

HRIS in the cloud

A Comparative Approach to On-premise and In-cloud Human Resources Information Systems

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Abstract

Human resources information systems (HRIS) help a number of HR processes to be executed with the help of IT. These systems are usually set up as on-premise systems, usually as a part of an Enterprise Resource Planning (ERP) system in large organizations. Latest developments in the cloud technology field has enabled Software-as-a-Service (SaaS)- or cloud-based HR systems, and their usage is proving to be a viable alternative to on-premise HR systems, although the adoption levels differ for different HR functions. Organizations are motivated to move their HR systems to cloud in order to benefit from new technology, reduce IT costs and standardize their HR processes. In-cloud HR systems differ from on-premise systems in many aspects including their implementation methodology, costs involved, the IT and HR skills needed to implement and maintain these systems. Organizational readiness for the changes that come with cloud based systems and security issues regarding data in cloud based systems are some of the challenges organizational face in their move to cloud.

Keywords HRIS, cloud, SaaS, human resources systems

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1 Introduction

The cloud technology is transforming business. Human Resources (HR) as a field is not immune to this change. The systems that have been enabling HR to perform its part are rapidly changing, and organizations, both in HR and IT departments, both at operative and executive levels, have to make decisions regarding how to run their business and what systems to use. A number of factors have influence in these decisions, and decision makers representing organizations, just as it is with any other functional area information systems, will have a variety of choices for what tools and systems to use for which business processes, and how to acquire, integrate and manage these systems.

In this changing environment for systems, cloud solutions are getting ever more popular alongside on-premise (in-house) Enterprise Resource Planning (ERP) and HR information systems (HRIS). The HRIS landscape of an organization is most likely far from being homogenous and providing a standard solution for every HR functionality in the organization, which makes the system related decisions even more complicated. Therefore, the system choice is not as simple as whether to keep everything on-premise or move everything to the cloud, as the vendors would like to suggest. Although this would make integration an obsolete job, the reality is almost always more complex and several systems, on premise and in-cloud, nowadays exist in elaborate landscapes. Especially in the case of larger enterprises, every system related decision is a challenge that needs to be taken seriously.

In this dynamic environment, a new way of managing HR and HRIS landscape requires better understanding of real life cases and possibilities to evaluate future of HR information systems.

The aim of this thesis study at the very basic level is to understand how recent technological changes revolving around cloud based HR systems impact, change and challenge HR and IT both, motivated by the author's own consulting background in the on-premise HR systems world.

In this chapter first chapter, a background to the field of human resources information systems (HRIS) will be provided with an introduction to major HR functions and how IT helps HR to run. Later, the essential concepts relevant to this study such as e-HRM, ERP and HR systems as a part of ERP, and cloud technology related concepts including SaaS will be introduced. At last the research questions will be listed.

1.1 Background

In order to discuss the issues related to solution architectures in the field of or relevant to HRIS in the further parts of this study, basic concepts related to the research topic will be introduced in this chapter.

Since the discussion presented in this study takes some HR systems that would be classified as on-premise to be a part of an ERP system, this part will include a brief introduction to ERP systems as well.

1.1.1 Human Resource Information Systems (HRIS)

Human resource information system (HRIS) refers briefly to integrated systems used to collect, store, manipulate, retrieve, analyze and distribute information regarding an organization's human resources in order to support HR activities and managerial decision making. (Hendrickson, 2013; Kavanagh, Thite, Johnson, 2015). A wider description of HRIS would include people using it, data it carries, policies and procedures it enables as well as a systematic way to maintain the software and hardware. A paper based system used for the same purposes prior to a computerized system would also be considered an HRIS, but this study will use the term to refer to the latter.

History of HR related record keeping for the personnel departments in paper forms already had started in the pre-World War II era, when "scientific management" was the dominant strategy to maximize productivity. Employment was defined by a contract between the employee and the employer, with the near absence of any government regulation, therefore the record keeping was made mainly for the internal purposes, however there was no IT-enabled HR activity yet in sight. In the post-World War II era until the 1960, albeit still very expensive, computers started to enter the business world, and payroll calculations became the first HR function to be automated. During this era, job description based compensation programs and unionization was the defining movements in the field, and as a result of increased influence of government agencies in industrial relations, employers started to improve their record keeping practices. The influence of labor unions in the employment relations and the legal compliance requirements only increased during 1970s with the growing economy. This period also saw the declining IT costs, as well as the increase in computerization of business functions and the appearance of first management information

systems (MIS), including for personnel departments, which by then had begun to be called HR. The pressure to use more effective and efficient systems was mainly due to potential penalties a company could face in case of failing to comply with the rules and regulations. 1980s and early 1990s was when HR function started to turn its focus from administrative tasks to personnel development, and managers were pushed to focus on return on personnel costs in the face of intensifying competition. This trend and the fact that a computer-based HR system was rather affordable for even smaller companies led to increased utilization of IT, which resulted in a significant reduction in the time spent on transactional HR activities, and HR personnel was able to focus on more value-creating activities. From late 1990s until present, with the backdrop of globalization, internet enabled services and outsourcing, technological advances transformed many HR processes into online processes and brought in unprecedented analytic capabilities, and possibilities for companies to transform HR into a truly strategic partner (Kavanagh, Thite, Johnson, 2015).

In order to better understand the way that IT can facilitate the job of modern HR department, a brief examination of HR management activities is useful. Figure 1 shows different HR management activities, whose interdependent nature is indicated with the arrows that show the interactions.

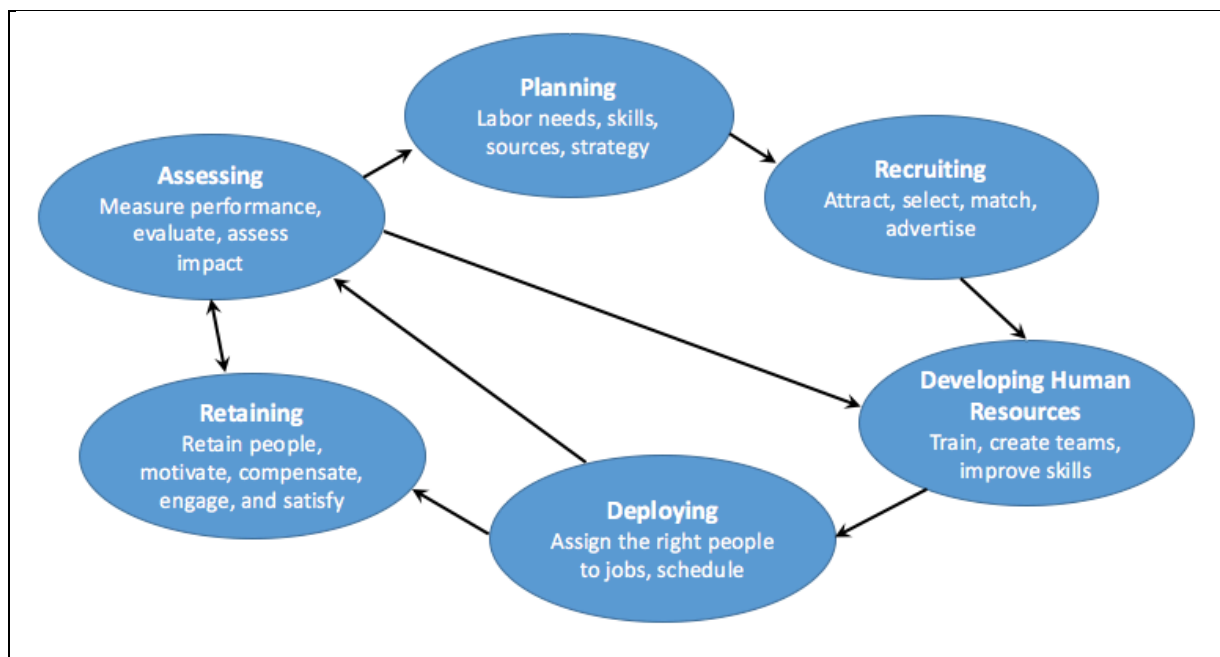


Figure 1. HR management activities (Source: Turban and Volonino, 2012)

The key HR activities that are executed with the help of IT can be grouped as below (Turban and Volonino, 2012; Rainer, Prince, Watson, 2013):

Recruitment: Recruitment process refers to finding candidates for employees, screening them using various methods and deciding which ones to hire. Whether there are too many applicants interested in a position or too few, IT can help a company to handle these applications. Use of online recruiting tools can result in reaching out to a wider network and can bring in candidates with the right qualifications, which works similarly for the applicants where they can easily find out about jobs suitable to their qualifications and interests. These tools can enable searching and shortlisting candidates and tracking their application processes, making it more transparent to those involved in the recruitment process within the organization and to the applicants.

Usage of social networks for recruitment has become very popular and increasingly integrated into recruitment process. Social networks such as LinkedIn offer possibilities to employers to search for candidates and post jobs and receive applications. External social networks can be integrated with applicant tracking system (ATS); for example, a candidate can authorize such a system to collect data from their LinkedIn profile (Bradley, 2015).

Human Resources Development: After hiring, an employee's performance is typically kept track of via periodical performance assessments, and based on these assessments, companies develop their workforce by offering trainings to their employees. Performance evaluation and training are two areas of HR management where IT is heavily involved.

Digitized performance management systems make it significantly easier for employees and managers to participate in a cycle of performance evaluation. The individual targets for different performance areas based on organizational targets can be agreed upon by employees and their managers, and at the end of evaluation period, employee's performance is assessed by themselves, their managers, and sometimes their teammates. This process and the following salary review can be started by automatized systems that would, for example, send emails to employees and managers at the set times and directing them to the forms they would need to fill and continue the process according to set workflows. Collecting this data manually and running such a complex process on paper can easily lead to errors and would take a much longer time. The data collected during the performance evaluation process can

be used for systematic analysis of performance, decisions regarding promotions, transfers, or layoffs, rewards, salary reviews, and training needs.

Trainings are an important part of human resource development activities. In order to stay competitive, companies understand the strategic importance of developing the talent base they have and keeping the skills of the employees relevant in an evolving market. Organizations that invest in their human capital build a career plan for their employees, which means keeping the employees trained.

Organizing training activities has seen some of the most extensive digital transformations in the field of HR. In addition to planning and monitoring trainings on a larger scale on IT applications, interactive web-based learning, also called e-learning, has been changing the way training content is provided. The web based multimedia trainings can be used to either support conventional classroom trainings or completely replace them with virtual classrooms. E-learning can deliver high quality and current content in a consistent way across training sessions, usually letting employees take the course at a time and place that suits them, and at their own pace. It also allows large number of learners access the content at the same time, practically ruling out any capacity issues (Rainer, Prince, Watson, 2013).

Human Resources Planning, Control and Management: IT can support three major areas in managing an organization's workforce: employee records and payroll, benefits administration, and employee relationship management.

First one refers to keeping basic employee data (employee master data) that is relevant for other HR processes, and preparing payroll, which will be calculated in an automated way and result in paychecks being prepared and sent to the employee and money being transferred to employee's account.

Second is benefits administration, which includes wages, bonuses and other benefits. Benefits can include healthcare, dental care, pension contributions, child care centers, disability or unemployment benefits. This can be a complex area for a company that lets employees to negotiate benefits on a personal basis. Some of these are possible to register and manage by employees themselves by using online self service tools via company portals.

Organizations also develop employee relationship management (ERM) applications in order to better manage the workforce all through the employment life cycle from hiring to leaving the company. This includes a wide variety of activities, such as providing access to

self-service tools for employees to update their basic information, enter leave data and see when their leave requests are approved, shift management, enrolling to trainings, communicating their grievances with managers and HR, participating in regular employee satisfaction surveys.

Based on the grouping of HR activities and examples of HRIS above, an overview of how information systems can support HR function at different operational levels can be shown as Figure 2 with examples.

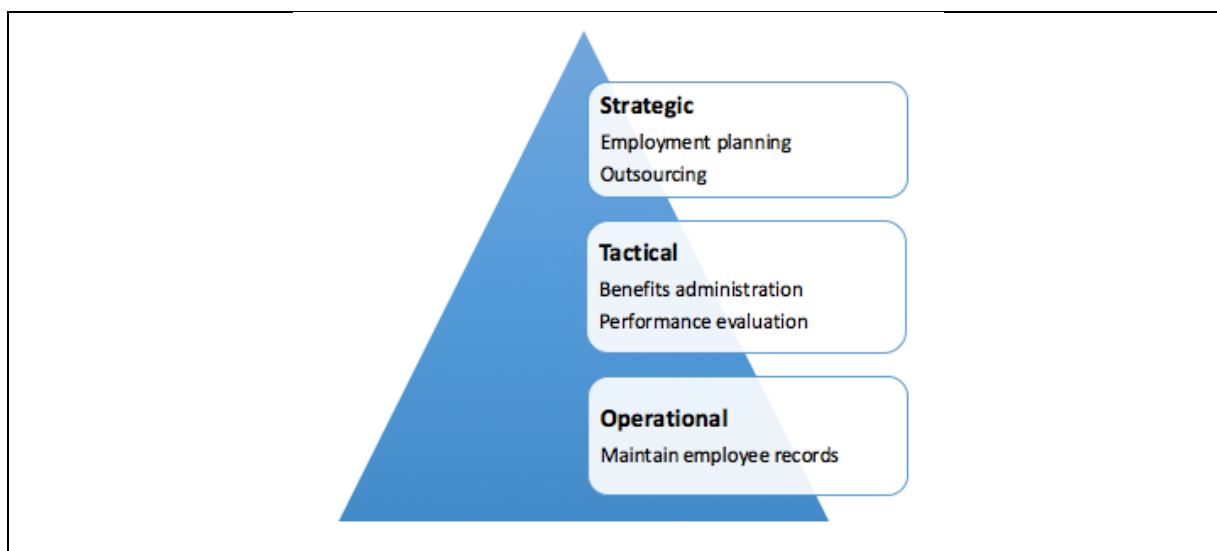


Figure 2. Examples of information systems supporting HR at different levels (Source: Rainer, Prince, Watson, 2013)

Wright, McMahan, Snell and Gerhart similarly group the HR activities in three broad categories as “transactional, traditional, and transformational”. Transactional activities are typically day-to-day activities relevant to regular bookkeeping, such as updating an employee’s contact information, updating payroll related information or keeping track of lunch benefits or bonuses. Traditional activities are recruitment, hiring, training, planning, compensation and performance management, and they can add significant value to the organization if their outcome is in line with the strategic targets of the company. Transformational activities, on the other hand, refer to those actions whose impact would be an organization-wide added value, such as “cultural or organizational change, structural realignment, strategic redirection, and increasing innovation.” (as cited in Kavanagh, Thite, Johnson, 2015).

Using the classification above and referring to the historical evolution of HRIS, Kavanagh et al. (2015) also make note of the change in the role of HR management from being primarily dealing with routine “transaction and traditional HR activities” to increasingly “transformational HR activities” in the past decades. This is an important point in understanding and evaluating the current changes in the landscape and composition of HRIS, since allowing HR to focus on more strategic side of business by making the administrative processes more efficient by outsourcing or deploying certain systems is still a valid driver for businesses.

HRIS is a field with many stakeholders in an organization: First and foremost, HR professionals rely on the system to do their jobs. These may include record keeping, payroll, legal reporting to authorities, skills management of the employees. Second is the managers, who require information from the HR systems regarding their team, performance related goals and appraisal data and time planning data such as shift plans and leaves. At last, employees use the systems where they manage their benefit options, update their own data, participate in trainings and automated performance appraisal processes. Therefore, HRIS can easily be described as the “backbone” of modern HR (Hendrickson, 2003).

1.1.2 Electronic Human Resource Management (e-HRM)

Parry and Tyson (2011) define e-HRM quite comprehensively as “*a way of implementing HR strategies, policies and practices in organizations through a conscious and directed support and/or with the full use of web-technology-based channels*”. This refers to a broad set of activities that can be executed with the help of web technologies from the employee’s joining in an organization all the way through his employment until his retirement or termination; the list includes but is not limited to recruitment, performance management, career and succession planning, training/learning, benefits administration and employee data maintenance, time data collection, employee surveys, and termination processes.

In his review of the existing e-HRM literature, Strohmeier (2007) refers to technology’s role as both connecting geographically separated participants of a process, and supporting and even substituting them in their tasks in these processes. In comparison to other terms used for the concept such as “virtual HRM”, “business to employee (B2E)” and “Web-based HRM”, e-HRM can cover wider properties of these systems like having non-computer

components, involving other actors than business owners and employees, and being interfaced to ERP-systems (Strohmeier, 2007).

Although e-HRM by itself does not have any specific indication as to how the system in question is procured, implemented, hosted or maintained, it represents a shift in HRIS and a certain, significant change in the ways of working of HR that is defined and enabled by the technological advances. Additionally, e-HRM research can provide guidelines to how to approach and position a research with a technology focus such as this one in relation to the HR research domain.

1.1.3 Enterprise Resource Planning (ERP) Systems and HRIS

In order to be able to evaluate the recent changes in the field of HRIS, the author considers that HRIS' existence as a part of an Enterprise Resource Planning (ERP) system need to be included in the study.

ERPs are extensive, packaged enterprise software that have started gaining wide spread use in business already in 1970s, and they can be considered one of the oldest kind of management information systems. In the past decades they gradually became an omnipresent solution for organizations, especially large companies that want to benefit from integrating their business processes by using a unified database and a single IT architecture (Klaus, Rosemann, Gable, 2000).

ERP systems serve different business functions in an integrated manner, and therefore has different “modules” that correspond to different business functions such as Manufacturing, Sales and Distribution, Finance and Controlling, Human Resources, Supply Chain, Customer Relationship Management (Figure 3).

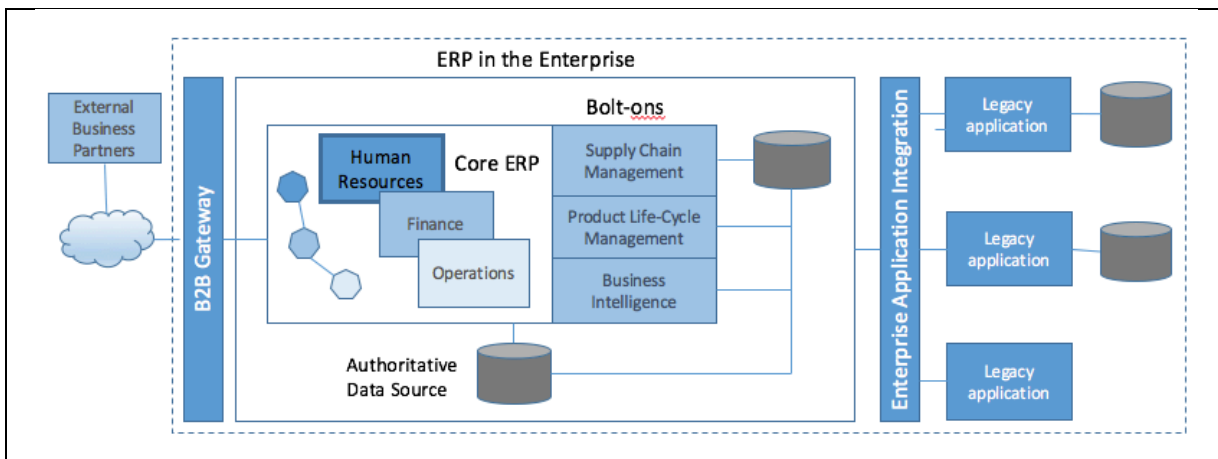


Figure 3. How ERP interfaces with other enterprise systems (Turban and Volonino, 2012)

Some of the most defining characteristics of ERP systems are that they are (1) modular, that they are comprised of different modules corresponding to different departments of a business organization, (2) customized, that they typically go through a configuration process before being taken into use in order to fit to and serve the specific business processes of an organization, (3) industry-specific, that they can be acquired as preconfigured for different industries such as banking, retail, telecommunications, etc. and (4) interfaced, that they are linked to other systems within or outside the organization (Chandrakumar and Parthasarathy, 2014).

In many cases for organizations that implement an ERP package, their HRIS will be comprised of the HR module of the larger ERP system and will be integrated to the other standard modules such as Finance. Examples are SAP HR as a part of SAP ERP¹, Oracle HRMS as a module of Oracle E-Business Suite², or Human Capital Management module of PeopleSoft by Oracle³.

With the development and popularity of internet applications, these HRIS providers developed web-enabled solutions in some functional areas, as the usage of the system became less and less dependent on the user being in the actual company premises or using a computer that can access the company network and therefore the HR system. Examples are SAP's

¹ <http://go.sap.com/product/enterprise-management/erp.html>

² <http://www.oracle.com/us/support/057153.pdf>

³ <http://www.oracle.com/us/products/applications/peoplesoft-enterprise/human-capital-management/overview/index.html>

employee self service (ESS) and manager self service (MSS) portal applications which enabled leave administration and approvals, maintaining basic data, filling timesheet information, benefits administration, travel and expenses and talent management processes such as training planning, e-recruitment, performance evaluation, career planning and to be executed via web interfaces, including SAP Talent Visualization by Nakisa⁴ which works as an integrated solution to SAP HR.

The challenges of ERP implementations are long acknowledged and researched, and these apply to HR modules as well. They are complex projects that require time and large investments. The processes in ERP systems are developed based on the industry “best practices”, which require organizations to adopt these processes, although large customizations are possible and are undertaken, but not supported by the vendors. They often need to be interfaced with legacy or third party applications, and along with updates they are bring extensive maintenance exercise to the IT.

1.1.4 Technological advances, Cloud technology and SaaS

Cloud computing is defined by National Institute of Standards and Technology as “*a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction*” (Mell and Grance, 2011). The essential characteristics of the cloud model is on-demand self-service, broad network access, resource pooling, rapid elasticity and measured service (Mell and Grance, 2011).

The Technological developments that enabled offering of cloud services are defined as Asynchronous JavaScript and XML (AJAX) technology, multi tenancy and virtualization (Chandrakumar and Parthasarathy, 2014). Turban and Volonino (2012) define virtualization as separating data and business applications from hardware and the origin of cloud computing of today. Virtualization enables a more flexible and efficient allocation of resources to applications, since infrastructure such as servers are no longer reserved for specific applications.

⁴ SAP Solution brief “Support Talent Planning Decisions and Help Ensure a Sustainable Workforce” on www.sap.com

Three major types of clouds are generally defined: Public, Private and Hybrid (Table 1). Community cloud⁵ (shared by few entities) or vertical clouds (built for a certain business or industry) can also be added to this list.

Table 1: Cloud types (Source: Rainer, Prince, Watson, 2013)

Public cloud	Accessible by anyone, non-exclusive, multi customer. Applications, storage or other computing resources are delivered as services over the internet.
Private cloud	“Internal” or “corporate” cloud. Accessible exclusively by one entity. Protected with firewall.
Hybrid cloud	A combination of private and public cloud, utilized to balance the needs for security and cost.

The promises of cloud computing that make it an attractive technology are summarized by Chandrakumar and Parthasarathy (2014) as follows:

- *Reduced capital costs due to the fact that the hardware and licenses are not purchased any more*
- *Cost transparency via pay-per-use or subscription models*
- *Reduced operational costs*
- *Increased flexibility regarding business processes due to lower switching costs*
- *Guaranteed service level*
- *Simplicity through commodity services*

The services offered by cloud computing providers are delivered according to three models: Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS). The responsibilities for the service provider (vendor) and the customer for each model are shown in Table 2.

⁵ <http://thecloudtutorial.com/cloudtypes.html>

Table 2: Comparison of cloud service models with on-premise software (Source: Rainer, Prince, Watson, 2013)

On-premise software	IaaS	PaaS	SaaS
Applications	Applications	Applications	Applications*
Data	Data	Data	Data*
Operating system	Operating system	Operating system*	Operating system*
Servers	Servers*	Servers*	Servers*
Virtualization	Virtualization*	Virtualization*	Virtualization*
Storage	Storage*	Storage*	Storage*
Networking	Networking*	Networking*	Networking*
*Managed by vendor / Managed by customer			

In the case of ERP or HRIS delivered in the cloud, SaaS (alternatively “on-demand computing”, “utility computing” or “hosted services”) model applies (Turban and Volonino, 2012). The customers do not need to invest in infrastructure, the resources or skills to keep the enterprise or HR systems running; they instead buy the service on a subscription basis and access the application and the data through a medium as simple and omnipresent as a web browser. The customer has a subscription based access to the service which also includes regular updates.

Different billing/payment methods exist in the market, such as yearly or monthly subscriptions or even pay-as-you-go and pay-per-use (Sobol, 2012), as well as different pricing strategies, as described by PwC (2013). SaaS providers can be on the more strategic and informed side or more on the ad hoc side with their pricing processes, which makes this new technology and model a challenge for the buyers.

Recent years have seen a significant increase in the offerings in the SaaS based systems and the number of vendors in the field of HR management systems, and organizations take a number of different roads in utilizing these solutions (Gale, 2014). Within the field of HR, some focus areas and functionalities gather more attention than others in the light of cloud and SaaS, and impact of this technological change on the organizations is likely to be felt in different levels.

1.2 Research questions

As the technology that enables enterprise systems evolve, its impact is also observed in the field of HRIS. Just like in other functional areas, organizations need to evaluate their human

resources information systems constantly, make decisions on how to build or configure their HRIS landscape and decide which enterprise tools are more advantageous for the present and future. Several factors affect this decision, such as cost, usability and fit to the greater system landscape.

As a result of the aforementioned technological advances, the field of HRIS appears to be scene to increasingly wider variety of new tools based on new technologies, offered by different sized developers, addressing different business challenges, aiming to enable different business processes. As an increasing number of organizations consider cloud based HR solutions as a possible replacement to their existing on-premise HR systems completely or utilizing the cloud offerings for only part of their HR system needs, it becomes important to understand these choices, both from the system and HR point of view and look into their impact on the organization.

In this regard, this study intends to answer at least the following research questions:

- R1: What are the major motivators for organizations to implement cloud based HR solutions and what are the factors leading the system choices?
- R2: How does a cloud based HR implementation differ from an on-premise implementation?
- R3: What are the potential benefits and challenges/concerns of deploying an in-cloud HR system and a combination of on-premise and in-cloud HR systems in comparison?

2 Literature Review

The end-to-end business processes being moved to a cloud based system is a relatively new business phenomenon for ERPs and specifically for HRIS as well, and literature lacks a mass of formal studies on HR systems in the cloud. However, a dispersed body of research exists for separate fields that the author feels can provide a theoretical basis for and insight into the research questions posed in this study.

The first one is the broader ERP literature, especially in the context of comparing and contrasting on-premise and in-cloud ERP systems. This is relevant to the research, as for many organizations HRIS is a part (or “module”) of a broader ERP system that comes as an integrated solution and their experience of implementing and using an HRIS reflects closely an ERP implementation project. As employee data is used as input to a number of processes (sales, manufacturing, project management) and the data outcome of typical HR processes such as payroll is used as input to other systems such as Finance, HR system forms an essential link between several functions in an organization.

The second one is the relatively more recent e-HRM literature. Although the definition of e-HRM itself is a focus of debate (Bondarouk and Ruël, 2009), the author finds this literature at a higher level useful; since the processes that are considered a part of e-HRM concept, such as self-service applications for employees and managers, recruitment and performance management systems, are also the functions that have been prominent in HRIS’ move to the SaaS solutions. Additionally, a meta analysis of e-HRM is found to provide an insightful general framework to approach the research questions.

Lastly in this part of the study, some research on the field of SaaS adoption is introduced and some groundwork is also presented directly regarding HRIS in the cloud.

2.1 ERP in the cloud vs. ERP in-house

In this part, some of the recent cloud ERP related research is examined. A few examples in the literature analyze and compare in-cloud ERPs to conventional, on-premise ERP systems with respect to implementation methodologies, costs, architecture and other business related criteria such as scalability and security. This provides a base for evaluating the same shift within the more specified HRIS context.

Elragal and El Kommos (2012) compare the implementations of a SAP ECC system (an on-premise system) to a SAP Business ByDesign (a cloud based solution) system in terms of implementation methodology, costs, time and post go-live usability of the system. SAP ECC is implemented using the standard ASAP (Accelerated SAP) methodology which relies on the waterfall approach; it follows five distinct phases: (1) Preparation, (2) Business Blueprinting, (3) Realization, (4) Final Preparation, (5) Go-live and Support. On the other hand, the Business ByDesign (ByD) implementation methodology is described as having four phases: (1) Prepare, (2) Fine-Tune and Integrate & Extend, (3) Test, (4) Go-live. The main difference here is that the activities that correspond to Realization (the baseline configuration, testing, customizations and detailed user acceptance testing) and Final Preparation (the data migration and checks) in an on-premise SAP implementation are included in a more parallel and iterative way in the Fine Tune and Integrate & Extend phase of the ByD implementation. In the latter, the customer data is uploaded to the new system much earlier in the process.

Grubisic (2014) attributes the global economic crisis of the second half of 2000s as a crucial turning point for the utility model enabled by the cloud computing being used in ERP context. He emphasizes that during this period, organizations had to reevaluate their IT investments, and especially in the case of SMEs (small and medium sized enterprises), found that the flexibility and standardization could be achieved at lower costs by deploying ERP systems in the cloud (Grubisic, 2014).

Regarding the costs, when yearly license costs of on-premise ERP is compared to yearly subscription fees of in-cloud ERP, substantial differences are found (Parthasarathy, 2013). Moreover, it is pointed out that more than license fees in the case of on-premise ERP, implementation and operational (maintenance) costs are the major burden, and they can be as high as seven times the licence fees (Grubisic, 2014). The lack of need for infrastructure, lower need for IT and HR resources due to less administrative tasks in the case of in-cloud ERP reduce the total cost of ownership (Elragal and El Kommos, 2012). The cost savings are also contributed by the fact that the business processes are standardized and come as pre-configured in the case of cloud ERP, while in on-premise the blueprinting phase requires detailed and long winded data collection procedure on organization's business processes (Elragal and El Kommos, 2012).

Cloud ERP implementation also requires less time to implement by utilizing the stored business processes for the organization to review already at the beginning of the implementation process. Users are involved with the system much earlier so they do not

require as extensive training as in the case of on-premise ERP, and the training for the resources responsible for maintenance is not required any more, since this is covered by the vendor (Elragal and El Kommos, 2012). Cloud ERP is considered an option since it offers a cost reduction in three fronts: the foundation, usage and support costs (Castellina, 2011).

In addition to cost of ownership, Grubisic (2014) adds three other drawbacks of traditional ERP: (1) functional drawbacks, which includes a “lack of comprehensive customizing set in ‘out-of-the-box solution’” and lack of flexible and comprehensive reporting capabilities, (2) technical drawbacks which are mostly linked to integrations and data interfaces, and (3) usability issues, which includes complex and difficult user interfaces. These drawbacks can be useful to assess whether cloud ERP addresses them and offers any improvements, at least in case of HR functionalities.

Elragal and El Kommos (2012) also compare the time taken by users to perform some tasks in both systems and found that in cloud based ERP systems the processes took much shorter to complete, concluding these systems scored better in user-friendliness.

Other benefits of cloud ERP is listed as being accessible any time and anywhere, streamlining business processes, easy upgrades and lower capacity requirements (Lennart, 2011).

Security is one of the top concerns of organizations considering moving their business processes to cloud, possibly replacing their on-premise ERP systems altogether (Elragal and El Kommos, 2012; Chandrakumar and Parthasarathy, 2014; Lennart, 2011). Other concerns are linked to the possible challenges with interoperability with existing systems, limits on customizing the ERP system according to the needs of the organization, lack of control over the system, vendor dependency and cloud’s general readiness for supporting a large and complex business environment (Parthasarathy, 2013). The need for business process reengineering as a part of the cloud ERP implementation is also seen as a concern (Grubisic, 2014). The local laws and regulations regarding the data security and transfer also need to be taken care of by the organizations in order to avoid unexpected costs and problems (Lennart, 2011).

It is concluded that in-cloud ERP can suit the needs and priorities of SMEs best, since they would have higher “cost and time sensitivity” and would not be able to provide the infrastructure required to keep the ERP system in-house (Elragal and El Kommos, 2012; Parthasarathy, 2013; Lennart, 2011). Generally, organizations that have a focus on

usefulness, require less customization and integration are found to be more suitable for cloud based solutions (Chandrakumar and Parthasarathy, 2014). The impact of in-cloud ERP can therefore be huge for smaller companies, but as the organization gets larger and the IT system more complex, the benefits start to diminish (Parthasarathy, 2013). Such organizations can utilize models where some functionalities that are business critical are kept in the conventional on-premise ERP environment and for other, simpler processes like automated talent management processes in HR can be run in a cloud based system (Chandrakumar and Parthasarathy, 2014; Grubisic, 2014).

2.2 e-HRM research

The focus and coverage of e-HRM (talent management processes, self service applications, etc.) is found to overlap to some extent with what is in the functional focus of the technological shift that this study is concerned with. The HR processes being enabled by web technologies are increasingly more often provided as services by cloud vendors and this is interesting to look at, both from HR perspective and from an information systems and technology point of view.

e-HRM is shown to have distinct goals in a multiple case study by Parry and Tyson (2011), which are listed as operational efficiency, service delivery, manager empowerment, strategic orientation, standardization and organizational image. The results on whether the organizations achieve these goals vary, but a number of factors affecting the success of e-HRM are reported. These are HR skills, training in e-HRM use, engagement with e-HRM, design of the e-HRM system and [organization's and user's] familiarity with technology. The emphasis on the user-friendliness and intuitiveness of the new system appears to have a large influence in the user adoption.

In their introduction to the issue of *The International Journal of Human Resource Management* that focused on HR and IT, Bondarouk and Ruël (2009) suggest a new definition for e-HRM as a result of ongoing discussion of the subject in the research community. They emphasize that focusing merely on the improvements in the administrative HR tasks by “electronization” does not cover the reach of e-HRM which includes more strategic gains such as increased employee engagement and workforce alignment. Therefore, they define 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” (Bondarouk and Ruël, 2009). This definition welcomes a wide area of research in the field, that could for example focus on:

- the content (HR practices involved or any certain kind of IT that supports a certain kind of HR),
- implementation (the adoption and different success criteria for e-HRM – diffusion, acceptance, appropriation, adoption, user satisfaction)
- different stakeholders (employees and managers in the target)
- consequences (value creation)

The author has found that e-HRM research can provide a useful framework to approach this particular study for grouping its focus areas and reporting its findings. For this purpose, the e-HRM research framework by Strohmeier (2007) is found to be beneficial (Figure 4).

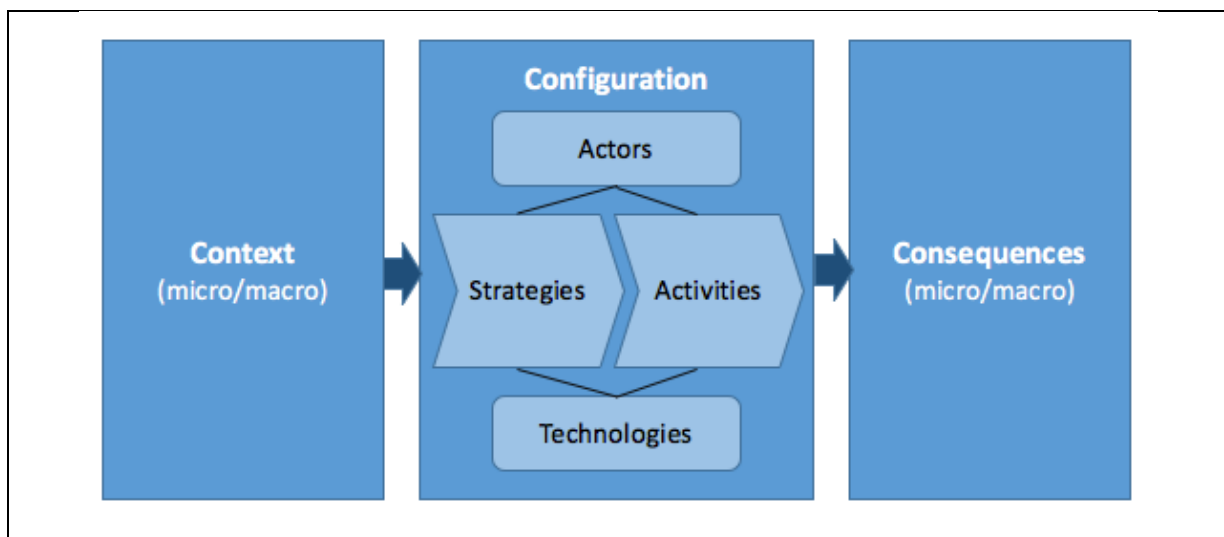


Figure 4. e-HRM research framework (Source: Strohmeier, 2007)

According to this framework, the context, configuration and consequences of e-HRM are distinguished from each other. The contextual factors affect the configuration and consequences of e-HRM, and they can be micro (related to individuals) and macro (related to organizational, cultural or legal environment). Configuration consists of actors, strategies, activities and technology. Consequences, similar to context, can be micro (e.g. user satisfaction or acceptance) or macro (e.g. efficiency, interaction of actors, a transformation of HR as a function).

A shift from an on-premise information system supporting HR function towards a different HRIS landscape utilizing new applications, new business model and changes in

internal workings of both HR and IT does not only represent a change to the technological configuration, but will have wider implications for an organization, encompassing and exceeding the HR.

For example, individual privacy concerns of individuals and their preconceptions about what a system change might entail forms their expectations from new HR applications (micro context), or the legal environment of the country, rules and regulations about data practices or the size of the organization can have an effect on the adoption of cloud based HRM (macro context).

As a part of “configurations”, actors could refer to different users (or “stakeholders”) in an organization who will be influenced by the change and need to be approached differently, such as HR users, applicants, employees, managers, HR systems administrators and even third party implementation and support partners. HRM strategy would be linked to an overall HR transformation plan in the case of a system change. Activities are what would be in the “scope” of an implementation, for example more administrative tasks like employee record keeping and payroll. Technology as a configuration could look into more specific parts of an HRM system, such as individual modules or functions like recruitment, performance management, payroll or benefits administration and how they work in integration with other functional modules, and how HR systems support the HR processes. Türetken and Demirörs’ (2004) study on whether a single ERP system such as Oracle HRMS can provide support for all the key areas of different P-CMM (People Capability Maturity Model) levels is an example on assessing the extent that an enterprise level HR software can cater to the needs of different types of organizations and HR functions, and could be applied to the purely cloud based integrated offerings or hybrid HRIS systems. From the configuration point of view, Strohmeier and Kabst (2014) study different types of e-HRM and define three kinds of organizations whose usage of HR systems at different levels and for different purposes: non-users, operational users and power users. Non-users are found to be smaller organizations, and power users are usually larger organizations with clear strategy objectives.

Finally, consequences in this model would refer to an assessment of the extent of achievement of individual or operational level goals, therefore the outcome of an HRIS implementation, such as user acceptance and satisfaction (individual) or efficiency improvements (operational) (Strohmeier, 2007).

The author expects the findings of this study to be mainly relevant to the context and some of the configuration aspects (actors, activities and technology).

2.3 SaaS adoption and cloud based HR information systems

Another framework the literature could offer for looking into the shift of HR functions from on-premise systems to in-cloud systems is the Technology-Organization-Environment (TOE) framework (Tornatzky and Fleischer, 1990). This technology adoption framework has been used to explain IT adoption at firm level by several studies (Oliveira and Martins, 2011). The model refers to three contextual aspects for an organization's adoption of a technological innovation. These are (1) Technology that is both internal and external to a firm, therefore the technology that is already in use and the technology that is available to the organization and its characteristics, (2) Organization, and its structures and processes, and (3) Environment, that covers all the external factors defining the context a firm operates, such as legal and country environment, industry and competitors (Figure 5).

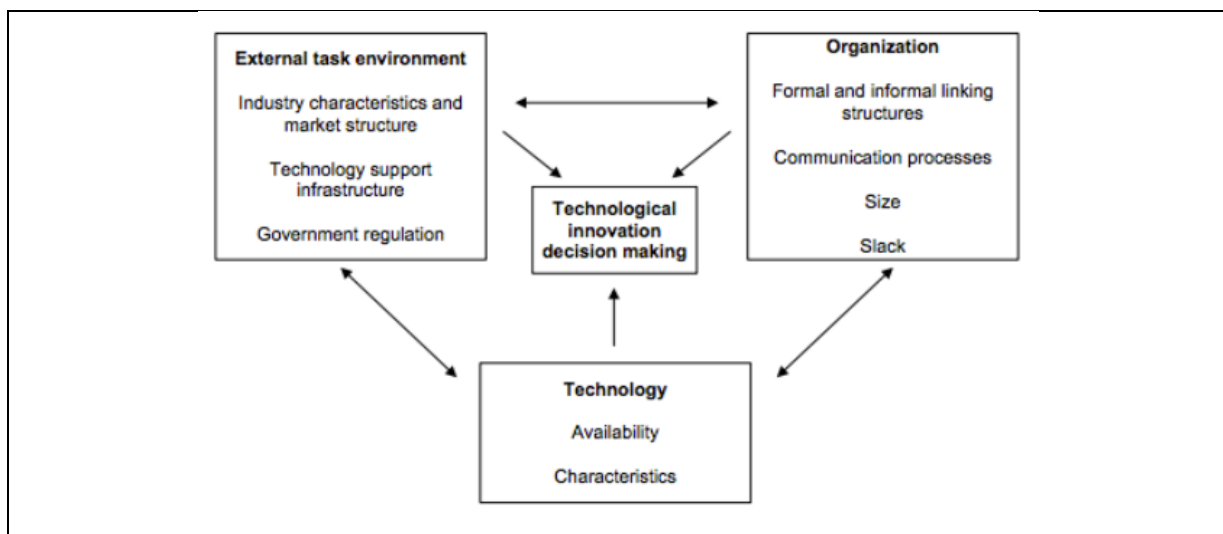


Figure 5. Technology, organization and environment framework (Source: Tornatzky and Fleischer, 1990; as used in Oliveira and Martins, 2011)

It has been suggested that for organizations to successfully adopt SaaS, the readiness from all three aspects of TOE is important (Yang, et al., 2015). Different SaaS readiness factors are found to be of difference importance for the SaaS adoption for Chinese SMEs. With regards to psychological outcome (attitude towards SaaS, intention to use SaaS), technological readiness was found to be the the most significant, which means potential users and decision makers are more concerned about usability. With regards to overt outcome

(actual adoption) however, organizational readiness was found to be most significant, which implies top management support and competition are important factors affecting the decision towards moving to SaaS. Compatibility, referring to how the SaaS system can be changed according to the business processes, is also found to be important for technological readiness, in this case more than perceived usefulness and perceived ease-of-use (Yang, et al., 2015).

In a separate study, it is also shown by Wang et al. (2016) that a cloud-based human resource management system would bring advantages to SMEs such as flexibility, better system capabilities, cost reduction and standardized processes, where the latter is also important in order to achieve optimal utilization of IT resources.

Although cloud based HR systems appear to recently enter the focus of the academic research (other than e-HRM literature), several indications and discussions of the “paradigm shift” from on-premise to cloud can be found in the business publications and the internet. Although the causality is not implied, the shift to SaaS model for HR management systems is seen as a part of the aftermath of the recession of the late 2000s; for organizations started looking at their technology spending more carefully (Kent, 2011). A parallel trend to this is the organizations’ increasing focus in talent management, especially in the post-recession period. An example is the increase in the number of job applicants for any open position, which makes recruitment a challenge for most companies, and with the remaining employees onboard, organizations are interested in moving away from a yearly performance evaluation method and try a more continuous approach to performance, so they are looking into newer and more innovative solutions in this field (Kent, 2011).

Talent management has lead the way in HR’s move to the cloud, but more core HR functions like employee master data, payroll, workforce management have been predicted to move to the cloud (Gale, 2014; Hamerman 2013). Goodwin (2013) also emphasizes the importance of “letting HR drive the project than group IT”.

The market surveys by research companies have indicated that an increasing number of companies are considering moving their HRMS to cloud (Towers Watson, 2014; KPMG, 2015) and listed the selection criteria for HR technology, which includes product features, ease of use, ease of integration and security of data (Kent 2011). Some of the priorities for companies considering cloud HRMs are “better workforce analytics, robust recruiting features, more mobile applications and a more user-friendly interface” (Gale, 2014).

One concept that has drawn attention since the HR software market has been shifting towards cloud is hybrid systems⁶ which combine on-premise and in-cloud HRMS (Kent, 2011).

The market for the HR software has also gone through changes. Many mergers and acquisitions in the solution market indicates some level of market consolidation, and almost all large vendors in the field are expanding their offerings to include cloud based HRMS as well (Gale 2014; Kent 2011; Goodwin 2013).

This section will be concluded by a brief introduction of three major HR system vendors and the cloud products they provide, which is considered to provide a reference to the empirical findings of this study. The author realizes that the products and vendors do change constantly, and for this study this input should be considered as contributing to the cross sectional picture of the market which might help to understand the choices made by organizations, and since the vendors' names are mentioned during the interviews, the author feels it to be beneficial to include these in the study, only at this level.

2.3.1 Vendors and products for in-cloud HRIS

A study of popular articles and interviews indicated the market for in-cloud core HR products to be dominated by three major vendor companies. These are Oracle (Oracle HCM Cloud), SAP (SuccessFactors) and Workday (Goodwin 2013; Gartner 2015).

Figures 6, 7 and 8 show the comparative functionalities offered by these three leading in-cloud HRIS providers (Gartner, 2015).

Research companies (Gartner) and survey companies (Sierra-Cedar) evaluate these providers as to their market share, functionalities or strengths as perceived by the users. These are not considered as a focal part of this study. More information regarding the cloud HR offerings of these vendors can be found in their respective websites.⁷⁸⁹

⁶ "Integrating a Hybrid Infrastructure? It's Now a Full-Time Job"

<http://searchcio.techtarget.com/feature/Integrating-a-hybrid-environment-now-a-CIO-core-competency>

⁷ Oracle HCM Cloud: <https://cloud.oracle.com/hcm-cloud>

⁸ SAP SuccessFactors: <http://www.successfactors.com/>

⁹ Workday: <http://www.workday.com/>

Oracle HCM Suite Functional Summary																	
Core HRMS			Service Delivery		Talent Management										Workforce Management		
Core HR Management	Benefits Administration	Payroll	Employee/Mgr. Self Service	HR Call Center Tools	Workforce Planning	Talent Acquisition	Onboarding	Performance Appraisals	Compensation Management	Career Development	Succession Management	Competency Assessment	Learning	Labor Scheduling	Time and Attendance	Leave/Absence Management	Task/Activity Management
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

✓ = Available From Vendor

Figure 6. Oracle HCM Cloud Functionality (Source: Gartner 2015)

SAP HCM Suite Functional Summary																	
Core HRMS			Service Delivery		Talent Management										Workforce Management		
Core HR Management	Benefits Administration	Payroll	Employee/Mgr. Self Service	HR Call Center Tools	Workforce Planning	Talent Acquisition	Onboarding	Performance Appraisals	Compensation Management	Career Development	Succession Management	Competency Assessment	Learning	Labor Scheduling	Time and Attendance	Leave/Absence Management	Task/Activity Management
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	P	P	✓	P

✓ = Available From Vendor; P = Partner Solution

Figure 7. SAP SuccessFactors Cloud Functionality (Source: Gartner 2015)

Workday HCM Suite Functional Summary																	
Core HRMS			Service Delivery		Talent Management										Workforce Management		
Core HR Management	Benefits Administration	Payroll	Employee/Mgr. Self Service	HR Call Center Tools	Workforce Planning	Talent Acquisition	Onboarding	Performance Appraisals	Compensation Management	Career Development	Succession Management	Competency Assessment	Learning	Labor Scheduling	Time and Attendance	Leave/Absence Management	Task/Activity Management
✓	✓	✓	✓	P	✓	✓	✓	✓	✓	✓	✓	✓	P	P	✓	✓	✓

✓ = Available From Vendor; P = Partner Solution

Figure 8. Workday HCM Functionality (Source: Gartner 2015)

3 Methodology

3.1 Research design

Having looked into the knowledge in the areas of ERP in the cloud and e-HRM which provides an underlying conceptual basis for the cloud based HR solutions from the market, an empirical study is designed in order to help answer the research questions of this study.

By this research, the author also aims to find out whether the outcomes found in the theoretical research in adjacent and related areas of study can be considered as transferable to the particular research area in focus.

The research is designed using a triangulation of methodologies in order to form a descriptive study which combines the suggestive strength of the quantitative data that exists as outcome of recent surveys conducted by other researchers and a qualitative study that approaches the questions at a more detailed level and provides an in-depth understanding of the reality related to the research topic. The author hopes to establish an acceptable level of validity with this approach.

Since the interviewees' reports rely in their personal experiences and understandings of the relevant situations, the study uses interpretive phenomenology as the method to approach the interview findings.

3.2 Data collection

In order to provide a wider and in-depth understanding of cloud based HR systems' impact on the business, two kinds of data are used in this study. As secondary data, results from publicly available HR technology surveys are used for the descriptive part of the study. In addition to that, primary data is obtained from a set of interviews conducted with HRIS professionals who have experience in SaaS/cloud based HRIS implementation and support.

3.2.1 Online sources

In order to approach the research questions from a quantitative perspective, a set of HR technology and delivery surveys are utilized. These surveys provided the research with an objective and more generalizable view on the research focus, since they reflect the views and

experiences of a large number of organizations with their experience with cloud based HR systems.

The surveys found to contribute to the study are:

- **HR Technology Survey by PwC (2014):** Conducted and published by PwC, this survey was completed by 268 respondent companies. 13% of the respondent organizations had under 1,000 employees, 29% had between 1,000-5,000 employees, 16% between 5,001-10,000 employees and remaining 42% had 10,001 and above. 55% of the respondents had employees in more than one country, and they were from a variety of industries.
- **HR Systems Survey by Sierra-Cedar (2014-2015 17th Annual Edition and 2015-2016 18th Annual Edition):** These surveys are the last two editions of the annual survey conducted by the research. The 17th edition was participated by an audience of 1,063 respondent organizations with an average 16,053 employees which comprised of 43% small (fewer than 2,500 employees), 29% medium (2,500-10,000 employees), 28% large (over 10,000 employees) companies. The 18th edition was participated by 1,204 respondent organizations with an average 17,709 employees which comprised of 49% small, 24% medium and 27% large companies.
- **Industry Trends in Human Resources Technology and Service Delivery Survey by Information Services Group (ISG) (2015):** Conducted online, the survey's respondents come from a variety of industries. Approximately 35% of the respondents are from organization with more over 10,000 employees.

All three survey results are published publicly on the organizations' respective websites.

3.2.2 Interviews

The interviews were held with a set of HRIS professionals who have experience with both on-premise and cloud based HRIS, predominantly as implementation or consulting partners to HRIS clients. The interviewees had project experiences covering different HRIS vendor products both on-premise and cloud based that are listed as leading providers of enterprise

class HR software¹⁰ (SAP HCM, SAP SuccessFactors, Oracle PeopleSoft, Oracle HCM Cloud / Fusion, Workday), they were based in different locations and had project experiences with customers from different countries such as India, Finland, U.K., Poland, Switzerland, Qatar and they were able to draw from the experiences both directly from their individual engagements and the projects and practices of their employers.

The interviews were conducted in a semi-structured way, and the questions were formed in open ended fashion in order to elicit responses that will help to obtain insight into the research questions.

¹⁰ "Seven Ways to Compare the Enterprise HCM Suite 'Big Three'", Gartner, 6.5.2015
<https://www.gartner.com/doc/reprints?id=1-2G3016O&ct=150518&st=sb>

4 Findings

4.1 HR technology surveys

From the HR technology and delivery surveys selected for this study, the survey outcomes relevant to the research questions posed will be summarized.

4.1.1 Adoption of SaaS/Cloud based HRIS

Survey data shows that the share of SaaS in HRIS is steadily increasing in general. The current distribution of deployments of on-premise and cloud among the organizations surveyed by Sierra-Cedar (2015) still show on-premise keeping its popularity especially in the areas of HRMS (core HR), payroll and workforce management, where in core HR the organizations with cloud deployments have reached 50% of the respondents. In the field of talent management, it is observed the SaaS model is now the dominant one, with 83% with cloud deployments and 22% with on-premise deployments. When organizations are asked about their plans in the coming 12 months, 96% have conveyed that they plan to have talent management in the cloud, whereas only 6% stated that they plan to have it on-premise. The future plans show a decline in on-premise deployments and an increase in cloud deployments in other three areas as well (Figure 9). The average user experience scores from cloud and on-premise HRIS deployments shows a higher score for cloud.

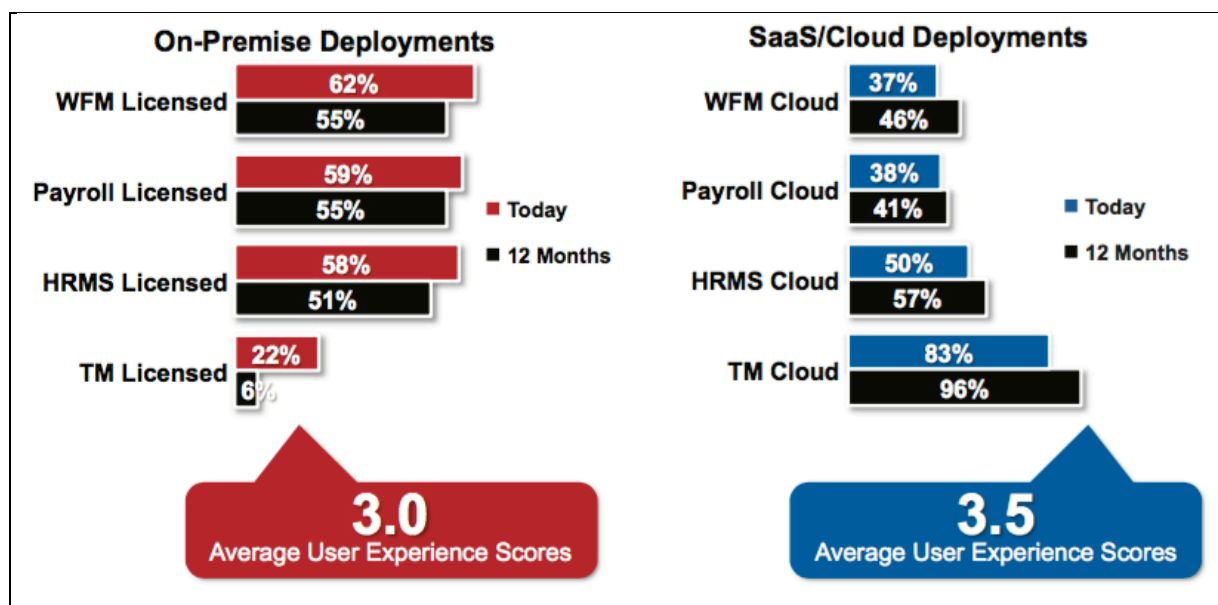


Figure 9. 2015-2016 HCM Technology Deployment (Source: Sierra-Cedar HR Systems Survey, 2015). On-premise deployments include combination and hosted environments. (WFM: Workforce Management)

The 2014-2015 edition of Sierra-Cedar (2014) survey had reported 28% of respondent organizations having cloud HRIS deployments, while 47% had indicated they expect to have cloud deployment in the following 12 months. This data was not broken down into specific areas of HR. The share of licensed solutions, both on-premise and hosted, for planned deployments were expected to decrease from 46% to 31% and from 13% to 9% respectively in the next 12 months.

Other surveys indicate a similar trend: KPMG HR Transformation Survey (2015) (formerly Towers Watson HR Service Delivery and Technology Survey) reports that as high as 40% of its respondents plan to replace their on-premise systems with a SaaS solution. Information Services Group (ISG) (2015) reports that regarding the prevalence of on-premise solutions, there is a decline in licensed solutions and an increase in cloud and hybrid deployments from 2014 to 2015, a movement led by organizations with fewer than 10,000 employees (Figure 10).

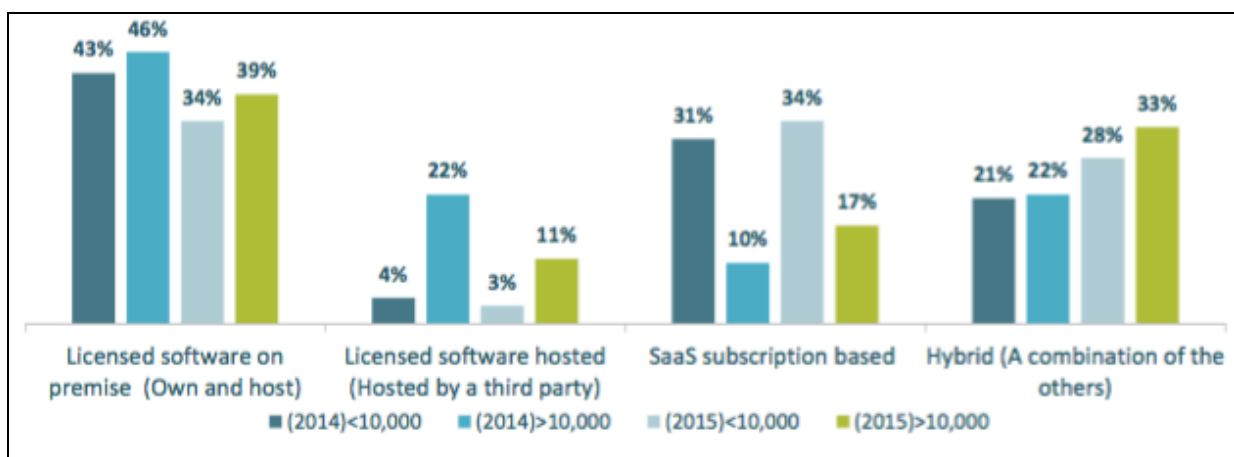


Figure 10. Prevalence of HR Technology Deployment Models (Source: ISG Industry Trends in Human Resources Technology and Service Delivery Survey 2015).

ISG (2015) survey also reports that for core HR applications, 48% of respondents plan to replace their current HRMS (core HR) with a SaaS HCM solution, and this rate rises to 52% for the plans to replace current talent platform with SaaS integrated talent suite.

The variety of distribution of on-premise and cloud deployments depending on organization size and area of application is reported by Sierra-Cedar (2015) survey (Figure 11). According to the survey results, the greatest adoption of SaaS solutions in all three application areas is by organizations with fewer than 2,500 employees, then followed by

medium sized organizations. Large organizations still hold predominantly on-premise HR systems.

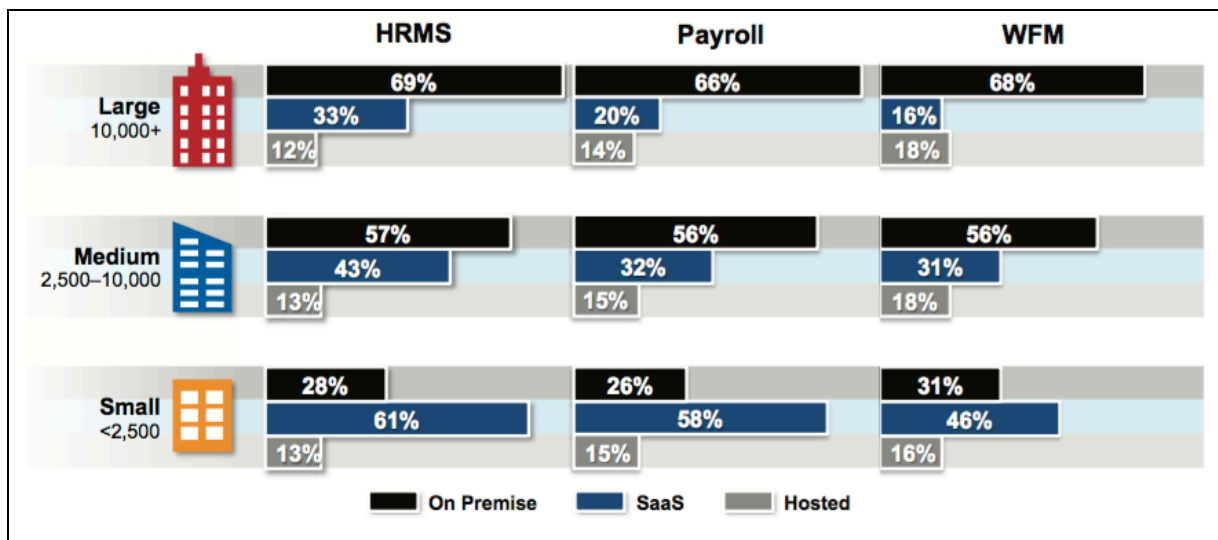


Figure 11. HCM Deployments by size and HR function (Source: Sierra-Cedar HR Systems Survey, 2015)

A similar result is reported by PwC HR Technology Survey (2014), with greater number of respondents reporting plans to move recruitment to cloud compared to a smaller number for core HR and payroll (Figure 12). The survey also reports that 70% majority of cloud deployments for core HR and payroll are by smaller organizations (with fewer than 5,000 employees) and only 10% have more than 10,000 employees.

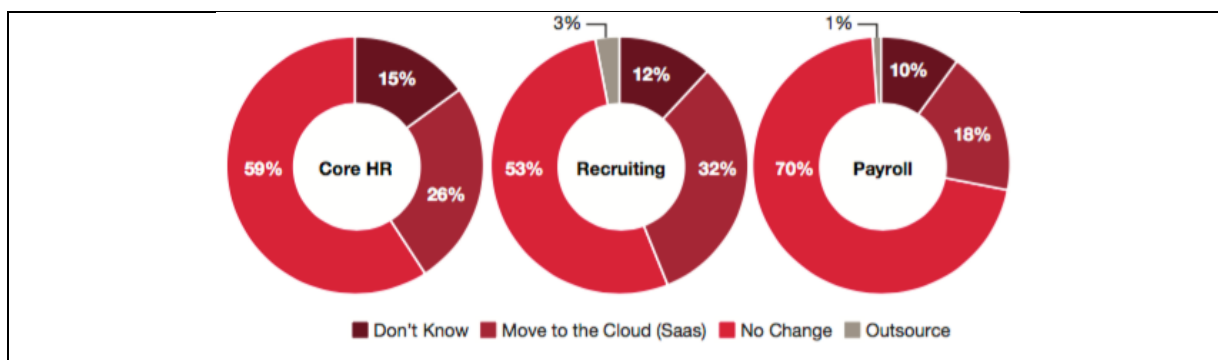


Figure 12. General responses by on-premise customers when asked about their future deployment plans (Source: PwC HR Technology Survey 2014)

On the other hand, for larger organizations, talent management appears to be the most popular cloud solution to deploy. The PwC survey (2014) reports that among respondent organizations with more than 5,000 employees, 57% use cloud for performance management and 61% for recruitment. Overall, it is shown that the future plans for on-premise customers to deploy HRIS in the cloud varies according to the HR function. Labor relations, payroll,

health and safety and time reporting are the four areas where organizations lean towards not changing their existing on-premise systems, and on the other end of the spectrum the functions that are most likely to be moved to cloud are talent review and succession planning, recruitment and incentive compensation.

According to the results of Sierra-Cedar survey (2015), the strategies organizations adopt while making HR system changes vary. 26,5% move all systems at once to the cloud (“Rip&Replace”), 18% have hybrid landscapes with some applications in the cloud and some on-premise, 21% combine licensed and cloud solutions by running them parallelly or adding hosted solutions and outsourcing to those to make a “patchwork” of systems, and 15% try hosting or outsourcing. Both PwC survey and ISG survey point that the large organizations tend to choose a hybrid HRIS landscape by deploying a combination of on-premise and cloud based applications.

4.1.2 Motivations and expected benefits

PwC survey (2014) shows that the largest motivator for organizations to move to cloud is to leverage new technology (42%), followed by the lower cost of ownership (36%). The survey finds that the number of FTE (full-time equivalent) resources in HRIS support and HRIT is lower in organizations with cloud solutions compared to those with on-premise solutions, which brings a certain reduction in costs. The third reason is to reduce the dependency on IT (Figure 13).

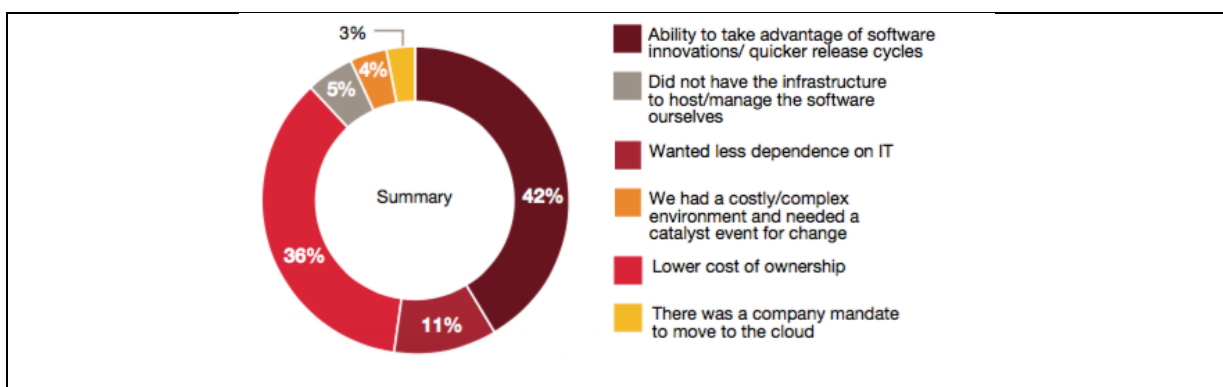


Figure 13. Motivators to deploy HR applications in the cloud (Source: PwC HR Technology Survey, 2014)

Measured by a slightly different question in another survey (ISG), the drivers to move to a SaaS based HR solutions are found to be led by improving the user experience for employees (58%), followed by having access to the best practices and the latest innovations (53%). A focus on integration appears to be the third most important motivator, followed by

an expected reduction in total cost of ownership and dependency on IT, similar to the PwC survey's outcome (Figure 14).



Figure 14. Expected Benefits of HR SaaS Technology Solutions (Source: ISG Industry Trends in Human Resources Technology and Service Delivery Survey 2015)

It is also possible to look into the reasons to move to cloud in a more detailed level as what priority they are for HR, IT and executives (Figure 15). While all three evaluate the user experience as the top reason to move to the cloud, for executives it can be noted that reducing the need for internal infrastructure is higher priority than it is for HR or IT.

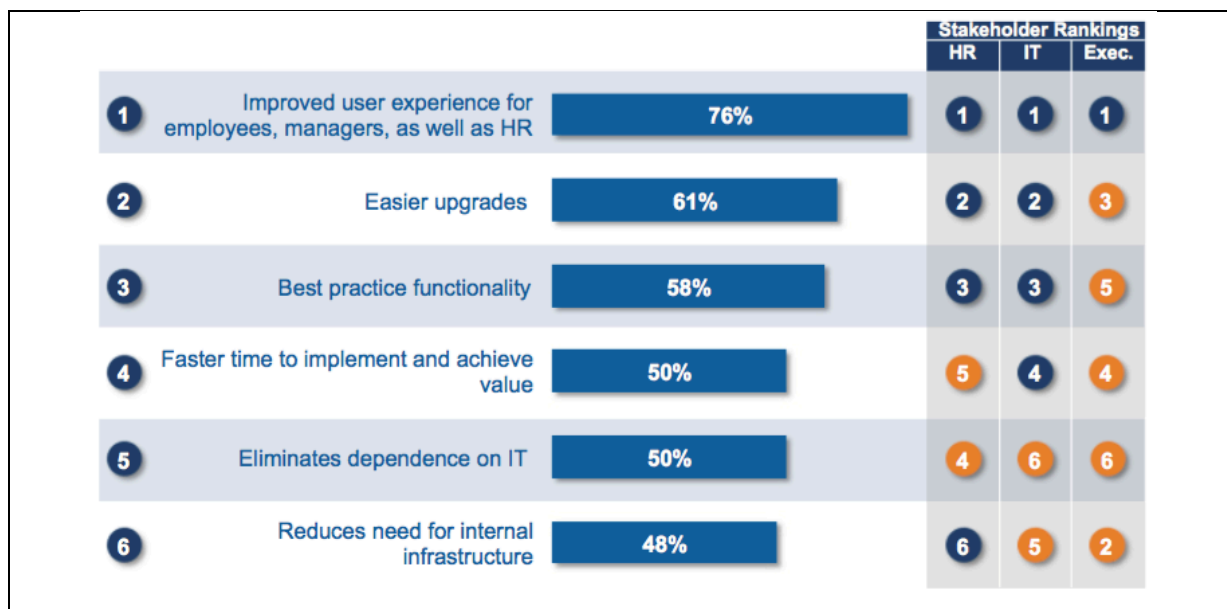


Figure 15. Reasons for Moving to SaaS – HR, IT, and Executives (Source: Sierra-Cedar HR Systems Survey, 2014)

4.1.3 Criteria for HR technology/product selection

According to ISG survey (2015), data security is the leading criteria for selecting an HR system and it is considered “must have” by 98% of the respondents. This is followed by ease of use with 90% rating it as a must, and reflecting the lack of possibility to customize cloud based systems, configurability also appears to be an important criterion (Figure 14).

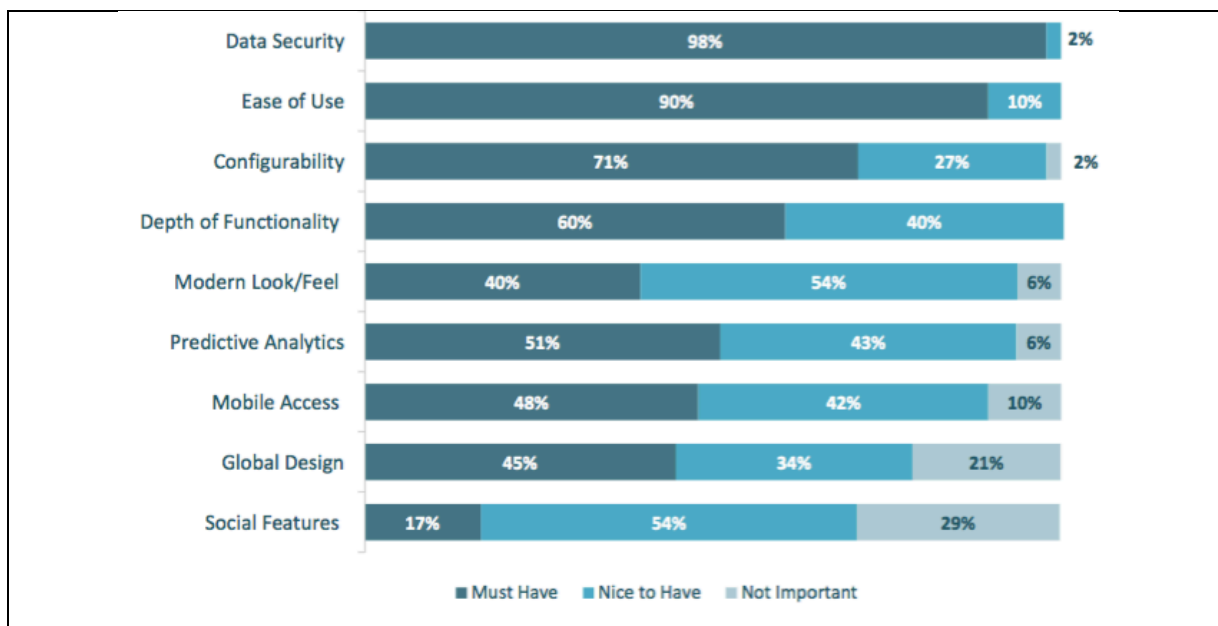


Figure 16. Importance of Usability Features in Selecting New HR Technology (Source: ISG Industry Trends in Human Resources Technology and Service Delivery Survey 2015)

PwC survey (2014) goes further than only the product features and takes into consideration other criteria as well. With listing Features/functionality at the top for product selection criteria for cloud HRIS (21% of respondents), followed by user interface/usability (17%), it points to a similar direction. Data security is reported as in the fourth place with 8% after cost (12%). Other criteria are: technology (for integrations) (7%), vendor’s reputation in the marketplace (5%), positive references (5%), scalability (5%), vendor’s future roadmap and the promise of future features (4%), providing the best platform to force the desired change/ transformation (4%), deployment flexibility (ability to deploy modules in any order at any time) (4%), vendor being established as company standard (3%), positive experience with the vendor’s sales/ account team (3%), vendor’s current install base (2%).

4.1.4 Costs

Although average technology costs per employee are not found to be significantly different between SaaS and licensed solutions taking into account the SaaS vendor fees or BPO fees and licenses and hosting fees (Sierra-Cedar, 2015), per employee costs of implementation and support are found to vary significantly between SaaS and on-premise (Figure 17). Large organizations are able to benefit from economies of scale, whereas for smaller organizations the average costs tend to be higher.

	Implementation Costs			Support	Implementation Costs		Support
	SaaS Avg. External 3rd Party	SaaS Avg. External Vendor	SaaS Ongoing Support	SaaS Ongoing Support	Licensed Avg. External 3rd Party	Licensed Avg. External Vendor	Licensed Ongoing Support
Large 10,000+	\$16 per Employee	\$8 per Employee	\$3 per Employee	\$3 per Employee	\$37 per Employee	\$8 per Employee	\$15 per Employee
Medium 2,500–10,000	\$23 per Employee	\$20 per Employee	\$21 per Employee	\$21 per Employee	\$79 per Employee	\$36 per Employee	\$40 per Employee
Small <2,500	\$89 per Employee	\$30 per Employee	\$121 per Employee	\$121 per Employee	\$102 per Employee	\$64 per Employee	\$153 per Employee
	HRMS + 7–8 Other HR Modules				HRMS + 7–8 Other HR Modules		

Figure 17. Implementation and support costs for on-premise and SaaS solutions (Source: Sierra-Cedar HR Systems Survey, 2015)

4.1.5 Implementations and challenges

Sierra-Cedar survey (2015) provides a comparison of time to implement for on-premise and SaaS based HRIS (Figure 18).

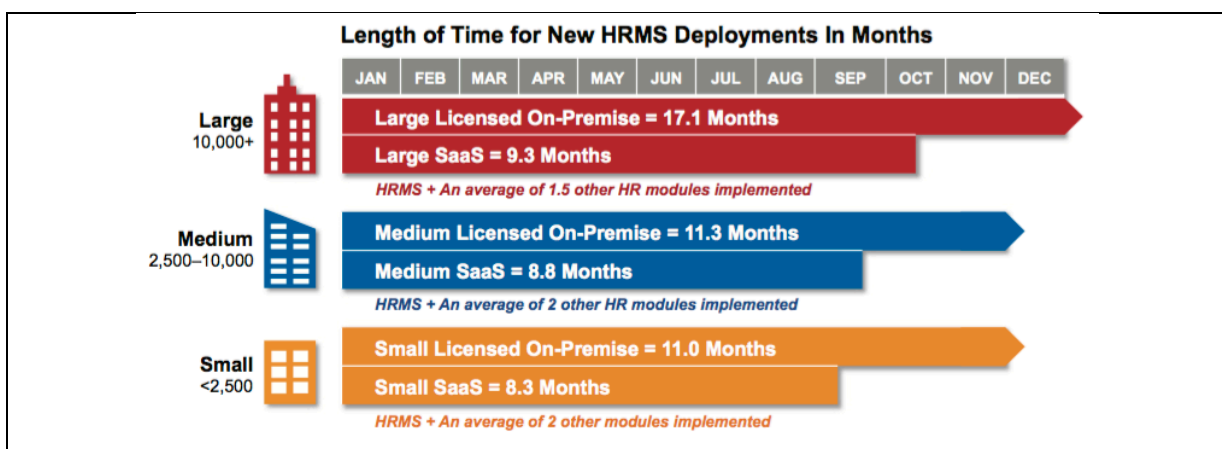


Figure 18. HRMS Deployments timelines for on-premise and SaaS implementations (Source: Sierra-Cedar HR Systems Survey, 2015)

This comparison includes the implementation of a core HR module and additional few modules implemented at once. It is observed that the modules usually implemented alongside core HR are the same for on-premise and cloud, payroll being the second, followed in a decreasing order by workforce management, talent management and analytics.

With cloud systems, the higher process standardization eliminates the customizations, and some of the integrations can be developed in advance and reused, and these contribute to the reduced implementation times (Sierra-Cedar, 2015).

In addition to implementations, significant time savings appear to occur with updates and upgrades as well in cloud compared to on-premise systems. With large companies, an on-premise upgrade lasts on average 9.3 months, in medium sized companies 7.0 months and in small companies 3.3 months. In cloud systems, this is measured in weeks: in large companies on average 5.8 weeks, medium sized companies 3.1 weeks and in small companies 3.3 weeks. The updates in a cloud systems are usually delivered as switched off and they need to be tested and activated by the organizations, and in some cases allocating resources to do these activities can be straining (Sierra-Cedar, 2015).

When participant organizations were asked to describe their cloud implementation experience for PwC survey, 23% responded that it took longer and/or cost more than what was estimated, whereas 52% reported that it went smoothly according to the expectations, completed on time/on budget.

According to PwC survey (2014), the most common challenge among respondents is the low level of preparedness of their business for the process changes that come with the cloud.

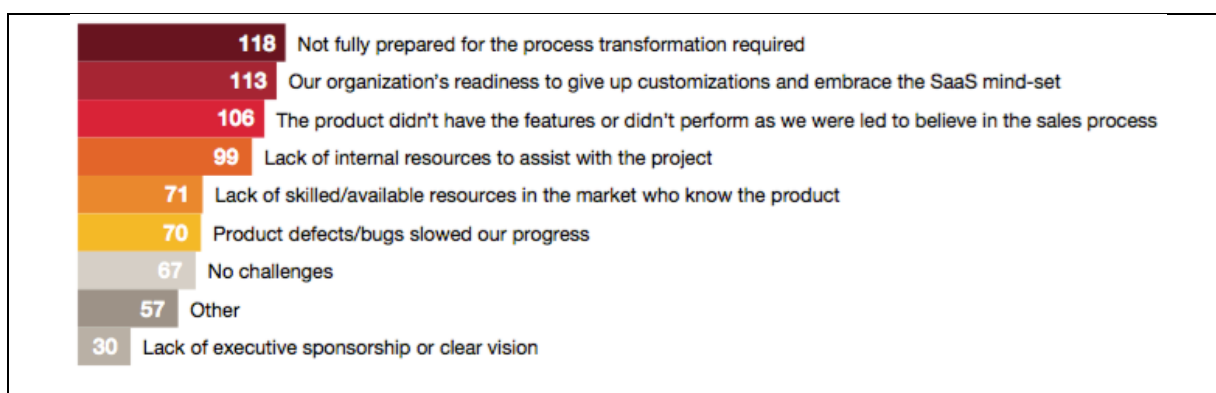


Figure 19. Cloud implementation challenges (Source: PwC HR Technology Survey 2014)

4.1.6 Concerns

For the organizations evaluating to move to the cloud, a number of concerns are reported by the respondents to Sierra-Cedar survey (Figure 18). For both HR and executives, the top concern is whether they will be able to get the similar level of service and support from the cloud vendor as they do from their current on-premise vendors. This is followed by the inability to customize, since this change will bring major process standardization in HR. There are still increased concerns around data security and the control of systems, and the latter is a top concern for IT along with integration complexities.

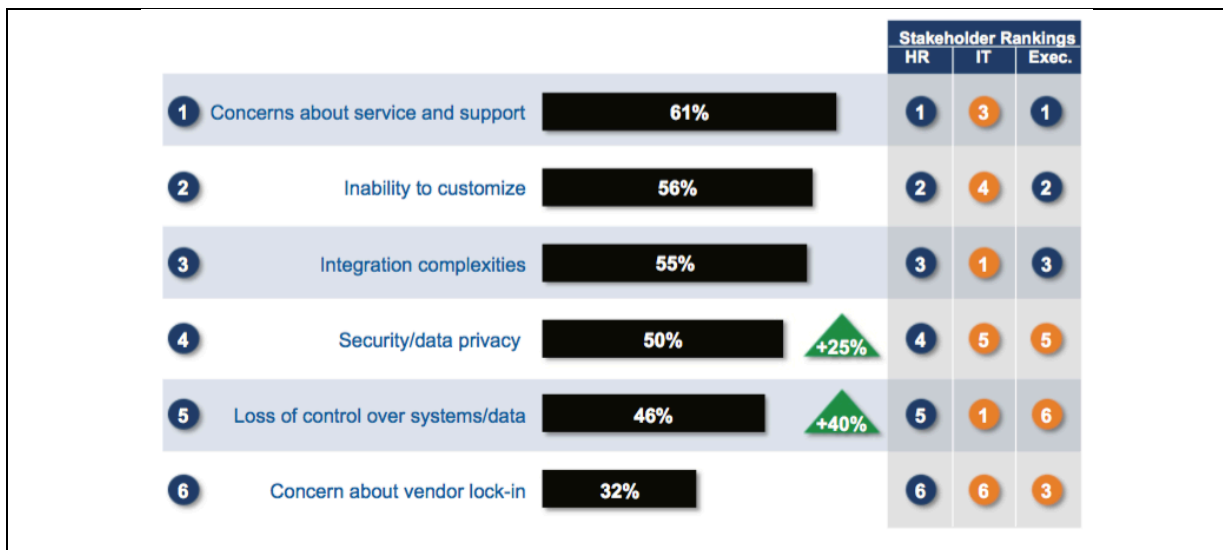


Figure 20. Concerns with Moving to SaaS HRMS for HR, IT, Executives (Source: Sierra-Cedar HR Systems Survey, 2014)

4.2 Interviews

The findings from the interviews with the HRIS experts will be grouped in different focus areas in this section.

4.2.1 Motivations

Although their priorities vary among the interviewed HRIS experts, based on the interviews a number of motivations appear to be prominent for organizations when deciding to shift their HR information systems landscape from in-house to a cloud based one.

First reason is achieving a standardized HRIS landscape instead of different systems in different locations. (Rychter, Hoy). This is a valid motivation especially for large and global

companies that have many subsidiaries in different countries. Here standardization can refer to two different phenomena. First is having a unified, or consolidated IT system for HR. Often large companies grow by mergers and acquisitions, and end up having a very fragmented IT landscape, including their HR systems. This means having employee data on a variety of systems that do not effectively communicate with each other, if ever. It can be true even within the same country, and in case of a global organization spread over several countries, it might be rather impossible to have a reliable picture of entire human resources. Therefore, according to Rychter, *“implementing a single system globally where their entire headcount will sit”* is a main driver for the cloud HR implementation projects. Having a cloud based platform that works globally helps an organization have better understanding and control over its human resources.

According to Hoy, this picture includes another kind of standardization, which refers to a shift from a highly customized system to one that has more of standard, global processes that are already included in a certain product. She explained that *“the on-premise customers loved to customize their systems and make custom infotypes¹¹, left right and center, and they want to try and stop doing that because every time they put a patch on or do an upgrade is a nightmare for them”*. In this regard, companies choose to implement a cloud system that will *“force the company to standardize and to use the global processes, and to reinvigorate their HR function and drive them down a more standardized route”*.

The second driver for this change is user experience and ease of use. (Rychter, Uzal, Bhat, Mitterschiffthaler). Uzal points out two sides to the ease of use factor. The first one is the ease to implement from the system setup perspective, the second is ease to use from the day-to-day user perspective.

From the implementation perspective, cloud based HR systems are considered to be *“easier, quicker and most straightforward”* and they are perceived to require less technical skill set in order to configure and maintain compared to an on-premise deployment (Mitterschiffthaler). It is also mentioned that the flexibility to change that comes with the cloud systems is welcome by the organizations, since with it they can *“easily maintain their configurations, adapt to new business requirements”* (Uzal). The skills required by the

¹¹ Infotypes are defined as “units of information in the Human Resource Management System” in an SAP HR (Source: SAP Help Portal). They are usually comprised of data fields on a single screen relating to the same context, such as Personal Data, Organizational Assignment, Basic Pay.

organizations implementing cloud HR systems is explored further in the sections 4.2.4 and 4.2.6.

The reason that these new systems are designed to provide a better user experience is explained by the vendors' investment and the learning and experience coming from the ERP systems being used in designing these new products (Uzal, Bhat). Bhat also refers to the ERP systems being "*quite monotonous, difficult to comprehend*" and describes the cloud as "*the mature version of the primitive ERP solutions*", but according to him, better user experience does not only refer to a better or easy-to-use user interface, but also to the fact that the cloud based systems provide better integration with upstream and downstream systems. His example asserts that in the ERP systems, the data flow between different HR modules such as employee data, time data (leaves), payroll and performance management was not as seamless as it is with the recent end-to-end cloud HR solutions. How the performance rating would affect the performance pay is a functionality that is usually custom built for each organization, whereas cloud provides a seamlessly integrated solution where data from different modules can also be used in sophisticated analytics tools and therefore an improved total user experience.

From the user perspective, the user-friendliness of cloud HR systems are often likened to the social media applications that people use in their everyday life. It is stressed that users, if they are used to engaging with such applications with ease on their mobile phones or computers on a daily basis, would naturally get more used to working with technology and expect the systems they use at work to be just as intuitive and user-friendly. Mitterschiffthaler compares SAP HR's traditional user interface to SuccessFactors and concludes the latter is "*definitely a lot more intuitive, and this is what draws customers to systems these days*" and adds that "*no one wants to put up with an ugly interface and a complex and clunky, heavy, old fashioned on-premise system at work if they have LinkedIn and Facebook and Instagram and all of that are easy to use, one click, you can look at it from your iPhone or iPad, etc. no matter where you are*".

A third motivator for the shift from an in-house HRIS to a cloud based one is the relatively lower costs of cloud subscriptions compared to the maintenance and update costs of in-house ERP systems (Bhat, Hoy, Uzal, Syrjänen). The lower costs are partly attributed to shorter implementations, but here the emphasis is usually on the license and maintenance costs being lower in the cloud, which makes cloud more affordable in the long run (Uzal, Syrjänen). Bhat explains that "*as the ERP systems had to be maintained and upgraded*

according to the latest features released by a vendor, the entire cost of implementing these updates is borne by the customer, and this becomes a huge cost which was usually not accounted at the inception of the ERP implementation. So they want to be over with this and try to focus on actual operations, carrying out their HR operations on the system". In addition to that, Hoy noted the reduced IT overheads when a number of systems are on the cloud due to reduced software and hardware maintenance efforts, and also for the fact that it is easier for the HR administrators to do some of changes in the system due to less coding being involved. Uzal describes this as "ease of ownership", and comments that *"you don't have to maintain infrastructure, your own back-ups, configure the network, so you buy that as a service."*

Finally, the decision by large HRIS and ERP vendors such as SAP and Oracle (PeopleSoft) to not provide updates any further to existing in-house solutions plays an important role in the shift from in-house to cloud (Sharma, Syrjänen, Uzal). Simply because these systems are considered to become obsolete soon and no more solutions will be available for on-premise, looking for a solution in the cloud becomes necessary. Uzal refers to the total shift of HR systems to the cloud as *"not a question of 'if', but 'when'"*. Syrjänen also considers the current ERP systems not being supported any more in the near future as a major reason for looking for new solutions.

Here it is also possible to observe the signs of possible vendor lock-in. Sharma gives the example of PeopleSoft of Oracle *"having decided not to release any other version, but to concentrate on helping customers move from on-premise to their cloud system, Oracle Fusion"*. Similarly, but for another product, Syrjänen explains that *"customers relying on SAP products are looking for the new cloud technology because SAP is moving to cloud."* Mitterschiffthaler, on the other hand, is more critical of this factor and thinks *"it doesn't push everyone from on-premise to cloud"* since a large vendor like SAP will most likely continue providing support as long as long as they have a large customer base.

Although scalability also comes across as a factor, it does not strike as a critical driver in making the decision to move HR to cloud, this is listed by Bhat in reference to the flexibility to scale it up easily, both in terms of number of users and the modules included.

4.2.2 Criteria for choosing cloud based HRIS

Criteria for which cloud HRIS product to choose appear to depend on a number of factors within the company and the industry dynamics.

One criterion that all interviewees agree on is the usability and user experience (Hoy, Uzal, Rychter, Syrjänen, Mitterschiffthaler, Bhat, Sharma). This is commonly mentioned to explain the success of Workday over other vendors although it is a relatively new product. Hoy points to the “*Amazon experience*” that a company wants its users to have when it comes to ESS and MSS, even though its functionality may not be “*that amazing in other areas, it looks so beautiful, user-friendly, it looks great*”. As mentioned in section 4.2.1, that people use easy and intuitive systems in their free time, they expect systems to work fast, look and feel good, instead of being complex and old fashioned (Syrjänen, Rychter). This applies not only to the user processes, but also the configuration interface where the implementers and administrators can modify the system according to the organization’s requirements.

Another set of criteria can be grouped as the financial ones, such as the cost and the budget, or return on investment (ROI) (Syrjänen, Uzal, Sharma, Hoy). As a related criterion, since the duration of the implementation projects affect the costs, it also comes up as a deciding factor (Uzal, Sharma). How quickly a system can be deployed from the beginning and how quickly changes can be deployed once it is live are important to the customers.

Security is another criterion that is often mentioned, since it is a main concern for IT departments. Companies usually perform a detailed due diligence with regards to security of storing data in the cloud.

In the evolving work environment where mobile devices are increasingly more relevant, they become a particularly important decision factor as well. Employees and managers use mobiles and tablets often in addition to work stations. Especially if a customer has or plans to adopt ESS and MSS functionalities, mobile capabilities become an essential part and the system should work just as well on the mobile devices as it does on a computer (Syrjänen, Sharma). As Rychter puts it, “*many senior managers walk around with their iPads and they want to do everything on their iPads, so they can do some reporting, get some dashboards on the iPads, do process approvals on the iPad...*”.

It appears to be important to look into the company set up and who has more influence over the HRIS. If it is HR function that has more decision power than for example IT, then

they choose what works best for them, unless for example a C-level HR director or an HRIS manager has a clear preference towards a specific system. Mitterschiffthaler specifies that she has *“come across quite a few customers who had just a personal preference, someone had seen Workday somewhere before and thought it was just amazing so they wanted it no matter what and they didn’t go through the road of independent vendor selection”*. As Uzal agrees, many organizations look at the industry references and the success of a product. If many other companies in a specific industry choose a certain product, others are likely to follow. But as Mitterschiffthaler comments that if the company is truly agnostic, the way to go is to have a vendor selection that compares the needs of the organization to what individual vendors offer.

This kind of vendor selection brings forward another factor, which is how different products are suitable for specific functionalities such as performance management, time recording and payroll, and what are the orientation of HR in an organization. Different vendors have different histories of developing their products. There appears to be a perceived difference between how capable SuccessFactors is in comparison to Workday or Oracle Fusion for different functionalities in HR. SuccessFactors is seen as being stronger in the talent management module, as this area was where the company’s products originated in, whereas Workday is seen as having a better core HR module. (Mitterschiffthaler, Sharma). Therefore, for a HR development oriented organization might value SuccessFactors over Workday. In such cases what a company looks for in a certain product becomes a decision criterion.

Here it is also possible to insert a comment about the complexity of existing HRIS landscape of an organization at the time of deciding on a cloud HR system. What differentiates between large companies who have got complete IT landscapes of their own which is presently in use, SMEs who have a relatively simple landscape, or companies with no specialized system at all. When an organization will move some or all of its HR activities to the cloud, according to the SaaS’ pay-as-you-go model, they are able to select the product based on the services or the “modules” they have. So if they have no system at all or a rather simple system that can be abandoned and replaced by a new and extensive cloud based system, their choice would most likely involve more HR modules, therefore the decision would perhaps involve an evaluation of different modules across products and deciding on a product that serves best to their most critical HR processes. On the other hand, if a company has a complex HRIS landscape that is interfaced to other systems, it might not be possible to

have a single jump to a new system, and instead it can choose to gradually have different cloud based systems for different functionalities. Or the decision making can simply take longer and include planning for a major HR transformation project.

In other types of organizations, especially where a relatively longer history of a certain ERP system (including HR module) exists, the selection of a cloud HR system might include the existing system, especially if the decision is driven by other units rather than HR such as IT, or even finance, given the strong link between HR and finance. Therefore, the vendor lock-in appears as an influencing factor here as well. Mitterschiffthaler briefly puts it as that an HR department can be told “we can only do SuccessFactors because it is SAP product, and we have the rest of the company on SAP”. She elaborates as follows:

“There are still companies in place that have done the typical end-to-end ERP implementation 10 years ago or so, where they have moved every single business process on to SAP or Oracle, who then have a hard time deciding what to do with HR because HR may want to move in a different direction than for example finance, and given how closely they are interlinked... most companies have to look at what they want to do from an IT strategy perspective rather than just considering what is best for HR or HR IT.”

This indicates that there are sometimes limitations imposed from a higher organizational level on which direction HR might want to head in terms of HRIS selection, and even if they would choose to go for a cloud solution, the organization-wide IT strategy might mean moving from one on-premise system to another and keeping HR on it as well for the sake of being “*under the umbrella of one ERP system*”.

A last criteria mentioned by the interviewees is the scalability of the product (Hoy, Sharma) although Hoy points out that “*not everyone has asked about scalability, which always surprises especially in the times of mergers and acquisitions, they might want to take on new companies and plug it in easily rather than having to rework a lot*”.

4.2.3 Company size

Regarding the impact of the organization size on the decision to implement a cloud based HRIS and the suitability of cloud HRIS and certain cloud-based HRIS solutions to large or global organizations and SMEs, the views vary.

Here it could be helpful to distinguish between smaller cloud based solutions and applications and large cloud HR systems that offer to replace the ERP systems. Rychter comments that for example in the U.K. market *“there are very simple solutions available in the cloud by many local small cloud HR systems providers, it is really just to store your data, for example for tracking time data. A small company can just put their data, and configure it almost by themselves and it is cheaper for them.”* Both Rychter and Uzal agree that Workday is an enterprise class system that is aimed at large and global companies, and due to high deployment and license costs, it usually does not make economic sense for small or even medium sized companies to implement it. Uzal informs that Workday is rarely used by companies with less than 1000 employees, and its largest customer at the time of the interview is FedEx, with around 695.000 employees. He emphasizes that *“it doesn’t really matter how large the organization is, it is about the ability to absorb such a project of the client organization; client has to have a large project organization to absorb such a project and to digest such a big change”* and gives the example of a Workday deployment in 3.5 months to 35 countries, and of another deployment, in Hewlett-Packard, to an employee population of over 300.000 in around 12 months.

Hoy and Syrjänen, who both had experience specifically with SuccessFactors, do not distinguish between different sizes of companies for suitability to cloud HRIS implementations, although Syrjänen does mention that it is *“truly convenient for mid-sized companies”*. Hoy comments *“we (in Deloitte) have got the standard process maps and SAP has their own, in Deloitte we also have our own methodology and leading practice process maps. For me if you have 100 employees in a country or 100.000, you still have to set the configuration to reflect what your employees need to do, of course you will have more data to migrate, but the configuration set up should not be very different.”*

Sharma and Bhat both point out that it is easier for small and medium sized companies to implement cloud HR, mainly because their processes are more likely to be simple and it is easier for them to adapt to the more standardized processes provided by the cloud HRIS products. According to Bhat, the adoption of cloud HR systems in large companies with more complex IT landscapes has been small. The cloud implementations in such companies might even take longer time than some ERP implementations, especially if many HR modules are included in the scope. Sharma adds he has *“seen very large companies going for cloud, but they have taken longer time to decide on a product, or to streamline their processes to align*

with the cloud solution. (...) Size does matter, but at the end of the day, it is ultimately the culture of the organization is and how the leadership are keen to implement the cloud.”

4.2.4 Implementation lifecycle

An implementation project for a cloud based HR solution will essentially have the same phases as a typical ERP implementation in a very high level, involving planning, design, configuration, testing and deployment. But the actual implementation methodology is rather different and is described as much more agile and iterative. (Syrjänen, Mitterschiffthaler, Uzal, Rychter, Hoy). Whereas a typical on-premise ERP project would have a waterfall approach where each phase has to be completed and verified before the next phase starts.

Mitterschiffthaler describes the drawbacks of this methodology as following: *“As a customer, you basically give your requirements to someone at the start of the project, then they go away and disappear, and then depending on the test strategy, you see some elements of it, but sometimes you only see the finalized product fairly close to go-live and if you realize it is not what you expected, then you have little opportunity to provide input”*. Hoy also refers to the fact that in most cases UAT (User Acceptance Testing) will be the phase a customer will see the complete product, until then they see nothing, and by that time if there is any part they did not like, there would not be much scope to make changes. Moreover, as the systems and user interfaces usually required intensive training for the end users, when they finally tried to do in the new system what they do in their day-to-day job, they would find it not user friendly, difficult to search and find, etc. (Bhat).

As for the cloud implementations, although the precise methodology changes from vendor to vendor and even for implementation partners, it typically involves several prototypes and customer can give feedback on each of these iterations along the implementation process. Each iteration is built, showcased and tested. There will usually be three iterations during the implementation (Hoy, Bhat).

In case of Workday, Rychter and Uzal stress the importance of a client already having their tenant at the beginning of the project, which means the clients get to see their data in the system already in the planning phase. This key difference is described by Rychter as below:

“In the planning phase, we already prepare an initial prototype of the system; we take out-of-the-box functionality, load some high level non-sensitive data of the client such as

some employee data, reporting structure, no compensation or personal data, and we use that prototype when we come to the design workshop. So they see their names in the system, see how a workflow looks like when they run a process, so we already show the system to them with their names”.

Later during the design workshop, this “prototype 0” which includes out of the box functionalities is used to finalize the design decisions. Design workshops last around 6-12 weeks and involve more interaction with the customer compared to a typical ERP implementation. During the workshops a customer can see how the system and the processes look like. All processes in the scope of the project are shown through, the capabilities of the product are demonstrated, and the exact requirements are documented based on customer feedback, so the design decisions on how new system should work are made together with the implementation partner and the customer. After the workshops, a first prototype is prepared and delivered based on the configuration data and the full set of employee data provided by the customer. Rychter adds that at this stage, *“[the customer] can still change their mind, they can say ‘the process we had designed looked good on paper, but it’s too complicated’ or ‘we don’t want so many approvals or some many people involved in this process’ so we can still reconfigure”*. Therefore, during the review of this prototype and initial testing with the customer, adjustments can be made. Based on this feedback and after inclusion of the adjustments, the second prototype is delivered, and this is the version that goes through end-to-end, rigorous customer testing (UAT). After acceptance, this version is built and deployed as the production system. Therefore, the implementations are described as more interactive and customer driven (Hoy, Syrjänen) compared to ERP implementations.

One major difference between the cloud based HRIS implementation and traditional on-premise HRIS is that the business processes that are enabled by the cloud based systems such as Workday and SuccessFactors are much more standardized. They can be configured but usually do not allow customizations as much as it used to be with the traditional ERP systems (Rychter, Uzal, Bhat, Mitterschiffthaler). They come with out-of-the-box functionalities, which constitute a starting point so that the system is not configured from the scratch, but it can be modified to suit the exact requirement of a customer. Rychter mentions that during the review of the first pilot, it is possible to make changes even *“on the fly as you are talking to the customer”*, and emphasizes on the relative speed to configure a prototype system. This has both upsides and downsides. As explained by Rychter, *“it is easier and faster to implement but there are limits to how much you can customize. It’s a tradeoff”*.

Mitterschiffthaler elaborates the impact of this as follows: *“We have come across a lot of clients who have heavily customized their SAP on-premise systems and when they move into the cloud, they find it really difficult to have been pushed into a more standardized way of working at first, and in the cloud they can’t have all those little nice things they have customized. Ultimately, because they are forced to streamline and standardize, it helps them but at first I think it’s a shock”*. (The organizational impact of this change is explored further in section 4.2.6.)

Bhat explains this as being a result of the learning from the ERP experience by the vendors, and therefore calls cloud based HR systems as more *“mature”*, now containing many features that had to be created as custom features in the earlier in the ERP systems.

This shift of focus from customization to configuration also implies a significant difference between the team setups that are involved in an implementation project in the cloud and on-premise systems in terms of skills and expert profiles. Since the new systems require less programming changes or technical developments compared to their ERP counterparts and they are much more intuitive to use, not only from the end user’s perspective but also from the back end configuration point of view, the project teams do not have as many technical resources or as much technical skills as it used to be in the on-premise ERP implementations. Bhat gives a comparative example that an HR module requiring one functional and two technical experts in an ERP implementation would not require more than one functional and one technical experts in a cloud based HR system implementation.

Uzal interprets this to be a challenge from the implementation partner’s viewpoint. He explains that *“in the old, legacy world”*, the project teams would be comprised of more specialized roles such as functional consultant, workflow consultant, integration consultant, user interface consultant, etc. However, with Workday, there are not as many different roles, so the functional consultants have to have wider specializations and they would be responsible for designing the systems with the customer, configuring both the business processes and authorizations, and loading the data into the system. He remarks *“in the traditional system, a functional consultant didn’t have any idea how to build workflows or configure security. In cloud environment, functional consultant has broader responsibilities, and needs to have very good subject matter expertise to understand complex concepts, because in a system like Workday, you implement much more and advanced capabilities into the system than you would have done in the on-premise system.”*

Another implication of the lack of customizations or technical developments is seen in the duration of the implementation projects along with the existence of the pre-configured, out-of-the-box and more standardized processes. Generally the durations are described to be much shorter compared to typical on-premise ERP implementations. Some of the factors affecting the duration are the capabilities of the customer, the extent of localization, the functional scope of the project (which HR modules are included) and whether is a “big bang” or a “staged” approach. According to Rychter, *“if the client has a good team, making decisions and providing information quickly, from the planning stage to go-live it can take five months”*. According to Uzal, they can take 4-12 months, and a lot depends on the capabilities of the customer’s project organization. Bhat compares a typical ERP implementation for an entire HCM suite being planned for 9-12 months but lasting 12-18 months with typical delays to a cloud HR implementation where it is possible to *“in 6 months’ time (...) roll out your employee data management and ESS/MSS and in 9 month’s time add payroll and few other modules such as learning and performance management”*. Rychter adds that if it is a global project by a large client and encompasses many countries, there can be more “politics” involved, there might be a pushback and change management issues by the country HR units, and as a result there might be more localizing, which adds to the duration of the project. For a staged approach, the first modules can go live quickly, but for a “big bang” project with many functionalities and many country organizations included, the project can take up to a year (Rychter).

It is possible to point out two aspects of implementation projects that might prove a challenge to organizations during implementations. The first one is to manage the expectations of the customer organization on the working methodology and the concept of “prototype”. Since the more agile methodology means that the work is broken down to smaller pieces, sometimes what constitutes a “prototype” can be different from what the customer who is used to the ways of working of the on-premise environments expects. Mitterschiffthaler explains that the prototype that the customer wants to see is usually “a clickable solution, a still very basic draft, a sandbox one, but an end-to-end, fully clickable solution. Something to play with”. However in a cloud implementation, the concept of a prototype can be something that is a smaller part of a bigger system that is developed and made available to the customer. Mitterschiffthaler compares this to a social media page: “For example, a search field. It will be developed and tested and you get to see and play with the search field, but you can’t play with the functionality of adding someone to your contacts or

changing your profile, because it has not been developed yet. It is bits and pieces that you get to see and test, and they are part of the prototype as well, but this is a different concept. Sometimes it will be a bit out of context to what you are used to see”. It is important to make the customer understand what they will really get, how a test will be run, qualified and considered successful. The second point that needs to be taken into consideration is the effort required to manipulate data to migrate it to the new system, which, according to Mitterschiffalter, is usually underestimated. The data conversion is a large exercise, especially if the new system is one with a different data structure with different fields. A customer would need to decide how much of the historical data they want to keep in the new system and what to do with the data that their older, on-premise system would have covered, but would not have an explicit place to be in the new cloud based system. Additionally, if some HR modules are left out of the implementation and kept in the on-premise system, such as payroll, and the data needs to be interfaced to the new system, this needs to be taken into account and might increase the duration of the project.

The post go-live support and maintenance appears to be where the effort by the organization’s own IT is minimized significantly. In an ERP implementation, it is not uncommon for the entire implementation team to stay in the project for a month after go-live where contractual post go-live support is three months, which increases the cost, and this could be longer with larger number of customizations. But in a cloud HR implementation, there can be up to 50-75% effort reduction during the support phase (Bhat). Additionally, since the product will most likely be more intuitive, less user queries can be expected (Hoy).

As all updates are implemented by the vendor in a cloud based HR system and deployed automatically on a regular basis (see section 4.2.1), maintenance does not require a dedicated team from the organization’s perspective, and the HR team are able to do the testing required. There will be less downtime during the update, and as Hoy puts it, “*[the customers] just have to get on with it instead of pushing the patch back and back and ending up being unsupported, like they sometimes do with the on-premise systems*”. Some implementation partners will be providing some form of application maintenance services (AMS) as well, but this will mostly be in the form of supporting the support teams of a client and not as a first level support. Rychter explains that the post implementation support teams are usually comprised more of functional, SME or business analyst kind of resources. The extent and nature of support also depends on the tasks that a customer organization will typically be performing on the systems after go-live. If they will have activities such as bulk

data uploads, or data conversions where data will be extracted from other systems, more technical resources are involved.

4.2.5 Comprehensiveness and hybrid landscapes

As it can be seen in sections in Figures 4-6 in sections 2.3.1-2.3.3, Hanscome and Cameron in their research for Gartner, Inc. (2015) compared the functional coverage of HR system offerings by the three leading vendors, Oracle HCM Cloud, SAP SuccessFactors and Workday. From this comparison, it can be understood that these leading solution providers all provide functionalities that cover the entire HCM spectrum, whether as a part of their own product or as a partner solution. A closer look however reveals that the maturity of each module across the three vendors vary. For Oracle HCM Cloud, the localized payroll module is available for seven countries as of 2015, while the actual number of customers with productive payroll is estimated to be quite low (less than 30), and the vendor plans to invest in further localizations in this field, but also focuses on integrating its core HR solution to the payrolls by other on-premise Oracle products such as PeopleSoft and E-Business Suite. While its biggest talent management modules are acquired (Taleo for recruitment and learning) and quite mature, some of its workforce management solutions are considered to be in early maturity level. SAP SuccessFactors Employee Central payroll is available in 28 countries via a hosted solution of SAP payroll, but similar to Oracle HCM Cloud payroll, the number of production clients are estimated to be quite low (less than 20), and its most mature solutions appear to be in the line of talent management as well, reflecting the history of SuccessFactors as originally being a talent management suite. Workday has localized payroll solution for the U.S., the U.K., Canada and France, and instead of developing further localized solutions, it focuses on integrating with partner solutions.

This outlook shows itself in the interviewees' assessment of the comprehensiveness of the cloud HR solutions in comparison to on-premise HR systems. The general picture is that the cloud solutions are being developed further and further rapidly and constantly, although as a suite, at the moment they are not considered a mainstream alternative to an all comprehensive ERP as it used to be. For example, Hoy refers to the absence tracking module of SuccessFactors as *"still not amazing and will never rival what is in on-premise, but I think it does the job enough"* and mentions the recent addition of continuous performance management to the talent management module.

This outlook of the market appears to push organizations to make IT related to decisions in favor of some form of hybrid landscape. Whether a company chooses to move all its HR functionalities to a cloud based system or keep a more fragmented HR application landscape would also depend on the history and the preceding systems. The type of organizations that are considered to have the smoothest adoption of a cloud based HR systems are the SMEs that have no existing systems at all or very basic ones, since they are able to adapt to the standardized processes provided by the cloud product easily (Bhat). On the other hand, moving the entire set of HR processes to a cloud based system is a challenging process for different kinds of organizations with different existing HRIS landscapes (Bhat, Mitterschiffthaler). The first kind is the ones that have a heterogeneous HR system landscape because they either grew inorganically by mergers of acquisitions where different systems join in to the overall IT landscape and consolidation never happened, or they grew organically but chose to go for the best-of-breed approach in order to choose an IT solution to support different HR functions. Some of these companies have an ERP system in place for some processes but have complemented it with custom built or “planetary” applications, having recognized certain submodules of the ERP do not serve well to their needs. At this state, some organizations find it difficult to estimate what the impact of suddenly replacing most of these applications with a single system, or replacing their customized solutions with the more standardized best practice processes offered by the cloud systems (Bhat). An in-cloud/on-premise hybrid application landscape therefore can be the mid-term result of a staged approach to replace HR systems with a cloud based HRIS gradually.

The second kind of organizations is the ones that have initially gone for “one single ERP”. Mitterschiffthaler describes this phenomenon as a common one before the appearance of cloud HR solutions: *“People really wanted one ERP and they were insisting on moving everything on to SAP or Oracle, PeopleSoft, no matter what. So even if the recruitment module was not the strongest, they were still moving on-premise”*. But even with this strategy, some companies ended up with overly complex and not so user friendly tools for simple processes, and with the cloud based HR solutions beginning to evolve from the talent management products, they started to subscribe to these applications that could work separately from their ERP system.

Payroll in general appears to be a module where organizations are not rushing about moving to cloud along with core HR and/or talent management (Bhat, Syrjänen). Hoy

describes payroll as the *“one hole we have got”* in the cloud, despite the existence of the SuccessFactors payroll product and the few implementations made in other countries than the U.K. that seem to have gone successfully, she comments that she is *“a bit careful about being the first guy in the U.K to do it, but it is a big step up for everyone to pay on to”*.

According to Mitterschiffthaler, the explanation why payroll is very hard to develop as an out-of-the-box product is that it is *“so heavily driven by local labor law, legal requirements and sometimes business practices as well”*. She adds *“if the idea behind cloud to some extent is that you don’t customize and tweak it to the n-th degree of your details, then you are not left with much of a choice in regards to payroll and you are probably less likely to be able to move that into the cloud”*. It is also very common among large companies to outsource the payroll process, especially if they are dealing with complex calculations related to complex time management processes such as clock in/out, overtime, shift workers, biweekly payroll, etc. and they would not see any benefit in bringing this to in-house or cloud.

Mostly this means that a typical cloud HR implementation will include integration with payroll on-premise (or the outsourced payroll vendor’s system). Rychter and Uzal both state that most organizations that decide to have Workday will have some form of payroll system, and it is very common that their payroll solution will be integrated with Workday with data flowing from Workday to the payroll system. Some companies choose to only deliver reports from Workday with the data changes, which the HR team then can enter manually in the (on-premise) payroll system. This can work especially if the volume of monthly data changes is not too high, and it is much faster to deliver. If the payroll is outsourced, the duration and complexity of the integration depends on the readiness and availability of the payroll service provider to provide information as well (Rychter).

The vendors will also have pre-configured integrations with the payroll partners they have, which can be implemented faster. Workday has such partners, and for example Uzal mentions that Cloudator as an implementation partner has also developed a payroll system unified with Workday, which at the time of the interview was localized for Finland and Sweden and planned to be rolled out to other countries. The partnerships exist for other modules as well; for example SAP’s SuccessFactors, which does not have a in-cloud solution

for benefits in the U.S., suggests Benefitfocus¹² which can easily be integrated to SAP's systems (Sharma).

As to whether there is a pattern to which HR functionalities move to cloud first and why, Bhat describes the process in many large companies as one where they define their functionalities as critical and non-critical. Employee data management, payroll, compensation and time data fall into the critical area, whereas most of the talent management modules (performance management, learning) are non-critical and can be moved to the cloud easily. Another factor that makes talent management easier to move to cloud is that most of the processes rely on latest innovations and they are more flexible, not as rigidly defined as the "critical" processes and can adapt to what the cloud HR can provide. On the other hand, the data relevant to the critical processes are much more sensitive, and this makes the organizations consider the results of an exposure of data or a breach of SLA from the vendor side.

Syrjänen also observes that "many companies have started moving to cloud by selecting cloud solutions for talent management purposes". However, she admits that there are many ways that the move to cloud can be done, citing the example of Neste, which has "moved to cloud globally and rapidly, having master data there and also talent management related data", and adds that the methods are constantly changing, and would not claim that there is a single pattern to move to cloud HR, but ideally it should start with core HR in order to support other modules with employee data. In the case of Workday, since it is a unified solution and requires core HR to be in place in order to implement other functionalities, the deployment would necessarily start at least with core HR, and the customers can decide later which modules to take onboard (Uzal). Additionally, if they have a very customized solution in any areas, such as time tracking, they usually keep those systems as they are overly complicated to move those to cloud (Rychter). It is added by Uzal this is also due to the fact that customers are scarcely resourced and cannot run so many projects in parallel, and changing payroll system is a large undertaking from the organization's point of view.

Therefore, which HR functionalities an organization will consider more suitable to cloud and take to cloud first will depend on factors internal to the organization as well as external factors like the maturity and the features of certain cloud HR solutions.

¹² <https://www.benefitfocus.com/press/releases/2015/05/04>

4.2.6 Organizational impact and HR/IT involvement

Many of the organizational changes that come with the cloud HR system implementations are linked to the fact that these projects are more business driven compared to ERP implementations, which were more IT driven, and that they force the HR business units to take more responsibility with building and maintaining the new systems as well as taking the lead role in the projects. The system related decision making takes place more often in HR than in IT, and IT's involvement will be increasingly more limited to the integrations between systems such as HRIS and active directory, financial systems or on-premise ERP (Rychter, Uzal, Sharma, Hoy). Readiness for HR in this area appears to be a challenge for many HR organizations and requires some change management. Uzal explains that the target is to have the customer to be self-sufficient to further develop their system (Workday) after the project is completed, but usually the projects are quite fast and it takes longer for the organizations to build the knowledge required to be able to do it, so some form of support relationship is maintained with the implementation partner. If the organization is in a line of business where larger changes are needed to be done in the HR systems often, such as uploading bulk data often, changing organizational structure or hiring many employees at once due to frequent mergers or divestments, it might choose to invest in a small in-house team that can also roll out new functionalities (Rychter). Hoy comments that the HR admin role will require a certain level of IT-competency and a *“logical hat”*, and *“sometimes [HR administrators] do not like messing around in a system, doing what they perceive to be IT work, even though it could easily be HR work. So we need to make sure they are comfortable in learning these skills”*.

On the other hand, introduction of ESS and MSS functionalities might also mean less data administration work for HR, since the employee's own data or time data can be maintained by employees themselves. This might bring in some data quality issues as more parties have access to update the data, which means less control on data by HR. Another impact of the reduced administration work is possible headcount reductions (Rychter). A similar outcome is observed due to the fact that organizations do not need to employ as many IT resources to maintain an HRIS, since the maintenance work goes under the vendor's responsibility and delivered automatically. Also there are usually not as much customizations as in the ERP setting, and if an issue is detected with the system, it is reported directly to the vendor, unlike in the ERP setting where a workaround is usually built in-house until a fix is

delivered by the ERP vendor, which takes longer (Sharma, Bhat). Therefore, it can be concluded that with the move to the cloud from on-premise ERP, the day-to-day IT support model for HR systems has changed, with reduced IT personnel and a shift towards HR from IT. As Mitterschiffthaler puts it, *“the army of people needed to support you is not no longer a necessity”*.

As mentioned in section 4.2.4, for organizations coming from a mindset and culture where they find that their on-premise ERP systems can do anything and that they only have to invest, moving to cloud where they are *“forced into a template”* can make organizations to think differently and recognize that there are many downfalls of this approach of *“customizing endlessly”* from the maintenance aspect, as the resources to maintain the system will need to be more experienced and skilled and all the changes will need to have been documented (Mitterschiffthaler). Rychter also predicts possible change management issues due to streamlining of HR processes globally with a consolidated move to cloud, in this case, with Workday. For Bhat, this is a matter of cost-benefit: *“As the companies want to have latest features, most of the processes to be mobile, and include more social in the performance management and recruiting, without which they cannot stand in the market, they need to go for the cloud (...) On the other hand, they have to fit their process to the cloud.”*

Both Bhat and Sharma also point to the reduced efforts in user training. Bhat explains that in the case of cloud solution, user manuals are not required to the extent they were for on-premise ERP systems, as cloud systems are *“very intuitive”*: *“If you feel the search button has to be on the top, you will get it that way. The icons that are used in a standard way on the internet will be found that way in the system.”*

4.2.7 Common concerns and challenges

Data security appears to be still one of the major concerns in the field. Some organizations may not be comfortable with having the personal details of employees in the cloud, comments Hoy, but she also gives a contrasting example where a police function was *“really worried about having the undercover officers’ addresses on the cloud”*. Mitterschiffthaler agrees that this is a concern, but links this worry to a traditional way of thinking within HR where complex authorization models are necessary to control who accesses which data. She proposes this to be an opportunity for organizations to challenge themselves to assess

whether these are really security concerns or a challenge to their way of working so that different user types other than HR professionals, for example employees would be responsible for maintaining certain employee data, or some processes might be automated so that how HR works internally can be rethought. Similarly, Syrjänen reports that “*new technology and doing things for the first time*” is one half of the challenge. According to Uzal, the biggest challenge is the availability of resources from the customer side, both for the project work and for data quality: “*[customer organizations] are very lean nowadays, they have optimized their resourcing, laid off most of the people, so there are not so many people any more to do the project. (...) Second challenge is associated with the data quality. Many times customers do not have a valid system, there is no correct data available. It is very difficult to get the data of their employees, usually a mission impossible*”.

Uzal also comments that the concern for data security is not a valid one as the methods to protect data in the cloud servers do exist. He elaborates that typically smaller organizations, and even some larger ones, do not have the capabilities to protect their data as well as it can be protected in a data center of a cloud provider: “*When you have the data of 1000 companies, you tend to put much more effort into securing it than you would do if you have only one company; the resources are much more*”.

The geographical locations of servers and therefore which country the data is kept is another aspect of the data security concern, which does not necessarily originate from the organization, but is a product of country legislations. Rychter refers to Russian government requiring that all data by Russian employees to be processed within Russia. Sharma gives the example of Qatar, where the lack of explicit government guidance regarding the location of cloud servers made a customer delay the decision despite the assurances by the vendors, since the data would be either in India, Europe or Asia Pacific, but not in Middle East. Hoy mentions the preference by German companies to have their data in Germany as well, and the data protection laws in Germany that has to be complied with. She mentions the International Safe Harbor Privacy Principles¹³ between the U.S. and the European Union, which all cloud systems comply with. In most cases, the customer will have a choice between few options regarding where their system will be hosted from.

These geographical regulations can be an issue with consulting companies that work globally and leverage resources in different countries. Hoy’s example refers to the limitations

¹³ <http://www.export.gov/safeharbor/>

for Deloitte employees in India, who can access only test data but not live data of customers from the E.U., and the necessity of working on customer machine even while working within the U.K. if live data is in question.

4.2.8 Future of cloud HRIS

Based on the interviewee's responses to how they evaluate the future of cloud HRIS, it is possible to have two perspectives, from the vendor's and organization's point of view.

On the vendors' side, the major providers in the HRIS space appear to be SuccessFactors, Workday and Oracle HCM Cloud (Fusion), but there are other vendors that come up as well, such as Cornerstone, which is known as a provider for learning solution, but also provides core HR functionality and could position itself alongside the three vendors (Mitterschiffthaler). Overall, all the providers continue to develop their offerings according to the demand from the organizations, so according to the interviewees, this rapid shift from on-premise to cloud based HRIS, which even a few years ago was not seen a viable option, is likely to continue. Regarding the shift to the cloud, Mitterschiffthaler also points out that there is a tendency for organizations to make the change in closely followed manner; she claims that *"the point about people waiting for someone else to do it first is definitely something that is written all over cloud. There are global organizations that are still end-to-end on on-premise ERP and they are just waiting for the competitor to move"* and also mentions that different industries make such technological moves at a different pace, referring to oil and gas traditionally being a *"heavyweight"* industry in this sense as an example. She also suggests that most organizations will overcome their concerns about data security as more work is done in this field, and they will find it easier to move to the cloud.

From the organizations' side, some of the focus areas that might affect the future appear to be the adaptability and readiness of the organizations for this change, which is not only a technology change, but it is also a change in the way of working for HR. Since there is no single way to move HR to the cloud, the organizations driven by different factors will make the move in different ways, but for larger organizations where a variety of factors are in place, it appears to be more likely that they have either a phased approach or a best-in-class solution that utilizes one or more cloud based HR systems, at least in the near future. For these organizations, integration is likely to be a focus area (Bhat).

There are two other areas that will possibly have an effect on the future of cloud HRIS: mobility and analytics. Mobility is a primary driver for the success of some of the cloud solutions such as ESS and MSS, where usability is a focus criterion, and as more devices are being used in the work context, the more demand from the users will be for enabling these applications as easy as possible, without necessarily turning on their work computer or logging on to a VPN. According to Mitterschiffthaler, this is a part of a bigger trend where *“people are starting to look at things differently, and move away from the traditional ways of working”* and *“putting employee in the center of attention”*, rather than the view where *“HR systems primarily serve HR”*. This would allow organizations to look at processes such as recruitment, self service, etc. in a different light and take into account the digital trends outside the HR business space as well. Another manifestation of this change in looking at HR is the trend to utilize analytics, to make use of the data available to HR organization wide and combine it with data from end-to-end business processes where an employee is involved in order to make forecasts. She also refers to robotics as an example of possible area of future focus, where machines can learn the logic of repetitive data related tasks, and some areas in HR such as data transfers and handling payroll calculation errors that could have application of it. She stresses the need for a *“different kind of HR professional”* and a different culture embedded in the organization for this kind of approach, one that is more visionary, and long term thinking.

5 Discussion

5.1 Literature and findings

5.1.1 Theoretical implications

In relation to the two frameworks suggested in the literature review, this study provides some insights.

Within Strohmeier's e-HRM research framework presented in section 2.2, findings regarding organizations' motivations from surveys and interviews and different factors affecting the choice to move HR systems (company size, existing systems, legal environment, vendors) can be considered an outcome related to the *context*. As a part of *configurations*, the process changes that result from adoption of cloud HR systems be seen for *activities*; the motivations and changes in the roles of employees, managers and HR personnel and IT personnel for *actors* and how different products or systems are able to cover individual HR functionalities, their comprehensiveness and different configurations like hybrid landscapes for *technology*.

Some of the goals mentioned by Parry and Tyson (2011) that are set for e-HRM were found to motivate organizations in their move to cloud based HR systems. These are *standardization* (using a common system across the organization and helping to have more consistent HR processes), *manager empowerment* (providing managers with capabilities originally under the responsibility of HR, such as taking part in recruitment, driving performance management and updating employee information) and *organizational image* (maintaining a "cutting edge image" and achieving a certain level of technological sophistication).

Within the TOE framework presented in section 2.3, the findings of this study can be used to help understand the adoption of cloud based HR systems. *Technology* related factors that have been found to affect the move from on-premise to cloud for HR can be listed as the systems that are already in use in an organization and the specific cloud based HR applications offered by different vendors, their available functionalities and how well they can cover the HR functions of the organization in question. *Organization* related factors are found to be the existing decision making structures, the size and the setup of the enterprise, the culture surrounding the system, motivations, resources and skills available to the organization. *Environment* related factors are the local laws and regulations regarding

different HR processes such as payroll and the cloud environment in general with regards to locations of data centers and how the data can be transferred between locations, the industry dynamics and competitors' interest in moving to cloud.

5.1.2 Managerial implications

The findings from the surveys on current share of on-premise and in-cloud deployments and future plans for deployments suggest that the organizations are increasingly choosing to deploy their HR systems in the cloud and the average user experience in cloud deployments are reported to be higher than on-premise deployments.

However, like different functional systems in an enterprise moving to cloud at a different pace, organizations evaluate the possibility to move different functionalities within HR to move to cloud at different steps. When the deployments are broken down to more specific areas of functionalities, it is seen that functions such as payroll and workforce management are still predominantly kept on-premise, while for talent management modules such as recruitment, performance management and learning, cloud solutions can be considered the standard business practice now. For HRMS, or core HR that manages employee data, the deployments are gaining speed with more software vendors strengthening their core HR offerings too; currently about half of surveyed organizations have their core HR in a SaaS system.

When considered with organization size, it appears more clearly that large organizations tend to keep their systems on-premise, and as the organization size decreases, the likelihood for a SaaS system increases. This was also suggested by the literature (Elragal and El Kommos, 2012; Parthasarathy, 2013; Lennart, 2011; Wang et al. 2016) as well. However, the responses from the interviewees suggested that while there are smaller vendors providing simpler solutions, the enterprise class solutions such as Oracle HCM Cloud, SAP SuccessFactors and Workday are more suitable for larger companies with resources to invest in large implementations, since both implementation and license costs for these products are seen as quite high. It should be noted here that the organizations that fall into the "small" bracket presented in the survey results have less than 2,500 employees, but the interviewees would consider these numbers as "large". Survey results confirm that the larger the organization is, the lower are the per employee costs of both implementation and support, and when compared to the implementation and support costs of on-premise solutions, the cost

advantage becomes more clear. This confirms the literature’s suggestion (Parthasarathy, 2013; Grubisic, 2014).

It is also shown that the cloud implementations last shorter and require fewer resources than the on-premise implementations, and this constitutes a significant reduction in the labor costs from the organization’s own perspective as well. Same impact is felt with the updates and upgrades of the cloud systems as well.

The increase in cloud deployments do not always correspond to a decrease in the on-premise deployments in the exactly same extent, since many organizations opt for a combination of the two settings, at least in the current circumstances. The survey results suggest that about a quarter of organizations choose to move all applications at once to cloud as a total system replacement, while around 40% will have some form of hybrid landscape with some applications deployed on-premise and some in-cloud, or running them in a parallel fashion. Although the first option is seen as more likely and feasible strategy for SMEs with no existing systems or those with basic systems and simpler and more standardized processes, the latter, the “hybrid” approach, appears to be a more popular outcome for large organizations with complex HR system landscapes. It would not be correct to deduct that this arrangement will be a stable and long term strategy for these large organizations; considering the dynamic nature of the market, the technological advances and the attractiveness of SaaS solutions from the financial angle, it is possible that for some organizations this is an interim solution during a staged approach to moving an increasing part of HRIS applications to the cloud. However, for others a “best-of-breed” approach is an established strategy for choosing applications. This way organizations can have the advantages of having the systems that individually serve best to the functions in question. In such a hybrid environment, integrating the systems becomes an important task and needs to be paid attention to. In the projects, setting up integration points with other systems might take more effort than planned, and in upgrades or generally during maintenance, the interfaces between systems needs to be tested and maintained if necessary as well.

It has been mentioned that the payroll (and other workforce management) applications are particularly the part of the HRIS landscape that organizations are hesitant to move to the cloud, despite the availability of solutions from the vendor perspective. This is found to be linked to the complexity of the function in general. The local laws and regulations require payroll solutions to be highly localized to handle labor legislation, and even within an organization the complexity of payroll process varies to a great extent depending on the type

of workforce they have (salaried/hourly payed, monthly/semi-monthly/weekly or biweekly payroll cycles, different contracts, special shifts, different time recording systems), therefore from the vendor perspective it makes building out-of-the-box functionalities nearly impossible, and from the organization's perspective, moving payroll functions from on-premise to a cloud system along with core HR becomes a decision of whether it will pay off eventually. As it will be discussed ahead, security concerns about the payroll related data is another factor that influences the decisions regarding taking an on-premise payroll to the cloud. As a note, this discussion only involves payroll on-premise; it is very likely that large organizations will have outsourced such complex payroll function to a third party and get it as a service in any case, so the implementation of a cloud HRMS implies that the integrations will usually be handled between the payroll service provider and the cloud implementation partner. This is a factor that can effect the duration of an implementation project as well.

In order to have optimal system choices, it is essential to know what is expected from the system. This will also answer the first research question of this study, R1. The research on the motivations and expected benefits from a cloud based HR system bring forward some insight into what the expectations from cloud based HR systems constitute and what criteria organizations take into account when choosing a specific product/vendor. The literature suggested that cost is definitely a significant driver (Parthasarathy, 2013; Grubisic, 2014; Elragal and El Kommos, 2012). As explained earlier, both implementation costs and maintenance costs are lower for cloud in comparison to on-premise, but the real advantage of moving from on-premise to cloud is that it reduces maintenance and upgrade costs significantly in the longer run, therefore total cost of ownership (TCO) is lowered. Reducing the need for keeping infrastructure also contributes to the financial motivators, and so does a reduced number of resources that need to be employed to maintain the systems. However, more significantly that the costs, the system change decision appears to be driven by a bigger motivation to improve user experience and taking advantage of new technologies, and this is shown to be a common goal for HR, IT and the executives alike. New, cloud based HR systems and applications promise a much better user experience, both from the user interface point of view, with ease-of-use and their modern look and feel, their intuitiveness, and from the aspect of functionality, "seamless integration" between modules. These criteria were supported by the interview findings as well. Other motivators are to lessen dependence on IT and reduce the IT workload by improving data and integrations. From the interviews, it was also understood that some organizations hope to achieve a certain level of standardization in

their HR processes and data with a global implementation of a cloud based HR system. As the idea with a cloud service is that it includes more standardized and “out-of-the-box” functionalities that are easier to implement, organizations find this as an opportunity to transform the ways of working of HR and replace the business processes with leaner ones. A few other, mostly external motivators are also found for moving from on-premise to cloud, such as the current vendor’s plans to not develop the on-premise solutions any more, therefore the systems eventually being obsolete. The competitors’ decisions to move to cloud is also hinted at and can be considered as a possible external motivator.

As for the criteria for product choice, similar/linked motivations are found, with the addition of one major criterion, which is data security. This is usually followed by user experience/ease of use, features and functionality, mobile features and scalability. Survey data also suggests configurability is a highly rated selection criterion in the absence of possibility to implement major customizations into the cloud system. Both surveys and interviewees indicated that product and vendor references and possibly their existing system also affects the choice, since a cloud product from their on-premise vendor might have easier integrations, therefore a vendor lock-in is possible to mention.

In order to answer to the second research question, R2, findings about the implementations of cloud based HR systems have been considered. The implementation methodologies for an in-cloud HR system resemble those used for on-premise system implementations only at a very high level. As in other similar projects, the planning phase is important, and this is followed by clarifying requirements, later the system is configured according to the requirements, tested and deployed. However, the on-premise implementations follow a waterfall approach to system development, whereas cloud implementations are described as more on the agile and iterative side. One major difference, and a plus on the cloud’s side is that the customers are able to see prototypes with their own organizational data at the very beginning of the project, so they become more familiar with it early on. In comparison, in an on-premise implementation, some users see some form of sandbox at the beginning of the project but most of them are not able to try using the system and run complete processes until the acceptance testing, which is usually too late to see if they will find it usable or if any major processes need update. In a cloud system, most of the business processes are pre-configured according to the industry standards and the system is not built from zero, but it is configured only to some extent. Customized features are usually not possible, and configurations are much less complex than on-premise, so it is possible to

configure prototypes quite fast. Each prototype is more developed than the previous one and the customer data is transferred to the new system earlier as well, so data related issues can be detected in advance. With each prototype, customer is able to provide feedback and it is possible to change configurations.

The lack of the need for entire infrastructure and customizations, and the ease of configurations make the implementation a less IT-driven and a more HR- or business-driven process. IT's involvement is usually limited to the integrations. Updates are vendor's responsibility, but when they are delivered, the customers need to perform checks. Additionally, adjustments and small developments to the system can be made continuously but for these do not require specialized IT resources, and can be made by HR administrators or a similar role. Impact of cost reductions is sometimes observed as reduction in the internal IT workforce. If these resources can be utilized elsewhere in the company, this usually means a need for training and making sure they have the relevant skills. On the other hand, since the systems are usually much more user-friendly, the user training efforts are limited.

The standardization of processes in a cloud based HR system is found to have its advantages and disadvantages. As mentioned earlier, by organizations that are driven by a motivation to transform their HR processes, this is seen as an opportunity to make processes leaner. For those who take the decision with more financial motivations or with less information, the actual extent of this standardization can be quite challenging. In an on-premise environment, organizations can fit the system to their needs, it is not always easy or cheap but it can be done. Moreover, as mentioned before, in general HR is expected to take more responsibility with the project and the system, and for most organizations the readiness for these changes and the extent of adaptability expected is found to be a challenge.

It has been mentioned several times, security and data privacy continues to be a concern for organizations, along with a loss of control over systems and data. Another factor causing data related concerns is the legal requirements regarding where the data from a certain country can be stored. Data related issues still drive the discussion about cloud systems and will likely continue challenging vendors, organizations and governments alike. These points on challenges and concerns, along with the information on hybrid landscapes, provide answer to the third research question, R3.

5.2 Limitations of the study and future research

The author feels that the use of survey outcomes and interviews in the same study has been beneficial to gain an understanding of the selected topic. The surveys cover a large number of respondent organizations, but independent survey results cannot be aggregated due to independent designs of them, so the results derived from the survey reports should be interpreted with a level of criticism. For the study, seven interviews were conducted. Although the interviewees had interactions with multiple organizations and projects and were able to bring in insights from a wide experience, this is still a limited number, and the input from the interviewees are after all based on their personal interpretations of the situations, therefore making generalizations based on the interviews difficult. The reliability of the research could benefit greatly from conducting an increased number of similar interactions.

The author considers the largest contribution of the interviews to be in the field of non-quantifiable aspects of this research, such as understanding the details of the implementation processes.

On the other hand, the specific research topic has not been subject to a wide level of research yet, so the prior literature has been limited. Research on closely related fields such as ERP and e-HRM are found to be useful, and the findings are found to support some of the earlier conclusions, but a broader research into both, quite extensive topic could bring invaluable insight. More SaaS adoption related research also could be applied to HR systems field in the future.

For future, the HRIS research field may benefit from longitudinal studies that can examine both the context preceding a cloud based HRIS implementation, such as expected benefits and motivators and both short term and long term consequences of the system change, i.e. whether the expected benefits are realized with respect to cost reductions, and user acceptance. Also, in depth case studies with organizations who went through such changes can prove to be beneficial to help understand all aspects of the context and consequences of such technological change and its business impact.

6 Conclusions

This study aimed at answering three research questions (section 1.2) with respect to motivators, overall process or implementation, and challenges and concerns for organizations that are planning to or have utilized cloud based / SaaS solutions for their HR system needs.

Technology and business practices surrounding SaaS continue to challenge HR as well as other business units. The cloud solutions nowadays provide a viable alternative to even large enterprise requirements and it is important to understand what motivates the organizations to change their HR systems, the ways information technology and new models can enable HR functions and what are the possible difficulties to overcome, so organizations as well as partners involved in these transformations can handle projects better.

Appendix A: Interview questions

- What are the major motivations for organizations to choose cloud based HR systems over on-premise HR systems?
- What are the criteria the organizations use to select a cloud based HR system?
- Can you describe the lifecycle of a typical implementation?
- How suitable cloud based HRIS suitable for large/global customers and SMEs?
- Are there any particular functional areas in HR that are more suitable or more preferred to be kept in-cloud or in-premise?
- Do cloud based HR systems provide an end-to-end, comprehensive solution in comparison to on-premise systems?
- What are organizations' major concerns regarding a cloud based HR system and implementation?
- How do you evaluate the involvement of HR and IT in choice, implementation and maintenance of cloud based HR systems?
- What is the organizational impact of the shift to cloud based HRIS?
- How do you compare the maintenance and support of in-cloud and on-premise systems?
- How do you see the future in the field and what are the areas of focus?

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