakeholders related to achieving sustainable e-HRM, but also collect and interpret data and finally present my findings in this research-paper.

This research project has been conducted under the supervision of Dr. A.C. Bos-Nehles and Prof. Dr. T.V. Bondarouk. Hereby, I would like to thank both for their support, supervision and relevant feedback.

I also would like to thank Hans van Leeuwen for giving me the opportunity to conduct my research at Asito B.V. and Bianca Esveldt for providing me with relevant information and contacts. Special thanks to the fourteen interviewees who participated in the research by making time to answer my questions.

In addition, I am very thankful to Jeroen who encouraged and facilitated me to do my master-degree and to my family and friends for their support, while doing this research project.

Enschede, April 2017

Hannah Methorst

ABSTRACT

The purpose of this research-project was to provide a theoretical base for, and offer useful advice, to support organizations in achieving sustainable e-HRM. Consequently, the social and material interactions between e-HRM stakeholders, related to achieving sustainable e-HRM were explored.

In a single case study, performed at a Dutch service organization that recently adopted e-HRM iOS-embedded personnel management applications, we used multiple methods such as semi-structured in-depth interviews and document analysis, to better understand e-HRM stakeholders' interaction related to achieving sustainable e-HRM. Since e-HRM stakeholders continually interact, we believe that a better understanding of their interactions might contribute to sustainable e-HRM. E-HRM stakeholders were selected based on their direct interaction with e-HRM applications and their interaction with HRM, technology and the organization. A total of 14 interviews were held.

The results of this research points out that the adopted e-HRM applications are not fully sustainable yet. Our analysis show that this is due to defective social and material interaction between e-HRM stakeholders, as their perceptions and needs, related to e-HRM were not sufficiently taken in to account. Technical issues such as poor internet coverage, sluggishness of the systems, systems not syncing fast enough and the incompatibility of the different systems used have also led to resistance and frustration by targeted users.

To achieve sustainable e-HRM, we suggest that; First, organizations do well to strengthen vertical and horizontal communication-lines. Second, e-HRM stakeholders should be involved at an early stage, e.g. from the adoption stage of the implementation process onwards. Third, technical issues such as internet coverage and system compatibility, should be improved.

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1. INTRODUCTION

Historically, it is found that institutionalized and culturally grounded structures, conventions, habits, routines and practices of organizations exert a strong influence on technology, when it is implemented (Barley, 1986). Crozier and Friedberg (1977, as cited by Jolly, 2004) confirm this, by stating that people are able to shape and adapt technologies, suggesting the coevolution of technology (material dimension) and human resources (social dimension), rather than considering technology as having simply a one-way impact (Jolly, 2004). The concept of 'sociomateriality' provides a theoretical framework to study social and material dimensions, influencing the implementation of innovative technology (Scott & Orlikowski, 2008).

As Information and Communication Technology (ICT) has integrated itself increasingly into our modern-day daily routine over the last decades, it can be observed, that it lays at the core of most contemporary work processes, e.g. production, financial and marketing work processes. The ongoing digitalization of work processes has also led to major transformations in the way Human Resource Management (HRM) is practiced (e.g. Strohmeier, 2012). New innovative HRM software and applications have been developed. In combination with web-based technologies, HRM software and activities are known to us by the term and concept of electronic-HRM (e-HRM) (Strohmeier & Kabst, 2009; Strohmeier, 2012). E-HRM facilitates managers and employees to handle work processes and organizational information more efficiently (Foster, 2011; Srivastava, 2010). Companies hope to gain a competitive advantage through the implementation of e-HRM (Bondarouk, Ruël & Van der Heijden, 2009a; Srivastava, 2010; Vashishth, 2014).

Following Ehnert, Parsa, Roper, Wagner and Muller-Camen (2015) and Bondarouk and Brewster (2016a), we define sustainable e-HRM as applying ICT to support and network relevant actors in their shared performing of HRM, that is directed towards simultaneously and consistently supporting the economic, ecological and social performance of the organization. In other words, e-HRM is sustainable, when a consistent and quality usage of the e-HRM technology by targeted users is achieved (Bondarouk & Brewster, 2016a; Klein & Sorra, 1996), or when HRM professionals have developed the ability to consistently apply their knowledge through the e-HRM application, in their daily work processes (Banerji, 2013).

The implementation process can be described as an ongoing multilevel phenomenon, since individuals, groups, organizational units and even the organization as a whole have to interact with each other to perform e-HRM activities (Strohmeier, 2007). However, implementing e-HRM does not always lead to expected results (Bondarouk & Brewster, 2016a). A discrepancy between the promised benefits and its realized outcome is frequently observed (Parry & Strohmeier 2014, as cited in Bondarouk, Schilling & Ruël, 2016b). Despite assumptions of a positive impact (Bondarouk et al., 2009a), if not implemented properly, e-HRM applications will be ineffective (Khilji & Wang, 2006). The failure to gain skilled, consistent and committed usage of the e-HRM application by its targeted users, is considered to be the key reason for implementation failure (Klein & Knight, 2005; Yi & Hwang, 2003). Therefore, it is important for organizations to find out targeted users' perceptions and needs (Klein & Sorra, 1996). Understanding how targeted users perceive e-HRM and what according to

them is needed to increase consistent and committed usage of e-HRM, will help organizations to achieve sustainable e-HRM. It is therefore essential for organizations to design e-HRM applications according to the perceptions and needs set by different e-HRM stakeholders (Bos-Nehles, Bondarouk & Labrenz, 2016; Strohmeier & Kabst, 2009).

Based on the previous assumptions, we believe that the interactions between HRM, technology and the organizational stakeholders (i.e. e-HRM stakeholders) can also be described as a mutual continuous interaction. All e-HRM stakeholders in some way affect or react to each other and by doing so consciously, or unconsciously affect the implementation process of e-HRM. Orlikowski and Scott (2008) therefore stress the essence of exploring and understanding the material and social forms and spaces, to find out how they are bound up with the organizational structure they are part of. In other words, the e-HRM implementation is affected by the consistent entanglement and interactions of the material and social aspects of an organization. Knowing that organizations not only desire to increase their competitive advantage but also want to maintain that position, it seems deviant that the concept of sociomateriality has been studied so little in practice so far. We therefore want to stress the importance of understanding interactions between e-HRM stakeholders and how they are related to achieving sustainable e-HRM.

For this reason, we believe it is not only important to know how e-HRM stakeholders interact, but also how they perceive e-HRM and what according to them is needed to achieve sustainable e-HRM. Hence, we emphasize the purpose of this study, in which we explore the interaction between e-HRM stakeholders and their perceptions and needs, related to achieving sustainable e-HRM. Consequently, the research-question to be answered is: *What perceptions, needs and interaction do HRM, technology and organizational stakeholders have, related to achieving sustainable e-HRM?*

In this paper we attempt to make a twofold contribution. First, we assume that e-HRM stakeholders are continually interacting. Creating a better understanding of the social and material interaction between e-HRM stakeholders, might give us more insight in how to achieve sustainable e-HRM. Second, we try to understand how e-HRM stakeholders' perceptions and needs are related to achieving sustainable e-HRM, by performing a single case study in a Dutch service organization that recently implemented e-HRM.

In structuring this article, we first define the concept of sociomateriality and how according to literature sustainable e-HRM can be achieved. Then, we introduce and explain the research methodology. Following that, collected data is presented and analyzed. Finally, findings are discussed and recommendations are given.

2. ACHIEVING SUSTAINABLE E-HRM

In the following, we explore present-day literature on sociomateriality, electronic HRM (e-HRM) and sustainability in order to understand how their interaction influences achieving sustainable e-HRM.

2.1. Sociomateriality

To Leonardi (2013), sociomateriality is one of the most popular, most cited and most debated topics in the field of information-systems and management. Scott and Orlikowski's (2008) believe that the social and material dimensions of the organization are inherently inseparable, as materiality is intrinsic to everyday activities and relations. Leonardi (2013) explains that the fusion between the social and the material represents an umbrella term, with the theoretical premise that "the social and the material are so fundamentally related, that it makes little sense to talk about one without talking about the other" (p. 60). This view is supported by Cecez-Kecmanovic, Galliers, Henfridsson, Newell and Vidgen (2014) who consider sociomateriality as a positive development, since it demonstrates researchers' willingness to identify different and alternative ways of understanding the relationships between the social and the material. Sociomateriality therefore, helps us to balance "the disproportionate attention given to either the social implications of technology use, or the material aspects of technology design" (Johri, 2011, p.207). In other words, the social interaction of people is—at least—moderating the impact of technology (Jolly, 2004). Organizations, considering the adoption of an innovative technology, in this research e-HRM technology, should be aware of the consistent entanglement of the material and social aspects of an organization.

2.2. Electronic HRM (e-HRM)

Throughout the past decades, research has been done on how developments of and changes in technological advancements have transformed HRM (Strohmeier & Kabst, 2009; Foster, 2011; Banerji, 2013; Barzoki, Mazraeh, & Maleki, 2013; Vashishth, 2014). Using modern technology, HRM has been made more efficient and effective, bringing about immense changes and opportunities to organizations and shaping the concept and use of e-HRM (Oswal & Narayanappa, 2014; Banerji, 2013).

E-HRM is commonly understood to be the application of technology, to network and support diverse actors in their shared performing of HRM-activities (Strohmeier, 2007). E-HRM does not only include the sharing of HRM-services and technology, it also combines the social and material parts of an organization (Bondarouk, Harms & Lepak, 2015; Juana-Espinoza & Luján-Mora, 2010). Organizations use e-HRM to empower employees, improve their competences, and make HRM-function more flexible and efficient, leading among others to reduction of administrative work and saving costs (Parry & Tyson, 2011; Oswal & Narayanappa, 2014; Deshwal, 2015). Bissola and Imperatori (2014) state that e-HRM plays a relevant role in the employee-organizational relationships and contributes to the role of the HRM-department in modern organizations. E-HRM therefore, can be a powerful driving force towards enhancing organizational effectiveness, as it enacts as a technological-tool to achieve sustainable management, upgrading HRM-activities and stimulating

the implementation-flow of business-strategies and processes (Oswal & Narayanappa, 2014; Deshwal, 2015). In addition, Srivastava (2010) stresses that the introduction of e-HRM applications should not be considered a stage within HRM-development only, but more like a specific choice made for an approach to HRM. E-HRM incorporates a structural change of working and thinking, which is not only bound to the HRM function and its execution, but influences the whole organization, including the interdependent relationships of the social and material dimensions.

2.3. Sustainability

Sustainability was initially used to refer to environmental sustainability (Cohen, Taylor, & Muller-Camen, 2012). Nowadays, definitions and interpretations of sustainability differ, depending on which aspects of an organization is referred to (Ehnert & Harry, 2012). Senna and Shani (2009) define sustainability by saying that "sustainability entails the preservation, regeneration, and development of the ecological, economic, and social resources of a system" (p. 84). Kuhlman and Farrington (2010) refer to sustainability as the idea of increasing the economic and social benefits of an organization, while retaining environmental responsibilities.

Related to management principles and e-HRM, Guest and Bos-Nehles (2012) define sustainability as the appropriate fit between the HR architecture and the strategic choices that have been made, which leads to sustainable e-HRM. Strohmeier and Kabst (2009) suggest that such a process requires the adoption of new routines, which entail changing or unlearning existing routines, while simultaneously initiating and implementing new routines. To reach this goal, "managers must devote great attention, conviction and resources to the implementation process" (Klein & Knight, 2005, p. 246). In other words, for e-HRM to become sustainable a consistent (long term) and quality usage of the e-HRM technology by targeted users is required (Bondarouk & Brewster, 2016a; Klein & Sorra, 1996). Guest and Bos-Nehles (2012) have found that different stakeholders use various criteria to assess sustainability, "those who promote HR, those who enact it and those employees affected by it, may arrive at different judgments about implementation effectiveness" (p. 84) and in the end also its sustainability. This interaction also reflects the entanglement of material and social aspects of the implementation process, as expressed by the concept of sociomateriality. Despite the increasing interest to make organizations more sustainable, research on sustainability and HRM (e-HRM), often called 'sustainable e-HRM', has only increased in the past decade (Ehnert & Harry, 2012). The authors (Ehnert & Harry, 2012) state that sustainability will likely become one of the core themes for management research in the future.

Based on the previous, we define sustainability, related to e-HRM, as applying ICT to support and network relevant actors in their consistent shared performing of HRM, that is directed towards simultaneously and consistently supporting the economic, ecological and social performance of the organization (Ehnert, Parsa, Roper, Wagner & Muller-Camen, 2015; Bondarouk & Brewster, 2016a). Sustainable e-HRM is therefore achieved when technology and human interaction harmonize, i.e. when employees are happy to use, have learned the essential skills to master, and fully understand the innovative technology (Bondarouk & Brewster, 2016a).

To ensure sustainable e-HRM, the perceptions and needs of different stakeholders and the way they interact should be a focusing point for organizations planning to introduce e-HRM, since failure

to gain skilled, consistent and committed usage of the e-HRM application by its targeted users is considered to be one of the key reason for its implementation failure.

2.4. Implementation

Klein and Sorra (1996) define implementation as the transition period, during which targeted users become more and more skilful, consistent and committed in their use of innovative technology. Targeted users are people who are expected to use and support the new e-HRM application directly and adapt to new HRM settings within the organization (Bondarouk, Looise & Lempsink, 2009b).

Rogers (2003) identifies three major implementation steps: (I) a prominent suggestion; (II) the initiation and (III) the implementation. Strohmeier (2007) proposes a threefold implementation framework: (I) contextual factors; (II) the configuration and (III) the consequences related to the implementation of an application, on the micro (individual) and macro (organizational) level, assuming multiple relations between the different dimensions and levels. According to Guest and Bos-Nehles (2012), the implementation stages are not always sequential, or entirely separate processes, but represent distinct elements which depend on the effectiveness of the previous stages, and on the internal and external contextual factors. This thought is supported by Strohmeier and Kabst (2009), who argue that implementation evolves over time, as it could skip certain stages, or even repeat them if necessary. The authors (Strohmeier & Kabst, 2009) suggest that implementation is not a straightforward process but an ongoing cycle, able to adapt to today's rapidly changing organizational environment.

In relation to e-HRM, implementation is the critical gateway between the adoption and its routine (sustainable) use of e-HRM. Organizations face the challenge to change the individual behavior of targeted users to increase the usage of e-HRM (Klein & Sorra, 1996). Failure to gain skilled, consistent and committed usage of e-HRM by its targeted users must be considered as the key reason for implementation failure. Motivating and training targeted-users therefore is the most critical and important aspect of the implementation process (Klein & Knight, 2005; Yi & Hwang, 2003). In other words, the implementation of e-HRM is not successful, until the targeted-users have adopted the new technology fully into their daily work processes.

This social and material interaction can be distinguished on all implementation levels, e.g. the individual-level (adoption of e-HRM by individuals), the organizational-level (adoption of e-HRM by organizational units) and the assumed interaction-effects between both levels (Jeyaraj, Rottman, & Lacity, 2006). These different implementation levels must contribute and work together to make the utilization of e-HRM successful.

2.5. Organizational challenges and consequences

Throughout the implementation process and trying to achieve sustainable e-HRM, organizations will have to face various challenges such as, aligning e-HRM systems with business requirements, implications of costs, user training, data entry error, security and/or improper use of gathered information, rigid mind-sets (Juana-Espinosa & Luján-Mora, 2010, Deshwal, 2015). When not followed up properly, these challenges could seriously contaminate the proper use of existing HRM rules and regulations.

Increased usage of ICT applications (e-HRM) also increases the dependency on and interaction between employees and computers (Wahyudi & Park, 2014). Growing online presence control through e-HRM usage, might become overwhelming to less supportive employees, feeling that they have to be constantly alert. Juana-Espinosa and Luján-Mora (2010) conclude that it is necessary for organizations to anticipate and take measures against the rise of such employee perceptions. The authors go on by pointing out that employees using e-HRM systems need to have the opportunity to correct mistakes without direct surveillance, as this could lead to technology anxiety and the employee's apprehension, or even fear when confronted by the expectation that they have to use computers (Venkatesh & Davis, 2000). This also creates the necessity for managers to discuss system generated performances and time management reports with their employees, in order to generate feedback on the causes and consequences of performances (Juana-Espinosa & Luján-Mora, 2010).

Improving the individual and collective – group and organizational – efficiency and effectiveness (Jolly, 2004) can be seen as one of the biggest challenges within the implementation process. Juana-Espinosa and Luján-Mora (2010) argue that the acceptance of e-HRM applications is greatly influenced by issues such as communication, conflict management and trust between employees. Not addressing these issues might lead to employees' reluctance to accept the system and creating more challenges than benefits. Organizations therefore have to learn how to 'e-manage' their human resources, as to just 'manage' them, in order to survive in today's digital-driven organizational environment (Juana-Espinosa & Luján-Mora, 2010).

Some of the organizational consequences related to e-HRM implementation need to be considered too. As e-HRM leads to the decrease of administrative and paperwork tasks and possibly to diminishing the amount of HRM personnel, it also bears new jobs (e.g. webmasters and programmers) that organizations have to fill, to keep up with today's digital-environment (Lengnick-Hall & Moritz, 2003; Juana-Espinosa, Valdes-Conca & Manresa-Marhuenda, 2009). As geographical barriers disappear, some organizations might start working 24 hours a day, making flexible considerations of time and space part of the job description (Juana-Espinosa et al., 2009). This also makes privacy a relevant issue, as the differentiation between personal and professional information becomes obscure, as well as blending personal time and working hours (Juana-Espinosa et al., 2009). All these challenges and consequences influencing e-HRM stakeholders oblige organizations to not only focus on organizational goals, or technical aspects/dimension, but also on the social aspects/dimension.

Much of the information discussed above shows that the organization's social and material aspects continually interact and influence the implementation and achievement of organizational goals. Changing one aspect creates an interdependent reaction, causing all parts of the organization to react and adapt. Based on the previous, we can say that to ensure sustainable e-HRM, organizations should be aware of and monitor the social and material interaction between e-HRM stakeholders. Organizations should also be aware of perceptions and needs, related to e-HRM. This gives organization the opportunity to detect challenges at an early stage and deal with these challenges in a way that fits the organization's and e-HRM stakeholders' perceptions and needs.

2.6. E-HRM stakeholder interaction related to sustainable e-HRM

The conceptual model has been derived from the research question and the literature that has been reviewed. It demonstrates how the interaction between e-HRM stakeholders (stakeholders from HRM, technology and the organization) and their perceptions and needs relate to achieving sustainable e-HRM. As the social and material dimension of an organization are inherently inseparable, interactions between e-HRM stakeholders are bound up in this concept. None of the stakeholders can act without affecting other stakeholders. These relationships can be seen in Figure 1.
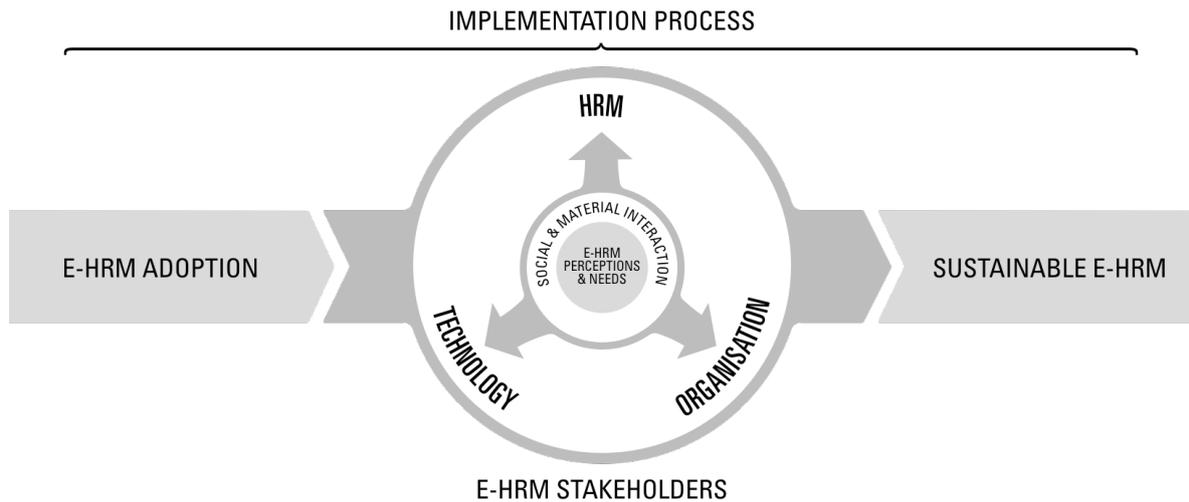

Figure 1 — Conceptual model: E-HRM stakeholders' interaction and perception and needs related to sustainable e-HRM

Understanding the interaction between e-HRM stakeholders and their perceptions and needs about e-HRM is believed to be of vital importance within the implementation process, leading to achieving sustainable e-HRM!

3.   METHODOLOGY

Given the explorative nature of this empirical research—exploring and understanding HRM, technology and organizational stakeholders' perceptions, needs and their interaction, related to achieving sustainable e-HRM—a qualitative research method has been used.

3.1.   A single case study design

As no known theories or patterns were needed to be tested during this research, the process of theory building was more inductive than deductive. This was because of the 'buttom-up' approach to knowing, developing constructs that abstract the essence of what is being observed, or describing a picture of the phenomenon that is being studied (Lodico, Spaulding, & Voegtle, 2010; Baker, 2010). In other words, patterns found from observations within this research were used to develop explanations or theories.

The observations were done within an exploratory single case study research design, which was chosen to develop an in-depth analysis of what e-HRM stakeholders' perceptions and needs are, when using the e-HRM application. As the word 'exploratory' suggests, this type of case study is used to investigate situations in which an intervention has no clear, single set of outcomes (Yin, 2003). Yin (2003) goes on by explaining that it is mostly used in situations where boundaries between the phenomenon and the context are not clear yet and the contextual conditions are believed to be relevant to this research.

The relationship between HRM, technology and organizational (e-HRM) stakeholders has still been studied very little in practice. Even more intriguing is the question on how these e-HRM stakeholders' perceptions and needs influence sustainable e-HRM. Because these interdependent relationships have been explored so little, traditional survey studies and experiments seemed impractical as the situation required a more in-depth approach. For this reason, generating new data within a single case study design appeared to be more appropriate, as the circumstances demanded more thorough questioning of the selected respondents.

There are arguments however, suggesting that case study sample sizes are too small and that lack of controls undermine the ability to generalize the results (Campbell, 1975). This might be true if one wanted to generalize the results of this study. However, the goal of this research is to contribute to theory building, based on newly gained in-depth knowledge, by studying what is needed to achieve sustainable e-HRM, from a e-HRM stakeholders' point of view. A case study approach supports that goal, by providing more detailed information, and offering 'better stories' (interviews) which are helpful in describing the studied phenomena (Dyer & Wilkins, 1991). Even though case studies are extremely time consuming and expensive to conduct, they are known to provide robust and reliable evidence, guiding the implementation of effective practices and identifying the links between the problem, intervention and outcome (Baker, 2010; Baxter & Jack, 2008). These characteristics fit into the earlier mentioned research purpose and helped us to identify key aspects needed to improve sustainable e-HRM.

3.2.   Case company selection

We selected our case company, based on whether e-HRM adoption had taken place and/or whether the company was still involved in the implementation process. E-HRM implementation is often initiated by companies to increase their competitive advantage. However, this does not always result in sustainable e-HRM. Since e-HRM stakeholders' directly influence the sustainability of e-HRM, we think it is of key importance to understand their perceptions and needs, to help understand potential causes for discrepancies between expectations and final results and help deal with these discrepancies.

3.3.   Case company description

The case company selected within this research study is a Dutch service organization (approx. 10.000 employees), based in the Netherlands. The company recently introduced an e-HRM application—a personnel-management-application, embedded in iPad technologies—to be used by line-managers' to perform/support different work tasks and processes. According to management, discrepancies between expectations and final results were observed. Causes and circumstances could not be pointed out, since no time and energy had been invested in finding out. This context made the company an ideal candidate, to be selected for this case-study.

In company introduced twelve technological applications (HRM and non-HRM) in the period between 2012 and 2016. Soon it became clear that a number of line managers found it hard to use e-HRM applications for their daily work processes. Consequently, it was decided to search for causes and give advice for solutions. HRM, technology and organizational stakeholders' questioned on their perceptions, needs and interaction, related implementation process and sustainable e-HRM. Based upon data collected by the company specific e-HRM apps were chosen and compared according to their sustainability. A list of all e-HRM apps used in this study can be found in Appendix A.

3.4.   Sample selection and characteristics

The sample size was based on the total number of potential interviewees. In our case 14 key e-HRM stakeholders were drawn, non-randomly and based on criterion sampling, selecting participants who would match the criteria of this study (Rudestam & Newton, 2015).

Purpose was to explore and understand HRM, technology and organizational stakeholders' and their perceptions, needs and interaction related to the implementation process and sustainable e-HRM. To gain a wide range of data, key e-HRM stakeholders were chosen from different organizational layers and units.

Main selection criteria, key e-HRM stakeholders
- Employed by the organization
- Direct interaction with e-HRM application during working hours
- Interaction with other organizational layers involved in the e-HRM implementation process (HRM, technology and organization)

Sub-selection-criteria, HRM, technology and organizational stakeholders

Because the selected case company is quite big, it has spread its operational activities over separate regions and units. The company's unit- and line-managers operate in these regional units. We wanted to explore their perceptions, needs and interaction. During prior meetings with the Human Resource (HR) director and the information manager a number of sub-criteria were decided on. Based upon these, key e-HRM stakeholders were selected: the coordinator-region-administrator (CRA), stakeholders from administrational unit, unit managers and line managers.

Unit criteria
- Pilot location (first to test the e-HRM application)

Line managers' criteria
- Best/or worse usage of a certain e-HRM apps (identified through available 'usage data')
- Show genuine interest in the e-HRM application
- Active participation in the implementation process

Based on the sub-criteria three different units, their unit managers, and six line-managers belonging to those units were chosen. All of them are located in the east of the Netherlands and situated next to each other. Choosing only one unit would not have been sufficient, because each unit and the personnel working there might express different perceptions and needs. This also would have been the case, if we had chosen six different line managers from six different units.

Selected key e-HRM stakeholders based on three pillars

Pillar	Amount	Function	Responsibilities
HRM stakeholders	1	HR director	Developing rules and regulations and setting goals prior to the introduction of the e-HRM application.
	1	Administration (AD: 'administratie')	Responsible for certain tasks prior the e-HRM app introduction. The work load shifted from administration to line managers because of the e-HRM applications.
Technology stakeholders	1	Information manager (FB: 'functioneel beheerder')	Directly involved with the technical development of the e-HRM application apps.
	2	Coordinator-region-administrator (CRA: 'coordinator regio administratie')	Point of contact for line managers concerning questions about the e-HRM application usage.
Organization stakeholders	3	Unit manager (VM: 'vestigingsmanager')	Authorizing party to decisions made by/ requests of the line manager ('objectleider').
	6	Line manager (OL: 'objectleider')	Has direct interaction with the e-HRM application.
Total	*14*		

3.5. Measurement construction

Case study designs involve collecting qualitative data from various sources, to explore one or more organizations or parts of organizations and the characteristics of these contexts (Baker, 2010). This approach facilitates the exploration of a phenomenon within its context, using a variety of data sources, ensuring that the issue is not only explored through one, but multiple lenses, allowing the phenomenon to be revealed and understood (Baxter & Jack, 2008). In this case that would be the perceptions and needs of the different key e-HRM stakeholders already mentioned.

Document, texts and archival records

The method of measurement is based on multiple sources, including semi-structured in-depth interviews as well as the collection and analysis of documents, texts and archival records. A list of documents used within this study van be found in the Appendix B.

Semi-structured interviews

Semi-structured interviews were chosen because of their flexibility to respond to the direction in which interviewees takes the interview, leaving room to adjust the emphasis of the research as a result of significant issues that might emerge (Bryman & Bell, 2011). This gave us the opportunity to explore or describe the phenomenon in context using a variety of data sources (Baxter & Jack, 2008).

3.6. Data collection procedure

The interview data was collected with the help of a semi-structured interview guide, which was based on studied e-HRM implementation literature and by analyzing relevant documents which were provided by the company. The interviewees, selected according to the sample characteristics mentioned in 3.4 Sample selection and characteristics, were contacted individually in order to make an appointment for the interview. The length of the individual interviews could not be determined at the start, as it depended on the available time each of the interviewees could offer. However, most interviews were about 40 to 70 minutes long. The interview guide can be found in the Appendix C.

3.7. Data analysis

Due to the diverse nature of qualitative research, there is no standardized method to analyze it. However, there are many traditions and methods in the field of qualitative research, resulting in a variety of strategies which can be used to deal with collected data (Saunders, Lewis, & Thornhill, 2008).

Based on the earlier mentioned, more inductive than deductive nature of this research, we opted for a combination of the 'Template Analysis' according to King (2004) and the analysis strategy according to Strauss and Corbin (1998) 'Grounded theory'. The Template analysis by King (2004) gave us the ability to display and analyze data in a flexible manner. Because the data had to be coded and analyzed around themes, patterns and relationships could be discovered and research results were displayed in a hierarchical manner. Grounded Theory helped us to stay highly accurate, as it tends to stay close to the original data. It also attempts to build the theoretical structure 'buttom up' (e.g. interview

transcript, field notes etc.) (Langley, 1999). This firm grounding in raw data can sometimes make it difficult to move from a theory of a specific phenomenon to a more general formal theory (Glaser & Strauss, 1967).

Because of the chosen method of analysis, 'Template Analysis' and 'Grounded Theory', it is important to capture the collected data precisely. All the interviews were therefore recorded digitally and transcribed afterwards. This should prevent loss of information and retain objectivity. The collected data was transcribed, coded and analyzed with ATLAS.ti. In line with the purpose of this research paper, mentioned at the beginning of this chapter, the method of analysis used is Grounded Theory. Different types of coding used were; open, axial and selective coding. The coding frame was based on provided guidelines for the classification and organization of data, in particular through the creation and maintenance of 'concept cards' (Bryman & Bell, 2011), which were derived from the research question and interview guide used. These could also be adjusted during the coding process as new relevant issues might emerge. The different codes and code families used during the analysis process can be found in Appendix D.

4. FINDINGS

During the course of this exploratory study, fourteen key stakeholders were interviewed on how they interact and their perceptions and needs, related to sustainable e-HRM. The main results are presented here.

4.1. Stakeholders concept of e-HRM

In order to understand stakeholders' views and needs to achieve sustainable e-HRM, we ought to understand what they believe e-HRM actually entails. We noticed that depending on their hierarchical position in the organization and field of responsibility, more or less detailed information could be given on the subject. The higher the function, the more detailed information was passed on to us on what e-HRM stands for. Stakeholders from the technology department naturally showed more detailed understanding of what e-HRM entails. Line managers, i.e. targeted users, who are supposed to use e-HRM in their daily routine, found it harder to describe e-HRM.

4.2. Stakeholders' expectations prior to e-HRM adoption

> *"HR instruments used should create a return, otherwise it is just a cost."*
> *(HR Director, personal communication, November 01, 2016)*

When asked, stakeholders expectations prior to the adoption of e-HRM varied. Some had been looking forward to it with great enthusiasm, some had only been curious. None of the interviewees had been reluctant. Various HRM, technology and organizational stakeholders with higher organizational functions (HR director, CRA, information manager and some unit managers) had focused mainly on organizational benefits such as costs reduction, increased efficiency and flexibility. Others had expected doubts, questioning whether the targeted users (e.g. line managers) would be able to handle the new way of working. The CRA and information manager in particular, indicated having had worries about whether line managers would be able to handle the new tools. At the start of e-HRM adoption, the majority of line managers neither had any experience, nor training in handling and dealing with this new way of working and the new administrative responsibilities connected to it.

> *"I expected that work would become easier, that it would become faster."*
> *(Linemanager6, personal communication, October 27, 2016)*

Both stakeholders from the administration and line managers expressed having had mixed feelings prior the adoption of e-HRM. On the one hand they had been worried, not looking forward to having to give up their familiar way of working. On the other hand, they had felt excitement, believing e-HRM would accelerate current work processes, enabling them to work more efficient and leading to reduction of work load.

4.3. E-HRM adoption

The adoption of e-HRM and the other iOS applications started in 2012 and was part of the company's reorganization plan called "12/20". Among other organizational goals, work processes had to be made more efficient and flexible, and overhead costs had to be cut, by placing responsibilities from higher to lower layers and functions within the organization.

4.3.1. Targeted users' involvement and need for a more phased e-HRM adoption

The development and introduction of e-HRM and other iOS applications involved intensive interaction between various e-HRM stakeholders and specialists, such as HRM and technology (ICT) specialist, operation managers, unit and line managers.

> *"In the beginning we made thes mistake by not listening enough to our targeted users."*
> *(Information manager, personal communication, October 25, 2016)*

Some line managers felt not well enough informed about and prepared for the development and adoption of the very first e-HRM application. A number of them felt that they had been left out and that development and introduction had not been thought through well. Neither the development nor the implementation process was ever discussed with them. Line managers felt that there had not been sufficient basic information and the involvement of targeted users was kept to a minimum, resulting in a number of discrepancies between line managers' expectations and results. In the years following however, line managers' involvement was improved.

> *"It could have been done in more separate steps. '12/20' indicates that innovation will take place from 2012 until 2020. However, everyone felt that it was more like '12/14'. As if the complete reorganization had to take place within two years, instead of eight, the number of years they had initially committed themselves to."*
> *(Linemanager6, personal communication, October 27, 2016)*

When questioned, line managers also pointed out that they simply needed more time to get used to the new concept of working and the new responsibilities that came with it. According to line managers, the introduction of the iPad, e-HRM and other applications happened too fast. Suggestions were made by unit managers, who pointed out that the implementation of e-HRM and various other kinds of iOS applications should be done in phases. This way targeted users and other stakeholders can take time to evaluate the systems introduced and improve mistakes. Work processes should also be fully integrated into the system. If not, the red tape which was supposed to be avoided by digitizing HRM would become digital, as there are still various systems used and needed to do all the work.

> *"Especially at the start, to many line mangers e-HRM was still a quite abstract concept. We ought to have involved them more."*
> *(HR Director, personal communication, November 01, 2016)*

Four years after the first applications was introduced, different project groups consisting of the CRA, the information manager, unit managers and line managers started to discuss the development and

adoption process of e-HRM applications. It had become obvious that line managers ought to have been involved in the process of e-HRM adoption from an early stage on. Their feedback (perceptions and needs) is essential for the organization to achieve sustainable e-HRM. This was also confirmed by the CRA who mentioned that the introduction went too fast and that it would have been better to have given line managers more information and more attention prior to introduction of the e-HRM applications.

4.3.2. Acceptance and resistance of e-HRM

During the adoption of e-HRM, line managers had difficulties getting used to iPads, the e-HRM and other applications. Elderly line managers found it very hard to adapt to the new way of working. Many younger line managers however, showed a more flexible attitude. They were more familiar with the new technologies. Mixed feelings were expressed, such as having had needs for regular evaluations and a more thorough instruction on how to use iPad, the e-HRM and other applications.

> *"There are opinions saying that employees might not have been trained well enough and that too much of the training responsibility had been given to the CRA to coach/train targeted users. Concluding, too little effort was made to win over the target users (line managers)."*
> *(HR Director, personal communication, November 01, 2016)*

We found that the HR director had been informed about starting up difficulties and the needs felt by line managers. This however, was not the case for some unit managers. Thinking that everything had been planned and communicated well, unit managers were surprised to encounter line managers' resistance. Somewhere, there had been a wrong flow of communication, a miscommunication, or no communication at all.

Even though difficulties were experienced, line managers continued to express faith in the company's management and believed that everything would turn out fine in the end. Compared to the start of e-HRM adoption, when targeted users showed quite some resistance. Nowadays, line managers seem to be more content with the e-HRM applications. This is the results of increased involvement of targeted users in the development process of e-HRM.

4.3.3. E-HRM introduction and a perceived lack of training

We experienced line managers' mixed reactions concerning the first introduction and their felt lack of training received. Some appreciated the opportunity to experiment with the iPad before all the applications were launched. Others expressed having had difficulties. They did not know how to use the iPad and would therefore have appreciated a more guided introduction. Concerns were also raised about different levels of knowledge/skills of line managers during training sessions. Not all could follow the speed of training, but they did not express this deficit during training lessons.

> *"Yes, some people weren't used to working with a computer. They knew how to turn it on, how to send an email and that the email eventually would arrive somewhere. But it was a shock for some people who had never seen an iPad, never used a touch-screen and no idea how to use an application."*
> *(Linemanager6, personal communication, October 27, 2016)*

Unit managers' impression about how line managers were coping with the new technology were also mixed. Due to the generation gap between 'older' and 'younger' users, some unit managers questioned whether they should have given 'older' users more time to get used to this new way of working.

> *"If a whole group of people doesn't know the iPad and its applications, then you should pay more attention to guide them through the implementation process! You cannot hand over and say 'Have fun!' (…) If you don't know something and you are afraid to use it, you will not get near the thing! But many targeted users couldn't get around it, because within two months they had to use the iPad and its applications. And that is where the mistakes were made (…) Targeted users exchanged work responsibilities with each other. They had known and worked with each other for years, so in a situation like this they helped each other out."*
> *(Unitmanager2, personal communication, November 04, 2016)*

Nowadays line managers still don't feel that the new applications (re)-explained to them work very well. Some hinted that the time spent to explain things to them was far too little and they felt intimidated to ask for help. One line manager told us that when she started working, all the applications were explained to here in one single day and in about 4 hours, without any breaks in-between. Afterwards she felt dazzled by the new information given to her. It was too much in a short time!

To the CRA improving targeted users background information on rules and regulations involving e-HRM and other procedures is one of the most important things to do. Meaning, training them to know the hazards and risks that their decisions can cause when using e-HRM and other iOS applications. The CRA does acknowledge that current training methods might not be the best and suggests that it would be more ideal to train targeted users at least a week or two, particularly their administration background, before letting them shadow their colleagues. Introducing a region wide training program where targeted users receive relevant background information would also be helpful.

4.3.4. Advantages and disadvantages

The introduction of e-HRM has led to a number of advantages. According to the higher management (HR director, CRA, information manager and unit managers) work processes have become more flexible, faster and efficient. The transparency and with it the chance to influence and/or control work processes has increased. Automatic standardization has given line managers and other stakeholders the chance to not only better coordinate their work, but also support each other by taking over tasks and responsibilities from colleagues on sick leave or vacation. All these changes have led to a more efficient way of working and a more professional appearance. Some higher management functions pointed out that line managers have become more responsible, accountable and efficient in doing their work. Line managers are more involved with both employees and their own administrational tasks. According to the CRA this has led to a change in line managers' function characteristics, as more responsibility is demanded from them.

E-HRM work processes are highly dependent on technology. They are dependent on external sources such as Wi-Fi or a 3G/4G Internet connection. If technology fails, work processes do not function. Some of the e-HRM stakeholders (the information manager, unit managers and line managers) have repeatedly brought this topic up. The organization seems to do everything possible to guarantee

consistent internet connections. In case of a failing connection however, no backup solution. Suggestions have been made to use applications offline and to synchronize changed and/or added information as soon as the user comes online again. Whether such a feature is possible to realize is still under discussion.

> *"If you're sensitive to work pressure, you can suffer under it. That's an obvious disadvantage."*
> *(Linemanager2, personal communication, October 17, 2016)*

Flexibility given to line managers' work is an advantage, but might also lead to a burn-out risk. Line managers have to learn how to use their time. We noticed that this issue about time management has only been pointed out recently and that targeted users have received training on how to properly manage their working time. A lot can be done to improve the situation, as communication about this problem is still at a minimum.

Line managers indicated that transparency of and the chance to influence and control work processes have also led to higher level of stress. Line managers are expected to answer emails quickly because they are connected to the internet. This source of stress, however, is not experienced by all line managers.

4.4. Technology, related to e-HRM and other iOS applications

Different work processes use different iOS applications. During our research we noticed that some line managers found it difficult to clearly separate problems related to specific e-HRM applications. The interaction between users of e-HRM and other iOS applications is intensive, making it difficult for targeted users to not mix up different applications.

4.4.1. Need for uniform design of e-HRM and other iOS applications

E-HRM stakeholders expressed no specific need to differentiate in general design between e-HRM and other iOS applications. They prefer a uniform general layout for all applications, with no differences in the placement of buttons and logos, applications should be user-friendly, i.e. intuitive. Similar features make it easier for targeted users to use different applications. The danger to mix applications remains. Each application must add value to the existing work process! The information manager, however, pointed out the importance of standardizing processes before starting to digitalize them.

4.4.2. Need for compatible ICT systems

E-HRM stakeholders' perceptions differ on how well e-HRM systems operate. Issues that had initially led to resistance of usage and/or irritations, as pointed out by unit and line managers, were mostly of a technical nature. Among them were: a poor internet connection/coverage (in rural areas), the system's sluggishness when used at peak times, the systems do not synchronize fast enough and the incompatibility of different systems used. For example, not being able to synchronize between different operational systems such as iOS, Windows or Google or having to open 4-5 different operational systems in order to see all the relevant information needed. On the other hand, the information manager is closely involved in the development process, stresses that all relevant information is

made available to all targeted users. This suggests that there might be differences in perceptions and needs between targeted users and the higher management. According to the information manager all relevant information is available to targeted users. The seeming inefficiency of some of the ICT systems used makes it difficult for targeted users to operate in an efficient way, leading to increased resistance.

4.4.3. Need for technical skills

The implementation of e-HRM and other iOS applications started in 2012. We noticed that, technology anxiety doesn't seem to play an important role anymore. Most employees who experienced technology anxiety at the start of e-HRM adoption belong to the elder generation. Those who weren't able to adapt to the new work process were transferred to different functions, or were offered an early retirement.

4.4.4. Need for technical support

Looking at technical support targeted users receive, we found that line managers, when having questions about the use of the applications, do not always contact the right persons. Whether this is caused by ignorance or unwillingness to admit having questions is still not clear to us. We noticed that most line managers, when having questions and problems, communicate these with the administration, the CRA or helpdesk. The CRA is responsible for training line managers how to use e-HRM applications. Compared to past work processes, the CRA has become an additional person, who can be contacted by line managers. The administration have expressed frustrations about not being able to help line managers, having to send them on to the CRA or helpdesk. This extra step that needs to be taken is considered by some stakeholders as quite time consuming.

> *"You get back an email saying that they will take care of it. Problem is, no indication is given how long it will take until you receive an answer or until the problem is really fixed. For example, you can expect an answer within 16 hours, 24 hours or 48 hours. Some problems however need to be fixed immediately, you don't have time to wait!"*
> *(Unitmanager2, personal communication, November 04, 2016)*

Some unit managers have therefore created their own solution to speed up the process for small technical issues by assigning one of the line managers to support and help other line managers within their unit. Consequently, less time is spent on calling the ICT, or mailing the helpdesk, as line managers can directly approach their colleague. This accessible approach seems more fitting to targeted users.

> *"It's inefficient to call CRA for each small problem, first you have to try to solve it on your own. Then you can ask a colleague and if that still doesn't work, you call CRA."*
> *(Linemanager1, personal communication, October 14, 2016)*

According to the information manager user data from the applications can give insight how often certain applications are used. Specific reasons however, why some applications are used more frequently then others are not always clear. Collecting user data from certain e-HRM applications could form the basis for questioning targeted users through surveys and getting more detailed information on the why-question. Conducting surveys was also suggested by line managers. Even

though their underlying thought might be different, conducting regular mandatory surveys about the used applications however, would give more insight in technical and work process.

4.5. Mobile working, inter-organizational relationships, communication and support

The introduction of the iPads and its e-HRM applications did not only change work processes, but has also led to a cultural change in relations and communication within the company.

4.5.1. Inter-organizational relationships

Relationships between various e-HRM stakeholders have become more distant. This consequence of mobile working is experienced as negative by many people and even seen as a grand disadvantage for the company. Previously, relations between the administration and line managers was based on regular personal contact and mutual knowledge of work processes, the working environment and clients. This knowledge was facilitated by short communication lines (working in the same office). Because of the administrative employees' relocation and new work structures, the administration has been disconnected from the line managers and their clients.

> *"Relationships have changed, compared to the past. Previously you knew everything, you knew almost everyone. Now you don't know anything and so you feel less involved."*
> *(Administration, personal communication, October 21, 2016)*

There is a need to regain mutual engagement and contact between e-HRM stakeholders. Administrative stakeholders complained that the implementation of e-HRM in combination with new work processes has changed their communication and relationships within the organization. It took them some time getting used to this new kind of working.

> *"The iPad brought more distance. They wanted us to be more mobile. This automatically creates distance. (…) But I believe, pushing unit managers and line managers apart will create problems. That's my biggest fear. Now you see that people keep moving back together. If you don't talk to each other anymore, but only send emails, that doesn't work! Our company has to keep its social character; you can't keep it up by distancing people."*
> *(Unitmanager2, personal communication, November 04, 2016)*

A distanced relationship can also be seen between unit managers and line managers. We found that each unit manager has his own way of handling the distance between them and their line managers. Some didn't see the need to see their line managers more often, others found the relation with their personnel one of the most important things, seeing or talking to them often was essential to them.

4.5.2. Collaboration and partnership, related to sustainable e-HRM

"If you need advice, who to call?" is a question that makes sense, when talking about communication and partnership related to sustainable e-HRM. We found it paradox that on the one hand — due to the strong organizational culture — people are satisfied with the way of working and on the other

hand struggle to share good ideas and solutions with each other (between line managers and/or different units). There is no, or limited knowledge sharing in between e-HRM stakeholders.

> *"We all have our own garden that we must maintain. That is our main attention."*
> *(Linemanager2, personal communication, October 17, 2016)*

Many unit managers have found their own solutions to cope with the e-HRM related communication problem. They don't know how other unit managers deal with similar difficulties, indicating that in many cases each stakeholder reinvents the wheel. The remarkable thing is that unit managers are aware of this problem, when looking at their line managers' way of communication, but don't identify it as their own problem. This problem has also been noted by the HR director himself.

Since 2016 a user consultation group has been established. Invited stakeholders, representing regions and/or units, can give feedback on the sustainability of applications, for example the sustainability of the e-HRM application. Shared information is used by ICT and information manager to improve the applications' sustainability. Because only a sample of stakeholders is invited, ICT might miss out on some important information related to e-HRM related problems.

Line managers tend to work independently. E-HRM introduction has led to a greater personal freedom, related to where and when the work process is being performed. As a result some of the line managers feel even more isolated than before, i.e. before e-HRM was introduced. When facing difficulties, line managers might call ICT, but they do not always receive help immediately. Not every stakeholder has the same priorities, allowing line managers sometimes to get the impression that receiving a response, or help might take a long time. Even though line managers are encouraged to work together, compliment and help one another, in reality this doesn't always work out. Each line manager is different. Not every line manager communicates, when encountering problems. Due to newly gained flexibility made possible by e-HRM introduction, it is difficult to realize regular interaction, because managers are not always visibly present.

In general however, most e-HRM stakeholders, regardless of function are happy to help others and by doing so assist others in how to use e-HRM.

4.5.3. Email communication

> *"Communication is very important! It all stands, or falls with communication. If the communication is good, and people know where and to whom they should go, then all goes well."*
> *(Linemanager1, personal communication, October 14, 2016)*

Having and using the right kind of communication. We noticed however, that does not seem to be the case for many e-HRM stakeholders' and other employees.

> *"If they don't immediately start to find a solution for this problem we will drown in emails."*
> *(Unitmanager2, personal communication, November 04, 2016)*

Emails don't always seem to reach the right recipient. Emails are send to numbers of people, before reaching the right person. The content of email communication has deteriorated, since the digitization of work processes. Emails are read carelessly and/or not fully answered. Many line managers must check their mail account more than once a day, as they receive up to 30-40 emails in about two to three hours, 90% of which being internal mails.

This email communication problem has been enhanced, since the introduction of the e-HRM applications. Previously, line managers regularly met at the unit manager's branch office. Using e-HRM has distanced them from each. They consequently use new communication channels to connect. Due to the 24/7 accessibility of stakeholders, the work pressure has also increased, which might have led to a more careless way of dealing with mails, because people want to finish off work and go home.

5.   DISCUSSION AND CONCLUSION

To understand the social and material interaction between e-HRM stakeholders and how this interaction is related to achieving sustainable e-HRM, this exploratory research was executed. Organizations wanting to implement e-HRM, or already involved in the implementation process of e-HRM might want to use our findings.

5.1. Theoretical contribution

Our interview-findings combined with our literature insights show that organizations' social and material interaction exert a strong influence on achieving sustainable e-HRM. As little research has been done on how this interaction between e-HRM stakeholders influences achieving sustainable e-HRM, we believe that our findings will contribute to a better understanding of the concept of sociomaterilaity related to achieving sustainable e-HRM. The relationships we found are demonstrated in Figure 2.
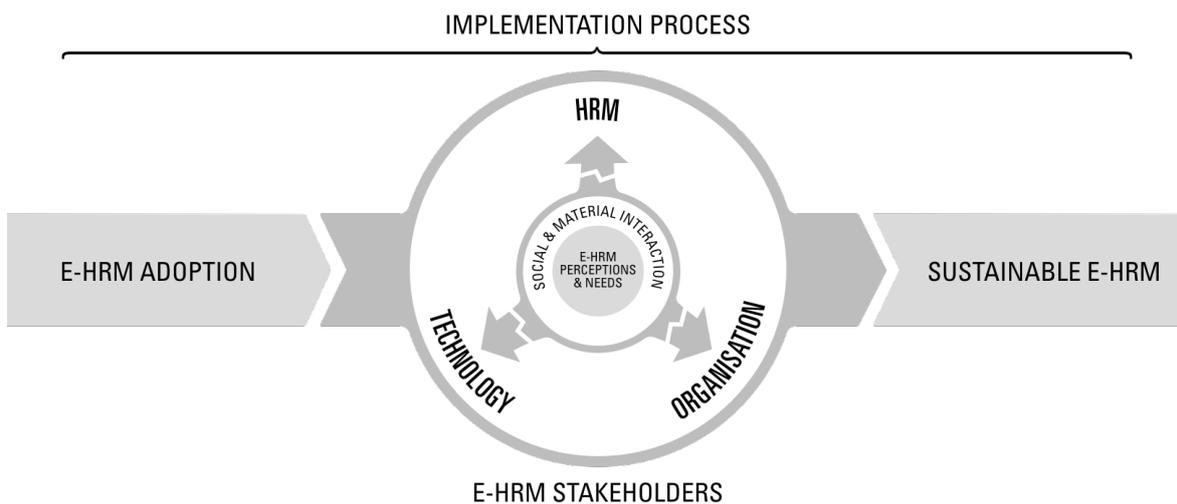
Figure 2 — Revised model: E-HRM stakeholders' interaction and perception and needs related to sustainable e-HRM

With Orlikowski and Scott (2008), we can say that the social and material dimensions of an organization are inherently connected, as expressed by the concept of sociomateriality. Based on our findings we argue that there are material and social aspects which influence the interaction between e-HRM stakeholder's, their perceptions and needs about e-HRM and in the end achieving sustainable e-HRM. As Jolly (2004) stated, the social and material interaction of stakeholders moderates the impact of technology and consequently influences the implementation of e-HRM. Our findings show that the perceptions and needs about e-HRM, and the interaction between e-HRM stakeholders play a very important role in achieving sustainable e-HRM.

5.2. Practical implementations

To ensure sustainable e-HRM, organizations do well to not only monitor the interaction between e-HRM stakeholders and their perceptions and needs about e-HRM, but also consider the following recommendations:

1. According to e-HRM stakeholder's organizational communication structures do not always function effectively. Targeted users expressed a need to be informed at an early stage and be allowed to interact about changes affecting their daily work processes. Organizations do well to invest in clear and effective communication structures. Doing so complications that might arise could be detected at an early stage, allowing the organization to react by taking necessary steps to enhance e-HRM. A defective communication structure hinders and even obstructs the implementation process of e-HRM, causing loss of valuable time and raise costs.

2. Our findings showed differences between targeted users' technical skills and technical knowledge. Motivating and training targeted users based upon their perceptions and needs about e-HRM is very important (Klein & Knight, 2005; Yi & Hwang, 2003). This might avoid possible starting-up difficulties with individual targeted users.

3. Targeted users expressed frustration about using and/or having to switch between different operational systems. Organizations should consider whether new operational systems should be compatible to systems already in use and whether targeted users are familiar with the new operational system, or need additional training.

4. E-HRM stakeholders expressed frustration about work processes not being completely digitalized, leading to a heavier work load as they have to frequently switch between the old and new work processes. When digitalizing work processes, therefore, it is important to do this to the whole process and not just one part of it.

5. When moving on to the development of the next application, maintenance of previously implemented applications should not be forgotten, as the implementation of e-HRM applications often happens non-sequentially.

6. The introduction of iPad and e-HRM applications has changed the way people communicate and affected inter-organizational relationships. This change was not always perceived positive. Critique was expressed by targeted users about the non-visibility of colleagues who previously, i.e. before the iPad and e-HRM applications were introduced, regularly met and communicated face to face. Therefore, organizations do well to allow targeted users to frequently meet, discuss and evaluate the implementation process.

7. Not all targeted users are prepared to communicate their difficulties related to using new e-HRM applications. This should be considered. Organizations should encourage targeted users to take part in the evaluations process. The organization might even make evaluation moments mandatory!

8. Due to the adoption of e-HRM, e-HRM stakeholders experience a negative change in organizational culture. Relationships between e-HRM stakeholders have become more distant. Positive aspects of the existing organizational culture are to be maintained, while simultaneously implementing innovative technology.

5.3. Limitations and future research

This research aims to produce a generalizable theory about how to achieve sustainable e-HRM within the context of sociomateriality. Understanding the interaction between e-HRM stakeholders and how their perceptions and needs about e-HRM influence the achievement of sustainable e-HRM.

We started this research four years after e-HRM adoption. It would have been better, however, if this research would have been conducted immediately after the introduction of e-HRM or over a certain period of time to see how the perceptions and needs about e-HRM of different e-HRM stakeholders have changed over time. We did consider this limitation during our research by asking stakeholders how they felt as the beginning or prior to the e-HRM adoption and how their perceptions and need have changed over the years.

Reliability within qualitative research is concerned with the degree to which the research results obtained are interrupted by assumptions or errors. In order to prevent bias, we have used data-triangulation, combining semi-structured in-depth interviews, voice records, literature review and various other sources of data (Bryman & Bell, 2011). Reliability of the in-depth interviews however, can be affected by the researcher because in qualitative research the researcher can exert influence on the respondent and vice versa. It is therefore inevitable that other researchers might come up with different or additional results, as to how sustainable e-HRM can be achieved.

This research aims to explore how sustainable e-HRM can be achieved, related to the concept of sociomateriality. The ideas expressed by the concept of sociomateriality are still novel to organizational research. Our model may present a starting point to understanding the interaction between the social and material dimensions of an organization related to achieving sustainable e-HRM. We therefore suggest that further research on exploring the interaction between the social and material dimensions within the organizational context of sustainable e-HRM is necessary.

5.4. Conclusion

Within the present research our focus lay on answering the central research question which was; *What perceptions, needs and interaction do HRM, technology and organizational stakeholders have, related to achieving sustainable e-HRM?*

Based on our results, we found that the organization's management had different perceptions of the problems and difficulties that targeted users had to face during e-HRM adoption. E-HRM stakeholders reported a frequently ineffective interaction between HRM, technology and the organizational stakeholders and simultaneously expressed the need to be kept involved in the development and implementation process of e-HRM. In support to achieving sustainable e-HRM, targeted users need improved communication structures and should be involved from an early stage on.

For e-HRM to become sustainable, we therefore say that it is very important to involve all e-HRM stakeholders as soon as possible. Their thoughts, actions and reactions interact, giving rise to either negative or positive thoughts about e-HRM. By leaving them out of the e-HRM adoption process, opportunities to use their feedback constructively to enhance sustainable e-HRM are missed out on. Targeted users also expressed critique on the adopted operational e-HRM technology. They felt at

loss, finding that the new operational e-HRM technology did not always function smoothly, did not improve existing work processes and was difficult to maintain.

Generally speaking, targeted users are willing to actively support achieving sustainable e-HRM, as they benefit from the advantages. They are willing to take part in the evaluation of e-HRM development and the implementation of e-HRM by giving feedback, but miss clear organizational structures to get involved and are not sure about whether feedback is valued and/or used to monitor their performance. Our findings suggest that organizations do well in giving more time and attention to training targeted users, when introducing e-HRM and other applications. Organizations should be aware that targeted users don't always express their concerns and/or encountered problems freely with their superiors or those officially responsible for training them.

E-HRM stakeholders also expressed fear about losing felt positive aspects of the existing organizational culture and hope that the organization will take this concern seriously. We can therefore suggest that the iPad and its e-HRM applications have created distance between e-HRM stakeholders. There is still a need however, to preserve the social character of the organization and the relationships between different e-HRM stakeholders.

Based on our findings within this research we concluded that the adopted e-HRM applications are not fully sustainable yet. Our analysis show that this is due to defective social and material interaction between e-HRM stakeholders, as their perceptions and needs, related to e-HRM were not sufficiently taken in to account. Technical issues such as poor internet coverage, sluggishness of the systems, systems not syncing fast enough and the incompatibility of the different systems used have also led to resistance and frustration by targeted users.

To achieve sustainable e-HRM, we suggest that; First, organizations do well to strengthen vertical and horizontal communication-lines. Second, e-HRM stakeholders should be involved at an early stage, e.g. from the adoption stage of the implementation process onwards. Third, technical issues such as internet coverage and system compatibility, should be improved.

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APPENDICES

A.   E-HRM applications (apps) and more

	Application	Name	Description
1.	HRM	IDT ('In dienst treding')	Used by line managers during the hiring process and to request approval of the vacancy to the branch manager.
2.	HRM	Verzuim ('HR-verzuim')	Used by line managers to report employees sick (technical side). Line managers can also see an overview of all employees who called in sick and is also able to report them better again.
3.	HRM	HR Info	Only used to search for information about employees and to send emails to employee (groups). The information within this application can not be changed.
4.	HRM	Uit dienst (op eigen verzoek)	Can only be used when employees request to resign on their own.
5.	Operations	AUP ('Asito Uren Portal') Non-e-HRM-app, has been considered an e-HRM app in the past.	Digital portal to register the planned working hours, the actual worked hours and the difference per employee and location.
6.	Operations	Objectinformatie	
7.	Finance	Jaarbehoefte	
8.	Finance	Bestelling	
9.	Operations	TopDesk	
10.	Operations	Check app (DKS – dagelijks kwaliteits system)	
11.	Operations	KIS (klant informatie system)	Client information system. Here you can find all relevant information about all the clients Asito has.
12.	Finance	Regie app	Invoicing of extra work

B.   List of used documents for analysis

Official notice of management about implementation e-HRM	
Company Protocols & Records	• Behoeften inventarisatie OL dag 2015 • Resultaten evaluatie OL dag 2015-16 • Actielijst vanuit gebruikersoverleg • MTO vragenlijst v5
Manuals how to use the e-HRM applications	• Handleiding IDT • Handleiding WUD • Handleiding Uit Dienst • Handleiding Verzuim app
Assessment and evaluation results	
Current job descriptions and requirements	• Functieprofiel objectleider • Functieprofiel vestigingsmanager
Data set e-HRM application usage	• App gebruik 2014-2016 v1 Ol'er

C.   Semi-structured interview guide (eng.)[1]

General information

- Experience (X year(s) working in the cleaning industry & company)
- Educational level
- What is your travel distance to work (-location)?
  (0 min – 15 min, 15 min – 30 min, 30 min – 1 hour, longer than 1 hour)

Current knowledge about e-HRM as a concept (ignorance/incomprehension)
- What do you think the term 'e-HRM' means?

Needs to achieve sustainable e-HRM implementation

If e-HRM would be introduced and implemented within a different location (different company, etc.), where the concept of e-HRM apps is unknown.

- How should the organization introduce the implementation of an e-HRM application?
- Who do you think are the relevant stakeholders when introducing e-HRM?
- What skills do you think these different stakeholders need?
    - Employees
    - Line managers
    - Unit managers
    - Etc.
- What do you need from the organization to implement the e-HRM application in a sustainable way?
- How should the organization support you?
    - Skills training
    - Technical support
    - Management support
    - Etc.
- What must the e-HRM application be able to deliver in order for you to implement it in a sustainable way?
- How do you believe this will influence the working process and the interrelated organizational relationships? (technology, hrm and organization)
- What do you need to achieve sustainable implementation?

Perceived consequences

- What do you believe are the advantages/disadvantages of e-HRM applications?
- Looking back, what changed since the introduction of the e-HRM applications?
    - Change in perception and attitude?
    - Change in technology readiness and skills?
    - Changes in organizational relationships?

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1   As all interview respondents were Dutch, the interview guide had
     to be translated in order to be used within this study.

- What can be done better?
- How can it be done better?

Expectations (prior implementation/usage)

Personal opinion
- What was your initial reaction on the introduction of the e-HRM application?
- What did you think of the idea?
- What were your expectations prior to the introduction / prior you starting using the applications?
- Why do you believe the company introduced the e-HRM applications?
- What do you expect for the future of e-HRM applications?

Experiences (during implementation)

- How did you experience the introduction of the e-HRM applications?

Knowledge sharing between stakeholders
- What is the difference in communication between the different e-HRM users before and after the introduction of e-HRM applications?

Perceived usefulness
- How do you experience the usefulness of the introduced e-HRM applications?

Practices (during implementation)

Frequency of use
- How often do you use the e-HRM applications?

Difficulties
- What difficulties do you encounter while using the iPad/Apps?
- Technical knowledge/skills
  - Technology anxiety (e.g. afraid of using iPad/apps, not the right skills)
- Technology
  - Ease of use of iPad
  - Design of Apps (e.g. not logic, difficult design)
- Introduction new apps
  - Speed of new app introductions
  - Not enough time to get used to the introduction/new process
- Process changes
  - Differences between old and new processes introduced with the app
- Expectations of line managers' prior introduction
  - Change of responsibility (e.g. more responsibilities, more work load)
  - Change of working hours (not 9-5 anymore)

- What differences to you see/experience between the different apps?
- Ease of use app

- Knowledge about
- Goal/intention of the app
- Organizational process/regulations change
    - Preference line managers (some apps are preferred above others-why?)
    - Operations – apps
    - Commerce – apps
    - Finance – apps
    - HR – apps

Other

Unknown issues
- Technical level
- Individual level
- Organizational level

Personal notes after the interview

1. How did the interview go? (was the interviewee talkative cooperative, nervous, well dressed/ scruffy, etc.)
2. Where did the interview take place?
3. Any other feelings about the interview (did it open up new avenues of interest)
4. The setting (busy/quiet, many/few other people in de vicinity, new/old building, use of computer, etc.)

D. Code book

Goundedness: Refers to the number of quotations associated with a particular code.

Number of Groups: Number of groups the code is in.

Code family: Company Asito

Description: Information about the case company and the internal work processes.

Number of Codes: 5

	Name	Groundedness	Number of Groups	Comment
1	Asito	31	1	Information about the company Asito (culture, atmosphere, etc.)
2	Collaboration	36	2	How Asito employees collaborate and work together
3	Communication	89	2	How Asito employees communicate with each other
4	Prior work experience	25	1	Earlier work experience prior to Asito or the e-HRM implementation
5	Reasons for introduction	15	1	Given reasons why Asito introduced e-HRM applications.

Code family: e-HRM applications/iPad

Description: Information about specific applications
Number of codes: 24

	Name	Groundedness	Number of Groups	Comment
1	App Design	15	1	Feedback on the design of the different apps
2	App Features	18	1	Information about application features
3	App Update	3	1	Information about the frequency, times etc. of app updates
4	App Usage	34	1	Information about how often and how (perceptions) the applications are used by employees
5	Apps overall	38	1	Overall information and perceptions about the applications
6	AUP App	22	1	Information about the AUP application
7	Check App	2	1	Information about the Check application. Check application helps line managers to check daily working results (list of times that have to be checked)
8	Dashboard	3	1	Information about the Dashboard (iPad&PC)
9	Differences between applications	3	1	Information about differences between the different applications.
10	Gespreksverslag App	8	1	Information about the 'gespreksverslag' application

	Name	Groundedness	Number of Groups	Comment
11	HR Apps	3	1	Information about specific HR applications
12	HR info App	9	1	Information about the HR info application
13	ID Check	6	1	Information about the ID-Check application
14	IDT App	15	1	Information about the IDT (in dienst treding) application
15	iPad	19	1	Information about iPad usage
16	iPad Usage	3	1	Information about the usage of the iPad
17	Jaarbehoefte App	2	1	Information about jaarbehoefte app
18	KIS App	9	1	Information about the KIS (klant informatie systeem) application
19	Leerhuis App	9	1	Information about the leerhuis application
20	Objectinformatie App	1	2	Information about the objectinformatie app
21	Regie App	12	1	Information about the regie application (additional orders for clients)
22	UDT App	2	1	Information about the Uit dienst application.
23	Verzuim app	4	1	Information about the Verzuim app
24	Testing apps	3	2	Information about the process of testing new applications

Code family: Employee Roles

Description: Information about employee roles and their interaction with each other.
Number of codes: 12

	Name	Groundedness	Number of Groups	Comment
1	Administration	26	1	Information about the perception of administration function, their collaboration and communication with line managers and the e-HRM implementation.
2	Collaboration	36	2	How Asito employees collaborate and work together.
3	Communication	89	2	How Asito employees communicate with each other.
4	CRA	23	1	Information about the CRA function and how they cooperate within the implementation process.
5	Function	10	1	Specific information about the line managers function.
6	Functioneel Beheer	5	1	Information about the function 'functioneel beheer'.
7	HR director	1	1	Information about the function 'HR director'.
8	ICT employees	4	1	Information about ICT personnel.
9	Inter-organizational relations	60	2	Describes the inter-organizational relations between employees.

	Name	Groundedness	Number of Groups	Comment
10	Line manager	54	1	Information about the line managers role within the company.
11	Personeelsmanager	1	1	Information about the function 'personeelsmanager'.
12	Regio-opleidster	1	1	Information about the function 'regio-opleidster'.

Code family: Implementation process

Description: Information about the e-HRM implementation process and e-HRM stakeholders' perceptions on it.

Number of codes: 14

	Name	Groundedness	Number of Groups	Comment
1	e-HRM concept	9	1	Knowledge of e-HRM as a concept
2	Expectations on implementation	31	1	Expectations prior the implementation
3	HRM tasks	6	1	Information about specific HRM tasks
4	Inter-organizational relations	60	2	Describes the inter-organizational relations between employees
5	Introduction	121	1	Information about the introduction process
6	Involved parties	28	1	Parties that were/are or should be involved during e-HRM implementation
7	Learning	25	1	Information about employee learning
8	New work process	114	1	Information about the old working processes after e-HRM implementation
9	Old work process	20	1	Information about the old working processes prior e-HRM implementation
10	Perceptions	104	1	
11	Personal (own) initiative	81	1	Employees own initiative on doing something
12	Problems	133	1	Problems with the implementation of the e-HRM apps and the new working process
13	Responsibilities / Additional tasks	28	1	Information about line managers responsibilities and additional/ new tasks since the implementation of e-HRM applications.
14	Training Apps	38	1	information about the given training on the different applications.

Code family: Perceptions on the e-HRM implementation

Description: Believes, feelings, expectations on the implementation process of the e-HRM applications.
Number of codes: 11

	Name	Groundedness	Number of Groups	Comment
1	Acceptance	13	1	Acceptance and reaction to introduction of e-HRM
2	Advantages of e-HRM (apps)	37	1	Advantages of the e-HRM (iPad & Apps) implementation.
3	Atmosphere	2	1	
4	Client reaction	8	1	Clients reaction to the e-HRM implementation
5	Control	9	1	Information about the changes in control since the e-HRM implementation.
6	Disadvantages of e-HRM (apps)	46	1	Disadvantages of the e-HRM (iPad & Apps) implementation.
7	Experience/ Reflection on implementation	49	1	Looking back, how was the implementation experienced.
8	Flexibility	26	1	Information about the flexible structure of the line managers function.
9	Sustainability	4	1	Information about sustainable practices since the e-HRM implementation.
10	Time management	13	1	Information about how employees deal with time management since the e-HRM implementation.
11	Transparency	3	1	Information about the changes in transparency of the company after the e-HRM implementation.

Code family: Required changes & Needs

Description: What changes are needed to improve the implementation?
Number of codes: 4

	Name	Groundedness	Number of Groups	Comment
1	Advice given / Solution found	90	1	Advice given/or solution found on how to change or improve the implementation process, the apps, iPad, systems, working process etc.
2	Evaluation	8	1	Needed evaluation moments of the implemented e-HRM applications
3	Future	26	1	Expectations about the future
4	Org. support	9	1	Needed org. support during e-HRM implementation

Code family: Technology

Description: Information about the technology used within the implementation process and related issues.

Number of codes: 6

	Name	Groundedness	Number of Groups	Comment
1	ICT system	29	1	Information about the current ICT system
2	Internet coverage	21	1	Information about internet coverage when working outside (not in Asito office)
3	Tech. support	16	1	Information about the tech. support given to targeted users and the reaction time until a app problem is solved by ICT, CRA or in a different way.
4	Tech. skills	26	1	Information about technical skills of employees
5	Technical issues	21	1	Information about technical issues
6	Testing apps	3	2	Information about the process of testing new applications