A Multidimensional Framework for Human Resource Information Systems Adoption and Use in a South African University

A

Doctoral Thesis

Presented

By

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858000

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Abstract

This thesis is about how an organization adopted an information system (IS) and the subsequent current use of that system. That is, the relevance of this thesis is premised within the adoption and use of IS research fields. The adoption and use of systems is still a key IS issue as organizations strive to find ways to justify investments while the research issue is in striving to profoundly describe the adoption and use behavior. The thesis employs Human resource information systems (HRIS) as the system under study, with a South African university being the context. HRIS are adopted and used in organizations, including universities, to facilitate human resource functions and practices. The adoption and use of HRIS is often critical to achieving organizational visions and mandates; however, literature in this field is still in its infancy, with no known study conducted with a South African university context. To this point, there was a need to study behavior during HRIS adoption and the subsequent use behavior, in order to inform an efficient and appropriate ongoing use.

Existing scholarly HRIS literature focus on either its adoption or its use, but hardly addressing both concurrently. This thesis argues that adoption may inform present use, and therefore, paramount to study both facets, and in the same locale. The study sought to understand how HRIS was adopted as well as understand how it is presently used, in the context of a South African university. The research argument driving the thesis is that HRIS is realized in a multidimensional environment, and thus, there is a need for a framework that may inform both adoption and use dimensions. The framework ought to be cognizant of the contextual determinants which influence both adoption processes and use behavior at varied levels, so that HRIS is adopted and used effectively and efficiently, sensitive to the South African context.

To conceptualize the multidimensional framework, the study was underpinned by Upper echelon theory; Social cognitive theory; Technology, organizational and environment framework; and Task-technology fit, as theoretical lenses. Majority of HRIS adoption or use studies take a positivist stance; however, this thesis deemed an interpretivist philosophy as a more appropriate stance to understanding the complexities of adoption

and use. A qualitative inductive approach using a case study research strategy was the methodology followed. Semi-structured interviews, field observations and institutional documents were ways to collect data. The empirical data were analyzed following thematic analysis and content analysis techniques.

Literature and the interpretation of study findings informed the conceptualization of the multidimensional framework for the adoption and use of HRIS. The thesis contributes theoretically by providing a framework that informs adoption and use; practically, the framework may be used by policy and decision makers to improve use and appropriate use of HRIS; Methodologically, the thesis shows how a case study following the interpretive philosophy may be a better alternative to profoundly describe and explain adoption and the use of HRIS; finally, the thesis contributes to context by giving insights unique to South African universities.

Keywords: Adoption and use framework, Human resource information systems Interpretive case study, Multidimensional, South African university

Declaration

I, Mampilo Magdeline Phahlane, student number 858000, declare that the thesis titled "***A Multidimensional Framework for Human Resource Information Systems Adoption and Use in a South African University"*** which I submit for the degree Doctor of Philosophy at the University of the Witwatersrand is my own work and that all sources I have used have been indicated and acknowledged by means of complete references.

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Signature Date

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Phahlane M.M and Kekwaletswe R.M. (2017). Human resource information systems adoption and use in a university environment. In the proceedings of the *IADIS International Conference on Information Systems*. 10-12 April 2017, Budapest, Hungary.

Phahlane M.M and Kekwaletswe R.M. (2017). A conceptual research framework for human resource information systems adoption and use in universities. In the proceedings of the *IEEE ICTAS Conference*, 9-10 March 2017, Durban, South Africa.

Phahlane M.M and Kekwaletswe R.M. (2014). Management information systems use in a higher education environment. In the proceedings of the *Southern Association of Information Systems Conference*. 21-22 March 2014, Atlanta, USA.

Articles under review

Phahlane M.M and Kekwaletswe R.M. Top management influence on HRIS adoption in a university. *Human Resource Management Journal*.

Phahlane M.M and Kekwaletswe R.M. A review and analysis of HRIS studies. *Human Resource Management Review*.

CHAPTER 1: INTRODUCTION AND BACKGROUND

This thesis is about how an organization adopted an information system (IS) and subsequently how that system is currently used. That is, the relevance of this thesis is in contributing to the IS adoption and use research field. The adoption and use of systems is still a key IS issue as organizations strive to find ways to justify investments while the research issue is in striving to understand and explain adoption and use behaviors. The thesis employs human resource information systems (HRIS) as the information system under study, with a South African university being the context. HRIS are adopted and used in organizations, including universities, to facilitate human resource functions and practices. The adoption and use of HRIS is often critical to achieving organizational visions and mandates; however, literature in this field is still in its infancy, with no known studies conducted within a South African university context. To this point, there is a need to study behavior during HRIS adoption and the subsequent use behavior, in order to inform appropriate use better.

Existing literature on HRIS is regularly narrowed to either its adoption or its use. This thesis argues that adoption may inform present use and therefore it is paramount to study both, and in the same locale. The study sought to understand how HRIS adoption happened, and the present use, in the context of a university. The thesis argument is that there is a need for a multidimensional framework that may inform adoption and use of HRIS, notably for universities. This thesis contributes to the IS discipline by providing that framework. The framework highlights contextual determinants to be cognizant of during both adoption and use at varied levels. In other words, the thesis informs ways by which the information system may be adopted and used efficiently and effectively.

The rest of this introductory chapter is outlined as follows: firstly, it introduces the field studied secondly; this is followed by IS adoption and use studies, theories of adoption and use in IS research are discussed, relevance of the study to IS research, a multidimensional and multilevel motivation for this study follows, background to the

research progress is deliberated on followed by the research problem, argument, purpose, goal, questions and objectives, contributions emanating from the study and the thesis outline is discussed last

1.1 Introduction to the field of study

This section introduces the field studied by briefly discussing the concepts in the thesis, which formed the foundation for the study.

1.1.1 Defining the thesis title

The section is a brief description of the keywords that make up the thesis topic "*A Multidimensional Framework for Human Resource Information Systems Adoption and Use in A South African University*". This is to help the reader understand the study undertaken and the subsequent thesis. These same key concepts are discussed in detail in the survey of scholarship chapter, chapter two.

What is Human resources?

> According to Wright et al. (1996:304) human resources are defined as "a pool of human capital under an organization's control in a direct employment relationship" this employment relationship is between the employees and employer.

Further, HR is not without its own practices and procedures; HR practices are organizational activities aimed at managing organizational human capital value- skills, knowledge and abilities and their impact in ensuring that the human capital assists in fulfilling organizational goals.

What is a Human resource information system?

> HRIS is defined as an Information System within an organization designed to support the "planning, administration, decision making and control activities of human resource management" (DeSanctis, 1986:11). Kavanagh et al. (1990) added that HRIS includes people, policies, procedures and data. DeSanctis (1986) further asserted that HRIS supports HR activities such as employee selection and

> recruitment, pension and benefits management, payroll, productivity evaluation, training and development, career planning, and equity monitoring. Essentially, HRIS is adopted in an organization to provide a service in the form of timely and accurate information to personnel, to manage HR data and enable HR processes.

HRIS is part of an organizational wide information system referred to as an ERP (enterprise resource planning systems) which is an integrated application package that enables transaction oriented data and business processes for the entire organization (Skoumpopoulou and Nguyen-Newby, 2015). These software packages store information about supply chain, customers, procurement etc.; in universities instead of customers, it is student information. The thesis defines HRIS as a system application that is used to manage, plan, and control HR processes and activities within a university environment.

HRIS adoption

> Adopting and implementing information systems in organizations is often a complex and challenging undertaking that radically changes the social culture, structure, processes and the behavior of organizational employees (Ngwenyama and Nielsen, 2014). Adoption can be viewed as both a process and an outcome and it's a problem solving process in which a product or practice is acquired and used in an organization to address a need (Damanpour, 2014).

In this thesis, adoption is then defined as the acquisition and implementation of HRIS by a university in order to automate and enable its HR processes and practices.

HRIS use

> The benefits of IS increase through actual use, unfortunately underutilization of information systems is a major problem in practice and IS use is one of the predictors of performance (Maruping et al., 2016). Burton-Jones and Gallivan (2007:244) define IS use as a "user's employment of a system to perform a task".

Use involves a task to be performed, a user and a system. In this thesis, HRIS use is defined as carrying out or performing a HR task or process with HRIS as an enabler.

Multidimensionality

The study was multidimensional in the following ways; it is about how HRIS was adopted by a university (HRIS adoption phase) and how that may or may not influence its current use (HRIS use phase). The two phases studied includes a retrospective (adoption) and its influence on the current use.

This next subsection discusses what organizational innovation is in relation to HRIS. This subsection is important because in this thesis, HRIS is seen as an organizational innovation.

1.1.2 What is an organizational innovation?

Greenhalgh et al. (2004) define an organizational innovation as a novel set of routines, behavior, and ways of operating directed at improving organizational outcomes, effectiveness, efficiency or employee's experience that are implemented by planned and coordinated action. Information systems (IS) fall into this criterion, and so does human resource information systems (HRIS) as it is an information system. The next section discusses the multidimensional nature of organizational innovations such as HRIS.

1.1.3 A multidimensional understanding of an organizational innovation

The adoption and use of a technological innovation such as HRIS is multidimensional, and it is important to understand and to explain them as such. Crossan and Apaydin (2010) conducted a study about the multidimensionality of a technological organizational innovation and conceptualized it as both a process and an outcome.

Since technological organizational innovations are multidimensional, it is important to understand their adoption, use and how they could be used effectively, as use alone is not enough to ensure that organizational goals are attained (Seddon, 1997). Effective use of an innovation ensures that it fulfills its intended purpose. This study is about how a technological innovation such as HRIS, is adopted and used in a university, the simultaneous view of HRIS adoption and use could give a comprehensive understanding

of how HRIS was adopted and how the adoption influences its current use and how it could be used effectively.

1.1.4 An organizational innovation as a process and an outcome

As mentioned above, an organizational innovation can be perceived as a process, that answers “how” questions, and as an outcome, that answers “what” questions Crossan and Apaydin (2010). Below is a description of an organizational innovation as a process and an outcome. This means HRIS is conceptualized as both a process and an outcome as an organizational innovation.

1.1.4.1 Organizational innovation as a process.

A technological innovation in any organization goes through different stages in its life cycle (Hoeber and Hoeber, 2012); hence, it is considered a multilayered process and is often studied from multiple perspectives at different levels of analysis. Stages that a typical technological innovation goes through in an organization include initiation, adoption, implementation and subsequent use (Damanpour and Schneider, 2006). Accordingly, it is important to understand the intended function of a technological innovation in an organization, because if the function is known, it’s easy to conceptualize its effective use to assist in realizing organizational objectives (Burton-Jones and Grange, 2012). It is important to understand some of the processes HRIS goes through and its intended functions, for this study adoption as a process and use as an outcome of HRIS are looked into, hence the multidimensionality of the study.

As mentioned above, a typical technological innovation in an organization goes through different phases that include the following: the *initiation phase* is about recognizing a need or a problem to be solved, an awareness of solutions and evaluating them and proposing the adoption of the innovation (Rogers, 1995). The *adoption phase* is focused on making the decision to implement or reject the innovation (Wolfe, 1994). The *implementation phase* includes activities that occur after deciding to adopt the innovation such as training, modifying organizational policies and processes and advocating the use of the innovation (Walker et al., 2015). The implementation phase is followed by the *acceptance* and *use* of the system (Hoeber and Hoeber, 2012). At the implementation phase, HRIS is brought

into the University for users to start interacting with it and to complete HR activities. Top management is involved at the initiation, adoption stages where decisions are made about HRIS; post-acceptance, resources are allocated, and the system is implemented and ready to be used while sensitizing users along the way.

Innovation as a process has *driver, source, locus, direction, level* and *view* concepts (Crossan and Apaydin, 2010). The *source* of the innovation is where the innovation was invented, it can be internal or external or a combination of both, HRIS was purchased from an external vendor. The *driver* concept is about available resources and knowledge within an organization or external influences in the industry. HR regulatory and funder bodies in universities as some of the stakeholders are often involved at different stages of HRIS adoption and use in the university. The *locus* dimension is about the where the innovation belongs, either in the organization only or in the market as a whole, HRIS belongs to the university with reporting mandates to stakeholders in the higher education environment. The *level* dimension is the split between individual, groups or organizational level, HRIS is adopted by a university for its employees to enable HR processes. *Direction* determinant is about how the innovation process starts, whether it is a top-down or a bottom-up approach, top management initiated and directed HRIS adoption processes for university employees to complete HR tasks.

1.1.4.2 Innovation as an outcome

An innovation as an outcome answers question related to “what or “what kind”. Dimensions in innovation as an outcome are: *form, magnitude, referent, nature* and *type* concepts (Crossan and Apaydin, 12010).

Referent dimension is about the newness of an innovation; in the market, organization or industry, HRIS was new in the university replacing legacy systems and has reporting mandates for stakeholders within the higher education environment. *Magnitude* is whether the innovation is radical or incremental, HRIS is incremental in nature, often the vendor has direction from the university on HR features that could be automated or the vendor updates certain features depending on technological trends in the market. *Form* dimension is whether the innovation is a product or service innovation, process innovation

or a business model innovation, HRIS as an IS is adopted to enable HR processes to serve HR users. *Type* dimension refers to the innovation as technical or administrative (Gopalakrishnan and Damanpour, 1997). Technical innovations include processes, products and technologies used to create products or services in organizations. Therefore, a technological organizational innovation such as HRIS can be classified, understood and explained as a technical innovation to serve university employees to complete HR tasks with.

The above discussions conceptualized and described HRIS as a technological innovation within a university.

The thesis is about how a HR system was adopted and used in a South African university. The description includes what constitutes a university's HR processes and practices; how the environment, organizational and technological factors influence the decision by top management as upper echelons to adopt HRIS as a retrospective view; how acceptance of HRIS manifest in a university; and how adoption as a dimension influence effective use of HRIS. The section that follows discusses the relevance of the study to IS research.

1.2 Relevance of this study to IS research and to IS discipline

Information systems adoption and information systems use are complex processes transpiring at varied levels within the organization. In addition, since how an information system is adopted may influence how it is used, a simultaneous examination of both complex processes is relevant to IS scholarship, is not well known. For that reason, a case study methodology was appropriate to unravel the complex adoption and the subsequent use.

Benbasat and Zmud (1999) categorized relevance as inclusive of the following categories: *interesting*: *does the research address problems that are of concern to IS professionals?* The research problem that this study addresses is of concern as organizations still battle with comprehending why systems they have heavily invested in are not effectively used and/or not bringing immediate tangible results. The issue includes non-realization of benefits and IS underuse, despite large sums of organizational

resources allocated to the IS adoption and use initiatives. In order to minimize such challenges and issues, organizational upper echelons should pay special attention to their contextualized environment when making adoption decisions and similarly when the adopted system is in use.

Applicable: does the research produce research knowledge and offer prescription that can be used by practitioners. This research offers practitioners a framework (prescription) that may inform them on how they could better adopt and use HRIS, notably in a university. The framework highlights contextual determinants which practitioners ought to be cognizant of during HRIS adoption and use. In other words, the relevance of this research is in giving practitioners knowledge on ways HRIS, as an information system, may be adopted and used effectively.

Current: does the research focus on current technologies and business issues. Information systems that are specific to human resources are in their infancy. HRIS is a new information systems technology that is just in recent years being adopted by organizations. Organizations are experiencing challenges and issues with this information system, especially in relation to how it enables the business. This research offers ways by which HRIS technology may enhance the business. That is, it offers how HRIS could be used to enable the functions and practices of the university human resource.

Accessible: can the research be understood in terms of tone, style, structure and semantics by IS professionals. The thesis is written in a tone, style and structure that researchers, learners and practitioners alike can understand and its discussions beneficial whenever needed. The thesis is written in simple English, with an easy to follow structure and topics and sections are introduced so that the reader keeps track of the topic under discussion.

The next section discusses Information Systems adoption and use studies, so as to have an understanding of where this research sits within the IS literature.

1.3 Information systems (IS) adoption and use studies

This section discusses IS adoption and use studies and starts with a brief definition of what an IS is as a follow up to understanding what an organizational innovation is, prior to the discussion of IS adoption and use studies.

There are many definitions of what an information system is. In this study an Information system is defined as a human related system that "examines more than just the technological system, or just the social system, or even the two side by side; it is the phenomena that emerge when the two interact. (Lee, 2001: iii). IS are made up of technologies, processes, business applications and software to manage and control organization's information database (Shaikh and Karjaluoto, 2015). Because of this intersectionality; there lays an emphasis on the importance of understanding how IS impacts organizations and humans. The information system adopted and studied is HRIS adoption and use in a university setting.

From the understanding of an IS mentioned above, it's now easier to discuss IS adoption and use studies. IS adoption studies vary across disciplines and levels of analysis. IS adoption studies are focused heavily on cognitive variables such as intention and prediction and are at an individual level as demonstrated by studies of (Venkatesh and Davis, 2000; Venkatesh et al., 2003; Karahanna et al., 2006; Venkatesh et al., 2012), often bypassing group, cultural and social influence on individual decision making (Bagozzi, 2007). It can be inferred that although some of the studies are at an organizational level, there is still an emphasis on individual prediction intentions and behavior.

Burton-Jones and Gallivan (2007) define IS use as a "user's employment of a system to perform a task". IS use studies in organizations are often focused on variables such as: behavioral intention to use (Jackson et al., 1997; Legris et al., 2003; van der Heijden, 2004; Chiu et al., 2014), actual use (Chang, 2010; Saraf et al., 2013; Wang, 2014), and antecedents of attitude on use (Verhagen et al., 2012). There is another stream of research in this area that identifies antecedents and drivers of intention that influence behavioral intention and use behavior (Kumar and Revindran, 2012; Stone and Baker-

Eveleth, 2013). As observed from the studies mentioned above, a majority of IS adoption and use studies carried out are about intention to use and antecedents of use, however fewer studies have examined how these antecedents influence system adoption and use behavior, therefore contributing to the call on multidimensional research.

As highlighted above that a majority of studies carried out on adoption and use are focused on an individual's cognitive variables with little understanding and explanation on how IS adoption influences use and subsequent effective use as an outcome. That could be attributed to the positivist stance in the literature. Shaik and Karjaluoto (2015) have suggested that an interpretivist lens may uncover new consequences that define IS adoption and use; that is actual use and not the intention to use or predicting if whether the IS will be used or not. Hence the significance of this study, as it seeks to understand how an IS was adopted and its influence on current use within a university.

As a follow up to the discussions of the preceding section, the one that follows is about theories that are used to underpin IS adoption and use studies, so as to have an idea of some of the grounding theories in this field.

1.4 Theories informing adoption and use of information systems research

IS adoption and use research often deploys models, theories and theoretical frameworks from various disciplines, e.g., the psychology field (Shaik and Karjaluoto, 2015). The most popular model in IS research is TAM-technology acceptance model (Davis, 1989), which has its roots in the theory of reasoned action-TRA (Fishbein and Ajzen, 1975), TRA has its roots in psychology, and the rest of the models that stem from TAM such as theory of planned behavior-TPB (Ajzen, 1991), TAM2 (Venkatesh and Davis, 2000), and the unified theory of acceptance and use of technology (Venkatesh et al., 2003) are in reality psychology based theories and models that predict intention.

Despite its popularity, TAM was not specifically developed as a predictor for continued use intention, but rather it was supposed to focus on motivations of users to accept a technology instead of intentional use as its currently applied in IS (Hong et al., 2006).

Regardless of its intended purpose, there are numerous studies that use it to study post adoption behavior.

In addition to popular IS theories and models, other theories such as contingency theory (Khalifa and Liu, 2007), diffusion of innovations-DOI (Rogers, 1995), Technology, organization and environment framework-TOE (Tornatzky and Fleischer, 1990), social capital (exchange) theory (Park 2014), expectation confirmation model-ECM (Thong et al., 2006), institutional theory (Tsamenyi et al., 2006), Capital maturity model-CMM (Paulk, 1995) are used as lenses in IS adoption and use research. The above mentioned theories, models and framework are often used together e.g., a theory and a model, a theory and a theoretical framework, depending on the phenomena under study and the goals and objectives of the research.

Underpinning theories and framework used for this study include Upper echelon theory (UET), Social cognitive theory (SCT), Task-technology fit (TTF), and Technology, organizational and environment framework (TEO) as lenses to develop the research framework utilized as a guide during data collection, which is discussed in chapter three of the thesis. The section that follows discusses the multilevel nature of IS adoption research as related to HRIS adoption in universities.

The next section discusses the multilevel nature of IS adoption research, because IS adoption and use study is conceptualized to be both multidimensional and multilevel.

1.5 Multilevel nature of IS adoption research

IS adoption research is considered multilevel by nature. Multilevel research addresses the individual, groups, organizations, industries and society levels of analysis (Tscherning, 2012). It also addresses the macro-micro divide by focusing on the individual micro dynamics and the organizations' broad view at the macro level, resulting in a holistic, rich depiction of dynamics at play (Klein et al., 1999). Further, multilevel research could assist in unpacking relationships at the different levels, as relationships that are true at one level of analysis may be stronger or weaker at a different level (Ostroff, 1993). Therefore, based on the nature of IS adoption and use, a multilevel approach will assist

in understanding IS adoption decision made by individuals, that is top management at the time HRIS was adopted at an organizational level and how it's used by university employees.

Adoption is a process rather than an event, individual adoption of IS is made up of awareness, persuasion, decision, implementation and confirmation (Rogers, 1995). IS adoption research at an individual level of analysis is rooted in psychology and is focused on understanding feelings, behavior and thoughts of individuals (Rousseau and House, 1994). Although HRIS adoption is at an organizational level, top management's individual behavior, feeling and experiences who made decisions during this phase where examined. While organizational research has its roots in sociology and economics and its focus is on understanding the environment in operates in and the organization (Dansereau et al., 1984). It's important to understand and explain the environment in which HRIS is adopted and used into, accounting for the different levels. The figure below represents multilevel nature of IS research.

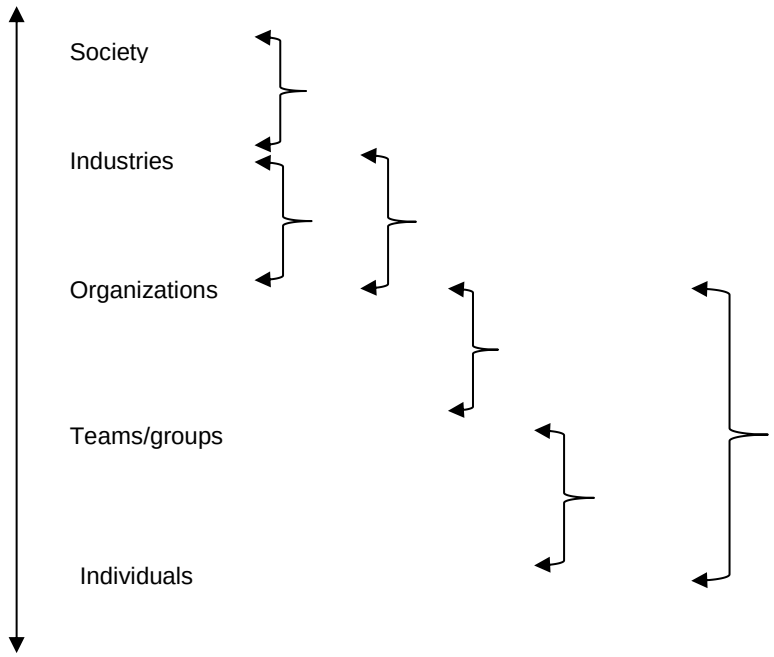

Figure 1: Multilevel nature of IS adoption research (Tscherning, 2012)

Figure 1 depicts the interrelatedness of the different levels of analysis in IS adoption research; at the top is society that influences industries, industries influencing organizations, organizations influence groups, groups influence individuals.

A majority of IS level research is at the individual-organizational level, Frambach and Schillewaert (2002) posit that there are two types of IS adoption decisions, the decision by the organization to adopt the IS and one made by individuals within the organization to use the adopted IS. Hence the thesis conceptualized HRIS adoption and use as a multilevel occurrence in a university as it's adopted by the university to be used by its employees.

1.6 Motivation for multilevel research

There are requests for multilevel (individual, group and organization) research in the IS field (Markus and Robey, 1988; Chan, 2000; Burton-jones and Straub, 2006), despite such calls; studies however remain few (Lapointe and Rivard, 2005; Burton-Jones and Volkoff, 2013; Crossan and Apaydin, 2010). According to Burton-Jones and Gallivan (2007) multilevel research could assist researchers avoid certain misconceptions associated with single level research; misconceptions such as *cross-level fallacy, contextual fallacy, ecological fallacy* and *atomistic fallacy.* Although this is an organizational level research, it accounts for organizational adoption and use of HRIS by individuals.

Cross-level fallacy is when a researcher does not address how individual use gives rise to organizational level use, *contextual fallacy* is related to failure to account for individual system use and performance and how organizational or group level factors influence individual use, *ecological fallacy* is the incorrect assumption that relationships at an organizational level exist in the same way at a lower level, *atomistic fallacy* is the opposite of ecological fallacy and is the assumption that if a relationship exists at a lower level, it exists in the same way at a higher level. As such, HRIS was adopted at an organizational level by top management, who made decisions on the system to be used by individuals within the university to complete HR tasks, so these fallacies were accounted for during data collection and subsequent analysis.

Additional strengths of multilevel research is that it is theoretical (Goodman, 2000); as it opens up new opportunities for theory building and development in organizational research instead of reference discipline specific theories (Burton-Jones and Gallivan, 2007). As one of the aims for this research is theory development, this approach is a better fit, and will offer a different understanding and explanation on HRIS adoption and use compared to a single level approach.

The different levels of users and those affected by HRIS are at four different hierarchies within the organization. At the top is top management who make decisions on how, when, what and why the system was adopted and how they use HRIS to complete their HR related tasks. At top management level, the researcher must be cognizant of *cross-level*, *ecological* and *contextual fallacy*.

Middle management is responsible for ensuring that there is a seamless transition during the adoption of HRIS and a link between operational and top management level, they also use HRIS for completing HR tasks. At middle management level, one must be cautious of *Cross-level, contextual* and *atomistic fallacy.* There are operational employees within departments who use the system such as HR personnel who complete their daily HR tasks on it. This is the lowest level of the hierarchy within the university; this is where daily HR tasks are executed though the HRIS, attention must be considered towards *cross-level, contextual* and *atomistic fallacy* at this level. The study is not only multilevel; it is also multidimensional, and is discussed briefly below.

1.7 Motivation for multidimensional research

The study is multidimensional in the following ways; it is about how HRIS as an organizational innovation was adopted by a university (HRIS adoption phase) and how that influences its use by university employees (HRIS use phase). Two phases that the IS went/ is going through, one retrospective (adoption) and the other the current view (use).

This is to acquire a holistic picture of how things happened (HRIS was adopted) and how that influences its current use. As advocated by Burton-Jones and Grange (2008), in order to conceptualize effective use as an outcome, the intended *function* of the system

must be known (determined at the adoption phase) and understood. Therefore, in order to understand how HRIS is used currently, I have to understand how it was adopted, hence the two phases of HRIS included in the study.

Another premise for the thesis is that HRIS as an organizational innovation is conceptualized to be both a process and an outcome in the university. This understanding will be made by investigating the determinants that influenced HRIS adoption as a process and those influencing use as an outcome.

Since HRIS is conceptualized as an organizational innovation, another part of an innovation is that it's an outcome; so it is important to know and understand the intended/unintended consequences as a result of HRIS being adopted and used in universities.

Last, the deployment of multiple theories, frameworks and models of IS adoption and use for understanding and explaining HRIS adoption and use in universities offers different ways in which the phenomena was assumed.

The section that follows discusses the background to the research problem, the problem statement, the research argument, the research goal and objectives and the research questions before discussing the study context.

1.8 Background to the research problem

This section discusses the background to the research problem. It starts by introducing the study location as South African universities, to get an understanding of the environment in which the study takes place in; that is, where HRIS is adopted and used and where the research problem manifests.

1.8.1 Study Location and context

The context and location of the study is a South African university. In order to contextualize the problem, the Higher Education South Africa report (HESA, 2011) details the following characteristics that influence HR practices and functions in universities as:

Increasing student numbers: Currently the student population in South African higher education public institutions is slightly over one million, with plans of increasing the number to one and a half million by 2030 with just over 18 000 full time academics in 2014 and over 30 000 support staff, bringing the number of staff to over 49 000.

Plans to increase research and postgraduate students: The South African government department of Higher Education and Training (DHET), has plans of increasing PhD graduates from 27 per millionth of the population to 100 per millionth of the population by 2030. Postgraduate student enrolment and research output remain low in relation to national economic and development needs. An impediment to improving the situation is the fact that only 34% of academics have doctoral degrees which is a necessity for quality research and supervision.

Curriculum reform: Social inclusion and exclusion in SA higher education extends well beyond issues of institutional and academic culture; it's also about engaging in issues of transforming the curriculum to serve the country and the continent.

Securing the next generations of academics: A transformed higher education should reflect the demographics of the country. The basic argument underlying the National Development plan (NDP) 2030 is to increase PhD's amongst academics and include those who have been excluded prior.

The above shows the challenges and issues facing a typical South African university. This thesis supposes that HRIS could, if adopted and used well, leverage some of these challenges.

1.8.1.1 South African universities

There are currently 25 contact public higher education institutions in South Africa; 6 universities of technology, 8 comprehensive universities and 11 traditional universities. According to the Council on Higher Education (2014) the 11 traditional universities are scattered all over the country and were not affected by the 2004 merger that formed the current universities of technologies from what used to be *technikons*. A majority of

traditional universities are in the Western Cape Province including university of Cape Town (UCT) which has seven campuses, the University of Stellenbosch with three campuses and the University of the Western Cape (UWC). Gauteng province follows Western Cape Province with the University of the Witwatersrand with four campuses, university of Pretoria (UP) with six campuses. The Eastern Cape has University of Fort Hare with three campuses and Rhodes University. Free State province has the University of Free State with three campuses. North West University has two campuses in the North West province, and an additional campus in Gauteng Province. Limpopo province has Limpopo University with a single campus in the province. And last, Kwazulu-Natal province with University of KwaZulu-Natal (UKZN) with four campuses.

The study used the University of the Witwatersrand as a case study. The next two paragraphs briefly discuss the university with respect to its HR strategy and practice – to allow the reader to understand the context of the research.

University of the Witwatersrand (commonly known as Wits University), is situated in Johannesburg. Johannesburg is “the economic and social hub of South Africa” (www.wits.ac.za). The university has five faculties with 35 schools in its four campuses around the city. More than 30 000 students are registered at Wits. The staff is made up of 6 200 members (of whom 2 600 are support staff and 3 900 are academic) (Wits annual report, 2013). However, how HR activities are enabled or inhibited by the use of HRIS, in the managing of the human resources, is not empirically known.

All public universities are subsidized by the Department of Higher Education and Training (DHET) as a government subsidiary and regulator of higher education in South Africa. There has to be value for investing in information systems such as HRIS as this is prioritized over other pressing human needs. DHET has set some objectives and universities continue to evolve to try to meet the needs of the country through the set objectives. Wits University, as one of the universities, is tasked with ensuring that such national objectives are met. It is, therefore, important to understand and describe the context in which HRIS is adopted and used in universities.

1.8.2 Formulation of the problem: theoretical and practical knowledge gaps

Additional to the above challenges, this section formulates the research problem further by highlighting the theoretical and practical knowledge gaps which are inadequately addressed in literature.

Gap 1: Based on the preceding characteristics, universities are mandated with the task of ensuring that all these objectives are met, the added pressure means universities have to attract and preserve skilled, knowledgeable people to address the demand. Human resource information systems (HRIS) could enable HR processes for attracting and retaining the right people to do the job, however, how HRIS is enabling or not enabling HR processes in universities is still not well known.

Gap 2: Further, as South African universities move towards becoming businesses, how information systems such as HRIS are adopted and used to enable HR activities and processes sensitive to the evolving environment is still not well understood. Troshani et al, (2011:472) argue that there is no “one-size fits all approach” to technology adoption as there’s fundamental differences that exist between innovation types, context and industries. Therefore, it is important to understand HRIS adoption and use in universities based on their unique evolving context and mandates they have to fulfil.

Gap 3: Extensive systematic literature search on HRIS studies revealed that there are very few studies that detail HRIS adoption and use in university environments. From the studies that discuss HRIS in universities; a majority of the papers are positivist in their approach, using survey strategies with questionnaires as data collection methods. From this point, it can be concluded that further research is needed to address this shortfall in literature so as to develop the body of knowledge on organizational adoption and use of HRIS sensitive to the environment, as the area is under researched (Strohmeier and Kabst, 2014). Therefore, there’s a need to examine university’s adoption and use of HRIS.

Gap 4: Based on calls (Chan 2000; Burton-jones and Straub, 2006) to focus on multidimensional organizational research and the research argument, the study heads this call for multidimensional and multilevel research discussed in the previous sections.

As stated above, since majority of IS studies carried out on adoption and use are focused on individual's cognitive variables such as intention and prediction, there is little understanding and description on how IS is adopted and used in organizations; notably in universities in South Africa. Further, a majority of studies on IS adoption and IS use are positivist. There is an argument that an interpretivist lens uncovers new consequences; and thus, since the present study follows interpretivist philosophy, that may assist in better understanding how HRIS was adopted and the determinants which influenced the adoption and how that influences current use.

1.9 The Problem Statement

The adoption and use of Information systems is still a practical key issue as organizations strive to find ways to justify investments – the research key issue is in striving to understand and describe adoption and use behavior. However, literature is problematized as inadequate in addressing these key issues. In other words, although the adoption and use of HRIS is often critical to achieving organizational visions and mandates, literature in this field is still in its infancy, with no known study conducted with a South African university context. To this point, the need for this study is in understanding behavior during HRIS adoption and behavior during the subsequent use. This may bridge the identified theoretical and practical knowledge gaps.

Secondly, the existing literature on HRIS is regularly narrowed to either its adoption or its use. Not understanding both together, the multidimensionality leaves a gap in that there is lack of knowledge on how the adoption may inform the current use. In other words, there is a need to study how adoption may inform present use and therefore paramount to study both, and in the same locale. The study sought to understand how HRIS adoption happened, and the present use, in the context of a university. The thesis thus conceptualizes a multidimensional framework that may inform both adoption and use. The framework is cognizant of the contextual determinants which influence both adoption

processes and use behavior at varied levels, so that the information system is adopted efficiently and used effectively.

1.10 The research argument

The research argument driving this study was that the adoption and use of information systems, such as HRIS, is multidimensional and occurs at multiple levels within the organization. Thus, the empirical and theoretical multi-dimensional approach to studying and understanding how HRIS adoption happens, how it is used and subsequently how it may be effectively used, is necessary – in order to have a theoretically comprehensive knowledge.

1.11 Research purpose, goal and objectives

Research purpose and goal

The purpose of the study was to understand and explain the adoption and use of HRIS, in a university. The research goal was to conceptualize a multidimensional framework for the adoption and use of information systems, in the context of a South African university.

The research objectives were to:

1. Analyze the current university human resource processes and practices;
2. Describe how university upper echelons were influenced by the environment, organizational and technological factors in the decision to adopt the human resource information systems;
3. Describe how acceptance and use of human resource information systems manifest in the university;
4. Determine how adoption as a dimension may influence effective use (another dimension) of human resource information systems

1.12 Research Questions

The primary question that drove the study was: *How can Human Resource Information Systems be adopted in a university, and how can they be accepted and used effectively?*

In order to answer the complex research question, the secondary questions were:

1. What are the university human resource processes and practices and how do they happen?
2. How were university's upper echelons influenced by the environment, organizational and technological factors in the decision to adopt human resource information systems?
3. How does acceptance and use of human resource information systems manifest in the university?
4. How does adoption as a dimension influence effective use (another dimension) of human resource information systems?

The answer to the above questions informed the contributions of this research to knowledge. These contributions, which are categorized into theoretical, practical and methodological contribution, are further discussed at length in chapter seven of the thesis.

1.13 Contributions emanating from the study

The study made several contributions; theoretically, methodologically, practically and to context. Each of the contributions is briefly discussed:

1.13.1 **Theoretical contribution**

The multidimensional framework for HRIS adoption and use in a South African university is the theoretical contribution from the study. The study is premised within the area of IS adoption and use. The multidimensional nature of the study allowed the researcher to understand HRIS adoption and use in a university from different organizational levels and how it is both a process and an outcome. Since a majority of IS adoption and use studies are focused on intention and antecedents of adoption and use; this study's focus is on HRIS adoption behavior and current use behavior in a university. A majority of IS adoption and use studies are positivist; this study being interpretative and using a case study as a research strategy, shows an alternative way of understanding how a HRIS was adopted and used and subsequently how it could be appropriately used, in line with why and how it was adopted.

As universities grow to become international organizations, their requirements change and need more information integrated (Pollock and Williams, 2009), this is so for Wits University as per their objectives. An overarching theme from the empirical data shows that there is “IS conflict” a disconnect, or tension of some sort, a lack of synergy, contradiction or power dynamics that are at play in the university, one of the reasons why HRIS as part of an ERP are adopted, is to integrate processes, people, systems and the entire organization to function as a single unit. However, in the university the status quo remained as if legacy systems that were replaced are still in use.

The multidimensional framework for HRIS adoption and use in universities contextual determinants to be cognizant of which influence both adoption processes and use behavior at varied levels, so that the information system is adopted efficiently and used effectively

1.13.2 **Methodological contribution**

The study used an interpretivist philosophy, with a qualitative case based research approach of a single university to study HRIS adoption and use. The research heeded the call for studying information systems as multidimensional and multilevel in organizations (Chan 2000; Burton-Jones and Straub, 2006). Theorizing the research as multidimensional and multilevel coupled with an interpretive case allowed the researcher to be in the natural setting where HRIS is adopted and used in a university. As a result, profound, rich, holistic understanding of HRIS adoption and use in universities was attained.

A majority of IS studies carried out on adoption and use are focused on individual’s cognitive variables such as intention and prediction, with little understanding and explanation on how an IS is adopted and used in organizations, moreover universities in South Africa. Since a majority of IS adoption and use are positivist, an interpretivist lens uncovered new consequences that assist in understanding how an information system such as HRIS was adopted and used.

Case study contribution: A case study contributed in the following ways: The rich case data provided inspiration for new ideas in theory building. The data contradicted and

revealed previously unseen shortfalls in the theoretical lens guiding the research, leading to a reassessment of literature.
Furthermore, the conceptualized framework could assist in adding detail to theory; it also assisted with identifying future research direction.

1.13.3 Practical contribution

The thesis offered an alternative conceptualization of HRIS adoption and use in universities. The multidimensional framework for HRIS and adoption use in a South African university provides an insightful implication to practice on how to integrate an organization, some of which could be dealt with during adoption, and use of an IS. As a developing country, the South African government through universities have invested huge portions of their annual budgets on ICTs that include technological innovations such as HRIS, despite other pressing human needs, so it's imperative to have an idea of how ICTs such as HRIS are serving or not serving universities as enablers of HR activities and functions so as to get return on the investment.

Another, practical contribution from this research is for top management to be cognizant of and prioritize planning; planning the adoption process and how that will unfold, inclusion of change management initiatives, technical and social aspects, what the IS is adopted for, what are some of the organizational objectives it is there to enable, the IS vendor choice, the IS fit to the organization and the changes that might be because of the existence of the IS within the organization. So as to minimize negative unintended consequences because of the system adoption and use.

Further, the research findings may inform and empower HR practitioners who interact with HRIS and understand ways in which they could overcome some of the challenges they face when completing HR tasks on the system; however, some of these challenges need a leadership role from management for some of their initiatives to work.

1.13.4 Contribution to context

South African universities are evolving and are moving towards becoming businesses,

how information systems such as HRIS are adopted and used to enable HR activities and processes sensitive to the evolving environment is still not well understood. Troshani et al, (2011:472) argue that there is no “one-size fits all approach” to technology adoption as there’s fundamental differences that exist between innovation types, context and industries. As part of their vision and mandate, the government has developed a “*National development plan 2030”* which outlines some of the HR directives that universities have to implement following what is happening in the region and country. Therefore, it is important to understand HRIS adoption and subsequent use in universities based on their unique evolving context and the mandates they have to fulfil. Further, it is imperative to understand how HRIS is enabling HR activities within university environments as the context in which the mandates ought to be fulfilled. The social context in which the university is operating in is unique, and thus important and relevant to conduct the research in a complex regional, country and university context where the use of the HRIS is mandatory for practitioners.

1.14 Summary of the chapter

The chapter introduced the field of the study within IS, HRIS adoption and use as a multidimensional and multilevel phenomenon in an organization such as a university was discussed, with its own uniqueness and evolving landscape. The chapter also deliberates on the research problem and how it was formulated; concepts that inform the conceptualization of how the problem could be looked at. The research goals, objectives, argument and question with its sub-questions, the relevance of the study to IS research, contributions that emanated from the research were discussed. The thesis outline is the next section.

Thesis outline

The rest of the thesis is organized as follows:

Chapter two is focused on the survey of literature and related concepts; it also focused on popular IS theories, frameworks and models. Some HR theories were discussed briefly; the reviewed concepts were grouped according to the research objectives, the research question and its sub-questions.

Chapter three is dedicated to theories and models of IS adoption and use. The lenses used to underpin the study are discussed and justifications to why they were chosen are also documented. The conceptual research framework and how it came to be is also detailed, the antecedents and contextual determinants of the conceptual research framework are discussed and how they are understood as informing the research. The different dimension of HRIS adoption and use are deliberated on as related to its multidimensionality and multiple levels.

Chapter four details the research methodology and discusses how the research was conducted and its philosophical stance, making the reader aware of other methodologies and philosophies that can be used in information systems research. The assumed research paradigm assumed is followed by the strategy and approach, data collection techniques, sampling method, sample and the time horizon are discussed last.

Chapter five focused on the collected data and findings based on interviews, observations and university documents, the research question were used as themes to guide data collection, and emerging sub themes were also documented and analyzed.

Chapter six discussed interpretation of findings, recommendations and theory building for HRIS adoption and use in universities by proposing a framework called "*a multidimensional framework for HRIS adoption and use in a South African university*" based on the findings discussed in chapter five.

Chapter seven is an evaluation of the research per research objective and question and how they were addressed; it also reminds the reader about the previous chapters and discusses the contributions from the research, limitations and future research ideas.

CHAPTER TWO: SURVEY OF SCHOLARSHIP AND THEORETICAL FOUNDATIONS

The previous chapter introduced the thesis by discussing the research problem, argument, purpose, goal, objectives and questions, relevance of the study to IS research, and contributions emanating from the study. To build on that, this chapter systematically reviews relevant literature. This review is guided by the research objectives and questions of the study discussed in chapter one to have an understanding and knowledge of the literature related to HR, IS and HRIS as this study is about an IS; HRIS, enabling HR processes and activities, so it is imperative to know and understand what those are.

The chapter is organized as follows; a discussion on Human Resources (HR), followed by HR actors in organizations, HRM system, theoretical approaches related to HR effectiveness in organization, HRM research, IS adoption processes, IS use dimensions and research areas, a review of HRIS related studies and individual level variables in IS discussed last.

The section that follows is a discussion on HR and related studies. The first research objective is "*Analyze the university human resource processes and practices*" this will be based around what HR is and research related to HR. The review of literature follows that objective in that it starts by describing what HR is within organization. The section that follows discusses what human resource is and HR/HRM research.

2.1 Human resources

Human resources, grounded in industrial psychology emerged as a discipline that was used to manage worker unrest and inefficiency in the early part of the 20th century to becoming a strategic partner within organizations currently (Bamberger et al., 2014). Despite developments in the field, the discipline is still suffering from an identity crisis, as a result, there are numerous terminologies used to refer to human resources.

Ulrich et al. (2008) mention typical terminologies such as human resources management, the personnel function, personnel management, personnel administration, and human resources department to refer to human resources. Further, Paauwe and Boselie (2005)

have asserted that because of the lack of consensus on what HR is, it makes it more difficult to define what it is. According to Wright et al. (1996:304) Human resources can be defined as “a pool of human capital under an organization’s control in a direct employment relationship” this refers to the employees and their employer, the university and its employees.

HR is not without its own practices and procedures; HR practices are university wide activities aimed at managing university’s human capital, value-skills, knowledge, abilities and ensuring that the human capital fulfills university mandates.

Amongst many, another definition of HR is that it’s a set of HR practices, or systems/bundles of practices aimed at a certain outcome in organizations. Wright et al (1999) takes a step further by asserting that even if the same concept is used to refer to HR, the underlying meaning might be different. There are numerous ways in which HR personnel act in an organization, they’re discussed below.

2.2 HR actors in organizations/universities

HR actors within organizations are not limited to the HR department, and these include top managers, line managers, HR managers, HR specialists and other employees within the organization (Zupan and Kaše 2007). Top Managers with the assistant of HR managers and/or HR specialists develop HR policies and HR practices and middle management in the form of HR managers and line managers implement and execute the policies and HR practices developed (Holt-Larsen and Brewster, 2003). Managing HR responsibilities lie within their HR departments, whereas HR specialists service the entire organization. HR practices impact the different levels within a university; top management, middle management and at an HR personnel and other university personnel operational level.

2.2.1 Five roles of HR professionals

To elaborate further on HR actors mentioned above, Ulrich (1997) conceptualized a theoretical framework of four roles of HR professionals as a strategic partner, administrative expert, change agent and employee champion. In 2005, Ulrich and

Brockbank (2005) changed the roles to HR leader, employee advocate, human capital developer, functional expert and strategy partner.

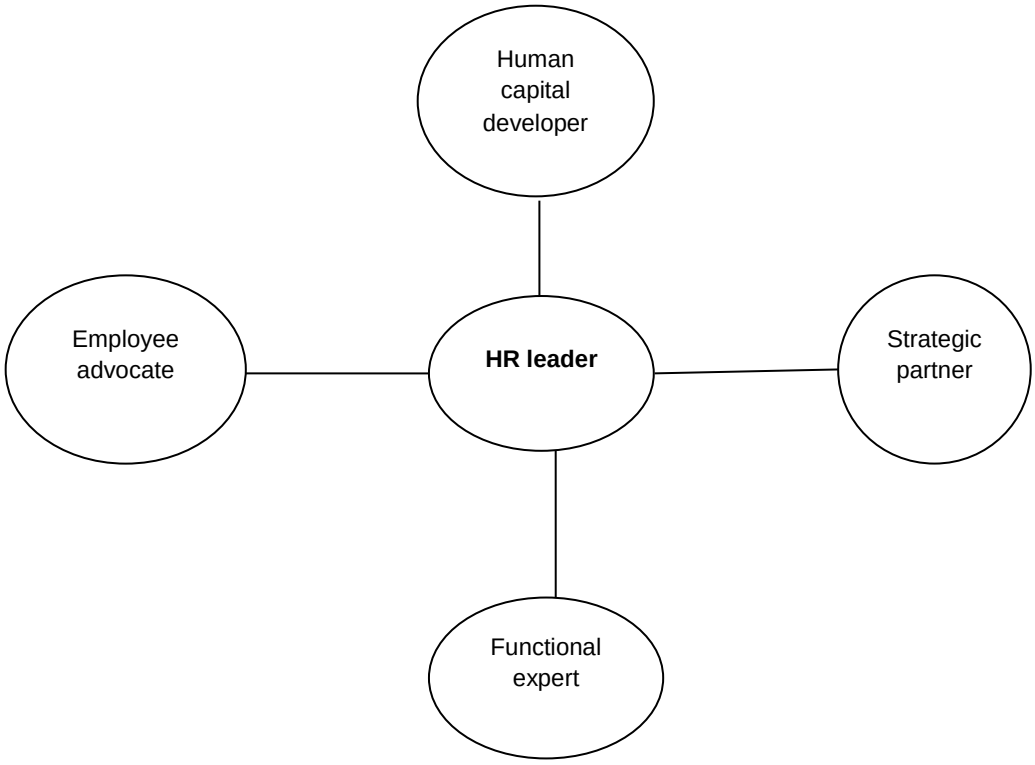

Figure 2: HR professional's five roles in organizations (Ulrich and Brockbank, 2005)

Figure 2 represents the five roles that HR professionals assume in organizations. At the center is HR leader, the HR practitioner is perceived as a leader and a sum of all the other four roles.

Employee advocate and human capital developer are concerned with employees entering the organization and existing ones. Employee advocate ensure that the employer and employee relations are smooth and friendly, whereas a human capital developer is focused on securing external suitable candidates.

Functional expert is responsible for executing daily HR practices; other administrative responsibilities are executed by the functional expert. Technological advances have allowed HR practices to be executed easier.

The HR leader takes charge of all four roles; as an employee advocate, human capital developer, strategic partner, and functional expert and they manage relationships in the organization between HR personnel and other employees as a sum of all the roles.

The strategy partner can be a change agent, business expert and knowledge manager. They ensure that they communicate with other departments in the organization to help create value and competitive advantage.

The section that follows discusses human resource management (HRM) system as related to the study; these include HR policies, HR functions/activities and HR operations.

2.3 Human Resource management system

According to Banks and Kepes (2015) HRM system is made up of HRM policies at an organizational level and at top management level, HR practices at unit level and at an individual level is HR processes in an organization/university.

Based on the levels above, HR practices could be conceptualized to include different levels within the organization, at the lowest level is organizational actions designed to achieve a specific outcome (Lepak et al., 2006). Policies are conceptualized at a high level and should reflect employee-focused programs that influence the choice of HR practices. The HR practice is defined in terms of HR function/activities, HR operation and HR policies are described below.

2.3.1 HR policies

HR policies are formal rules that organizations put in place to hire, train, assess, and reward its workforce (Masango and Mpofu, 2013); these policies have to be adhered to by employees in an organization. Examples of typical HR policies include policies on recruitment and selection, compensation, performance management, conditions of employment and employment equity. Pursuing on HRM systems further, Boudreau and

Ramstad (2003) asserted that the long-term competitive advantage in organizations from HRM arises from developing appropriate HR practices that are consistent with the organization's context. From this, different approaches to HR practices in organizations are discussed below as identified by Schuler and Jackson (2005).

2.3.2 HR function/activities

The HR function is about what the HR department is supposed to do in an organization. However, the challenge for HR is to develop systems for the HR function that are inter dependent on each other, rather than develop a set of independent best practices (Wright et al., 1996). This requires changing the mind set of employees from the traditional sub functional (selection, training, appraisal, compensation, etc.) view of HR to one where all of these independent sub functions are viewed as interrelated components of an interdependent system. HR functions/ activities can be classified as transactional, traditional or transformational (Thite et al., 2012). Traditional HR functions are administrative HR activities such as selection, performance appraisal etc., transactional HR activities are concerned with routine HR tasks such changing employee personal information. Transactional HR activities are actions that increase the value, strategic importance and visibility of the HR department in an organization. All the different HR activity types are important and an organization should focus on each if the HR department is to add value within organizations.

Further, Wright and Nishii (2007) have said that there should be a clear distinction between intended HR practices (policy based developed HR practices) to actual or what is practiced in the organization by the employees. All outcomes have a bearing towards the HR function in organizations; the following subsection discusses typical HR practices/activities in an organization such as a university:

2.3.2.1 Staffing and employee management

These include activities such as recruitment, selection, job offers and placements. In developing economies, where recruiting and screening job applicants is expensive and time consuming, skilled labor is tight with high turnover rates, with South Africa as a developing country, such are challenges that most universities deal with.

Selection is about identifying people with the right skills and competencies that match the job description and execute tasks related to that. Part of the selection process means deciding where to search for the appropriate people to fill jobs in an organization. Departments ought to communicate their personnel needs on time.

Gatewood et al. (2008:3) define HR selection as "…the process of collecting and evaluating information about an individual in order to extend an offer of employment". This process involved evaluating the skills and competencies that they need for the job and assessing those skills. The potential employee decides whether the offer on the table suits them or not.

2.3.2.2 HR development

HR development is concerned with employee improvement and growth; this includes creating training profiles and assessing training need. Employee succession planning can be a subsidiary of HR development.

Training is about identifying skills that employees need to improve and making resources available to develop those skills. According to Beulen (2009) training is not limited to professional training opportunities only, educational opportunities could be included as part of training and development.

2.3.2.3 Equal employment

Equal employment is concerned with affirmative action plans, applicant tracking, workforce utilization, availability analysis. A majority of universities in South Africa have employee transformation agendas in place, which is related to affirmative action, the extent to which that is happening is another unknown factor. At Wits University, this is referred to as transformation and employment equity (EE) and it's one of the objectives that the university and the country is having challenges with.

2.3.2.4 Benefits and compensation

Benefits and compensation is about pay structure, salaries/wages costing, leave and benefits use, occupational health and safety and performance appraisal. These are all

related to financial system in most organizations. The benefits and compensation unit sits at a different department from finance unit or they can belong to the same unit.

Benefits and compensation also involves the creation and management of employee benefits such as salaries, pension funds and medical insurance. Employee awareness on how these benefits work is as important as having the benefits in an organization (Dessler, and Al-Ariss, 2012). Benefits and compensation are a way of attracting and motivating employees.

Evaluating employees' competencies and expected outcomes and identifying their strengths and weaknesses, and creating a plan on how to augment those weaknesses could be used as motivator to retain employees in an organization. Some organizations link performance management to a reward system as another aspect of benefits and compensation. The process starts when an employee engages with the immediate manager.

2.3.2.5 HR planning and analysis

This is about forecasting HR needs in order for the organization to continue with the business of the day should there be a shift within their employees and forecast demand. This usually involves organizational HR reports, staffing projections, skills inventory, turnover analysis, absenteeism analysis and restructuring and job marketing as documents used for HR forecasting. HR planning and analysis usually involves three phases, that is, forecasting future demand of skilled human resources, analyzing the supply of such resources and ensuring that critical HR shortfalls are filled with appropriate candidates.

2.3.2.6 Employee-labor relations

Employee-labor relations are about union negotiations, auditing records, attitude survey results, employee work history, exit interview analysis, employee work history and grievance analysis.

The information that the HR department shares with its employees regarding the organization should be well thought of and executed (Bamberger and Phillips, 1991).

Employee participation in organizational decision making is another HR function that needs careful consideration of when and how to consult employees about issues they might have an interest in. These include changes to policy and other related matters or an introduction of something into the organization.

Keeping record of employee information is important as it assists in meeting various legal requirements (Tithe, 2004). Employee information for regulatory bodies such as tax services, and audits in the university could be maintained on HRIS. The system could serve as a central repository for all employee information and management could extract reports for decision making, further disciplinary related information could be stored on HRIS for reference purposes, even when the employee leaves the university.

2.3.3 HR operations

HR operations are tasks performed by HR personnel to execute transactional HR activities (Trine, 2013). Some typical HR operations include recruitment and selection of employees, workforce planning, induction, training management, leave management, benefits management, overtime management, health and safety management, attendance management, timesheet management and maintenance of employee information. These operations can be broken down into tasks which could all be performed on HRIS and the subsection that follows discusses HR operations and the different frameworks they fall into.

Competency modeling. Competency modeling falls within traditional HRM framework, it's focused on job analysis as an appropriate basis for developing HR practices to meet organizational requirements (Schuler and Jackson, 2005). Traditional job analysis is focused on specific jobs whereas competency modelling is more focused on skills, knowledge, abilities and other characteristics that are essential in an organization. It's also focused on forecasting organization's future needs instead of details of specific individual jobs as they are (Schippmann, 1999). Competency modelling provides basis for developing an appropriate HR architecture for the organization.

Vision and values. Clearly defined and declared organizational values, objectives and vision may provide a guide for developing HR systems (Schuler and Jackson, 2005). Statements regarding organizational objectives and values could provide direction and decisive rules for accurate HR practices to assist with HR ambitions. They might not be the foundation of organizational culture but they articulate where the organization wants to be. Vision based HR practices serve as a benchmark for employees in an organization when making HR related decisions. Often university objectives are directives from DHET in line with the country's needs. The section that follows discusses determinants of HR effectiveness in organizations as a measure of HR success.

2.4 Theoretical approaches related to HR effectiveness in organizations

An assessment of HR effectiveness in organizations has been demonstrated in monetary terms and as a way to satisfy multiple stakeholders, is one way. The different approaches as determinants of HR effectiveness in organizations are discussed below:

Economic approach. Schuler and Jackson (2005) allude to the fact that utility analysis or cost accounting as technically merit and have unfortunately not being adopted in organizations as a way to measure HRM effectiveness. Unfortunately, organizations still rely on intuition and individual estimates as determinants of HR effectiveness in organization (Becker, 2009). However, organizations are resistant to adopt utility analysis and cost accounting although intuition and individual estimates may not reflect strategic objectives or stakeholder's concerns in the organization (Boudreau and Ramstad, 2003). A variety of HR effective measures estimate the economic added value or the return on investment of HR activities. Hence, the current measures of HR effectiveness still place an emphasis on monetary metrics.

There's a likelihood of a shift in assessing HR effectiveness in terms of monetary gains as organizations try to improve their understanding of underlying influences of long-term organizational success (Schuler and Jackson, 2005). Certain organizations are adopting models focused on how HR practices influences organizational operations, such as balanced scorecard and strategy maps (Kaplan and Norton, 2004). These models are all

about how HR practices influence organizational operations and those it is supposed to serve.

Satisfying multiple stakeholders. Schuler and Jackson (2005) further acknowledge stakeholders in an organization as an assessment of HR effectiveness. With the organization as a primary stakeholder it is suitable to assess HR activities against organizational goals such as profitability, sustainability etc. Organizational objectives and goals are more difficult to accomplish if employees do not have similar plans and objectives. Therefore, employees are legitimate organizational stakeholders and their concerns should be addressed.

Indicators of employee's feelings about the organization are recognized as effectiveness of HR practices, indicators such as commitment and satisfaction (Kinnie et al., 2005) have been studied to show effectiveness of HR practices. Other HR effective measures studied are knowledge development and employee engagement (Boudreau, 2003). Other stakeholders that could be affected by HR practices in organizations include customers, suppliers, society, investors and alliance partners, in universities stakeholders are as broad as the society, government and other funding agencies and students.

The section that follows discusses human resource management (HRM) research as documented in literature as a background to understanding HR studies.

2.5 Human research management (HRM) research

According to Boxall et al. (2007) human resource management studies can be categorized into micro or traditional HRM, strategic HRM (SHRM) and international HRM research. Micro or traditional HRM research stream is concerned with functions related to HR practices and policy; it has two streams of research: one is about managing organizational human capital performance through HR activities such as selection, recruitment, etc., and the other with managing HR related organizational factors.

According to Becker and Huselid (2006) the difference between SHRM and traditional HRM research is that SHRM is focused on organizational performance instead of individuals' performance and it acknowledges bundles of HR activities as solutions to

organizational challenges instead of individual HR practices in isolation. Further, SHRM covers organizational HR strategies and measures HR bundles and how they impact organizational performance (Lengnick-Hall et al., 2009), strategic designs and execution are also considered. There's a move to make HR a mores strategic partner in organizations, with HR specialists more closely aligned to the business strategy in order to gain competitive advantage (Bamberger et al., 2014). This means HR is viewed as an important player in making strategic organizational decisions regarding HR strategies, practices and systems for organizational success and realizing objectives.

2.5.1 Strategic HR research theories

Research in strategic HR management mirrors that of HR management. According to Bamberger et al. (2014), the theories used to underpin HRM research are classed as contingency based and rational choice theories and are discussed below.

2.5.1.1 Rational choice theories

Rational choice theories are based on human resources as a source of competitive advantage for an organization (Bamberger et al., 2014), they include behavioral role theory, human capital theory, transaction cost theory, resource based view and agency theory. These theories are briefly discussed below.

2.5.1.1.1 Behavioral role theory.

Behavioral role theory assumes that employee behavior is important in implementing organizational strategy (Katz and Kahn, 1978), further it suggests that aligning HR policies and practices with the organizational strategy will assist employees to be meet expectations of other organizational employees and customers and the internal and external environment (Schuler and Jackson, 1999). Behavioral role theory is about encouraging employee behavior to be consistent with and support organizational strategy.

2.5.1.1.2 Human capital theory

Human capital theory suggests that the value of human resources such as skills, knowledge and capabilities enables employees to contribute to organizational productivity

(Schuler and Jackson, 2005). Therefore, organizations invest in their employees and manage them as they would like other crucial assets. Once this is recognized and practiced in organizations, an important consideration is whether to develop human capital internally or to acquire them externally from the labor market (Wright et al., 2001; Becker, 2009). It is of no value if the appropriate human capital is acquired or developed in an organization to assist with its strategic objectives if that asset is not managed properly.

2.5.1.1.3 Resource based view of the firm (RBV)

RBV suggests that rare, inimitable resources that cannot be substituted are a source of competitive advantage in an organization (Grant, 2010). RBV shies from the idea that competitive advantage is dependent on external factors, rather it emphasizes on the importance of internal resources. Therefore, employees could be considered a crucial internal resource that could assist an organization gain competitive advantage as both human and social capital (Bamberger et al., 2014). Human capital in the form of employee skills, knowledge and abilities provide the organization with resources that may help in differentiating the organization from its competitors, and hard to duplicate, more so if organized in groups or networks (Colbert, 2004). Additionally, social capital expressed in the form of relationships with stakeholders, both internally and externally, could provide the organization with resources that other organizations might not be able to replicate.

2.5.1.1.4 Transaction cost theory

Transaction cost theory is about whether an organization adopts an existing strategy developed elsewhere or develops a HRM strategy internally, the chosen strategy is about minimizing costs involved in controlling internal organizational exchanges (Williamson, 1979; 1981). Costs are incurred when organizations are trying to control opportunism from employees. Opportunism is influenced by the relationship, the partner and the nature of the transaction (Tremblay et al., 2003). Unique HRM strategies are better adopted by organizations that have highly developed employees where employee loyalty is important or organizational specific skills, knowledge and abilities are highly valuable, this allows for the organization to compete.

2.5.1.1.5 Agency theory

Agency theory asserts that a strategic approach to HRM could enable employees to generate maximum return for the organization (Eisenhardt, 1989). Given the complex nature of employment contracts in organizations; agency theory suggests that the strategic alignment of employees or “agents” and employers or “principal” employment relations, compliance, monitoring and rewarding systems can be simplified (Hayton, 2005). The theory is better suited when trying to manage employee-employer relations and resolving disputes.

2.5.1.2 Constituency based theories

HR has always been perceived as an administrative function as opposed to being a strategic partner in organization, however, there’s a shift as HR is now contributing to organizational performance, making a strategic partner (Lemmergaard, 2009). SHRM could assist in contributing to the overall organizational strategy, based on that, there are theories that are used by researchers to understand SHRM and its contribution to organizational effectiveness. These include resource dependence theory, institutional theory and multiple stakeholder approach and are discussed below

2.5.1.2.1 Resource dependence theory

Resource dependence theory emphasizes that organizations gain power over other organizations by securing scarce resources and controlling the resources that their competitors are dependent on (Pfeffer and Salancik, 1978). HR value in organizations can be increased by ensuring that other organizational interests and key performance areas are dependent on human capital, their acquisition, development and their deployment (Bamberger et al., 2014). A strategic approach to managing human resources in organizations could help in ensuring that human capital is central to achieving organizational objectives.

2.5.1.2.2 Institutional theory

Institutional theory affirms the internal and external environment within which the organization operates in, and the pressures that arise from the environment (Powell and DiMaggio, 2012). An adoption of certain organizational practices stems from the pressure

in the environment, as organizations seek legitimacy and acceptance from key stakeholders as a means to sustained survival (Bamberger et al., 2014). Pressures from the environment could be coercive from government regulation, mimetic from management copying the latest HR fads from the environment.

2.5.1.2.3 Multiple stakeholder theory

Multiple stakeholder theory is rooted in systems theory and declares that organizations are open systems that need the support of both internal and external stakeholders to address relevant organizational concerns (Freeman and McVea, 2001). Organizational goals, objectives and strategies are influenced by stakeholder relationships, power influence and their goals and objectives.

Rational choice theories are about a strategic management to human capital as a source of competitive advantage in organizations, whereas constituency based theories are about understanding SHRM and an organization's quest for legitimacy and political interests.

The previous sections discussed HR related terminologies and the research which is conducted in the field; some typical theories used to underpin the different research areas that exist in HR were also looked at. The section also addressed the first research objective for the study, and the section that follows addresses the second research objective as "*Describe how university upper echelons were influenced by the environment, organizational and technological factors in the decision to adopt human resource information systems*" and the third research objective as "*Describe how acceptance and use of human resource information systems manifest in the university".* Because objective two and three are intertwined, they will be addressed simultaneously and objective four as an outcome is "*Determine how adoption as a dimension may influence effective use (another dimension) of human resource information systems*" and they are addressed by the sections that follow.

2.6 Information systems (IS)

Information Systems (IS) could assist an organization achieve operational excellence; which can lead to high productivity, and rapid response to customer needs, foster an

innovative culture, manage customer relationships efficiently, improve decision making, and forecast changes in the environment and workforce needs (Taylor and Todd, 1995; Lee and Xia, 2006). All of this could be achieved by implementing and using one of the four types of IS, and they are, executive information systems (EIS), transaction processing information systems (TRP), management information system (MIS) and decision support information system (DSS). Within each IS type there are various types of systems, an organization might implement any of the systems in different departments, depending on the function and need of that department. The section that follows discusses an enterprise resource planning system (ERP) which is a type of a MIS implemented and used in organizations which HRIS is a part of.

2.6.1 Enterprise Resource Planning (ERP) Systems

An example of a MIS is an ERP (enterprise resource planning). For this study the focus is on an ERP within a university setting. Generally, an ERP in a university might include the following types of modules, academic management information system, that capture student course related information, a library system, a student enrollment system and a human resource information system (HRIS) for employees in the university (Goldstein, 2005). An ERP that the researcher looked at is a HRIS, which was introduced in chapter one as an organizational innovation, but before HRIS can be discussed, the section below gives a brief background on ERP and their value within organizations.

An ERP is a suite of integrated applications that organizations including universities, can use to collect, store, manage and interpret data from organizational activities (Kulkarni et al., 2015). Although ERP is a preferred solution, a majority of the legacy systems they are replacing offered a great deal of value from their unique personalized features.

Globally, enterprise resource planning systems (ERP) spending increased at a rate of 13.5% annually between 2001 and 2006, and in the same year it reached US$187 billion, and with an annual 5% growth from 2006-2010 (Velcu, 2010). Liu and Seddon (2009) assert that there' a high ERP project failure rate and that raises concerns, with approximately one half of these systems failing (Ram et al., 2013). With such huge investments in these systems, organizations must create conditions for these systems to

be adopted successfully and used appropriately. Not only do ERP systems fail in organizations; they are underused by employees (Jasperson et al., 2005). The appropriate environment for the optimal use of ERP means the HRIS will benefit from it. The section that follows discusses the main IS use research domain areas.

2.6.1.1 Human resource information systems (HRIS) as an ERP

HR activities could be automated using HRIS (Tansley et al., 2001; Strohmeier, 2007; Bondarouk et al., 2009) by providing electronic based HR for all employees within the organization (Ulrich, 1997), therefore setting up the HR department to be fully computerized (Hussain et al., 2007). This will minimize errors that are associated with manual work. HRIS can be called as computer based applications for gathering and processing data related to human resources (Maier et al., 2013). The system is not only limited to computer software and hardware; HRIS includes organizational procedures, policies, data and people essential to direct the HR function (Kassim et al., 2012; Targowski and Deshpande, 2001). Human resources (HR) are a key element to any organization (Troshani et al., 2011), to manage HR effectively, almost all organizations have a human resource management (HRM) department with some form of automation afforded by IS.

2.6.1.2 HRIS Organizational Value

According to Beckers and Bsat (2002) and Tithe and Kavanagh (2007) There are several advantages of using HRIS in organizations, including the following:

A central, comprehensive, repository database- this enables the organizations' various departments to connect across and communicate and increase information transaction in the following ways (Lengnick-Hall et al., 2009):

Enhancing competitiveness by improving HR operations and management processes

Collect appropriate data and it convert into information and knowledge for improved decision making

Generating real time reports

Streamlining and enhancing the efficiency and effectiveness of HR activities

Assist with HR focus as a strategic function within the organization

Reengineer HR processes and functions

Assist with the timely delivery of HR services

The benefits that HRIS offer would otherwise not be realized because there are several factors that influence HRIS use, such as, organizational size, top management support and commitment, availability of resources, managerial competencies, employee motivation and change management initiatives (Ngai and Wat, 2006). The risks associated with use factors should be managed to provide an environment where HRIS could be optimally used, further, how HRIS adoption process is handled influences how HRIS will be used.

According to Harris and Desimone (1995) and Troshani et al. (2011) HRIS at a functional level can assist keeping track of employee activity, worker's demographics, job applicants, evaluating performance professional development, education and training, payroll benefits, recruitment, and retention initiatives.

Beadless, et al. (2005), Wiblen et al. (2010) and Dery et al. (2013) posit that administrative efficiency from HRIS can be in the form of improved employee communication, faster information processing, and increased accuracy of information, lowered HR expenses and enhanced HR efficiency. The return on investment (ROI) generated by HRIS should not be viewed only in terms of financial justification; intangible and indirect benefits could have more value than financial cost or savings.

HRIS strategically improve how organizations are managed (Kattou and Budhawar, 2006). The strategic worth that HRIS generates assists with the design and implementation of policies and practices that contribute towards business objectives (Troshani et al., 2011). Some of the strategies that HRIS can assist with are estimating future labor force demands, making appropriate training investments, and creating and adapting accurate remuneration according to market demands (Lippert and Swiercz,

2005). In this study, HRIS is understood as enabling or restricting HR practices in a university, with intended and unintended consequences for its adoption and use, the paragraphs that follow discuss IS adoption processes in relation to understanding HRIS adoption and use.

2.6.2 IS adoption processes

IS adoption in organizations can be regarded as a stage based process (Rogers, 1995). Hameed et al. (2012) categorized the adoption process to include pre-adoption, adoption-decision and post-adoption phases. The pre-adoption or initiation phase is about activities related to recognizing a need for the IS, gathering information or an *awareness* about it, forming an *attitude towards the IS* and suggesting the adoption of the IS (Gopalakrishnan and Damanpour, 1997). The adoption-decision phase is about the *acceptance of the idea,* evaluate the financial, technical and strategic implications and the *allocation of resources* to acquire and implement the IS. Post-adoption or implementation phase involves *acquiring the IS,* getting the organization ready to use the system, testing and piloting the IS, *acceptance of the IS* by the users and *continued use*. These phases are presented using figure 3 below.

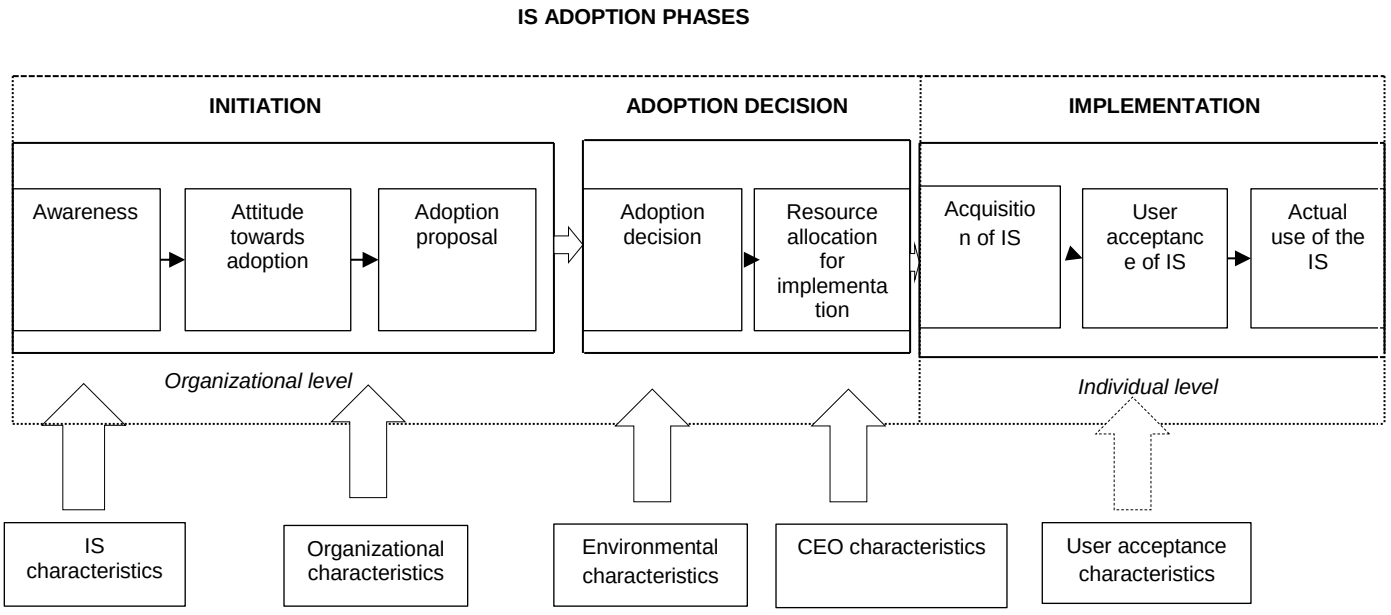

Figure 3: IS adoption processes (Hameed et al., 2012)

Figure 3 represents IS adoption processes, activities involved in the pre-adoption and adoption phase are examined at an organizational level while the implementation phase is examined at an individual. The initiation phase is mostly affected by the IS and organizational characteristics. The decision phase is affected by the environment where the IS will be implemented in. The implementation phase is influenced by CEO or leadership and user acceptance characteristics.

The next section discussed IS use research areas, before doing that, it is important to understand the concept of use within IS, and below is a discussion on dimensions of IS use as a follow up to IS adoption.

2.7 Dimensions of IS use

The terms use, usage and utilization are used in the IS literature to describe post adoption behavior reflected by IS users (Walsh et al., 2016). Post-adoptive behavior as explained by Jasperson et al. (2005) is about use, habit and features of an IS after it has been installed, made accessible to the user and used to accomplish work activities. IS individual use can be defined as a user's employment of one or more features of a system to complete a task (Burton-Jones and Straub 2006).

Parthasarathy and Bhattacherjee (1998) conceptualized utilization as describing behaviors and including objective elements related to IS use and can be assessed through objective elements such as length, frequency and breadth of use.

Burton-Jones and Gallivan (2007) define usage as a user's employment of a system to perform a task, a practice, a customary way of using an IS. Use, usage and utilization are all related to users' conscious behavior as it becomes part of their normal routine activity. Use is necessary to define both utilization and usage

Moreover, IS use, usage or utilization has been called by many names such as continuance (Bhattacherjee, 2001), routinization (Cooper and Zmud, 1990), incorporation (Kwon and Zmud, 1987) and implementation (Zmud, 1982). The studies mentioned above view use as an extension of acceptance behavior, without explanation about IS use

continuance/discontinuance, this therefore, does not explain why some users discontinue IS use after accepting or even using it.

Further, it was highlighted that organizational systems remain underused as users barely engage with features of the syste1, operate at low levels of feature use and seldom initiate task-related extensions of the features available (Jasperson et al., 2005). This was revealed during preliminary investigations that HRIS remained underused in the university.

2.7.1 Mandatory vs voluntary IS use

Guo and Zhang (2010) have noted that mandatory IS adoption and use is prevalent in China, especially government organizations, with South Africa being a developing country similar to China, the same could be assumed with the approach to IS adoption and use. The challenge with mandatory use settings is that users often do not seek to effectively use the system and user productivity and organizational performance are affected. It is important to note that adoption and use scenarios have different outcomes and user behavior (Melone, 1990). In a voluntary setting, determinants lead to intention and actual use, in a mandatory setting determinants lead to attitude and that leads to subsequent user performance (Guo and Zhang, 2011). Both settings are demonstrated below.

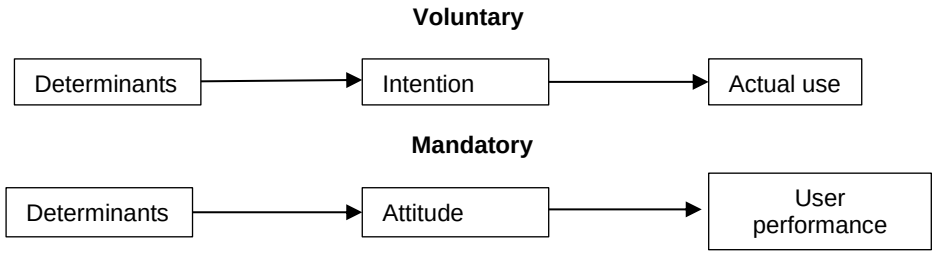

Figure 4: Voluntary and mandatory IS adoption and use setting (Guo and Zhang, 2010)

Figure 4 depicts IS use in mandatory and voluntary settings as different, in mandatory settings IS users are usually required to use the system based on instructions from management, this causes some users to resist the system or nonuse. In voluntary

settings users adopt and use the system at their own pace, which often results in higher levels of use compared to mandatory settings. HRIS at Wits University is mandatory for all employees to complete HR processes and activities.

2.7.1.1 IS use conceptualization terminology

There is numerous terminology used to define post use behavior in IS research, these various terminologies are described below starting with IS use continuance.

IS use continuance (Bhattacherjee, 2001) has its roots anchored in expectation-confirmation theory (ECT), which is used to study consumer behavior. The theory states that consumers' intention to repurchase a product or continue using a service is based on prior satisfaction of the product or service. The same is theorized for IS continuance intention, the user must be satisfied with the IS to want to continue using it post acceptance.

Enhanced use is defined as a novel way of employing IS features (Bagayogo et al., 2014). They conceptualized enhanced use to be in three forms: using a formerly used set of features to perform additional tasks, using available unused set of features and using features extensions. Enhanced use takes into consideration the task, system and user.

Faithful appropriation is described as how users engage with IS structures for their intended purpose (DeSanctis and Poole, 1994), this is dependent on people as they select how to use the IS and not dependent on the IS design. The authors suggest that appropriation could happen in the following ways: users relating to the structures such as structures in the task or environment, constraint or interpret the structures as they are used or make judgments about the structures such as to affirm or negate their usefulness. Second, groups may choose to appropriate technology faithfully or unfaithfully. This leads to emergent or unintended uses as a way of learning how to use the system (Wagner et al., 2010).

Faithful appropriations are consistent with the spirit and structural feature design, whereas unfaithful appropriations are not. Unfaithful appropriations are not "bad" or "improper" but are simply out of line with the spirit of the IS. According to Gallivan (2001)

users may choose to appropriate the IS features for different instrumental uses, or purposes as they learn to use the system to complete tasks.

Exploitive and exploratory use is explained as users' exploit their IS knowledge and discover new ways of using the system (Subramani, 2004; Burton-Jones and Straub, 2006). Explorative and exploitative use draws from theory of learning and action, exploration is the pursuit of new possibilities, exploitation involves the application of common strategies to streamline activities. The two terms are conceptualized as complementary for appropriation as discussed above.

Applied and adapted use is related to IS use-related activity (ISURA) defined as a set of behaviors users' undertake concerning a specific task-individual-technology context (Barki et al., 2007). Users' task performance increases when they apply the IS in their tasks and when they adapt the IS and adapt themselves.

Walsh et al. (2016) conceptualized expectable use as a facet of IS use as a user's character or preference which reflects a user's frame of mind and may be predictable or foreseeable to approach any new IS. It is dependent on training and context and may evolve over time; it includes affective, behavioral and cognitive determinants from both individual and group factors.

Effective use according to Burton-Jones and Grange (2012) is the use of an IS to achieve a desired goal and it involves the user, task and the system. It is motivated by representation theory; it states that people use representations to understand a domain and meet the purpose and reflect that domain faithfully (Weber, 2003). Effective use has two dimensions: representation fidelity and transparent interaction with effectiveness and efficiency as outcomes related to performance. Representational fidelity is defined as the extent to which the user is obtaining representations from the system that faithfully represent the domain being represented, transparent interaction is when the user is accessing deep structures of the system unrestricted by the surface and physical structures.

IS use has been categorized in previous studies to include consumptive use or passive use which means an extent to which an employee uses a IS to acquire information or knowledge (Kügler and Smolnik, 2014). Contributive use is another dimension of IS use, it reflects the extent to which individuals contribute knowledge to a platform or active use. A third dimension that could be included in IS is hedonic/utilitarian use (van der Heijden, 2004), these systems are designed for enjoyment whereas utilitarian systems aim to increase task performance. Social use is related to the extent to which users establish and maintain social relation with each other in an organizational setting

Further, Walsh et al. (2016) identified the following dimensions of IS use in their study. Non-use is related to users who have no perceived needs for the IS and no incentives for the IS. Extensive use of IS is when it is considered essential and applied in all the aspects of users daily tasks and beyond. Fearful use is associated with computer anxiety (Brown et al., 2004). This type of use is often triggered by social pressure to fit within a group or with peers, mandatory use has elements of fearful use.

Opportunistic use involves extrinsic motivation with elements of regulatory compliance (Deci and Ryan, 2008). Self-enhancing use is related to the fulfilment of self-accomplished needs, users want to understand, learn and discover the IS to enhance their own development. Self-indulging use is about fulfilment of power and prestige; it arises as an importance of image. The last one identified is socializing use and arises as a need for affiliation, users engage with the IS to communicate and exchange information with their social groups or to be part of a community.

In summary, the IS use construct or use process involves all actions of individuals in an organization that interact with the system in order for the purpose it was intended for or to realize some organizational goals (Lauterbach and Mueller, 2014). Therefore, use affects both the individual and the organization.

The section that follows discusses the review of literature related to key concepts such as HRIS that make up the study and this is detailed in the sections that follow.

2.8 Review of related HRIS studies

This section reviews HRIS literature. This is done so as to have an understanding and awareness of what, how and where studies in the area are. This then informed the route taken by the present study.

Studies and literature were identified through the use of *scholar.google.com*, the Internet search engine for published academic work and directed us towards management, information systems, organizational, industrial an organizational psychology and human resource databases such a ACM, IEEE explore, Wiley InterScience. Keywords such as HRIS, e-HRM, HR-ERP, HRIT, virtual HRM, HR-ICT or variations of these words were used. Studies found were published in journals, conference proceedings and workshops. Studies examined date back to 2006; this is to serve as a follow up to Strohmeier's (2007) work to avoid a repetition of the literature the researcher surveyed up to that point. A total of 93 articles were surveyed so as to have an understanding of how things are, where the current study fits in and where the field is going. The first subsection of the review discusses the theoretical landscape in the field, followed by methodologies used, level of analysis etc.

2.8.1 Theoretical perspectives used

Theory means different things to different people; moreover, researchers often fail to account for what theory means (Gregor, 2006). This adds to the ambiguity surrounding the nature of theory in information systems. Theories, frameworks and models were used to conceptualize a majority of the studies. Theories used to underpin HRIS surveyed studies are diffusions of innovations theory (Teo et al., 2007; Normalini et al, 2012; Obeidat, 2013; Burbach and Royle, 2014), role theory (Yeh, 2014; Allayne et al., 2007), task information processing theory (Yeh, 2014), work adjustment theory (Stone et al., 2006), contingency theory (Ruel and Kaap, 2012; Marler and Parry, 2015), representation theory (Siriwardene and Dharmasiri, 2013), actor network theory (Bamel et al., 2014; Dery et al., 2013), adaptive structuration theory (Bondarouk et al., 2015), signaling theory (Bondarouk et al., 2015), attribution theory (Bondarouk et al., 2015), organizational commitment theory (Parvari et al., 2015) turnover intentions theory (Parvari et al., 2015),

social exchange theory (Bos-Nehles and Bondarouk, 2012), social cognitive theory (Bondarouk et al., 2009), institutional theory (Burbach and Royle, 2014; Heikkilä, 2013). These are some of the theories used to underpin some of the studies surveyed for this research.

Frameworks used in the surveyed studies are technology, organization and environment (Troshani et al., 2011; Yeh, 2014; Masum, 2015). Models used are technology acceptance model (Voermans and Veldhoven, 2007; Huang and Martin-Taylor, 2013; Yusliza and Ramayah, 2011; Bamel et al., 2014, de Juana Espinosa and Lujan-Mora, 2010; Maier et al., 2013; Bondarouk et al., 2009; Yusoff et al., 2010; Ruel and Bondarouk, 2008; Parvari et al., 2015; Mueller et al., 2010), UTAUT (Al-Khowaiter et al., 2013; Yusoff et al., 2015; Maier et al, 2013; Ma and Ye, 2015; Heikkilä and Smale, 2011), Delone and McLean model of IS success model (Qteishat, 2014; Mueller et al, 2010), internal and external influence model (Florkowski and Olivas-Lujan, 2006). This section discussed studies surveyed that used either a framework or a model to underpin their work.

Other approaches include universalism and contextualism (Strohmeier and Kabst, 2009), critical discourse (Francis et al., 2014), social constructivism (Dery et al., 2009), people and performance approach (Schalk et al., 2013), delphi approach (Heikkilä, 2010), moderate constructivism (Marler and Parry, 2015), resource based view (Markova, 2012; Parry, 2011), and organizational capabilities approach (Bondarouk and Ruel, 2013).

The use of theory as a lens was low in the surveyed studies, a majority of the theories are borrowed from fields such as psychology (role theory, work adjustment theory, social cognitive theory, social exchange theory, turnover intentions theory organization commitment theory) and sociology (diffusions of innovations, contingency theory and institutional theory). Further, majority of the papers used IS leading models such as TAM and UTAUT, D&M model of IS success. Bagozzi (2007) however has highlighted TAM and UTAUT shortcomings; and further described the shortcomings of theory of reasoned action (TRA) and theory of planned behavior (TPB) as theoretical bases for TAM and subsequent UTAUT. The use of TAM and UTAUT in the majority of the articles reviewed and documented shortcomings indicate a lack of a leading paradigm. Strohmeier (2007)

also observed this. Baggozi (2007) points out that if fundamental progress is to be made in the field, a paradigm shift is paramount.

For this study, in order to have a holistic understanding of how HRIS was adopted and its current use and subsequently its effective use, several theoretical frameworks, and theories of adoption and use were deployed. The theories that underpin the study were social cognitive theory (SCT) and upper echelon theory (UET); and TOE (technology, organization and environment) framework and are discussed further in chapter three of the thesis.

2.8.2 Methodological approaches

Methodological approaches vary with the reviewed studies depending on the research outcomes, aim and questions. The studies that mentioned explicitly their assumed research paradigm as positivist is Wahyudi and Park (2014) with its associated data gathering techniques and (Bhuiyan et al., 2015) who gathered secondary data using financial statements and an intepretivist approach by Tansley and Newell (2007a) who studied comparative extreme cases, (Tansley and Newell, 2007b) used an ethnographic strategy.

A survey approach with the use of questionnaires as data collection instruments is still popular (n=39) with some online, email and hand delivered. There's a use of CRANET, GLOBE or CIPD (n=9) surveys. Action research (Razali and Vrontis, 2010) was also used, whose work was on change management and acceptance of HRIS, Huang and Martin-Taylor (2013) used a similar approach. Experimental (Stone et al., 2013; Lukaszewski et al., 2008) and quasi-experimental comparison approach (Payne et al., 2009) was adopted. Exploratory studies (n=4), case studies (n=13) broken down into: - in-depth case (n=7), single case (n=5), and an extreme case (Tansley and Newell, 2007b). Because of the popularity of a survey strategy, a majority of the studies used questionnaires as data collection techniques followed by semi-structures and structured Interviews, observations, focus groups (n=22) for a majority of the interpretivist studies with Wozniak (2014) who used only secondary data from company websites, consultancy reports etc.

Mixed approaches to data collection were also used (n=12) with some survey strategy studies using interviews, focus groups, documentation, observations etc. Cross-sectional as a time horizon is the most popular with the exception of Dery et al. (2013) and Smale and Heikkilä (2009) who used a longitudinal approach to data collection. Sampling techniques include random (n=8), convenience (n=3), purposive (n=5), theoretical to snowball (Troshani et al, 2011), purpose random (Mohanty and Tripathy, 2007), stratified (Ukandu et al., 2014) and stratified random sampling (Razali and Vrontis, 2010).

Methodological approaches of the majority of the studies are determined by the assumed paradigm (positivist or interpretivist) and theories/frameworks/models used. The studies reviewed used an assortment of methodological approaches.

2.8.3 Levels of analysis

Information systems are multilevel by nature (Kositanurit et al., 2006) and that's because HRIS supports an organization's HR at an operational level for users within the HR department, relational level and at a transformational level to support strategic goals (Bondarouk and Ruel, 2010). Other levels to consider is the personal, organizational, group or societal levels (Ruel and Kaap, 2012). Based on the theories/models/frameworks used to predict individual behavior and used to underpin a majority of the reviewed studies; it could be suggested that the level of analysis is mainly individual with some studies at an organizational level.

Individual level of analysis could be inferred with some of the studies as they deployed individual adoption and use theories/models/frameworks such as TAM, UTAUT, social exchange theory, work adjustment theory and organizational commitment theory. There is also a use of organizational level theories/models/frameworks such as TOE, institutional theory, contingency theory and resource based view of the firm that indicate the level of analysis for some of the studies. There are also studies that used combinations of either individual or organizational level theories/frameworks/models; this satisfies the call made for multi-level research.

Another consideration in HRIS research is multinational corporations (MNC). Because MNC operate in subsidiaries where cultural and societal influence are significant (Leornardi, 2008). This expectation creates a societal level within the research stream.

2.8.4 Emerging themes from the surveyed literature

The reviewed studies were organized according to themes; the researchers observed a pattern that the studies took as more articles were reviewed. The themes are: *HRIS adoption and implementation, HRIS and security, trust and privacy, HRIS use and use conditions, HRIS and organizational performance, HRIS implementation success, global HRIS integration* and *HRIS enabling a strategic focus.* Barrett and Oborn (2013)'s special issue paper that addressed the strategic value that HRIS offers, they further alluded to certain common themes in the special issue, and the researcher realized that those themes mentioned as emergent themes within the HRIS research field. Themes inspired by Barrett and Oborn's paper are *global HRIS integration, HRIS use and use conditions, HRIS enabling a strategic focus*. The other themes emerged as the review progressed.

2.8.5 Context

Context plays an important role in understanding HRIS research. Factors related to economic, culture, socio-demographics and politics could affect the adoption and use of the system (Olivas-Lujan et al., 2007). Most adoption and use models are conceptualized from well-developed and stable economies, a fact that presents a particular challenge for emerging economies. The inclusion of the theme *global HRIS integration* deals specifically with HR practices of the MNC operating in a different country from the headquarter country. Burbach and Royle (2014) examined determinants of a successful diffusion of e-HRM of a US based MNC in the medical field with subsidiaries in Ireland and Germany, similar to the study done by Smale and Heikkilä (2009) of a European owned MNC in in Finland. Heikkilä and Smale's (2011) study was about language standardization on e-HRM MNC from Western Europe in Finland, these are studies about developed country's' MNC with subsidiaries in developed countries.

There's research on MNC from developed countries with subsidiaries in developing countries (Heikilla, 2013), then there's Tansley and Newell (2007b)'s study that focused

on a North American owned MNC with subsidiaries in 12 countries around the world. Despite studies mentioned that are categorized into the global HRIS integration theme, there are other studies that were categorized into other themes that could be a part of this theme but were not because the study's focus was not on the MNC and its subsidiaries.

An important contextual variable to be mindful of is the sector within which an organization operates in. Both public entities and private organizations were part of the studies. A majority of the studies took place in private organizations. Those studies that were conducted at public entities include universities (Bamel et al, 2014; Kumar et al., 2015; de Juana Espinosa and Lujan-Mora, 2010) municipalities (Reddick, 2009; Kumar and Parumasur, 2013) and hospitals (Wilson-Evered and Härtel, 2009). These studies were conducted in mixed environments such as Strohmeier and Kabst (2014), Bondarouk and Ruel (2009), Mishra and Akman (2010) whose context included a public entity, a not for profit (NGO) and a private organization.

Industry within which an organization operates from is important and determines some of the environmental factors organization deal with (Oliveira and Martins, 2011). Industries that organizations are operating from in the study include education, healthcare, banking, hospitality, aviation, pharmaceutical and construction.

Research indicates that the nationality of the organization adopting HRIS is an important issue because of differences in countries regarding HR laws and regulations (Marler and Fisher, 2010). The national differences can be recognized in the form of laws, educational systems, legislation, political climate and levels of development (Ibid, 2010) cultural dimensions such as power distance, individualism vs collectivism play a role in influencing HR (Bamberger et al., 2014). This aspect is important for MNC as the organization will be operating at a country different to the headquarters. From the surveyed studies, national context includes countries from developed regions such as Europe-Germany, Netherlands, United Kingdom, Greece, Finland, and Spain. The Americas include Mexico, USA, and Canada. African countries are Ghana, South Africa, and Uganda. Australasian countries include Malaysia, Bangladesh, India, Malaysia, Sri-Lanka, Jordan, China, Iran and Australia. Ruel and Bondarouk (2008) mentioned factors such as competition, HRIS

trends, labor market, societal developments and government regulation as influencing HRIS within organizations and as contextual variables.

2.8.6 Stakeholders

HR stakeholders are groups or individuals affected by or affecting a specific outcome or decision that relate to HR policy and strategy (Kamal et al., 2011). Ruel and Bondarouk (2008)'s model of e-HRM includes internal agents such as management (operational, middle and top), HR employees, other employees within the organization and council as stakeholders affected by or affecting HRIS. The reviewed papers document top management, middle management, HR department users and individual users as HRIS stakeholders. The type of study determines the stakeholders within that area and context, the stakeholders will be categorized according to themes mentioned earlier. Stakeholders affected by themes around HRIS adoption typically include; users, competitors, decision makers who are responsible for funding such as management, vendors, designers and the IS department who are responsible for infrastructure updates to accommodate the technology.

Post-implementation phase represents a different type of stakeholders, this is when the HRIS is adopted and used in the organization. Typical stakeholders in this phase include the users who engage with the system, management who provide resources for maintenance and upgrades and the IS department and vendor for system upgrades.

2.8.7 HR activities enabled by HRIS

HR activities enabled by HRIS carried out post adoption depend on the type of HRIS within the organization; whether the HRIS is for operational, relational and transformational purposes (Ruel et al., 2004). Typical HR activities include selection, recruitment, appraisal, development and retention (Ruel et al., 2013); these services could be supported by HRIS. In the surveyed studies, single HR services examined include e-recruitment (Wozniak, 2014; Maier et al, 2013; Stone et al., 2006), HR planning and development (Nagendra and Deshpande, 2014; Khera and Gulati, 2012; Reddick, 2009) e-performance appraisal (Payne et al., 2009). HRIS activities depend on the level of the employee in the organization, top management are responsible for strategic

decisions, middle management oversee operational needs and operational employees execute daily HR activities according to the strategic needs of the organization. If the HR activities are related at all levels, they are socially complex, and link to the individual, the unit (department) and at an organizational level (Banks and Kepes, 2015). Some of the studies surveyed examine HR activities as bundles and not single HR activities.

2.8.8 HRIS use antecedents and outcomes

HRIS use antecedents on the surveyed studies include organizational fit and business processes (Troshani et al., 2011), adoption antecedents such as organizational characteristics (Teo et al., 2007), socio cultural and organizational characteristics (Panayotopoulou et al., 2010), top management support, HR manger's attitude, IT infrastructure, compatibility and industry pressure (Masum, 2015), individual and organizational factors (Stone et al, 2006), IT capabilities at organizational level and role complexity at an individual (Yeh, 2014), attitude, technology readiness and readiness for change (Ibrahim and Yusoff, 2015), HRIS comparison to e-commerce technology (Shani and Tesone, 2010), success enablers of e-HRM acceptance and value creation (Wahyudi and Park, 2014). Research antecedents in HRIS research could be at an individual, group or organizational level.

HRIS outcomes are dependent on the operational model the organization adopts; HRIS outcomes can either be intended or unintended and positive or negative (Martin and Reddington, 2010). Depending on the theme, which could be viewed as outcomes on their own, certain outcomes are prevalent in certain themes. Within *adoption and implementation* theme, studies here are diverse and relate to outcome of HRIS adoption and implementation. This theme is more about the antecedents and factors that influence HRIS adoption process. Besides evident HRIS outcomes because of the identified themes, other outcomes include HRIS assisting with regulatory compliance (Troshani et al., 2011), e-HRM design (Strohmeier and Kabst, 2009; Bondarouk et al., 2009), attitude towards e-HRM use (Yusliza and Ramayah, 2011), characteristics of technostress (Ibrahim and Yusoff, 2015), HR planning (Karikari et al., 2015; Spero et al., 2011; Nagendra and Deshpande, 2014; Khera and Gulati, 2012), e-HRM explaining HR value creation (Ruel and Kaap, 2012; Hussain et al, 2007) HRIS effective use (Siriwardene and

Dharmasiri, 2013), strategic considerations in the decision making process using e-HRM (Schalk et al., 2013), e-HR and HRIS security (Zafar, 2013), brand recognition and use of social networking sites (Wozniak, 2014; Heikkilä, 2010), traditional versus online performance appraisal (Payne et al, 2009), usability evaluation on HRIS (Kumar et al, 2015), appropriation and policy integration (Bondarouk and Ruel, 2009), indirect effect of attitude towards HRIS turnover intention and job satisfaction (Maier et al, 2013), HRIS impact on financial performance (Bhuiyan et al, 2015), e-HRM and HRM service quality (Bondarouk et al, 2015), HRIS specificity and organizational effectiveness (Markova, 2012; Kumar and Parumasur, 2013), HRIS for HRD and leadership development (Reddick, 2009; Methuku and Ramadan, 2013; Stone et al, 2006), HRM system strengths (Bos-Nehles and Bondarouk, 2012), HRIS assisting in rebuilding strengthening employee and HR department relationship (Bissola and Imperatori, 2014), adaptation of e-HRM practices to local setting or standardized from headquarters in MNC's (Smale and Heikkilä, 2009).

2.8.9 Summary on surveyed HRIS studies

The conducted literature searches and subsequent analysis on HRIS studies can be summarized as HRIS adoption and use at the center of organizations realizing some benefits or not from the systems once it's implemented and in use and are summed up with the figure 5 below.

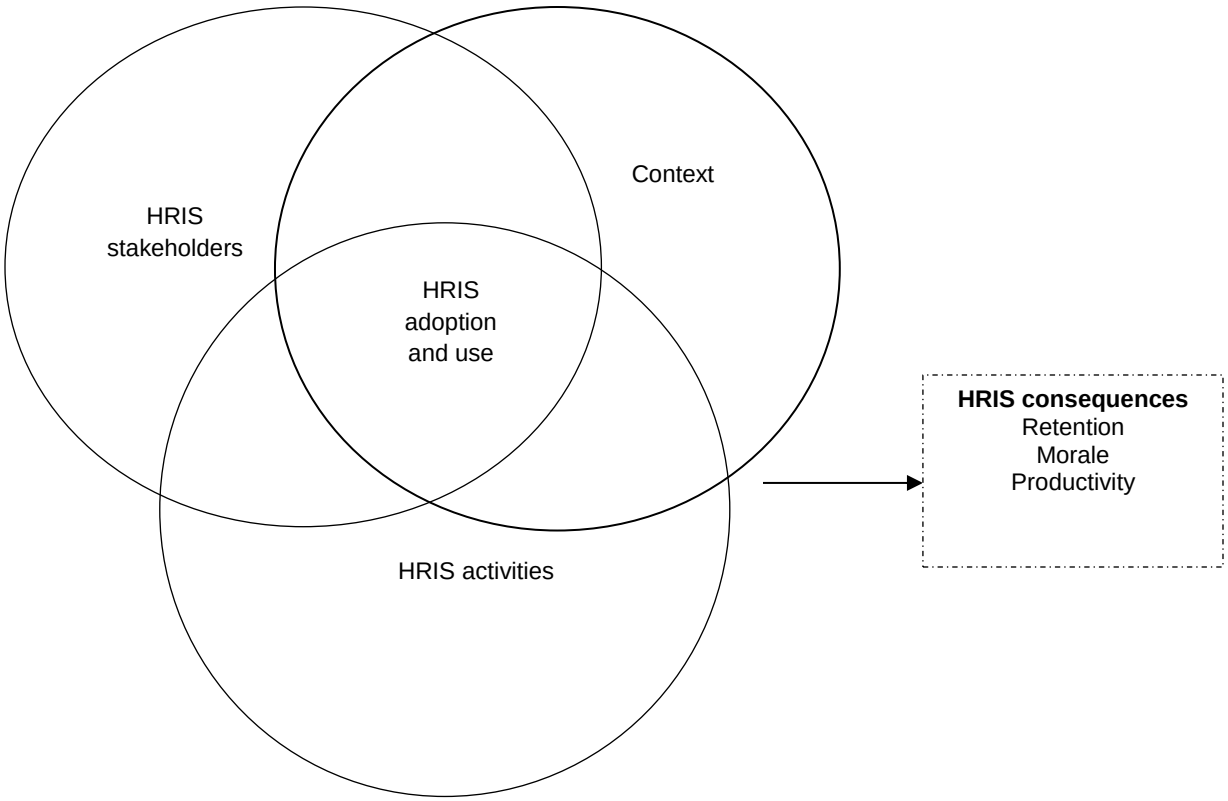

Figure 5: A summary of HRIS research

Figure 5 summaries the surveyed HRIS literature. HRIS stakeholders are those who are affected and affecting the adoption or use of HRIS. Context is related to the environment within which HRIS is implemented and used, considering developed and emerging economies at a societal leve. HRIS activities are about the HR activities completed on the system once it's been adopted. HRIS consequences can be intended or unintended, the result of HRIS once it's implemented and used.

The previous section highlighted studies on HRIS and subsequent analysis, the section that follows discusses IS use research areas.

2.9 Information systems use research areas

This section describes the five domains within which IS use studies have been conceptualized; the domains are IS implementation, IS acceptance, IS success, use of

IS for decision making and IS impact on organizational performance (Burton-Jones and Straub, 2006). The five domain areas are discussed below.

2.9.1 IS implementation

IS implementation has been studied through user involvement (e.g., Hartwick and Barki, 1994). User involvement refers to the participation of users in the system development process and is measured as a set of activities that users have performed in the system development process (Baroudi et al., 1986). Previous studies in this domain include that of Ludwick and Doucette (2009) who did a longitudinal study of health information systems spanning seven countries. They discovered that issues relating to functionality, project management, procurement, users' previous IS experience and employee anxiety affect implementation outcomes. These concerns could be overcome by establishing strong leadership, using project management techniques, establishing standards and training employees that such risks do not compromise implementation success.

The premise of this domain is that if the implementation process goes according to plan and users are involved within the IS development process, it therefore means that the implementation is perceived as successful and system use is guaranteed (Jasperson et al., 2005). According to Motwani et al. (2005), antecedents of IS implementation success are well studied and known, further research needs to carried out on IS implementation management; change and process management and alignment with organizational strategy. This study is about the adoption and use of IS in an organization; that is, its focus is on adoption and post implementation use by employees in an organization and how the IS is enabling organizational goals.

2.9.2 Acceptance of IS

IS acceptance studies are generally based on expectancy-based theories of motivation such as Ajzen's (1991) theory of planned behavior (Walsh, 2014), which are the theoretical anchors of Davis's (1989) and Davis et al's (1989) technology acceptance model (TAM). TAM has two fundamental beliefs; perceived usefulness and perceived ease of use to influence intention for IS use. TAM has received extensive empirical support in IS research (Venkatesh and Davis, 2000; Venkatesh et al., 2003; Karahanna

et al., 2006). Regardless of this empirical support, previous TAM studies fail to address the link between intention and actual use and the motivational content in reasons for acting (Bagozzi, 2007). A majority of IS acceptance studies are at an individual level focused on social and cognitive variables as demonstrated by studies of (Venkatesh and Davis, 2000; Venkatesh et al., 2003; Karahanna et al., 2006), overlooking group, cultural and social influence on individual decision making (Bagozzi, 2007). Bagozzi's work highlighted the need to address cultural dynamics, nationally within organizations, and their impact on decision taken. This study is about the adoption and mandatory use of an IS in an organizational setting.

2.9.3 IS success

IS success use studies are influenced by the work of DeLone and McLean (1992) who developed a model to determine IS success. The IS success model identified six components of IS success: system quality, information quality, use, user satisfaction, individual impact, and organizational impact (Petter et al., 2008). The overall belief is that system and information quality lead to system use, as a result system use then leads to individual and organizational benefits (Burton-Jones and Straub, 2006). Previous IS system use elements that are generally studied in this domain include features used, tasks supported, use or nonuse, frequency of use and duration. Gable et al. (2003) argue that the evaluation of IS success studies revealed that there is little consensus on the appropriate measure of IS success.

This complicates comparisons of results across studies and the establishment of an accumulative research tradition (Sabherwal et al., 2006). Appropriation was suggested by Sedera and Tan's (2007) as an alternative to better understand conceptualizing of IS success; appropriation is about how the IS is a suitable tool to complete job related tasks. Apart from the appropriation suggestion, another suggestion was made by McLean et al (2011) that IS success should be studied in terms of efficiency (frequency) and effectiveness (depth and extent). Both suggestions are a way to study IS success and could be investigated further to enrich an understanding of how IS are deemed successful in organizations. This study is not premised within this domain as it's about how an IS

was adopted and is an enabler of an institutional process and practice to realize an organizational objective.

2.9.4 IS for decision making

IS for decision making is about the inclusion of system generated data by the decision maker in their organizational activities and processes (Barkin and Dickson, 1977). Research in this domain is about how the IS is infused into the decision making process. This domain is about the information or data generated by the system and incorporating this information into work processes (Szajna, 1993). Previous research on IS for decision making has focused on how the IS influences the decision making process (Leidner and Elam, 1993), their research shows that frequency of use and length of time of use are both significantly associated with the decision making process. O'Donnell and David (2000) studied how IS characteristics influence user decisions. They further suggested that further work be carried out on environmental characteristics and their influence on decision making and organizational performance.

From the preceding suggestion, this study is about how an IS was adopted and how it's used for HR related activities. This study is anchored in this domain and would also investigate how an IS enables an organizational process to realize a particular outcome. The IS could serve managers in an organization in the form of a decision support system (DSS), through reports generated by the system. It could be used as a management information system (MIS) for employees to capture and access information. The IS could also be used as an executive support system (EIS) by top management to analyze trends and forecast future needs and demands.

2.9.4.1 IS impact on organizational performance

This domain is about the IS generating business value such as enhancing productivity, profitability improvement, cost reduction, competitive advantage, inventory reduction or other measures of performance (Melville et al., 2004). There is little consensus amongst researchers and practitioners on how best to measure the impact of IS in organizations (Gable et al., 2003). Kohli and Grover (2008) examined IS value within organizations and suggested a mind shift towards organizational co-creation of value and intangible value

generated by an ERP. Instead of focusing on a measure for IS impact in organizations, Melville et al. (2004) highlighted organizational conditions and factors that influence how an IS is used, these conditions could provide for the optimal use of an IS. Researchers such as Kohli and Gover (2008) suggested that value generated by the IS can only be realized if the IS is aligned to organizational strategies. They suggested that further work be done on the value, both tangible and intangible, an IS generates in organizations. This study is premised in this domain and investigated how an IS enables organizational processes and changes and the value that the IS creates in the environment. Figure 6 is a summary of the five IS use studies

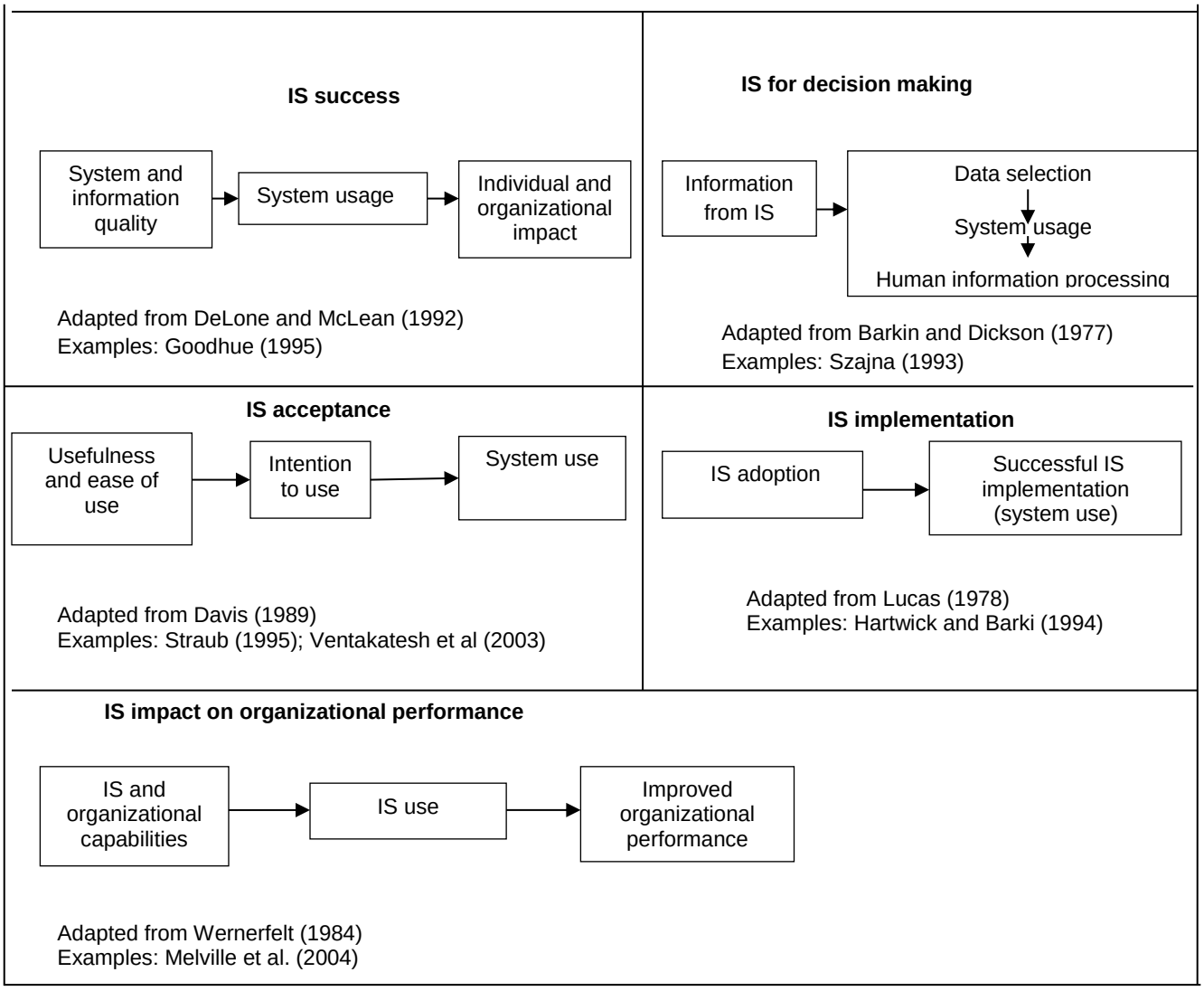

Figure 6: Conceptualization of IS use studies (Burton-Jones and Straub, 2006)

Figure 6 presents the five domains within which IS use research is conceptualized. The domains are IS implementation, acceptance of IS, success of IS, using IS for decision making and IS impact on organizational performance. The section that follows discusses individual level variables in IS research.

2.10 Individual level variables in IS research

Since a majority of IS adoption and use studies are at an individual level, thus, it is important to discuss the variables examined at this level of analysis. According to Tscherning (2012) literature conceptualizes that an individual's attributes and beliefs lead to intention, which subsequently leads to certain adoption behavior. Table 1 below depicts this.

Table 1: Individual level variables in IS use (Tscherning, 2012)

Concept	Definition	Reference	Study example
Attributes	Individual characteristics that could contribute to a certain adoption behavior , examples include education, age, personality values, communication behavior etc.	Rogers (2003), Venkatesh et al., (2003)	Lu et al. (2005) Tscherning and Mathiassen (2010)
Beliefs	An individual's psychological state that holds a proposition or premise to be true, examples are normative, control or behavioral beliefs	Ajzen (1988)	Davis et al. (1989) Hsu and Lin (2008)
Intentions	Intention indicates an individual's readiness or willingness to execute a specific behavior	Ajzen (1988)	Venkatesh and Morris (2000) Gefen et al. (2003)
Adoption behavior	An individual's observable response in a given situation when accomplishing a task	Ajzen (1988)	Davis (1989) Davis et al. (1989)

Attributes and beliefs variables related to human behavior, attributes are related to socioeconomic status such as age, gender, education levels, and personality values to explain IS individual adoption behavior (Venkatesh et al., 2003; Rogers, 2003). According to Ajzen (1988), human behavior is directed by three types of beliefs: behavioral, normative and control beliefs. Behavioral beliefs are about the likely outcome of behavior

and evaluating how the outcome was realized, normative beliefs are about expectations of other from the individual and the motivation to comply with those expectations.

Last, control beliefs are factors that could enable or inhibit performance and perceived power of those factors (Ajzen, 1988). Previously studied beliefs include effort expectancy, performance expectancy, facilitating conditions and social norms (Venkatesh et al., 2003), subjective norm and attitude towards behavior (Ajzen and Fishbein, 1980). The variables mentioned about intention are the most studied variables in the IS literature on individual use of a system, they are studied from various contexts.

Intention indicates an individual's readiness to engage in certain behavior and it is considered an immediate predictor of behavior (Ajzen, 1988). Intentions can be described as characteristics of behavior until the intention is executed at an appropriate time and opportunity and turned to action (Davis et al., 1989). Attitude is conceptualized as a predictor of use behavior.

Use behavior is influenced by intention with attributes and beliefs as antecedents for intention (Coleman, 1990). Use behavior results in a specific outcome such as organizational performance, effectiveness and efficiency, competitive advantage etc.

2.11 Summary of chapter

As a follow up to chapter one which introduced the thesis, this chapter discussed Human Resources (HR), HR actors in organizations, HRM system, theoretical approaches related to HR effectiveness in organization, HRM research, IS adoption processes, IS use dimensions and research areas, a review of HRIS related studies and individual level variables in IS. The reviewed concepts were grouped according the research objectives and research question and its sub-questions. The purpose of this chapter was to get an understanding and knowledge about HR, IS and HRIS related concepts. The chapter that follows discusses the theoretical frameworks for adoption and use study.

CHAPTER THREE: THEORETICAL FRAMEWORKS FOR ADOPTION AND USE STUDY

The previous chapter reviewed related studies in HRIS. It discussed key concepts which make up the study. Building on that, this chapter now looks at various theories of IS adoption and use. The purpose of the chapter is to highlight and discuss popular IS theories for adoption and use and those underpinning this study and how they were used. This chapter starts by unpacking the role of prior theory. It then gives a critique of Gregor's view on IS theory, IS adoption and use framework and theories are discussed. From the reviewed theoretical frameworks, a conceptual research framework of HRIS adoption and use in universities is presented. The contextual determinants and antecedents influencing adoption and use and possible outcomes are discussed last.

The section that follows discusses IS adoption and use framework and how it relates to this study.

3.1 IS adoption and use framework

Figure 7 represents IS adoption and use processes that typically happen to a system in an organization, these processes happen at an organizational and individual level so as to highlight the interrelatedness of HRIS adoption at an organizational level and individual use post adoption.

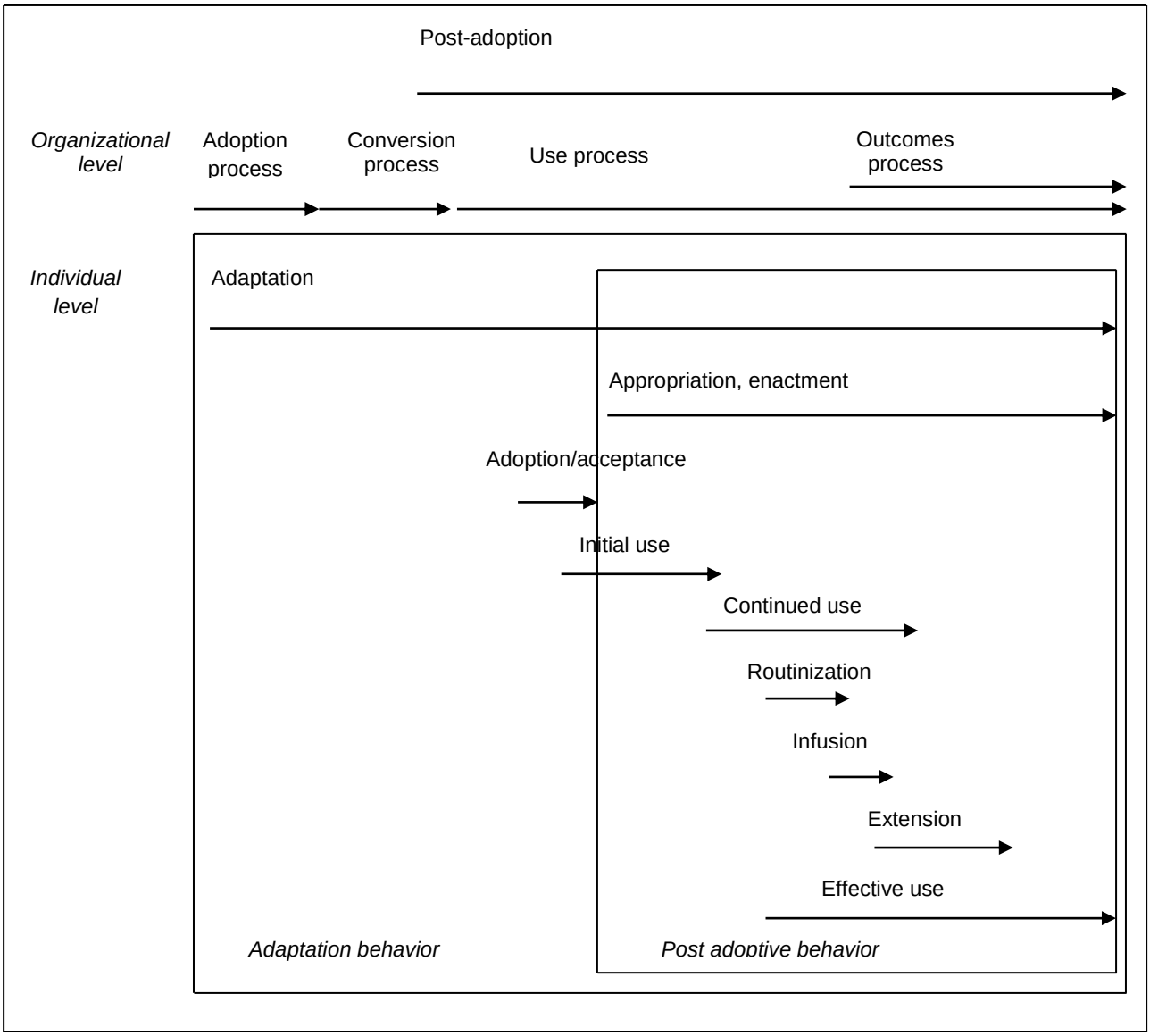

Figure 7: IS adoption and use framework (Lauterbach and Mueller, 2014)

Figure 7 is a framework focused on post-adoptive processes at both individual and organizational level for IS adoption and use. At the organizational level, adoption and use processes are the actual adoption, conversion, use and intended outcomes. The individual level is where the adoption and use of the IS takes place, where users adapt the technology to suit their working style or the tasks that have to be completed.

Users must make a decision to accept the IS, in mandatory settings; the decision is made, however users might decide to reject the system by not using it (Walsh et al., 2016). *Adaptation* refers to users' responses to an IS event such as adoption, implementation and use (DeSanctis and Poole, 1994). *Appropriation* is an individual's activities towards deeply incorporating and using an IS in completing one's related work tasks (Leonardi and Barley, 2010). *Enactment* follows appropriation on the framework and Orlikowski and Yates (1995) define enactment as how individuals interact/create actions with the IS as guided by the virtual structures that emerge from these interactions. *Adoption or acceptance* of an IS is where it all starts, and it is defined as activities such as discussions or negotiations of decision makers necessary to decide to implement or not implement the system (Kwon and Zmud, 1987). The process overlaps the adaptation and post adoptive behavior.

Taken together, all these individual efforts in an organizational context are towards a system aimed at realizing organizational goals (Burton-Jones and Volkoff, 2013). Appropriate use is the outcome of use, that is, HRIS is used properly. The section that follows discusses the role of prior theory in IS research.

3.2 The role of theory

Often, there is a debate which one comes before the other: data or theory? The answer to the question is dependent on the researcher's guiding philosophy, traditionally positivists consult theories in literature in order to formulate hypotheses or research questions at an early stage (deductive approach) and interpretivists work in a different direction (Carson et al., 2001). To add, an explanation of what theory is discussed below to remove ambiguity about the concept. Gregor (2006) defines theory as "abstract entities that aim to describe, explain and enhance understanding of the world and in some cases, to provide prediction of what will happen in the future and to give basis for intervention and action".

Theories can be categorized according to their level of generalization; at a very high level of abstraction is *meta-theory,* which is a theory that provides a way of thinking about other theories. *Grand theories* according to Bacharach (1989) are theories with sweeping

generalizations not bound in space and time, Weber (1997) argued that the IS field is in need of such theories.

Theories can also be classified by their range of focus (Neuman, 2000). *Substantive theory* is developed for specialized areas of enquiry such as race relations, strikes, and delinquent gangs. Substantive theory is often compared with *formal theory*; which is developed for broad conceptual areas (Gregor, 2006). Lastly, *Mid-range theory* is theory that is abstract, limited in scope and can easily lead to testable hypotheses and it's often practice discipline dependent. Based on the discussions on theory, the following section details the nature of theory in IS research.

3.3 Theory in information systems research

Gregor (2006) in her seminal work titled "*The nature of theory in information systems*" classified theory as theory for analysis, explanation, prediction, explanation and prediction and design and action, the table below describes the theory types.

Table 2: Theory types in information systems (Gregor, 2006)

Theory type	**Distinguishing attributes**
Analysis	Focused on "what is" The theory describes and analyses and doesn't go beyond that. No causal relationships among phenomena are inferred and no predictions made
Explanation	Describes "what is, how, why, when and where Explanation theory is focused on explanations but does not aim to predict with any precision, there are no testable propositions
Prediction	Describes "what is and what will be" The theory provides predictions and testable propositions but does not have well-developed justifiable causal explanations
Explanation and prediction	Describes "what is, how, when, where and what will be" Provides descriptions and has testable propositions and explanations
Design and action	Describes a "way of doing something" Design and action theory provides a detailed prescription in the form of methods, techniques for creating an artefact

3.3.1 Theory for analysis

Theory for analysis describes what is and doesn't explain causality and no predictions are made. Fawcett and Downs (1986) referred to these types of theories as descriptive. Examples in this category would include frameworks and grounded theory method which produces a description of categories of interest. An example in literature for this type of theory is Lee and Baskerville's (2003) "*generalizing generalizability in information systems"*. Their work discusses generalizability, its nature, how it's been used and misused, and it presents a framework for classifying its different forms. Gregor (2006) further asserts that a contribution to knowledge with this type of theory is when little is known about phenomena.

3.3.2 Theory for explaining

This theory explains how and why some phenomena transpire, or it can be called a theory for understanding (Gregor, 2006); these theories are often lenses as they have an emphasis on showing others how the world can be seen in a certain way as things are and why they are as they are. An example of this type of theory in IS is structuration theory (Giddens, 1984) as it's an understanding of the world as mutual relationships between action and social structure. Case studies are another example of this type of theory and hold views aligned to interpretivist paradigm (Klein and Myers, 1999). Contribution to knowledge with this type of theory is the theory developed or the inferences must be new and interesting insight or explain something that is not well understood (Gregor, 2006). The theories and frameworks used as lenses in this study, that it, upper echelon theory (UET), technology, organization and environment framework (TOE), social cognitive theory (SCT), task technology fit (TTF) were used to explain and understand some of the contextual determinants at the adoption and use phase due to the multidimensional nature of the study.

Moreover, the multidimensional theory of HRIS adoption and use in a university conceptualized from the study could be used to explain contextual determinants that influence the adoption and use of an IS in organizations.

3.3.3 Theory for predicting

Theories of prediction say what will be but not why it will be like that; this type of theory is able to predict outcomes from a set of explanatory factors without explaining underlying causal connections between dependent and independent variables in any detail (Gregor, 2006). There isn't a lot of theories for predicting in IS, a contribution in this regard is the discovery of regularities that allow prediction if they were unknown before.

3.3.4 Theory for explaining and predicting

This type of theory is focused on how, what is, why, what will be and when, and it implies an understanding of underlying causes and prediction, as well as description of theoretical constructs and relationships among them (Gregor, 2006). This type of theory benefits from process studies, which look at unfolding events over time or variance studies which look at the degree to which one variable can predict changes in another variable. What constitutes a contribution in this theory is theory and building.

3.3.5 Theory for design and action

This theory says how to do something, it's about form, function, methods used for IS development, research associated with design sciences in IS include prototyping (Baskerville and Wood-Harper, 1998), as system development approach (Burstein and Gregor, 1999) and software engineering research (Morrison and George, 1995). March and Smith (1995) and Hevner et al. (2004) assert that a contribution to knowledge in this field include utility to a community of users, the novelty of the artefact and persuasiveness of the claim. Further Gregor (2006) emphasizes that models and methods can be evaluated for completeness, ease of use, simplicity, consistency and results obtained through the use of the method, these are done as a conditions for contribution to knowledge.

According to Walsham (1995), there's several ways of using theory in interpretive research in IS; as an initial guide to design and data collection (midrange inductive, deductive approach); as an iterative process of data collection and analysis (grounded theory approach) and as a final product of the research. This study used theory as a lens

to guide the research, to guide data collection and as a result a theory that details HRIS adoption and use in a university was conceptualized. The section that follows is a critique of Gregor's four way of using theory in IS.

3.4 Critique for Gregor's four ways of using theory in IS

Weber (2012) counter argues Gregor's four ways of using theory in IS in the following ways; Weber says theory for analysis is not a theory but a typology; and that typologies underpin the exact definition of the construct in a theory but lack certain characteristics that are important to theory. Theory for explaining and theory for predicting may or may not constitute theory, Weber further argues that both types of theories sometimes lack clarity and precision with constructs, their relationships, states and events they cover, and since theory for explaining is associated with interpretivist paradigm; they often lack rigor, they can be regarded as models because of lack of qualities needed to constitute a theory. Theory for design and action can be categorized with theory for explaining and theory for predicting.

Weber (2012) asserts that his view of theory is associated with Gregor (2006)'s theory for explaining and predicting as there's precision with constructs, their relationships, and often have clear descriptions of states and events as they occur and a rigorous research methodology is defined.

Further, Weber (2012) conceptualized a framework of what constitutes a theory in IS, based on the work of Locke and Golden-Biddle (1997)- a theory's *parts*- constructs, their associations, states (boundaries) and events they cover. The whole- *importance*, importance to practice and researchers by providing understanding of the focal phenomena, theoretical and empirical progress in the field; *novelty*; *parsimony* is about levels of predictive and explanatory power; *level* (not too low or high) and *falsifiability (*where the theory can be supported/not supported empirically). Weber's description of what constitutes theory building in IS is leaning more towards positivism with words such as "constructs" "their associations" "predictive and explanatory power", and is not a suitable framework for evaluating theory within the interpretivist philosophy.

The section that follows discusses theories and models used in IS adoption use research which was briefly discussed in the previous chapters; this section elaborates further on what was discussed as a follow up the conceptual research framework.

3.5 Theories/models used in IS adoption and use research

Various theoretical approaches have been used to examine IS adoption and use at both individual and organizational level of analysis (Wilson and Akter, 2012). The most common used lens in IS adoption and use studies is the technology acceptance model (TAM) which has its roots in expectancy based theories; theory of reasoned action (TRA) and theory of planned behavior (TPB) (King and He, 2006).

The other theories used in IS adoption and use research include diffusion of innovations (DOI), Rogers (2003), social cognitive theory (SCT), Bandura (1997), TAM2, Venkatesh and Davis (2000), theory of planned behavior (TPB), Ajzen (1991), theory of reasoned action (TRA), Fishbein and Ajzen (1975), Task-technology fit (TTF), Goodhue and Thomson (1995) and unified theory of acceptance and use (UTAUT). The table below presents the theories/models and their levels of analysis.

Table 3: Theories/models used in IS adoption and use research and their levels (Wilson and Atker, 2012)

Theory/model	**Authors**	**Use at individual level studies**	**Use at an organizational level**
Diffusion of innovations theory (DOI)	Rogers (2003)	X	X
Social cognitive theory(SCT)	Bandura (1997)	X	
Technology acceptance model (TAM)	Davis (1989)	X	
Theory of planned behaviour (TPB)	Ajzen (1991)	X	
Theory of reasoned action (TRA)	Fishbein and Ajzen (1975)	X	
Task-technology fit (TTF)	Goodhue and Thompson (1995)	X	X
Unified theory of acceptance an use (UTAUT)	Venkatesh et al. (2003)	X	

Table 2 represents popular IS adoption and use theories/models used and the level of analysis they are applicable at, the theories include DOI, TRA, TPB, TAM and UTAUT and these will be discussed below.

3.5.1 Diffusion of innovations (DOI)

DOI by Rogers (2003) is about the rate at which technology spreads within a social environment over a certain period. The theory has been used to study IS diffusion at an individual, organizational, market and societal level; the five attributes of an innovation are *relative advantage*- as the idea that the innovation is better than its predecessor, *complexity*- the opinion that the innovation is difficult to understand and use, *observability*- the visibility of the innovation to its potential adopters and it influences the rate of adoption, *trialability*- is the experimentation by adopters on the system and *compatibility*- is the idea that the innovation is well suited for the needs, values and experiences of adopters .

DOI is a popular organizational theory in IS and is used to study IS implementations at an individual, organizational, industry or societal level. It has been used in studies by (Teo et al., 2007; Normalini et al., 2012; Obeidat, 2013; Burbach and Royle, 2014) to understand and explain HRIS adoption and use in organizations.

3.5.2 Social cognitive theory (SCT)

A motivation based theory from psychology, SCT assumes that inherent in human nature is the propensity to be curious about one's environment and interested in learning and developing one's knowledge (Niemic and Ryan, 2009). As a motivational theory, SCT focuses on intrinsic and extrinsic motivation (Ryan and Deci, 2000). Intrinsic motivation refers to doing something for enjoyment, satisfaction or it's interesting, while extrinsic motivation is influenced by external variables and expected outcomes from engaging in a certain task (Deci and Ryan, 1985). Extrinsic motivation limits autonomy and it can range from the most autonomous to the least autonomous, while intrinsic motivation is internally motivated. SCT is used as one of the lenses and is discussed in detail in the following sections.

3.5.3 Theory of reasoned action (TRA)

TRA is a social psychology theory suggests that an individual's behavior can be predicted through behavioral intention (BI) which influences attitude towards use and subjective norm as antecedents and core constructs, attitude is determined by an individual's belief and belief is defined by a probability that the behavior will give desired consequences (Fishbein and Ajzen, 1975). Attitude towards use represents an individual's positive or negative feelings about engaging in a specific behavior and subjective norm is about the perception that most people who are important to him think he should or should not perform a certain behavior (Fishbein and Ajzen, 1975). Despite being useful to predicting social behavior, TRA is limited when it comes to accounting for behavior that is not under an individual's control such as mandatory IS use environments (Teo and van Schaik, 2012), hence the conceptualization of TPB, which accounts for control or controlled environments. TRA has been used in IS adoption and use studies as a predictor of certain behavior.

3.5.4 Theory of planned behavior (TPB)

TPB is an extension of TRA by adding perceived behavioral control as an additional element to intention and behavior outcomes; perceived behavioral control is the perceived ease or difficulty of executing a behavior (Ajzen, 1991). Its core constructs include attitude towards behavior, subjective norm and perceived behavioral control (Venkatesh et al., 2003). TPB has been used to study IS adoption and use behavior (Harrison et al., 1997; Pavlou and Feygenson 2006). Decomposed theory of planned behavior (DTPB) was conceptualized from TPB, DTPB divides attitude, subjective norm, and perceived behavioral control into underlying belief structure within technology adoption contexts, which is internal or external constraints on behavior (Taylor and Todd, 1995). Another popular theory in IS adoption and use studies which has been used to explain, predict and understand user's behavior during IS adoption and use.

3.5.5 Technology acceptance model (TAM)

Like TRA and TPB; TAM follows the popular and common threat of belief, intention and behavior and has been used extensively to examine varied information systems (Teo and

van Schaik, 2012). TAM was the first theory developed specifically for IS context (Wills et al., 2008). Davis (1989) conceptualized TAM to describe people's beliefs and attitude as related to their intention to predict technology acceptance and use in organizations. TAM's core constructs include perceived usefulness, perceived ease of use and subjective norm (from TRA/TPB), and excludes attitude to better explain intention, perceived usefulness is explained as "the degree to which a person believes using a particular system will enhance a job performance" Davis (1989:320).

Perceived ease of use is "the degree to which one believes using a system will be free of effort Davis (1989:320). TAM2 arose by bringing back subjective norm to the model as an additional predictor of intention (Venkatesh and Davis, 2000). Another technology acceptance and use model arising from TAM and TPB is C-TAM-TPB; this model combines predictors of TAM (perceived usefulness) and attitude towards behavior, subjective norm and perceive behavioral control (Taylor and Todd, 1995). A lot of the TAM variations in IS research followed are based on the notion of combining two theories or models to understand phenomena.

Despite TAM's popularity and predictive power; Benbasat and Barki (2007) and Bagozzi (2007) have highlighted several unintended problems within the IS field, TAM diverts the researcher from the phenomena, TAM based research has paid little attention to the antecedents or theory for PEU and PU (this is so with TRA and TPB) and as bases for decision making. TAM research stream is limited in examining important consequences of IS adoption, it also fails to account for group, social and cultural aspects. Because of the saturation with TAM related research, TAM as a theory has not expanded or adapted its core model limits its usefulness in a constantly changing IS adoption environment, the TAM++ is not based on solid and commonly accepted foundation, resulting in theoretical confusion, chaos and lack of progress in knowledge accumulation. Although tremendous progress has been made in the field of IS adoption and use theories, TRA, TPB and TAM essentially use the same concepts to express IS acceptance factors (Min et al., 2008), to resolve some of the limitations, an effort was made to integrate the theories resulting in unified theory of acceptance and use (UTAUT).

3.5.6 Unified theory of acceptance and use (UTAUT)

UTAUT is an extension of TRA, TPB and TAM, UTAUT integrates eight user acceptance models; TRA, TPB, TAM, TAM2, IDT, model of PC utilization (MPCU), motivation model (MM) and C-TAM-TPB (Venkatesh et al., 2003). UTAUT constructs are performance expectancy (perceived usefulness, extrinsic motivation, job-fit, relative advantage and outcome expectations), effort expectancy is made up of (Perceived ease of use, complexity and ease of use); social influence comprises (Subjective norm, social factors and image); facilitating conditions encompasses (Perceive behavioral control, facilitating condition and compatibility) which influence behavioral intention and subsequent use behavior with gender, age, experience and voluntariness of use as moderating variables (Venkatesh et al., 2003). Since its conceptualization, UTAUT has served as a baseline model for a majority of IS research and has been used to study a variety of technologies in both organizational and non-organizational settings (individual, across countries). The model has been applied, extended and replicated within new contexts (different industries or countries), explore new users and adding new constructs to the model (Venkatesh et al., 2012). It's because of such extensions and new contexts that gave birth to UTAU2.

UTAUT2 is theorized to be cognizant of the consumer use context; the model includes hedonic motivation or perceived enjoyment or fun from using a technology (Brown and Venkatesh, 2005), price value related to money and what you get for that you spent (Chan et al., 2008) and experience and habit (Kim and Malhotra, 2005). UTAUT2 is usually applied to contexts where individuals spent money or time doing a specific task, such as online shopping. The section that follows ties up the discussion on what IS is, followed by ERP and HRIS, dimensions of IS use, IS use research areas and theories used in IS research by reviewing literature on HRIS studies.

The section that follows discusses the underpinning theories and framework used as lenses for the study.

3.6 Theories and frameworks underpinning this study

Since the study is multilevel and multidimensional by nature, the adoption phase of HRIS is underpinned by Upper echelon theory (UET) and Technology, organization and environment framework (TOE). As advocated by Thong (1999) that IS adoption elements are related to decision maker's characteristics, technological, organizational and environmental characteristics and social cognitive theory (SCT) as lenses. Decision maker's characteristics can be understood through upper echelon theory, while technology, organizational and environmental characteristics can be better understood from TOE framework and SCT to understand motivation for users' behavior.

3.6.1 Upper Echelon Theory

Mumford and Licuanan (2004) have confirmed the multiple roles of top management in an innovation adoption; top management offer guidance and support at the initial stages. Later they harmonize group members' interactions and create suitable conditions for the implementation on the innovation. Top management in UET could mean individuals such as CEO or CIO or the entire top management team (TMT).

Upper echelon theory proposes that key decision maker's behavior in an organization is influenced by their experiences, personalities and values (Hambrick and Mason, 1984). Leaders' creative efforts are a result of technical and professional expertise and the ability to process complex information and motivation (Mumford and Licuanan, 2004). Mellahi and Wilkinson (2004) argue that this theory is premised in "*who*" makes the decision as a central source of success or failure in organizations. This is important for HRIS as the university's top management team were responsible for decisions taken when the system was adopted. Their decisions influenced how the system was adopted and used currently in the organization. Upper echelon theory elements considered for HRIS adoption in a university is attitude, support and communication.

3.6.1.1 Levels in UET theory building

Levels in UET research is about consolidating individual level to reflect the phenomena in another level, this is important as the study is multilevel by nature. The study considers

decisions made at top management for the outcome to be implemented at all levels of the university, specifically, HRIS users at an operational level. Issues experienced in theory building related to different organizational levels include individuality, homogeneity, heterogeneity, mixed- effect models and temporal effects as documented by Cannella and Holcomb (2005).

Individuality. This implies there is no group links to TMT individuals. The individuals that make up the TMT, the group has little or no influence on the individuals as they are perceived as independent. Decision makers involved in HRIS adoption were acting as individuals during the adoption process.

Homogeneity. Homogeneity refers to TMT individuals are similar or nearly similar. Homogenous TMT behave in a similar way as though the group is one person. The individual team members usually share similar values and work related matters.

Heterogeneity. Heterogeneity is about the differences in the TMT individual members in important ways. Individuals might create subgroups that are homogenous but heterogeneous to other subgroups. Heterogeneity of the group could mean individuals' characteristics and their differences to other group individuals or the group.

Mixed-effect model. Is about models that affect different levels of analysis, it's about consideration for an individual CEO leadership behavior on TMT cohesion and effort on lower echelons within the organization.

Temporal effects. Temporal effects are characteristics (individuality, heterogeneity and homogeneity) of individuals within the group can change over time. TMT can start out as different individuals to highly homogenous teams after interacting for a while.

3.6.1.2 Upper echelon theory figure

The figure below depicts UET (Hambrick and Mason, 1984), the theory suggests that organizational outcomes and processes are a function of managerial characteristics of top management in organizations

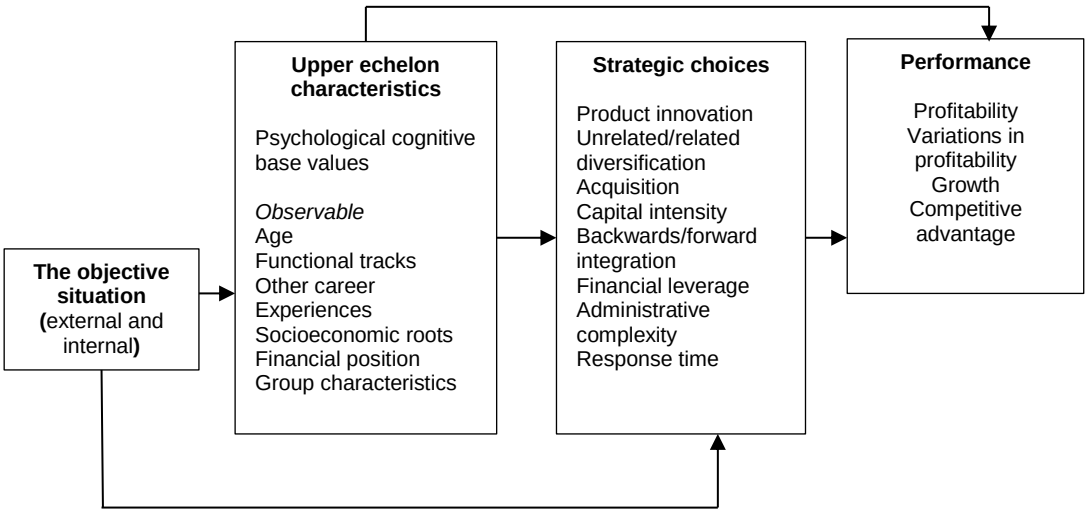

Figure 8: Upper echelon theory (Hambrick and Mason, 1984)

UET (Hambrick and Mason, 1984) suggest that strategic choices, which lead to organizational outcomes, are more of an outcome related to behavioral factors more than a consideration on economic related issues. Therefore, strategic choices are an outcome of behavioral factors and are a reflection of the decision maker's characteristics such as value and base preferences. In this regard, UET suggests that cognitive characteristics, values and perceptions are difficult to measure and unobservable, measurable managerial characteristics as replacing cognitive variables that could provide indicators.

Upper echelon theory research is essentially multilevel by nature and it involves individuals, teams and the organization (Nielsen et al. 2014). As a result, the theory embraces individual, team and organizational mechanisms to explain how individual characteristics influence team decision making that affects organizational level outcomes (ibid, 2009). The multidimensionality of this study makes upper echelon theory an appropriate lens for understanding top managerial decisions on HRIS adoption within universities, both as a group and as individuals. The individual and group characteristics of top management who were involved in HRIS adoption decisions are important to understanding how those decisions were taken, what influenced the decisions and how that affects HRIS adoption and subsequent use.

Despite its strengths, however, Mellahi and Wilkinson (2004) posit that upper echelon theory is focused on internal, individual characteristics; it does not account for the environment within which an organization operates in. Since upper echelon theory is internally focused and does not cater for the environment within which the organization (university) operates in. TOE will be used with upper echelon theory to moderate this gap. TOE explains how social factors and pressures (internal and external) from the environment influence a certain outcome.

3.6.1.3 Studies related to UET

Studies conducted by Dwivedi and Lal (2007) considered individual factors such as education, age, gender and occupation as predictors of broadband adoption. The study concludes that socio-economic factors such as age, education, occupation and income were significant predictors of broadband adoption. Chuang et al (2007) examined CEO's gender, age, education and work experience; the study concluded that work experience is not a predictor of IT adoption while CEO's gender and education were significant predictors of IT adoption. Chuang et al. (2009) used UET as a lens to understanding IT adoption by SME's in Nigeria by TMT, they examined factors such as composition of age, education and group heterogeneity (gender and ethnicity). The study concluded that age and education are predictors of IT adoption and group heterogeneity has negative impact on IT adoption. Awa et al. (2011) studied demographic variables such as experience, age, homogeneity/heterogeneity, gender sensitivity and education of TMT on IT adoption behavior in SME's using UET as a lens. The investigation uncovered that age composition, experience and gender sensitivity as strong predictors of adoption.

From above, it can be observed that UET has not been used as a lens to understand TMT behavior and decision making influences in HRIS adoption research in university contexts. However, a study by Hattke and Blaschke (2015) examined the influence of TMT diversity on academic excellence in universities using UET as a lens. Therefore, the study is relevant as IS adoption studies that seek to understand top management; both as a team or individuals, are scarce. This study used UET as a lens to understanding top management behavior during HRIS adoption process in universities. UEP and TOE framework were used as lenses to understand HRIS adoption in universities.

3.6.2 Technology Organization and Environment (TOE) framework

TOE framework is an organization level framework that explains three different levels of an organizations' context and how they influence adoption decisions (Baker, 2012). These are the technology, organization and environment context.

TOE is an adoption and use framework that identifies an organization's context that influence the adoption process, the context is represented by the technology, environment and the organization (Oliveira and Martins, 2011). The technological context refers to the expertise, knowledge, infrastructure and support of the IS, the organizational context refers to descriptive measures such as size the size, scope etc., environmental context refers to the industry within which the organization is operating from (Tornatzky et al., 1990).

3.6.2.1 The technological context

The technology context focuses on how technology characteristics can influence adoption (Yang et al., 2007). An emphasis is placed on the operationalization, the realization of potential benefits and the organizations adoption capability (Troshani et al., 2011). IS are usually judged on the perceived benefits they might have for the adopting organization, benefits usually include increased levels of productivity, efficiency and effectiveness (Chau and Tam, 1997). Barriers often encountered during the adoption process include the complexity of the IS and compatibility issues related to legacy systems and organizational technology competency (Rogers, 2003; Thong, 1999). Further, organizational changes that might arrive as a result of the IS within the organization must also be considered, so as to ensure an easy transition for the IS to be accepted by the people it's geared towards.

3.6.2.2 Organizational context

The organizational context recognizes the amount of slack resources, linking structures between employees, internal communication processes and characteristics of the organization that may inhibit or enable the adoption of the IS (Baker, 2012). Organizational structures-organic, mechanistic or centralized, decentralized

organizational structure, influence how an IS is adopted in an organization (Yang et al., 2007). In centralized organizations, top management can continue to adopt an IS regardless of managers and other employees resisting it, contrary to what would happen in decentralized organizations.

Mechanistic structures that emphasize formal reporting, clearly define roles for employees, centralized decision making are not suitable for the adoption process (Baker, 2012). Decentralized and organic structures emphasize teams, flexible in employee responsibilities and promote lateral communication are more suitable for the IS adoption process.

Communication processes within organizations can also enable or inhibit IS adoption. Top management can be proactive in fostering an organization that embraces change and support for IS that support the organizations core objectives (Premkumar and Ramamurthy, 1995). Before an IS is implemented, top management could communicate information such as describing the role of the IS and its relation to the organizations' objectives and to the employees, especially those who will be interacting with it often.

Top management support and a skilled workforce could help facilitate the IS adoption process (Lin, 2006). Additionally, large organizations are likely to adopt IS faster than smaller organizations due to financial advantages (Troshani et al., 2011). However, smaller organizations are more responsive to adopting IS due to their flexibility and adaptability compared to larger organizations (Barbosa and Musetti, 2010). Although size as a predictor of technology adoption has been criticized (Baker, 2012), there is a suggestion that better descriptive variables of an organization be used instead of just size.

3.6.2.3 Environment context

The environmental context is about the setting where the organization operates in or external factors such as the industry, support services (e.g. infrastructure) and the regulatory environment (Oliveira and Martins, 2011). Industry pressures, can push an organization to adopt an IS, as a means of survival for competitive advantage (Masum, 2015).

Support services such as infrastructure and other related resources influence the adoption of an IS, successful adoption of HRIS requires skilled professionals such as consultants and other suppliers of technology services (Teo et al., 2007; Chau and Hui, 2001) and appropriate infrastructure to accommodate the growth.

Government regulations could inhibit or enable IS adoption (Troshani et al., 2011; Baker, 2012). Governments could encourage technology adoption by raising awareness, training, funding and other forms of support (Chong and Ooi, 2008). In summary, the three contextual variables- technology, organization and environment, could inhibit or enable HRIS adoption in universities. Figure 9 depicts the TOE framework.

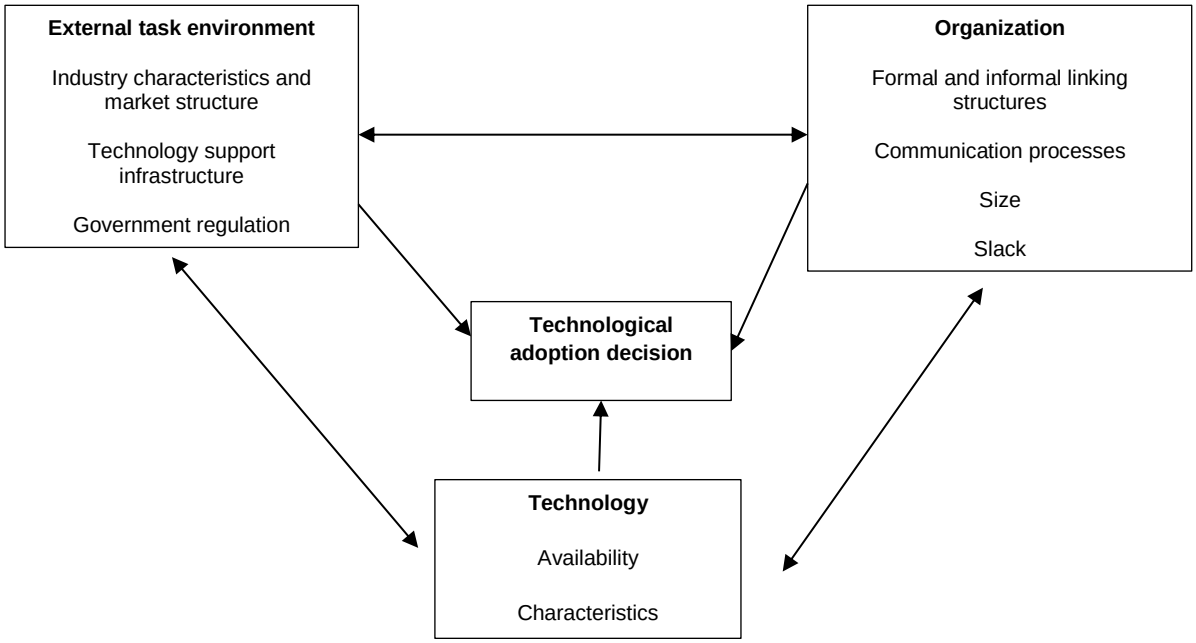

Figure 9: The technology-organization-environment (TOE) framework (Tornatzky and Fleischer, 1990)

The three elements i.e. technology, organizational and environmental could enable or inhibit IS adoption and use within organizations as presented by figure 9 above. The variables vary as per context and the type of IS being adopted.

3.6.2.4 TOE framework in HRIS research

Due to its broad applicability, TOE framework has been used across different industries and national contexts. The framework has been used to explain the adoption of ERP (Ramdani et al., 2009), e-business (Zhu et al., 2003). TOE has also been used to assess adoption of IS in industries such as health care (Yang et al., 2013; Lee and Shim, 2007), manufacturing (Mishra et al., 2007) and financial, wholesale and retail services (Zhu et al., 2006). Additionally, TOE has been used to explain adoption in European, American and Asian countries.

HRIS adoption studies that used TOE to explain variables that could influence the adoption process include Troshani et al. (2011)'s study which was about public sector adoption of HRIS in Australia, the adoption variables included communication and media, education, health, financial services, natural resources, utilities and defense. TOE elements: technology context variables were perceived benefits and organizational fit, organizational context was technology competency, management commitment, organizational size and degree of centralization and environmental variables studied are regulatory compliance and successful adoptions.

The TOE factors were identified for HRIS adoption within the university. Some of the TOE HRIS adoption elements are HRIS technological innovation determinants such as fit/compatibility, strategic investment rationale; organizational determinants such as training, size/distribution, norms, values, culture, change management, IS dedicated resources/capabilities. Environmental determinants are industry, government, policy/regulations and professional associations.

3.6.3 Social cognitive theory (SCT)

Social cognitive theory (SCT) was initially called social learning theory; it was based on the operation of learning principles within human social context (Bandura, 1977). And it was later renamed social cognitive theory, when concepts from cognitive psychology were included to accommodate the growing understanding of human processing capacities and biases that influence learning from experience symbolic communication

and observation (Bandura, 1997). SCT is one of the motivational theories often used in literature to understand individual motivation on behavior.

SCT emphasizes the interaction between people and their environment “reciprocal determinism” and how individuals make sense of social situations (McAlister et al., 2008). Further, SCT emphasizes human behavior as a product of an interaction from personal, behavioral and environmental influences, the theory is focused on how the environment, personal motivation are influenced and influence behavior (Bandura, 1997). The theory is demonstrated as figure 10 below.

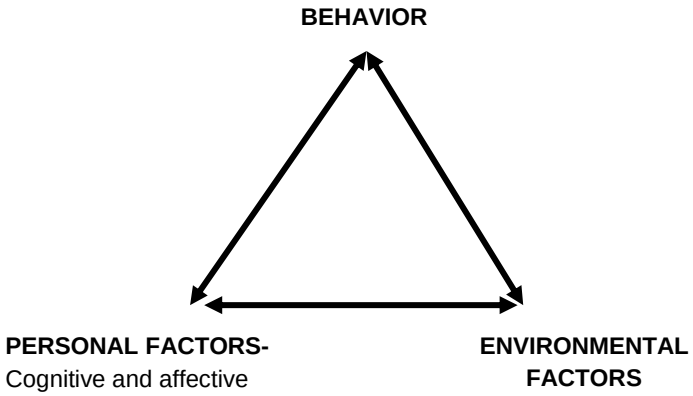

Figure 10: Social cognitive theory model (Wood and Bandura, 1989)

Figure 10 represents SCT and it emphasizes how environmental, personal and behavioral factors interact to determine motivation and behavior (Crothers et al., 2008). Environmental factors are concerned with the setting which can influence individual motivation and behavior; these include social and physical environments (McAlister et al., 2008). The social environment in organizations includes colleagues, managers and other organizational employees an individual interacts with. The three factors are always interacting to influence each other, the environment provides models for behavior and motivation, and the same with behavior, an individual must know what the behavior is and have skills to execute that behavior (Glanz et al., 2008). The university environment, the

university staff personal factors and behavior all interact and influence each other to determine motivation and behavior for using HRIS.

3.6.3.1 SCT concepts

According to McAlister et al. (2008) SCT has the following concepts that influence or are an outcome of the interaction between individuals, their environments and their behavior. The concepts are:

Reciprocal determinism, is about environmental factors and how they influence individuals and groups and how individuals and groups can influence their environment and regulate their own behavior.

Outcome expectations, anticipating outcomes from certain behavior.

Self-efficacy, beliefs about personal ability to perform behavior that bring desired outcomes (Bandura, 1977).

Collective efficacy, a group's belief about the ability to perform certain actions that bring desired outcomes.

Self-control is about personal regulation of goal-directed behavior or performance to provide opportunities for self-monitoring, goal setting. Self-reward and problem solving.

Motivation or reinforcements respond to an individual's behavior that increase or decrease something to happen.

Observational learning by observing actions of those who are around you, peer modelling.

Elaborating further on motivation or reinforcement, to be motivated means to be moved to do something, there are different types of motivation (Ryan and Deci, 2000). Two types of motivation are intrinsic and extrinsic motivation. Intrinsic motivation is defined as engaging in an activity for its satisfaction rather for some other consequence (Gagne and Deci, 2005). When a person is intrinsically motivated an individual is moved to act for the fun or challenge of it rather than external pressure such as rewards or pressure. Intrinsic

motivation has been linked to an individual and a task and as satisfaction as a person gains from intrinsically motivated task engagement.

Extrinsic motivation relates to an activity carried out in order to get a certain outcome. The study will focus on extrinsic and intrinsic motivation of HRIS users. HRIS is mandatory for users to complete HR related tasks within the university. There are varying degrees of extrinsic motivation, from the most extrinsically motivated to the least (Gagne and Deci, 2005). Since HRIS is mandatorily used, extrinsic and intrinsic motivation could assist in explaining and understanding how the setting influences users' actions when engaging with the system.

Motivation based theories have been used in IS studies such as that of Teo et al. (1999) who studied intrinsic (perceived usefulness) and extrinsic (perceived enjoyment) motivation in internet acceptance and usage. Lin (2007) examined intrinsic and extrinsic motivation of employee knowledge sharing behaviors using TRA as a lens. Yang and Lai (2010) examined motivators of Wikipedia content contributors.

3.6.4 Task-technology fit (TTF)

Task-technology fit (TTF) is premised in the thinking that IS ought to be well-suited to users intended tasks to influence performance and technology use (Goodhue and Thompson, 1995). TTF has its roots in organizational contingency theory; contingency theory posits that organizational effectiveness is dependent on the extent to which organizational characteristics are suitable with certain circumstances in the organization (Galbraith, 1973; Doty et al., 1993). Thus, organizational performance outcomes are dependent on the fit that exists between the task and the technology (Furneaux, 2012). Further TTF argues that performance benefits achieved by individual IS users transcend into the group and subsequent organizational level; this means the theory is suitable for multi-level analysis research as it considers the individual, group and organizational level (Wilson and Akter, 2012). This means that the theory is suitable for the study as it is multilevel in nature.

TTF is focused on the technology features, the task characteristics and how they fit with each other and influence performance (Fuller and Dennis, 2009). The antecedents of TTF are task, technology and the individual as they interact with each other; however, the individual is not highlighted as much as task and the technology, the theory is presented as figure 11 below.

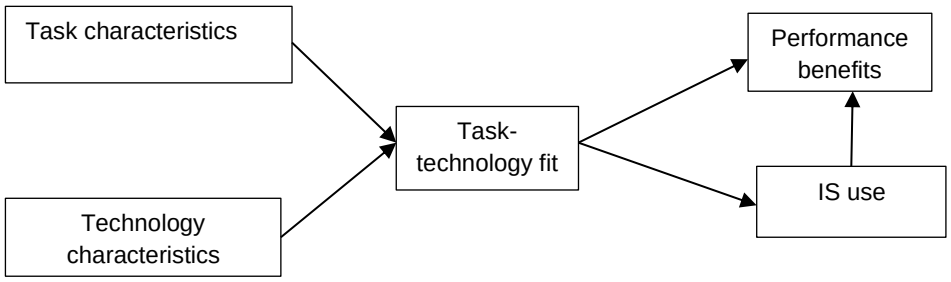

Figure 11: Task-technology fit model (Goodhue and Thompson, 1995)

Figure 11 depicts task-technology fit model, it asserts that tasks carried out by individuals can be defined as actions executed by processing inputs into outputs (Googhue and Thompson, 1995). Task characteristics include non-routineness (which is lack of analyzable search behavior) and interdependence (with other organizational units); another task characteristic to consider is task differences, which recognizes the different levels of users within organizations.

Technology is the tool, including software, hardware and data, and its support services (training, help desk) which are used to execute tasks (Goodhue, 1995). Technology attributes influence how individuals perceive and use the tool (Wilson and Atker, 2012). HRIS is used to process and execute HR functions to influence the performance of an organization.

Fit is defined as portrayal of a match between requirements of a task and the capabilities of the IS to support task accomplishment (Goodhue, 1995). Individuals who use IS that

has a better fit to the task perform better than those whose IS is a poor fit to the task (Maruping and Agarwal, 2004). Therefore, the better the fit of HRIS features for HR tasks, the better the performance outcomes, outcomes include HR effectiveness and efficiency. Task-technology fit then leads to HRIS use and subsequent organizational performance benefits.

Researchers such as Fuller and Dennis (2009) have used TTF to understand team performance on how fit and appropriation influence team performance over time. TTF was used with appropriation perspective and a model called fit-appropriation model was conceptualized. The study revealed that fit can predict team performance as teams adapt and innovate as they move along; a second finding is that teams could benefit from learning how to adapt existing technology and work structures for a better task-technology fit.

Another study was conducted by Wilson and Akter (2012) which was on TTF as a way to structure and evaluate the adoption of e-books by academics. The study is focused on the interrelationships of e-books, the affordances offered by smart readers, the information needs of academics and the fit of technology to tasks and subsequent performance. The study concluded that there is a positive impact of task, technology and the individual character on TTF for e-books in an academic setting.

Maruping and Agarwal's (2004) conceptual paper used TTF as a theoretical base for identifying how virtual teams match available ICT to different interpersonal interactions that they engage in and some propositions were suggested.

Lin and Huang (2008) examined knowledge management systems use antecedents by using TFF and SCT as theoretical foundations. The study revealed KMS self-efficacy as important for perceived TTF, personal and performance related outcomes.

Lastly, Larsen et al. (2009) examined the use of e-learning tool among university teachers, the study used TTF and post-acceptance model proposed by Bhattacherjee (2001). Their findings suggest a work-centric path through utilization construct and IS-centric path through user satisfaction.

TTF is suitable for this research as the theory acknowledges the fit between IS and task, and that the fit leads to IS use, further, the theory is used at both individual and organizational levels of analysis. Although the theory is positivist by nature, it will be used as a lens to understand how HRIS users use the system for their HR tasks and how the system fits those tasks.

3.7 The study's Conceptual Research Framework

After reviewing the theories commonly used in information systems research and those that often underpin HRIS adoption or use studies, this section now conceptualizes a blueprint for the present study. The conceptual research framework addresses the study elements that are pertinent to the adoption and those pertinent to the use of HRIS in a university context. Figure 12 captures these studied elements and places them accordingly.

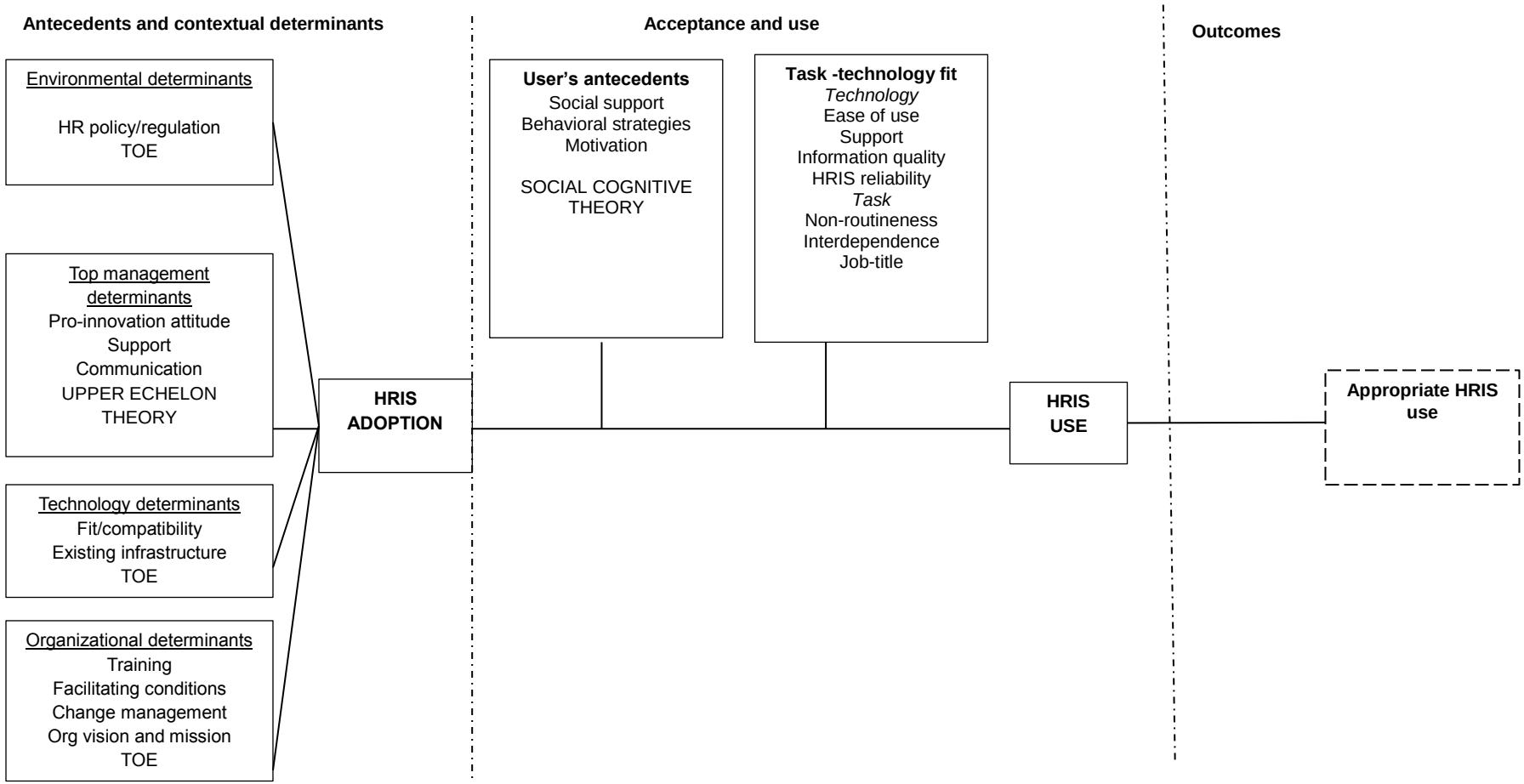

Figure 12: Conceptual research framework for HRIS adoption and use study in a university

Figure 12 is the conceptual research framework for HRIS adoption and use study in universities. The framework is made up of three phases; the first phase represents the antecedents and contextual determinants that influence HRIS adoption, the second phase represents HRIS acceptance and use and the performance phase as the outcome of both. The elements that make up the phases are discussed as follows:

3.8 Antecedents and contextual determinants influencing adoption

This section discusses the antecedents and contextual determinants influencing adoption, the sub sections include policy and regulation, pro innovation attitude, top management support, HRIS compatibility, communication, organizational strategy, facilitating conditions and change management plan is discussed last.

3.8.1 Policy and regulation

Troshani et al. (2011), Ruel and Kaap (2012) examined policy and regulation in a public sector setting and how that influences HRIS adoption; they assert that public sector organizations adopt systems that help them fulfil regulatory compliance and directive policy changes. In fact, regulatory requirements concerning industrial relations legislation can drive HRIS adoption especially with HR related systems. In this study, the policies studied included those of the university developed to address HR, HRIS and related strategies.

3.8.2 Pro innovation attitude

Pro innovation attitude is the perception that the IS is important and it will be beneficial for the organization to adopt and implement the innovation by top management in an organization (Thong and Yap, 1995). Therefore, organizational leaders' characteristics are expected to influence the adoption of an innovation (Damanpour and Schneider, 2009). Schalk et al. (2013) Agarwal and Prasad (1998); Thong and Yap (1995) have studied innovation attitude when adopting an IS and they discovered that top management qualities are the determinants of the overall management style of the organization, this positive attitude is often relayed to other organizational members. Pro

innovation attitude in this study is about the attitude of top management towards HRIS when it was adopted.

3.8.3 Top management support

Top management support is essential for innovation adoption (Premkumar 2003; Thong 1999; Teo et al., 2007; Troshani et al., 2011). Top management support is crucial to overcome possible internal resistance and allocate resources to assist facilitate HRIS adoption and ensure successful implementation. In this study, top management support is about initiatives such as training, manuals investments before HRIS adoption to ensure an easy transition.

3.8.4 Communication

Agarwal and Prasad (1998) and Jeyaraj et al. (2006) perceive communication as an important factor during IS adoption and use. Top management must inform organizational members of its plans to adopt and implement an IS and involve them in the processes if the adoption and use is to be successful. In this study, communication means management and operational employees' engagement with each other about HRIS during the adoption and use processes.

3.8.5 HRIS compatibility

HRIS compatibility has been studies by authors such as Teo et al. (2007), Troshani et al. (2011) and it was found to influence the decision to adopt HRIS, as the system must be compatible with the other systems, standards and work procedures and individual working styles in the organization. The study perceives HRIS compatibility as related to other university systems, the environment (internal and external) and the university's ways of doing things.

3.8.6 Organizational strategy

Hussain et al. (2007), Nagendra and Deshpande (2014), Grant and Newell (2013) have recognized the role played by HRIS in support of organizational strategy which enables the organization to achieve competitive advantage. The organizational strategy is often

related to or its part of the organization's *vision and mission*, Razali and Vrontis (2010), acknowledge the importance of HRIS to enable the objectives and plans that the organization wants to achieve. In this study, organizational strategies are university mandates and visions that they plan on achieving.

3.8.7 Facilitating conditions

Facilitating conditions can include aspects such as attributes of the innovation, the organizational context and culture, and the work task itself (Gallivan, 2001). Facilitating conditions have historically been defined as elements out there in the environment that enable IS adoption and use. Gallivan (2001), Ruel and Kaap (2012) have examined facilitating conditions in IS adoption and use and they their research indicate that facilitating condition make the adoption and implementation phases easier to manage. Facilitating conditions in this study refer to the internal environment and how they enabled or inhibited the adoption process.

3.8.8 Change management

Change management is often not payed attention to in organizations adopting technological innovations; transitioning the organization to a new HRIS is often a difficult task which might result in the failure of the system. Razali and Vrontis (2011), Dery et al. (2009) acknowledge the importance of change management during HRIS adoption in organizations. In this study, change management is the move from legacy systems to HRIS and how the process was handled retrospectively.

3.9 Acceptance and use determinants

This section is a brief discussion on some of the antecedents that influence HRIS acceptance and use as a dimension, these include perceived ease of use, motivation, HRIS use and information quality

3.9.1 Perceived ease of use

Mather et al. (2002), Brown et al. (2002), Hsieh and Wang (2007) demonstrated that in a mandatory use context, ease of use plays an important role in the acceptance of

technology and subsequent use. Perceived ease of use in this study refers to HRIS user's perception of the system to complete HR tasks.

3.9.2 Motivation

Motivation has been studied in IS research as a predictor of behavior and subsequent IS use (Bandura, 1997). Lantara (2016), Delaney and Huselid (1996) Bissola and Imperatori (2013) examined employee motivation to accomplish a desired goal. Bissola and Imperatori (2014) examined employee attitude and motivation towards HRIS in small and medium enterprises (SME's) and discovered that attitude and motivation are important in supporting the adopted HRIS. In this study, motivation refers to intrinsic or extrinsic motivation to use HRIS by the systems users to complete HR tasks in a mandatory use setting.

3.9.3 Information quality

Reddick (2009), Bondarouk and Ruel (2009), Al-Khowaiter et al. (2013) suggest that HRIS information quality is important in delivering relevant, up to date and easy to understand information to the individuals who request it. HRIS is suggested to facilitate the provision of quality information to management for informed decision making. Information quality in this study is the reports generated by HRIS for decision making, that is, the accuracy and currency of the information generated by HRIS for making decisions.

3.9.4 HRIS use

Qteishat (2014) suggests that in order for organizations to reap the benefits of electronic human resource management application, the systems must be used. Given what is known about these systems and their use, it should be possible for organizations to more effectively and efficiently coordinate the development of E-HRM systems to achieve desired organizational outcomes (Ruel et al., 2004; Marler, 2009). HIRS use in this study refers to the way users engage with HRIS to complete HR tasks.

3.10 Outcomes

Outcomes often refer to consequences of HRIS adopted and used in organizations, these include integration, seamless information delivery and return on investment (Sabau et al., 2009), centralized control (Lyytinen and Newman, 2015), strategic objectives or other consequences that management thought of when HRIS was implemented.

3.11 Chapter summary

This chapter looked at the role of theory followed by the nature of theory in IS research, various theories of IS adoption and use were discussed, the conceptual research framework for the study of HRIS adoption and use in a university was presented last. The framework addressed both the contextual determinants influencing adoption and use and possible outcomes. The conceptual research framework was used to guide during data collection.

The next chapter discusses the research methodology followed in the study of HRIS adoption and use.

CHAPTER 4: RESEARCH METHODOLOGY

Chapter three discussed popular IS theories and frameworks. It then conceptualized a research framework for studying HRIS adoption and use. This chapter continues from chapter three by discussing the research methodology that the study followed.

This chapter begins by discussing what ontology and epistemology is; this is followed by a discussion on the three popular philosophies in IS research, the research approach, the role of the researcher, the research strategy, study location, the unit of analysis, the population, data collection techniques and the time horizon.

The section that follows discusses the research philosophies; that is, ontology and epistemology.

4.1 Ontology and epistemology

This section briefly discusses what is meant by epistemology and ontology. Ontology is the form and nature of reality, and epistemology is the relationship between that reality and the researcher, nature of knowledge claims or what can be known (Carson et al., 2001). Andrade (2009); Guba and Lincoln (1994) assert that a researcher's epistemological and ontological stance must be made explicit before embarking on a research journey. The researcher is an interpretivist and as a result the study was completed within that paradigm and the paradigm could assist in uncovering insights that were previously overlooked. Table 3 below summarizes the research methodology for this study.

Table 4: Summarized view of the research methodology

Research Design	**Methodology**
Research philosophy	Interpretive
Research approach	Qualitative (inductive)
Research strategy	Case study
Unit of Analysis	Organization (SA University) at the adoption phase-and individuals at the use phase

Population	University employees including top, middle management and HR practitioners
Sample	Top management team Operations and finance management Central HR directorate management Middle management HRIS management Employee relations management Compensation and benefits management HR practitioners Faculty HR personnel (HR managers, senior HR officers, HR officers, HR administrators) General users Academic staff Non HR administrative staff
Time Horizon	Cross sectional Retrospective
Data Collection Methods	Semi-structured face-to-face interviews (one and one and a focus group) Field notes Document reviews
Data analysis	Latent level thematic analysis, content analysis

Table 3 is a summarized view of the methodological choices for this study. The next section describes each of the methodology components. However, before the table is discussed the section that follows discusses philosophical perspectives in IS research.

4.2 Philosophical perspective

Myers (1997) concluded that philosophical perspectives in information systems research could either be positivist, interpretive and critical realism in line with what is practiced in social research. Thus, the most important philosophical assumptions in social research are related to epistemology, which is known about knowledge and how that knowledge can be acquired. The three philosophical perspectives are discussed below.

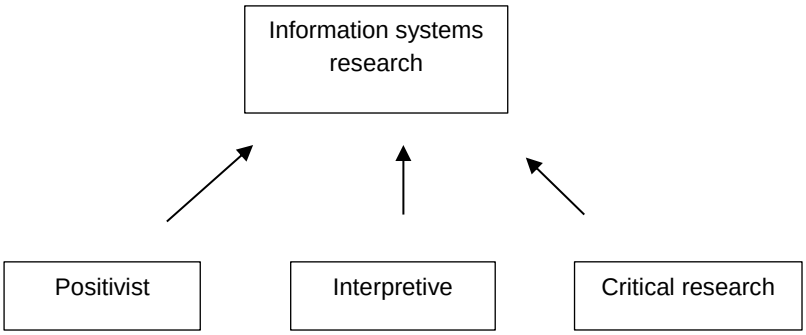

Figure 13: IS research philosophies (Myers, 1997)

The three philosophical assumptions differ in terms of sources and how knowledge is acquired, the nature of physical and social reality, and the relationship between theory and practice (Orlikowski and Baroudi, 1991). Following on this, the three philosophical paradigms are discussed below.

4.2.1 **Critical research**

Critical researchers assume that social reality is historically created and that it is produced and reproduced by people (Myers, 1997). Social and economic circumstances can be changed, although constraints such as cultural, political and social context play a role (Richardson and Robinson, 2007). Critical research is perceived as an alternative to traditional functionalist and managerialist approaches towards understanding IS, as it focuses on oppositions, contradictions and conflicts in society and seeks to be emancipatory and encouraging social change (Chua, 1986; Kincheloe and McLaren, 1994; Ngwenyama and Lee, 1997). Critical research is about socially critical research which challenges social conditions, institutions and oppressive norms of control, often enabled and supported by IS revealing hidden interests and agendas guiding IS such as ethics and value propositions (Cecez-Kecmanovic, 2011).

Alvesson and Deetz (2000) proposed three elements of critical research: *insight, transformative definition* and *critique*. *Insight* is about acquiring understanding of the social context of people and situations as done by interpretive, hermeneutics or archaeology studies. This includes a focus on social and power relations, micro-macro

aspects of phenomena, forms of domination, control and corporate culture. *Critique* is related to *insight* and suggests a deeper investigation beyond what is observed, this requires going deeper to reveal hidden interests and power dynamics. Transformative redefinition is represented the necessity to not only understand and critique; but also suggest alternatives to change the status-quo.

Further, Myers and Klein (2011) proposed six principles for conducting critical research, categorized as three for enabling critique and three for enabling transformation. The first three are related to critique; principle 1: The principle of using core concepts from critical social theories as lenses based on the problem at hand. Principle 2: taking value propositions for motivating and grounding the research such as, human rights, justice, equality, democracy etc. Principle 3: challenging and revealing social practices and beliefs, this is about habits, customs and conventions passed down by tradition and sources of authority and looks at how knowledge is conditioned and used as a source of power once it becomes available. The following three principles are related to transformation, principle 4: individual emancipation is about freeing individuals from repressive social and ideological conditions, realization of human needs and potential for identifying possibilities of change and assisting the powerless and exploited to have a voice and emancipate them. Principle 5: improvements in society starting with the individual, organization, institution, and ultimately society. Principle 6: improvements in social theories based on new discoveries and empirical data on current social changes and in response to a new theoretical reasoning and debate.

Critical research as a IS research philosophy is of value and importance. Myers and Klein (2011) further posit that critical research can add potential contributions to IS in the following ways: it allows fundamental criticism by questioning taken for granted issues, widely accepted assumptions at an individual to societal level, it’s the only research philosophy with values at the core of research undertaking, it gives researchers a chance to involves some intervention because of the methodologies that critical researchers could use e.g. ethnography, action research, lastly, critical research reveals a new dimension of richer meanings missed by interpretive research in the social order within a society. Therefore, this philosophy could assist IS research by adding richness and depth

to the IS field, as it was called “A missing paradigm” by Richardson and Robinson (2007) to highlight its importance.

4.2.2 **Positivism**

Positivist based research assumes that reality is objective and can be described by measurable properties independent of the researcher and the instrument for measuring reality (Myers, 1997). The following are terms with which positivists design and understand research (Creswell, 2008). The terms include causal relationships between variables, concepts and constructs, operational definitions, concepts which to measure or test the links, hypotheses to be tested and generalizable assumptions and population. Kolakowski (1972) and Goles and Hirschheim (2000) assert that positivism embraces a four point doctrine: 1, that the rule of phenomenalism which asserts that there is only one experience; all abstractions regardless of how they appear have to be rejected; 2, the rule of nominalism which asserts that abstractions, words, generalizations etc., are linguistic phenomena and do not give new insights to the world; 3, the distinct separation from facts and values and lastly the unity of the scientific method.

Further, Burrell and Morgan (1979) define positivism as an epistemology that seeks to explain and predict what happens in the social world by searching for regularities and causal relationships between elements and is sometimes referred to as natural sciences. Goles and Hirscheim (2000) concluded positivism is based on the following five pillars: unity of the scientific method, belief in empiricism, search for causal relationships, value-free scientific processes and lastly science as based on logic and mathematics. A majority of IS research is positivist; this is so with HRIS related research surveyed and documented in chapter two of the thesis and is not an appropriate philosophy for answering the research questions and objectives this study addressed.

4.2.3 **Interpretivism**

This paradigm is the one chosen for this study, interpretive research assumes that reality is accessible through social constructions such as language, shared meanings and consciousness (Myers, 1997). Studies within this paradigm attempt to understand phenomena through the meanings that people assign to it within a specific context where

things happen (Carson et al., 2001). It considers multiple realities, different actors' perspectives, the researchers' involvement, the context of the phenomena under investigation, the contextual understanding and the interpretation of the data by the researcher (Walsham, 1995; Carson et al., 2001). Interpretive research is philosophically based on hermeneutics and phenomenology (Boland, 1985).

According to Creswell (2008) the following are terms in which interpretivists design and understand research include: themes and concepts that emerge from collected data or participants' lived experiences, processes and relations between chosen concepts, research questions and observed in processes, experiences, views, perceptions, feelings of participants' lived experience in an unobtrusive and non-manipulated way within that context, context based or context limited studies.

Interpretivists believe that reality is socially constructed, with a continuous interaction between the researcher, what is being observed and constraints the researcher might encounter during the process (Lagsten and Goldkuhl, 2008).

The main character of IS interpretivist research knowledge is an *understanding* through processes of interpretation as the researcher interprets the existing shared meaning held by actors (Orlikowski and Baroudi, 1991). Klein and Myers (1999) outlined six principles for conducting interpretive field research; they are listed and explained below as:

> Principle 1: *the hermeneutic circle*; that is the iterative engagement between the parts that make the whole and the whole.
>
> Principle 2: *contextualization*, a critical reflection of a historical and social background as a way to inform the audience how the status quo came to be.
>
> Principle 3: *interaction between the researcher and the subjects* is about how the researcher got the data they have through interaction with the subjects.
>
> Principle 4: *abstraction and generalization*, abstraction and generalization are related to the data analysis phase of the research; abstraction is about unique instances that can be related to ideas and concepts that apply to multiple situations and generalization is the logic applied in describing interpretive results.

Principle 5: *dialogical reasoning* is about “prejudices” or preconceptions that the researcher used to guide the original research design with the data that emerge from the research process.

Principle 6: *multiple interpretations* requires the researcher to examine the social context by documenting multiple viewpoints with reasons along the way, they could include viewpoints related to power dynamics, values, economics etc.

Principle 7: *Suspicion* is concerned with interpreting meaning and not false preconceptions and it prompts the researcher to go beyond what the participants are saying by scrutinizing the social world the participant is saying from, as the social world is where there are power structures, limited resources and vested interests of others who control this reality.

These principles are derived from hermeneutics, anthropology and phenomenology and support the creation of hermeneutically based understanding (Goldkuhl, 2012). The seven principles were used during fieldwork planning, data collection and subsequent data analysis to assist the researcher during the different phases of the study.

The main objective is to acquire an understanding of how HRIS was adopted and how it is currently used in a university as a social environment. Therefore, an interpretivist paradigm is relevant. This understanding lies within the people who interact with the system and those who made decisions about the system during its adoption. The table below discusses the differences between positivist and interpretivist paradigm as popular paradigms often used in IS research.

4.2.3.1 Definitions and comparison of IS epistemology, ontology and methodology

Table 4 defines and compares IS epistemology, ontology and methodology based on positivist and interpretivist philosophies.

Table 5: Definitions and comparison of IS epistemology, ontology and methodology (Carson et al., 2001)

Ontology	**Positivism**	**Interpretivism**
Nature of 'being'/ nature of the world	No direct access to real world The researcher and reality are separate	Have direct access to real world. The researcher and reality are inseparable
Reality	Single external reality	No single external reality
Epistemology		
'Grounds' of knowledge/ relationship between reality and research	Possible to obtain hard, secure objective knowledge	Understood through 'perceived' knowledge, lived experiences
	Research focus on generalization and abstraction	Research focuses on the specific and concrete
	Thought governed by hypotheses and stated theories	Seeking to understand specific context
Methodology		
Focus of research	Concentrates on description and explanation	Concentrates on understanding and interpretation
	Detached, external observer	Researchers want to experience what they are studying
Role of the researcher	Clear distinction between reason and feeling	Allow feeling and reason to govern actions
	Aim to discover external reality rather than creating the object of study	Partially create what is studied, the meaning of phenomena
	Strive to use rational, consistent, verbal, logical approach	Use of pre-understanding is important
	Seek to maintain clear distinction between facts and value judgments	Distinction between facts and value judgments less clear
	Distinction between science and personal experience	Accept influence from both science and personal experience
Techniques used by researcher	Formalized statistical and mathematical methods predominant	Primarily non-quantitative

Based on table 4, the two popular paradigms in IS research; positivism and interpretivism are polar opposites of each other. Positivism is still a very common approach to research in IS, however this study is based in the interpretivist paradigm as the researcher aims to acquire an understanding of the context of HRIS adoption and use within a university environment. The researcher's ontological and epistemological stance is that reality is socially constructed, and there is an appreciation of the different constructions and meanings that people place on their experiences, with the aim to understand and explain the different experiences.

4.2.4 **Information systems epistemology**

Hirschheim (2007) posit that epistemology refers to how humans acquire knowledge-what knowledge is and how to obtain it. Becker and Niehaves (2007) conducted an extensive IS literature review on IS epistemology. From this review they came up with epistemological questions which are highly appropriate to the IS field. Question I, (the ontological question) the existence of a real world, the researcher does believe the real world exist, that is, the university where HRIS was adopted and in use. Question II, is about the relationship between "cognition" and the object of "cognition" this is about HRIS adopters and users and their perception of the system. Question III, is about the concept of truth and its importance when it comes to analyzing the influence of language on research (Lyytinen, 1985), truth and how it is expressed through conversation by HRIS adopters and users and to verify this truth, the researcher observed some of the participants when they interacted with HRIS and official university documents. Question IV is about the origin of knowledge and it's in those who have the experiences of making HRIS decisions and use the system to complete HR tasks. Question V is about the means of achieving knowledge (methodology) the study followed an interpretive, qualitative, case based methodology in order to get profoundness and depth from those who adopted and use HRIS currently.

4.2.5 Information systems ontology

First, I would like to distinguish between philosophical ontology and IS ontology, not to confuse which one this text is referring to but essentially, they refer to the same thing.

Philosophical ontology is defined as a piece of reality under investigation, or the nature of reality, how we seek truth (Zuniga, 2001). IS ontology is a formal language designed to represent a particular domain of IS knowledge (Ibid, 2001), or it can be defined as an explicit specification of a conceptualization (Gruber, 1995). Conceptualization is an abstract, a simplified view of the world. IS ontologies could describe *individuals*- basic or ground level objects, *classes*- sets, collections or types of objects, *attributes*- properties, features, or characteristics that properties can share, *relations*- the way the objects can be related to one another and *events*- the changing of attributes or relations. The above mentioned IS ontology concepts were used as an analysis to understand how HRIS was adopted and how it is currently used by different types of users within the university and how it is used is detailed in chapter five of the thesis. The section that follows discusses the role of the researcher.

4.3 The role of the researcher

Interpretivist researchers are tasked with the difficult task of assessing other's interpretations,their lived experiences, filtering through their own eyes and reporting back the version of events to others (Walsham, 1995). Interpretive research places a considerable emphasis on the researcher and is often part of the research process, the researcher as a subject in the research process (Carson et al., 2001). Further, Walsham (1995) posits that there are two types of roles interpretive researchers can take on; outside observer or involved researcher through participant observation or action research, neither of these approaches deems the researcher as an objective reporter, since the collection and analysis of data involves the researcher's subjectivity.

The outside observer role means there's some distance between the researcher and employees within the organization, perceived as an outsider, the importance of this role is that the researcher is seen as not having a direct personal stake in interpretations and outcomes. This can cause participants to be not so open about their views; access to confidential and sensitive information might be restricted and there might be a lack of direct sense of the organization from inside. Regardless, trust can be established and relationships formed as an outside observer.

The participant observer or action researcher (Walsham, 1995), is when the researcher is a member of the field organization, even if it's for a brief period. An advantage to this approach is that the researcher will have an inside view of the organization and it's easier to access confidential and sensitive information (Fink, 2000), a downside could be that organizational employees could be guarded and not express as they should.

Participant observer can hide their research motives once in the organization, but that is considered unethical and one is advised not to do such (Mumford, 1985), regardless, the researcher will still not be considered as a normal employee and not a complete insider. The researcher in this study was the instrument as the interview questions were developed by her. She was also a participant and although was not an active member of the university, she had access to the university employees and reports during data collection, and there were numerous visits to some of the participants before the interviews took place to establish trust and familiarity.

4.4 Research Approach

There are two popular research approaches used in IS research, these are qualitative and quantitative research approaches. The research approach assumed for this study is qualitative research approach; the next sub section discusses quantitative approach as an alternative to qualitative research approach.

4.4.1 Quantitative research approach

Quantitative research approaches are concerned with prediction, objectivity, control, outsider perspective and discovery of general laws (Burrell and Morgan, 1979). Quantitative research approach is usually associated with deductive processes, which are normally designed to test and falsify previously formulated theory through causal predictions with empirical data often using experiments and surveys as data collection strategies (Gill and Johnson, 2010). Quantitative research is similar to deduction processes and this is described in the subsection that follows.

4.4.1.1 Deductive process

Deduction, which is the opposite of induction, is about the development of a conceptual and theoretical structure before it is tested through empirical research methods, the process starts with an abstract conceptualization, testing through the application of theory in order to create new experiences and observations (Carson et al., 2001).

Below is figure 14 that illustrates the differences between inductive and deductive research processes.

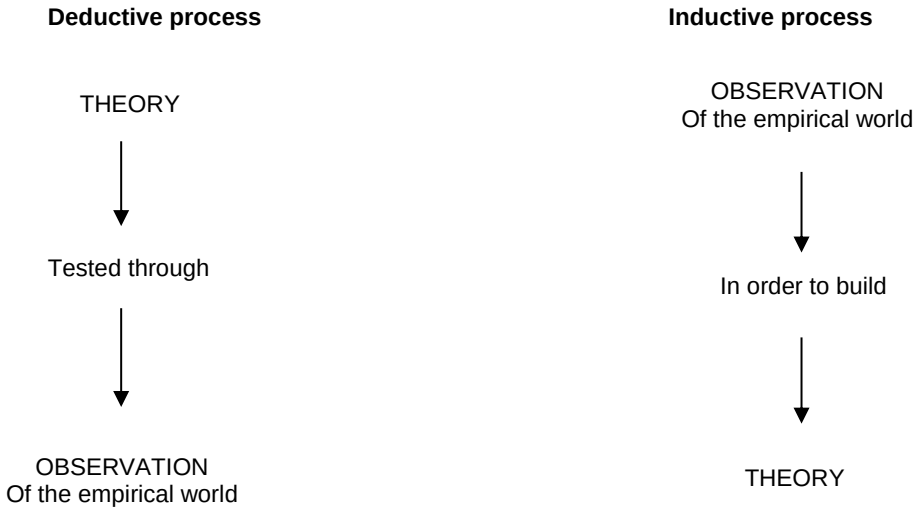

Figure 14: Deduction and induction processes (Gill and Johnson, 2010)

Deduction and induction processes as related to quantitative and qualitative research approaches are presented in figure 14. The research approach the study followed was qualitative with inductive processes, the research approach is discussed in the following sub section.

4.4.2 Qualitative research approach

The followed research approach for this study was qualitative approach with inductive processes. Qualitative research methodology typically involves a systematic and detailed study of individuals in natural settings, often using interviews intended to prompt detailed, profound accounts of the participant's perspectives and experiences of specific events

and situations (Kaplan and Maxwell, 2005), it produces descriptive data. Qualitative approach is usually contrasted with quantitative research methodology, quantitative research methodology leans more towards the natural sciences to study phenomena, quantitative methods are accepted in the social sciences and these include surveys, laboratory experiments, formal methods and mathematical modelling (Myers, 1997).

4.4.2.1 Inductive process

The inductive process allows data to guide the research and theory building; it involves observation of the empirical world to allow construction of explanation and theories about what has been observed (Gill and Johnson, 2010). Inductive research is related to qualitative research approach discussed as, action research, case study research, ethnography and grounded theory (Myers, 1997). These approaches employ the following techniques as data sources; participant observation, interviews, documents and text, questionnaires and the researcher's mind, and they share the following characteristics as related to the research strategy (Chesebro and Borisoff, 2007):

> *Natural setting*, the research is conducted at the place of enquiry, investigation and data collection takes place where the participant's lie or work, so as to capture or observe the situation or events as they happen. The natural setting of HEIS adoption and use was in the university, in the participant's offices and that's where the interviews took place.
>
> *Researcher as participant*, the researcher is part of the research process and is considered the "human instrument" (Walsham, 1995) as the researcher is trying to understand the meaning participants attach to things in their life.
>
> *Participant-based communication*, the participant's guide the communication process and the topics discussed during the interview process and transition from a topic to the next. As the interviews were semi-structured, it gave the participants openess to engage with some of the topics the research did not cover with the interview questions

Participant intentionality, preserving and accurately interpreting what the participants meant by engaging with the participants, this includes interpreting the language, symbols and tools associated with interpretive or qualitative research.

Pragmatic, results from qualitative research could provide insights into social processes and outcomes, and contribute to theory development.

Despite the above characteristics of qualitative research methodologies; there are several reasons for using qualitative research methodologies in IS and these include, *understanding how a system's users perceive and evaluate what meanings they attach to the systems* qualitative research gives an in-depth understanding and explain users' behavior towards the system (Kaplan and Shaw, 2004).

Understanding organizational and social influence on system use as IS do not exist in isolation and to consider the context in which IS are implemented into (Rogers, 2003). The conceptual research framework helped greatly in this regard as it provided some contextual determinants of HRIS adoption and use.

Investigating causal processes, qualitative studies do a follow up to the "what" questions posed by quantitative research by uncovering the "how", therein revealing processes of how things happen and events (Cook, 2002). The participants were open in discussing most of the questions that the researcher asked, however some were hesitant to agree to the interviews.

Increased use of results from research, policymakers, practitioners, system designers and administrators could use qualitative research findings as a guide in the work they carry out (Patton, 2002). The results from this study are aimed at top management and policy makers in the country and subsequent organizations on how IS could be adopted and used so as to derive value from such investments.

Kaplan and Maxwell (2005) assert that qualitative research usually addresses questions such as *what is happening here, why is it happening, how has it come to happen in this particular way, what do the people involved think is happening, how are they responding to what is happening, why are they responding that way?* To

attempt to answer such questions qualitative researchers formulate an understanding about the way people perceive, conceptualize and make sense of what is happening is a specific situation. The understanding often includes everyday behaviors, routines, and attitudes as the people involved go about their daily lives (Hirschheim and Klein, 1989). This study uncovered an in-depth understanding of how HRIS is adopted and used in universities, and why things happen the way they do based on participant's attitudes, behavior and lived experiences during the two phases of adoption (retrospective) and current use of the system.

The research approach was discussed, the section that follows describes the research strategy that was suitable and was followed for this study based the selected research approach.

4.5 Research strategy

The research strategy followed for this study is a case study of a university in South Africa. According to Feagin et al. (1991), case studies are ideal when an in-depth, holistic, exploration is required. The subject being investigated is usually a "contemporary phenomenon in its real-life context" (Yin, 2009:13). A case study is therefore an intensive investigation of a phenomenon in its natural setting, and often makes use of a variety of data sources (Benbasat et al., 1987; Tsang, 2014). Cavaye (1996) further adds to the description of case research as a study of phenomena in one of the few sites using qualitative tools and techniques for data collection and analysis. This view assumes case research as following an interpretivist way of doing things; however, it must be acknowledged that case studies have been advocated for use in positivist studies such as (Yin, 2009; Dubé and Paré, 2003). Yin (2003) says that a case study can be an individual or organization, as primary units of analysis.

4.5.1 When is a case study approach appropriate?

A case study is concerned with depth unlike a survey which is about statistical power to test a model (Tsang 2014). Interpretivist case research is about collecting in-depth data through various sources. Further, Yin (2003) asserts that a case study is appropriate if

When you want to answer “why” and “how” questions

The researcher cannot manipulate the behavior of participants

Cover contextual conditions as they are deemed to have an impact on the phenomenon

No clear distinction between phenomena and context

Based on profoundness needed to understand and describe HRIS adoption and use, with the guide of the interpretivist philosophy, a case study approach with qualitative research methodologies is appropriate to uncover that reality.

4.5.2 Characteristics of case study research

Case study research has particular characteristics that distinguish it from other forms of research strategies and according to Ellinger et al. (2005) they are:

Bounded, case studies are usually focus on an individual, a group of individuals, an organization or a couple of organizations. The research questions determine the boundary of the research. The boundaries for the study are within the university with a focus on both the organization and individuals within it.

Embedded, a case is often embedded in social systems; a significant part of a case is a thorough description of boundaries and the context. The context of a case can be an industry it operates in, an organization or a population. The case is an organization a university that adopted HRIS and is used by its employees to complete HR related activities.

Multivariate, case studies typically examine multiple variables and their interaction in order to provide a holistic understanding of an event or situation. The conceptual research framework presented in chapter three of the thesis gives an idea of the variables that the researcher was cognizant of when formulating interview questions and during data collection.

Multidisciplinary, multiple perspectives are often used to understand phenomena of interest, as an example, organizational research often uses theories from different disciplines to understand organizational dynamics. The theories used as lenses for

the study are at different levels of analysis and come from different fields such as psychology and sociology, therefore contributing the multidisciplinary nature of case studies.

Multimethod, a combination of methodologies could be used in case research to collect data; these include interview, observations, questionnaires, document analysis, psychometric instruments etc. Data was collected using interviews, official documents and field notes; this complements the multimethod nature of data collection in case based research,

Multisite, organizational research provides an opportunity for case research to be conducted at multiple sites, which allows for some comparison between the sites of a single organization. Although data was collected at one site but at different levels and functions, the university has staff at about four campuses around the province that they need to consider when it comes to HR and HRIS related matters. Further, the university has three levels of HR and HRIS to be cognizant of, this means the case is complex.

4.5.3 Types of case studies

Depending on the research question, it's important to determine the type of case study that is best suitable for addressing the question posed (Baxter and Jack, 2008). Yin (2003) and Stake (1995) have categorized the types of case studies that one can adopt in answering a research question, Yin recognizes case studies as descriptive, exploratory, explanatory and further, he distinguishes between single, multiple and holistic case studies. Stake identifies case studies as collective, instrumental and intrinsic. Table 6 distinguishes and defines the case study types.

Table 6: Definitions of different types of case studies (Baxter and Jack, 2008; Flyvbjerg, 2006)

Case study type	Description
Explanatory	Explanatory case studies are used were used to answer questions that explain presumed causal links in real-life interventions that are too complex for survey or experimental strategies (Yin, 2003). An example of this type of case study is Joia (2002) conducted a study that was explanatory on e-commerce learning community.

Exploratory	This type of case study is used to explore situations in an attempt to understand and explain what the case is about (Yin,2003)
Descriptive	Descriptive case studies give a detailed account of the case in its real life context, and may be in a narrative format (Yin, 2003)
Multiple-case studies	Is used primarily when the researcher wants to compare and contrast similarities and differences between and within cases, it can be also used to draw generalizations and predict similar results across cases (Baxter and Jack, 2008)
Intrinsic	Intrinsic case studies are defined as a researcher's interest in the case, it is not chosen because it represents other cases, it represents a particular case or problem, it might even be ordinary, interest alone in this type of case is enough (Stake, 1995)
Instrumental	Instrumental cases are often used to accomplish other things other than providing an understanding into an issue or build a theory, the case is often at in depth, examining the context and activities detailed as it assists the researcher pursue external interest (Stake, 1995)
Collective	Collective cases are similar in nature and description a couple of case studies (Yin, 2003)
Extreme/deviant cases	This type of case study is used to obtain information on unusual cases, the case can be unique and it could either be a problem for the researcher or be good, depending on how it's used (Flyvbjerg, 2006)
Maximum variation cases	This case study is used to obtain information about the significance of differences on processes and outcomes, an example of this case is that there could be three to four cases that are different on organizational size, location, budget etc. (Flyvbjerg, 2006)
Critical case	A critical case is defined as having a strategic importance in relation to the general problem, it gives information that general deduction can be made from "if this is (not) for this case then it applies to all (no) cases" (Flyvbjerg, 2006)
Paradigmatic cases	Paradigmatic cases establish or highlight more general characteristics of the society observed, and operates as a reference point , a focus for the founding of schools of thought (Dreyfus et al., 2000)

Despite the types of case studies mentioned above, a researcher normally decides if a case study or various case studies will better answer the research questions posed. The case study is exploratory as the objective is to understand and explain HIRS adoption and use in a university.

This is a case study of a university with multiple case units within it; these include HR and HRIS directorates at central level and faculty HR departments. Since one of the aims of this study is to build theory, then the argument that, a case study of a university with multiple case units within it is sufficient for the purpose. In addition, the aim of the study is not to compare cases, hence the relevance of case study of a university. This can be done with a profound, holistic understanding of HRIS adoption and use in its natural setting to get rich data and profoundness.

4.5.4 Misconceptions about case study research

According to Flyvbjerg (2006) there are five general misconceptions about case study research and they are described as:

General, theoretical (context-independent) knowledge is more valuable than concrete, practical (context-depended) knowledge. The closeness of the case study to real-life is important for a development of a reality nearer to daily life as compared to theoretical knowledge; a case study approach is especially suited to produce context dependent knowledge (Cavaye, 1996).

One cannot generalize on single cases; therefore, case research cannot contribute to scientific development. Generalization in interpretivist case studies is not about generalizing results on the general population but about: concept development, theory generation, drawing on specific implications and contribution of rich insights (Walsham, 1995; Lee and Baskerville, 2003). Since the aim of this study is to build theory, it fits well with generalization of interpretivist view of case study generalization.

A case study is suitable to be used at the first stages of the research process for hypotheses generation, whereas other methods are suitable for hypotheses testing and theory generation. Again, this is not totally true, depending on the type of case you choose or the one that emerges, Eckstein (1975) argues that case studies are valuable at all stages of the theory building process, but they are most valuable at the theory building stage where the least value is when testing theory but building it.

Case studies contain a bias towards verification; a tendency to confirm a researchers preconceived ideas. Flyvbjerg (2006) emphasize that it is falsification not verification that characterizes case study research, again, subjectivism and bias towards verification applies to all research methods not just qualitative based approaches such as case studies. Further, case studies have their own rigor, although different but not less rigorous than those of quantitative based methodologies.

It's often difficult to sum up and develop general propositions and theories on specific case studies. Case studies are often difficult to summarize, especially case processes. However, case outcomes can be easily summarized. Case studies are

often described as narratives which capture the complexities and contradictions of real life. Since the misconceptions about case studies have been demystified, the strategy is appropriate for this study and the following subsection details the relevance of a case study.

4.5.5 Case study relevance

This study sought to understand how HRIS is adopted and used in a university. Preliminary investigations revealed that HRIS (as part of an ERP) that was adopted is not a typical higher education system such as ITS (integrated tertiary software), which is adopted and used by a majority of higher education institutions in South Africa, this makes it a unique and interesting case. The multidimensional and multilevel nature of the study allowed the researcher to understand and explain HRIS adoption and use within the different university departments/units affected/infecting HR/HRIS from top and middle management to HR practitioners at faculty level and general users of the system.

Further, to highlight the importance of HRIS within the university, there is a dedicated department that is for the purpose of managing the system. The researcher felt that with how things are in the university, it's a unique and interesting case that must be explored and understood, hence the choice of a case study of a university with multiple case units.

Further, the interaction of the researcher and participants in their natural setting allowed the researcher to make insightful discoveries that would not have been possible if survey data were used from a large group of participants followed by statistical analysis.

After explaining what a case study is and its relevance to this study, the section that follows discusses the study location, to have a context of where the study took place.

4.6 Study location (Case description)

The case presented in this research is a university within South Africa; University of the Witwatersrand or Wits University as it is commonly known. The university provided an

opportunity to study how HRIS was adopted and how it is used currently. The University of the Witwatersrand is the location of the case study. The University of the Witwatersrand has a strategic vision called "*vision 2022*" and one of their objectives is described as:

> "*Wits aspires to be a leading world-class research-intensive university in Africa, firmly embedded in the international top league universities by 2022"*

Wits seeks to position itself as an information technology (IT)-savvy university that uses technology to enhance all its core processes, one being talent management. In 2014, the University approved a comprehensive institutional IT strategy that seeks to invest R650 million in the next five years in ICT. The university is busy implementing a new "ICT strategy that will move the University towards achieving its 2022 goal". This ICT investment will assist Wits to enhance quality and availability of ICT services, manage data, and the ERP system; the ERP system includes HRIS (Wits University annual report, 2014). Wits University has acknowledged, in its documents, that in order for the university to meet its expectations, there needs to be a focus on how technology (in the study's context HRIS) could assist in bringing about this shift. The efficiency and effectiveness of how employees use the system influences this thinking directly, for the systems to function optimally, they must be adopted and used for their intended purpose. In order to understand the university better, the management and HR structure at faculty level and central are discussed next.

4.6.1 The university's management structure

The university structure plays a role in how decisions are made; this is a typical structure in most of the universities in South Africa, with a few differences here and there. Figure 15 below represents the university's management structure

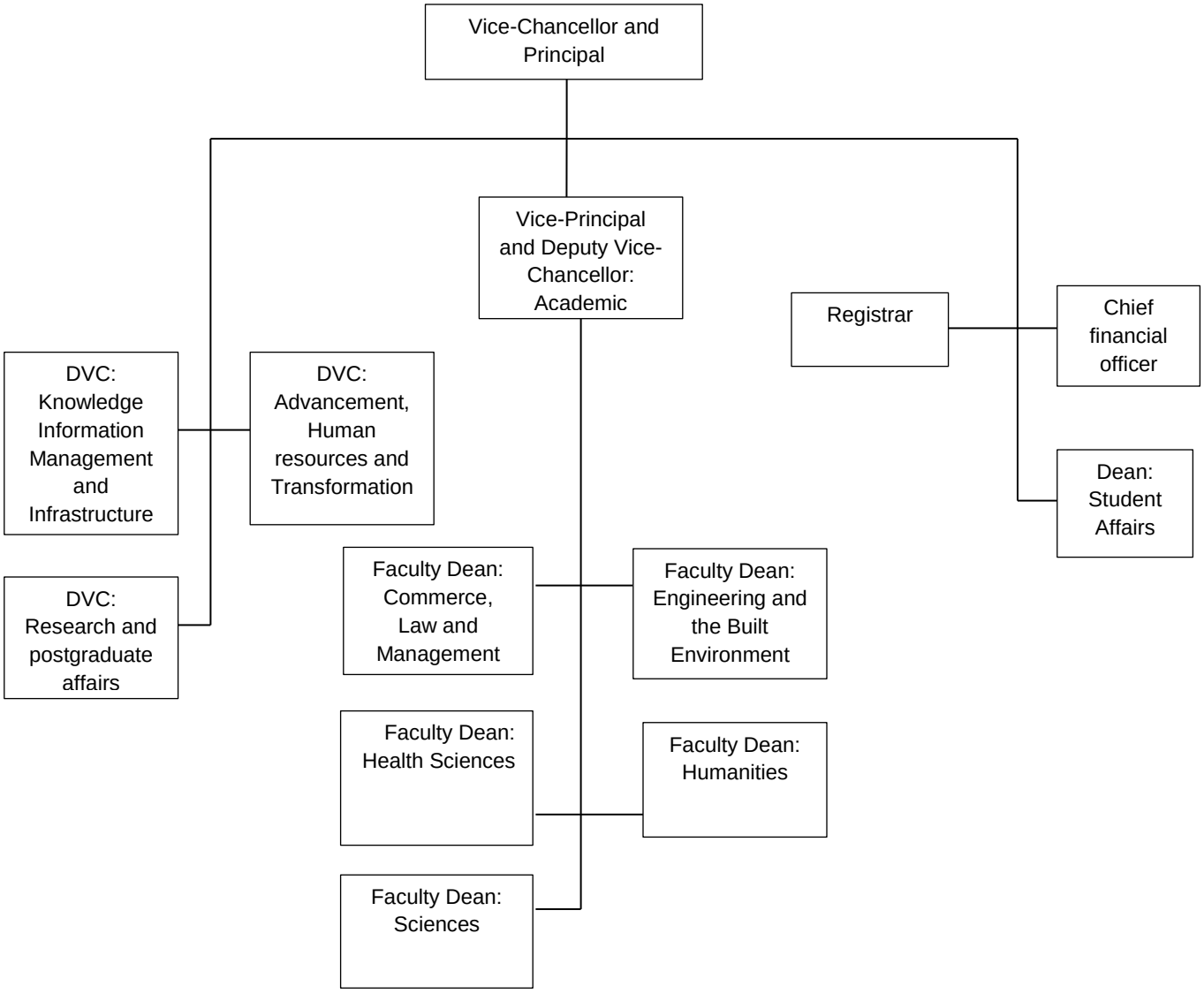

Figure 15: The University's management structure (Wits annual report, 2014)

Figure 15 represents the university's top management team, the Vice-Chancellor at the top, followed by the deputy Vice-Chancellor academic, Deputy Vice-Chancellor advancement, resources and transformation, Deputy Vice-Chancellor information management and infrastructure and Deputy Vice-Chancellor research and postgraduate affairs. There's the registrar, chief financial officer and dean of student affairs and under the vice principal are deans at faculty level. The figure's purpose is to highlight the case units within the university starting at top management, through to faculty level. Further,

the figure highlights the importance of HR within the university as it has its own directorate in the top management below the Vice-Chancellor.

4.6.1.1 The University's central HR structure

Figure 16 below represents the university's central HR structure as a follow up to the university structure posted above and will be described in detail below

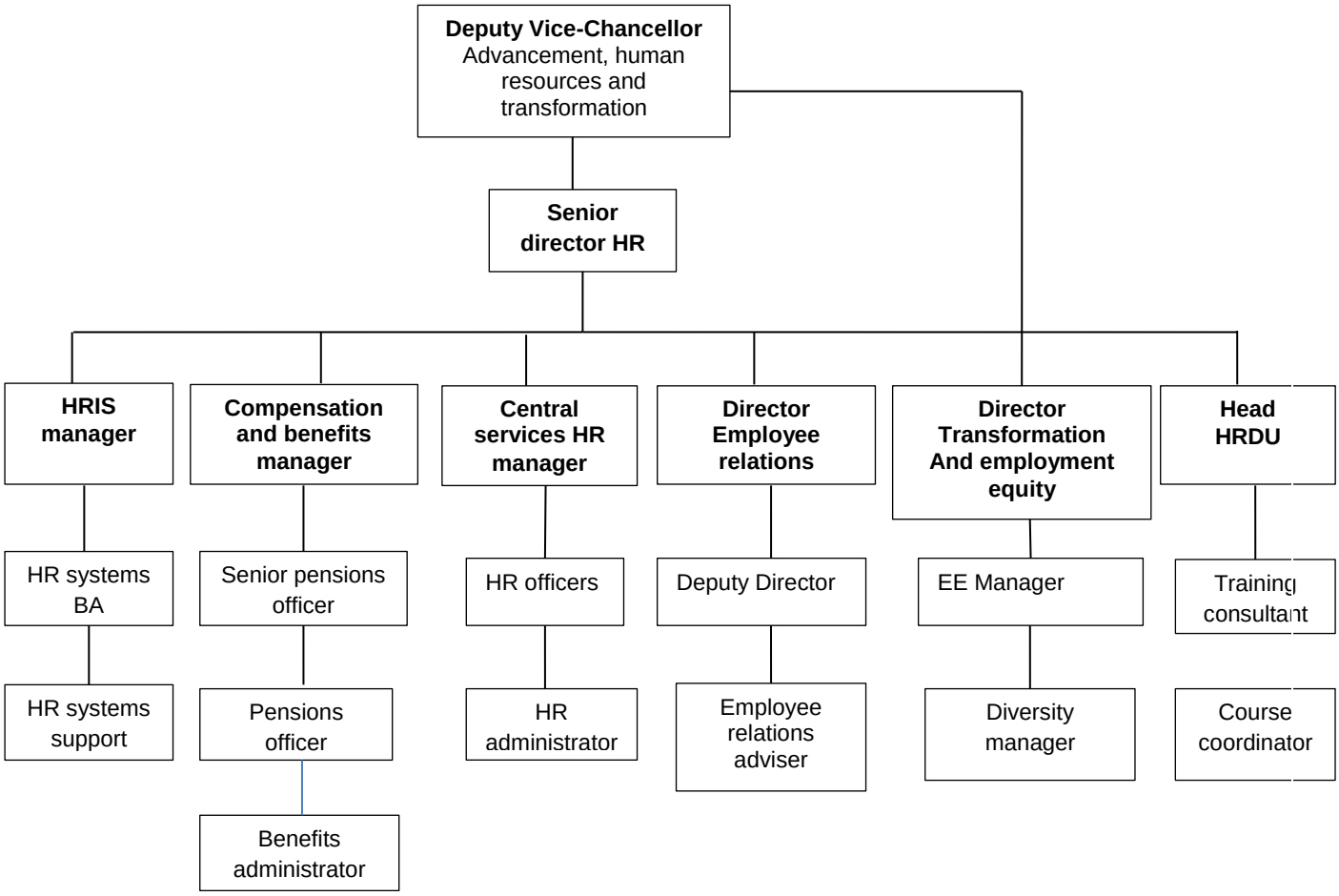

Figure 16: University's central HR structure (Wits annual report, 2014)

The university's central HR structure starts at the Deputy Vice-Chancellor: advancement, human resources and transformation, HRIS manager and subordinates, compensation and benefits manager and the division's officers, central cervices manager with HR officers and administrators, director employee relations with the deputy director and advisors and the head of HRDU. The director of transformation and employee equity has

an employment equity (EE) manager and diversity manager report directly to the DVC and not the HR director like the other divisions that report to the HR director.

Figure 16 represents HR at the central level, this is the level just below top management, this once again is to highlight the size of the university and the different case units that make up the study.

4.6.1.2 Faculty level HR structure

As a follow up to the central HR structure discussed above, the faculty HR structure is presented below.

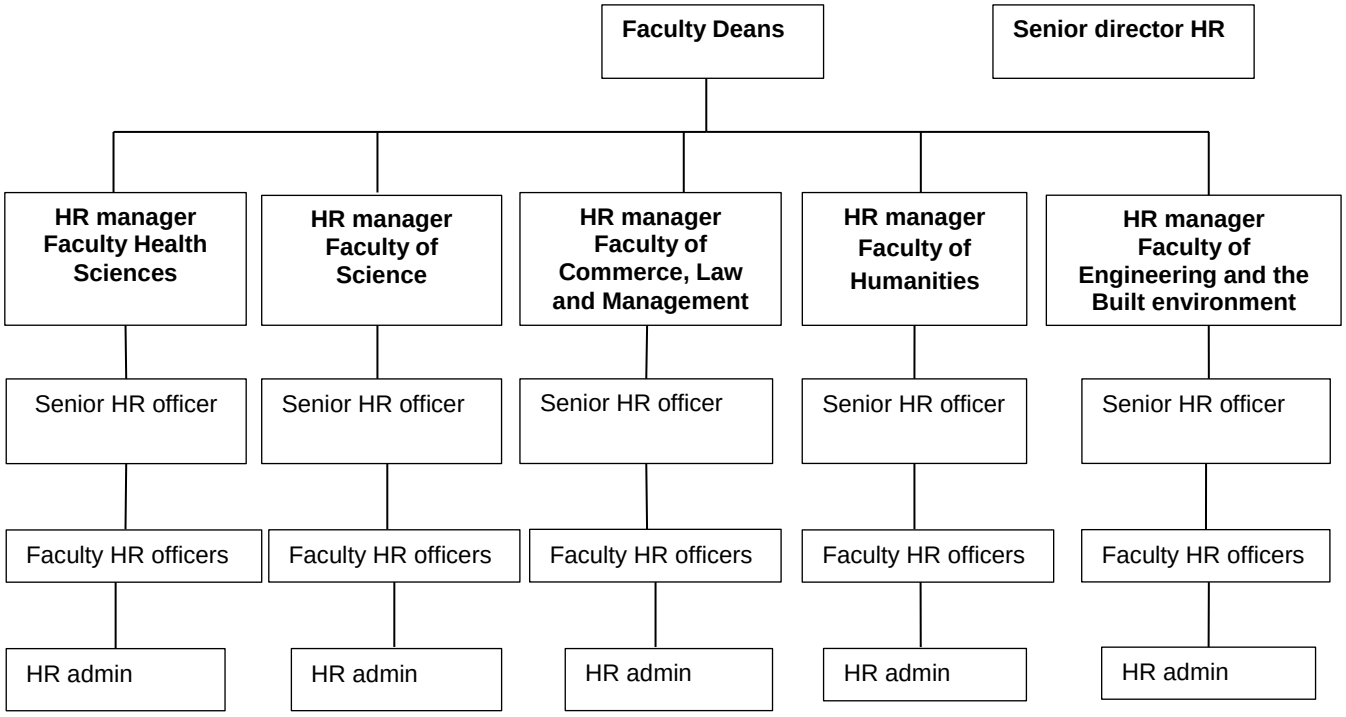

Figure 17: University faculty HR division (Wits Annual report, 2014)

Figure 17 represents the university's faculty level HR structure; at the top is faculty deans; followed by HR managers within each faculty, the HR managers are then supported by the senior HR officer, faculty HR officer and HR administrator. The section that follows discusses the unit of analysis.

The three levels as depicted by diagram 15, 16 and 17 as HR within the university highlight the multilevel and complex nature of HR and HRIS and how all these different case units and their levels are part of the case study.

4.7 Unit of analysis

Because of the multidimensional and multilevel nature of the study, the unit of analysis is both the organization and individuals. The adoption phase analyzed the organization, the university. The use of HRIS is analyzed at an individual level with HRIS users who interact with the system to complete HR tasks. The section that follows discusses the study population and the sampling strategy.

4.8 Study Population

Seawright and Gerring (2008) define a population as subjects or members that conform to a set of specifications that could provide the richest and most relevant information. The population comprised university employees who are familiar with or use HRIS. Because of the multidimensional and multilevel nature of the study, the population was chosen to address HRIS adoption dimension as limited to those involved in executive decision making while HRIS use dimension population was everybody in the university who uses or supports HRIS.

HRIS use involves all the levels within the university, which is top and middle management and HR practitioners and general users who use the system to complete HR tasks, with each level using the system in ways different from the other. The section that follows discusses the sampling procedure and popular sampling strategies.

4.9 Popular sampling strategies

Choosing a study sample in a research project is necessary; it is efficient and ethical, as one cannot study entire populations (Marshall, 1996). A sample is a smaller group of a population, using the correct sampling methods allows the researcher to reduce costs, research efficiency, have greater flexibility, greater accuracy and access to information required for the research (Latham, 2007). There are two categories of sampling techniques, probability and non-probability sampling (Lohr, 2009). Probability sampling is about selecting a sample that is representative of the population in order to generalize to

the entire population, which can be inferred as sampling for quantitative methods. Whereas non-probability sampling is about selecting a sample that will assist the researcher in answering research questions under investigation and can be inferred to as sampling for qualitative methods (Devers and Frankel, 2000). Figure 18 below represents both probability and non-probability sampling methods.

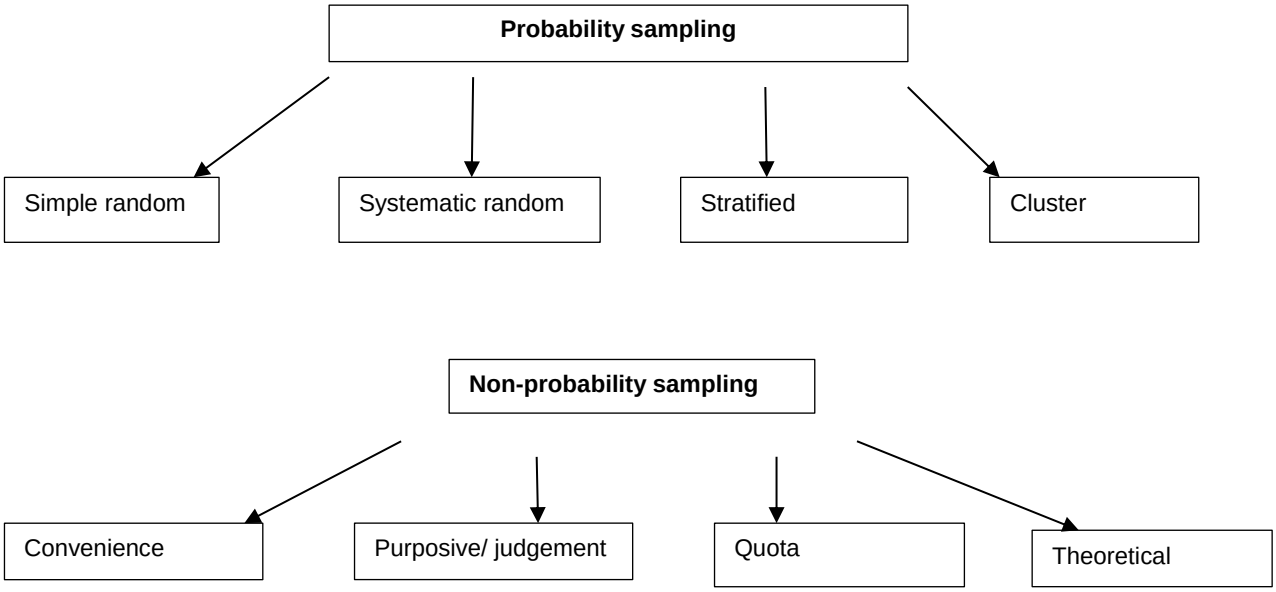

Figure 18: Sampling methods (Latham, 2007)

Figure 18 represents sampling techniques used in IS research, and the sampling methods are categorized as probability and non-probability sampling and will be discussed below

4.9.1 Probability sampling

Probability sampling is often associated with quantitative approaches where a sample is chosen as a representative sample from the population, to generalize and every subject has an equal chance of being selected (Henry, 1990). There are four types of probability sampling, simple random, systematic random, stratified and cluster sampling.

4.9.1.1 Simple random sample

Simple random sampling often called straight random sampling and requires each member of the population has an equal chance of being selected (Thompson, 2012). A simple random sample is selected by assigning a number to each member in the population and has a chance of being selected.

4.9.1.2 Systematic random sampling

This type of sampling techniques includes “selecting sampling units in sequences separated on lists by the interval of selection” (Särndal et al., 2003: 21). The separating rate is used in sequence to select sampling units. A disadvantage of systematic random sampling is that the population list for arrangement order could result in possible bias if the arrangement is not in order.

4.9.1.3 Stratified random sampling

The population is divided into subgroups or “stratas” and a random sample is selected from each subgroup (Fink, 1995:11). The population is arranged according to certain characteristics or categories then a random sample may be selected from the subgroups, which might include religion or gender as an example (Babbie, 1990). There is proportionate and disproportionate stratification, proportionate is often done to ensure representation of groups and uses the same fraction for each subgroup, disproportionate sampling uses different fractions for each subgroup (Latham, 2007).

4.9.1.4 Cluster random sampling

Cluster sampling is similar to stratified sampling but the difference is that cluster sampling is about the natural occurring groupings such as schools in a specific area, and data is collected from the groups (Henry, 1990). Within cluster sampling there is multistage sampling, multistage sampling involves two stages; stage one is about selecting clusters randomly from the population and stage two is about selecting individuals from the clusters (Frey et al., 2000).

Probability sampling techniques are focused on generalizing and are often used for positivist, quantitative research and such methods are not suitable for this study.

4.9.2 Nonprobability sampling

Nonprobability sampling is subjective in that the researcher decides which units of the population to include in the study, and if the focus of a study is not to generalize, nonprobability sampling will be suited better (Henry, 1990). The aim of nonprobability sampling is to identify specific groups of people who either possess or live in circumstances relevant to the social phenomenon studied (Mays and Pope, 1995). Sandelowski (1995) asserts that all qualitative sampling is purposeful. Nonprobability sampling types according to different authors are listed below.

Table 7: Nonprobability sampling techniques based on various authors (Latham, 2007)

Author	Types on nonprobability sampling
Babbie (1990)	- Purposive or judgemental sampling - Reliance of available subjects (convenience) - Quota sampling
Henry (1990)	- Convenient samples - Quota sampling - Typical case samples (purposive) - Critical case samples (purposive) - Snowball sampling - Most similar/most different samples (purposive)
Marshall (1996)	- Judgement - Convenient - Theoretical
Fink (1995)	- Quota sampling - Snowball sampling - Convenience - Focus groups
Frey et al. (2000)	- Convenience - Volunteer - Purposive - Quota - Network (snowball)
MacNealy (1999)	- Purposeful sampling - Convenience sampling - Snowball sampling

Nonprobability sampling allows the researcher to select the most suitable participants related to phenomena under study. Different authors give different names to non-probability sampling as demonstrated on the table above but essentially, they mean similar things (Latham, 2007). This means the researcher chooses a sample based on the purposes of the research. These will be described in the section to follow.

4.9.2.1 Convenience sample

This type of strategy is based on accessibility of research subjects, however it is the least rigorous technique and it usually saves the researcher time, money and effort but this might result in poor data and lacks credibility. It is the most popular with interpretivist, qualitative research (Marshall, 1996). The participants are usually readily available and agree to participate in the study (Fink 1995; Henry 1990), it is also often called accidental (MacNealy, 1999), Frey et al. (2000) refer to convenient sample as accidental or haphazard it and it's reliant on available subjects.

4.9.2.2 Theoretical sampling

Theoretical sampling technique is when the sample is chosen based on the theory that the researcher chooses for the research (Marshall, 1996). Due to the interactive nature of qualitative research, samples are often theory driven to a certain extent. Coyne (1997) asserts that often purposeful, selective and theoretical samples are often viewed synonymously, however they are different. Theoretical sampling is defined as a process of data collection where the researcher collects, codes and analyses data simultaneously, this sampling techniques has its roots in grounded theory (Coyne, 1997).

Part of theoretical sampling in the initial stages is that the researcher will go to individuals or groups that the researcher believes might give data and leads for more information, based on this the researcher approaches people believed to be more knowledgeable (Glaser, 1978). Participants are chosen based on the objectives of the study guided by the theory used for the study.

4.9.2.3 Snowball sampling

Snowball sampling is often referred to as "network" sampling (Frey et al., 2000:133). It identifies cases of interest identified by someone who knows a certain person who has the necessary experience or expertise (Palinkas et al., 2013). Another way of carrying out snowball sampling is identifying previously used participants and asking them to identify others who might have information on the phenomena under study (Latham, 2007). It's a one participant leads to another one approach.

4.9.2.4 Quota sampling

Quota sampling is when the population group is subdivided into subgroups; the subgroups can be divided according to categories such as gender, age and race (MacNealy, 1999). Quota sampling is often compared to stratified sampling technique.

4.9.2.5 Purposive sampling

Purposive sampling is also referred to as judgmental sample and it's the most popular sampling technique for qualitative research, the researcher seeks the most productive sample to answer research questions (Marshall, 1996). Henry (1990) asserts that purposive sampling has three methods; most similar/dissimilar cases, typical cases and critical cases, each type of purposive sampling is used based on the objectives of the study. Marshall (1996) affirms that purposeful sampling could be used in studying a broad range of subjects (maximum variation sample), outliners (deviant sample), subjects with special expertise (key informant sample), subjects with specific experiences (critical case sample), further; at the analysis and interpretation stages of the study it's important to consider subjects who support emerging explanations and subjects who disagree (confirming and disconfirming samples).

Purposive sampling is the most popular sampling technique for qualitative researchers (Devers and Frankel, 2000). Purposive sampling strategies are designed to enhance an understanding of individual or a group's lived experiences by selecting information rich participants that will provide the greatest insight into the research question posed (Patton 2002).

Sampling techniques employed depend on the research questions, objectives and population of a study (Saunders et al., 2011). The sub section that follows discusses the study sample and sampling strategy for this study.

4.9.3 **Study Sample and Sampling strategy for the present study**

Theory based purposive sampling is the sampling strategy followed for this study and this is discussed below as:

4.9.3.1 Theory based purposive sampling strategy

Theory based purposive sampling as the sampling strategy followed for this study, involves finding indicators of the theoretical lens elements of interest to observe and elaborate more on the theory elements in the context of the study (Palinkas et al., 2013). The researcher selects the sample according to the needs of the study (Morse, 1994). The theory sample is based on the conceptual research framework for the adoption and use of HRIS is universities, which was discussed in chapter 3. The purposive sample was chosen based on their knowledge and lived experiences during HRIS adoption and its use in the university, these together formed the theory based purposive sample for the study.

In addition to the top management team, the university has five faculties. Thus, the participants for this study were purposively picked from top management and from one of the faculties in the university. These included faculty HR management, faculty HR personnel and general HRIS users. The sample picked gave a holistic picture of how HRIS was adopted; what purpose it was supposed to serve, how the adoption influences its current use, how it's supposed to support HR activities, how it's currently used and how it could be used effectively.

4.9.3.2 Study participants

The study participants consist of central HR directorate management, HRIS management, employee relations management, compensation and benefits management, and at the faculty level is HR management, senior HR officers, HR officers and HR administrators, in order to ensure anonymity, the interviewee column represents the managerial level of the participant instead of writing their specific positions. The table below depicts the study participants.

Table 8: Study participants

Level in organization	Interviewee	Duration of interview
Top management	Operations and finance management unit	20 minutes
	Central HR directorate	1 hour
Middle management	Compensation and benefits management unit	45 minutes
	HRIS management unit	45 minutes
	Employee relations management unit	30 minutes
Operational HR practitioners (faculty)	HR manager/senior HR officer	45 minutes
	HR officers (x2)	30 minutes
	HR administrator	20 minutes
General users	Focus group interview/conversation -Academics staff -Non HR administrative staff	25 minutes

Table 8 represents the sample for the study, with the different levels in the university and the corresponding participant. At top management level is the operations and finance management and central HR directorate management with the duration of the interviews. At middle management are compensation and benefits management, HRIS management and employee relations management and their interview duration, lastly operational HR personnel at faculty level.

4.10 Data collection methods

Data was collected using semi-structured face-to-face interviews (one-on-one and a focus group), field notes and official university documents. The sub sections that follow describes each method, starting with the interviews and the different levels in the university that were interviewed.

4.10.1 Study Interviews

The study interviews are grouped according to the different university levels and are further described according to each business unit, starting with top management interviews.

4.10.1.1 Top management interviews

Top management were selected from the university's website, they were specifically chosen on the positions that they occupied, their positions were nominated based on their proximity to IS or IT (Information Technology) or the university HR directorate and their experience and knowledge of HR and HRIS. After identifying the operations and finance management unit from the website, the researcher went to their offices as the first point of contact for the interview phase.

Operations and finance management unit

This unit has six employees with six different sub units under it, two participants were identified as suitable to answer the interview questions from the operation and finance management unit. The researcher printed the top management structure from the university's website and this was used to identify potential participants. The participants chosen were identified from the operations and finance management unit and the researcher went to the offices to request an interview through the secretary. This is the highest office in the university that is tasked with operations and HR and HRIS as its sub units, the secretary and the researcher went through potential participants who were available and who will give more information relevant to the study.

The secretary assisted with setting up appointments with the participants. The secretary requested an interview guide prior to setting up the appointments and was sent through her email for the participants to prepare for the interview. Unfortunately, the first interview was postponed via email two days before it was to take place and was moved to the following week. A day before the interview, the participant's secretary sent an email with another postponement because the participant had a packed schedule and couldn't make it for the interview. The interview took place almost three weeks after the initial request in the participant's office for 20 minutes and was recorded on a hand held tape recorder, the researcher wrote some of the important keywords in order to probe further. The second interview happened as planned, the second interviewee repeated a lot of the points the first interviewee touched on, that's when the researcher knew it was time to focus on the next directorate.

Central HR directorate

The central HR directorate has six sub units with a total of 12 employees; two participants were chosen from this directorate. The secretary from the operations and finance management unit directed the researcher to the central HR directorate as another place to acquire more information for the study. After the interview request from the operations and management unit participant; the researcher went to the central HR directorate to request an interview from the participant and it was granted for the following week. The interview was set up for two days from the request, the interview took place in the participant's office for an hour and it was recorded on a hand held tape recorder, the researcher wrote some of the important keywords in order to probe further for more information. Unfortunately, the second participant was not available due to work related travelling commitments during the data collection phase, the researcher was open to come back for a second interview; however, the first participant's interview captured the essence of the directorate holistically.

4.10.1.2 Middle management interviews

Middle management interviews include participants from the compensation and benefits management unit, HRIS management unit and employee relations management unit

Compensation and benefits management unit

This unit with 3 employees and forms part of the HR directorate, and was suggested by the secretary from the operations and finance management unit from the printed top management structure the researcher had, after that conversation, the researcher went to this office to set up an appointment and it was granted for two days after the request. The interview took place in the participant's office for 45 minutes and was recorded on a hand held tape recorder, the researcher wrote some of the important keywords in order to further probe for more information. The compensation and benefits management unit suggested some policies that they thought will be helpful for the study and these were sent the following day by the secretary through email.

HRIS management unit

HRIS management unit has three employees and its part of the HR directorate, and was suggested by the secretary from the operations and finance management unit. After the suggestion, the researcher went to the HRIS management unit to request an interview with the participant, the secretary granted the interview for the following day, the participant requested the interview questions to prepare for the interview, the researcher sent those to the participant's email. The interview took place in the participant's office for 45 minutes and was recorded on a hand held tape recorder, the researcher wrote some of the important keywords in order to enquire more information around that.

Employee relations management unit

The employee relations management unit was discovered by the researcher by accident while walking on the passages to one of the study's interviews, after reading the title on the door. The secretary that the researcher spoke to suggested the interview for the following day. The interview took place in the participant's office for 30 minutes and addressed certain topics the researcher deemed interesting for the study, and the interview was recorded on a hand held tape recorder. This was an unexpected interview which revealed a lot non automation challenges on HRIS because of the nature of the unit.

4.10.1.3 HR practitioner's interviews

There are 6 HR practitioners at faculty level; 2 HR managers, 1 senior HR officer, 2 HR officers and 2 HR administrators. HR officers were selected and approached after interviewing the participant from the HRIS management unit who suggested them, the HR manager was contacted first for the interview request. The interviews were suggested for the following week as it was a Friday. The HR manager's interview was first, followed by that of the HR officers and HR administrator was interviewed last in their specific offices. The HR manager's interview lasted for 45 minutes, the HR officers' interviews took 30 minutes each and the HR administrators' 20 minutes. The researcher noted keywords that they deemed interesting to ask more questions on those, and the interview was recorded on a hand held tape recorder. Some of the topics covered during the

interviews were repeated by the participants and had reached a saturation point, and that's when the researcher decided to call off the interview data collection phase.

4.10.1.4 General users focus group interview/conversation

A focus group interview and conversation with academic staff and non-HR administrative staff was done to get a sense of university HRIS use outside of the human resource practitioner environment. This group of university employees interact with HRIS for various services such as when they make applications for further training, vacation leave and other leave of absence, managing their performances, etc. They do this through a "Self-service" HRIS application. Subsequently, their views and opinions are imperative and were solicited and gathered to increase a profound understanding of the use of HRIS.

The participants that made up the focus group were contacted in their offices during working hours to set up a common date and venue on when the interview or conversation could take place. The group met at a common venue and the interview captured their use of HRIS in the university.

4.10.2 Field notes

Field notes were written by participants in order to paint a mental picture of what is being described, these notes were scanned and are part of the thesis and will be discussed in detail in the next chapter.

4.10.3 University documents

University documents such as policies and manuals form part of the data collected for the study, these include policies and manuals around HRIS, HR and these were suggested by some of the participants to acquire more information.

4.11 Time horizon

The time horizon for this study is cross sectional and retrospective. Retrospective is about selecting participants based on a past concept of interest related to an outcome (Kazdin, 2003). The retrospective view of this research is at the adoption phase, top management

teams were asked about events that have already taken place when HRIS was adopted in the university.

4.12 Summary of chapter

Chapter three discussed popular IS theories and frameworks and conceptualized a research framework for HRIS adoption and use in universities. This chapter continued from chapter three and discussed the research methodology that the study followed.

The chapter began by a discussion on what ontology and epistemology are, followed by a discussion on the three popular philosophies in IS research, the research approach, the role of the researcher, the research strategy, study location, the unit of analysis, the population and sampling strategy, data collection techniques and the time horizon discussed last. The chapter that follows discusses data analysis and discussion of finding.

CHAPTER FIVE: DATA ANALYSIS AND DISCUSSION OF FINDINGS

Chapter four detailed the research methodology followed in order to answer the research questions posed in chapter one. This chapter analyses the data collected based on methods discussed in the previous chapter and discusses the findings. The chapter starts by discussing the interview data and how it was analyzed and presented, followed by an analysis of some university documents related to HR and HRIS, some field observations are also presented and discussed and qualitative rigor as related to the study is discussed last.

The interview data themes are conceptualized based on the research objectives as themes with sub themes as part of the chapter. The section that follows discusses the interview data analysis.

5.1 Interview data analysis

Data was collected using semi-structured, face to face interviews (one on-one and a focus group). The analysis represents the interview data and is structured according to the predetermined themes; the themes are the study's objectives and research questions and that's where the interview questions were formulated from. The questions were grouped according to the job title; as certain questions are answered better by certain functions.

Interview data was analyzed using thematic analysis, and can be defined as a method of identifying, analyzing and reporting patterns (themes) within data, thematic analysis at a latent level examines ideas, ideologies and conceptualizations (Braun and Clarke, 2006). Thematic analysis acknowledges the researcher as active when identifying themes to report on. After a sub-theme has been identified, the researcher discusses that using a table with what could be the ontology of the participant. The ontology elements are based on Weber (2012) conceptualization of IS ontology and are described as: IS ontologies could describe *individuals/objects*- basic or ground level objects, *classes*- sets, collections or types of objects, *attributes*- properties, features, or characteristics that properties can share, *relations*- the way the objects can be related to one another and *events*- the changing of attributes or relations.

The section that follows is an analysis of the interview data, the theme is listed and a subtheme follows that with a table that details some ontological aspects of the subtheme, a quote to support the subtheme and interpretation is presented last.

5.2 Theme one: Analyze the university human resource processes and practices

This theme is about understanding some of the characteristics of HR in the university; these include answers to interview questions such as: How important is HR in the university? What are some of your daily HR activities? What is the HR portfolio in the university in charge of? How does the HR portfolio assist WITS with achieving its goals and objectives? HR has many departments in the university, please describe some of the daily HR activities per each department.

Each sub theme is represented by the ontology table followed by the participant's responses in the box and an interpretation of the ontology table and response follows.

5.2.1 Sub theme: HR as a point of truth

Individual/objects	Employees
Classes	Employees in a university
Attributes	Working for the university
Relations	Colleagues in the university
Events	Employees ensuring that the objectives of the university are met
Constraints/challenges	Challenges in the environment, not working well together

"*HR is regarded as a point of truth; the heart of the system, if you look at any financial statement, the biggest cost component is your staff always*"

The participant response above highlights the importance of HR within the university. Being the heart or referred to as the point of truth cements the fact that in order for the university to move forward, precautions must be taken in ensuring that employees are well taken care of.

5.2.2 Sub theme: Complex environment (different types of employees)

Individual/objects	Visiting professors, permanents, temporaries, sessional, joint staff, joint staff between departments
Classes	Employees in a university
Attributes	Working for the university
Relations	Colleagues in the university
Events	Employees being hired and retrenched or fired
Constraints/challenges	HRIS must accommodate the requirements of all these types of employees

"*In the university context it's very complex because we've got visiting professors, permanents, temporaries, sessionals, joint staff between departments, there's a lot of different person types, all of those people have to be loaded on the HR system*"

The subtheme addresses HR "as the heart" or "the point of truth", HRIS is where it all begins and has a knock on effect on all the university systems. The HR system passes information through to other systems like the student system, access control, email provisioning system, when someone starts, you get provisioned an email, the telephone system.

"*And people always ask is why there are so many administrators and few academics, shouldn't it be the other way around? But some of these administrators provide academic support. In order for you to be an academic you need the support. And that's how the system in terms of budget, subsidy is set up and that's how we're set up because DHET can raise concerns to say, there's too many people in these areas. So there's intelligence around that sort of reporting and the data that comes out of the HR side."*

The participant response cements the fact that a university is a complex environment as expressed by one of the participants. Moreover, there has to be a balance to have a functional university despite how complex the environment is, work around the complexities of the environment.

5.2.3 Sub theme: Labor laws' influence on HR practice

Individual/objects	University employees and management, country laws and regulation
Classes	Labor laws and labor relations as a culture from which HR progresses
Attributes	HR culture
Relations	Labor laws and labor relations as a culture from which HR progresses
Events	Changes in labor laws
Constraints	Labor laws sometimes restrict the university in a way and that kills the innovation

"…HR is culture specific, and if for instance in SA you have so many laws that govern labor relations, that has become a culture from which HR progresses…forgetting that the laws of the country might also be inhibiting… investors do not have the confidence in our labor law system"

South Africa's labor laws tend to dictate how organizations, including universities, conduct HR practices, making these practices the norm. As a result, it becomes difficult for HR to grow from any other point because of constant changes in labor regulations and laws.

5.2.4 Sub theme: HR as legal compliance

Individual/objects	HR department, employees, laws and regulation
Classes	Compliance to labor laws
Attributes	Compliance within the university
Relations	The role of HR as assisting with compliance to the laws of the country
Events	Changes in the country's labor laws
Constraints	When there are changes to labor laws in the country, this influences the policies within the university and it must comply according to the new changes

"…the traditional role had been to ensure that there's legal compliance because everybody is employed according to some law, ranging from immigration to labor law, conditions of service, there needs to be compliance so that you have a peaceful workplace"

Labor laws ensure that employees are protected and treated fairly, that has always been the traditional role of HR in many organizations, and Wits is no exception. As these labor

laws change over time, the university has to keep abreast of that and sensitize the workforce on those changes. Although traditionally HR is for compliance purposes, there's a shift to make it more a strategic partner in organizations.

5.2.5 Sub theme: HR as a strategic partner

Individual/objects	HR department, employees, unions and staff associations
Classes	University management and staff
Attributes	Aligning HR strategies to that of the university
Relations	Ensuring everyone in the university is working towards the same objectives
Events	When the university changes directions in terms of objectives
Constraints	Not aligning the university with the HR strategies could create problems

"…every time the university changes direction we need to be coming up with strategies as HR that adapts the workforce in alignment with the revised strategy"

Strategic support from HR means supporting the organizational strategy and ensuring that the HR strategy is aligned to it. This happens with consultations with unions and the employees, the university must check its practices, policies and organizational development to support what the university wants to achieve.

5.2.6 Sub theme: Affiliation to HR professional bodies

Individual/objects	HR practitioners, management, HR professional bodies
Classes	Legitimizing HR as a profession
Attributes	Ethical behavior
Relations	Legitimizing the HR profession
Events	HR practitioners registered with HR professional bodies
Constraints	It might be difficult to regulate all the HR practitioners in the industry

"…maintaining the ethics of the profession… professional body that looks at setting standards and norms for the HR practice… so the professional body will allow you the opportunity to be continuously developed"

A professional body will allow the maintenance of ethics and conduct and to be accountable for behavior not in line with the code of ethics set up. Professional associations assist in setting up norms and standards, if not the profession run the risk of not growing and it can assist with development of its members as they will be kept up to date as the body of knowledge changes from time to time

5.2.7 Sub theme: Salary benchmarking

Individual/objects	Finance office, external organizations, unions
Classes	Salary benchmarking
Attributes	Salary benchmarking
Relations	Salary surveys, benchmarking
Events	Negotiating salary increases and job evaluations and salary scales
Constraints	When salary negotiations don't go well, posing threats of strikes and unrest

"…we negotiate with the unions around salary increases, we do salary benchmarking. What we do is we participate in salary surveys. And currently we have (rainchanel) which is aligned to PWC as a salary survey company. We participate in salary surveys in order to determine the university's salary benchmark in terms of scales and where we would pay staff"

Salary increases are based on industry benchmarking and that is based on salary surveys which the university participates in, the surveys assist the university in terms of salary scales based on job evaluations. The benchmark for professional and administrative staff is based on industry standards and not just higher education and of academic employees is benchmarked according to other universities. So once the salaries are determined on an annual basis, then the office does a salary benchmark, based on the outcome of the benchmarking then salary negotiations follow, the university then adjusts its salary scales and a bargaining situation to determine annual salary increases.

5.2.8 Sub theme: Segregation of duties: payroll, remuneration and benefits

Individual/objects	Finance division, payroll and remuneration division and management
Classes	Segregation of duties
Attributes	Finance related matters in the university
Relations	Payroll, remuneration and benefits could be one division
Events	Segregation of payroll from remuneration and benefits
Constraints	Payroll remuneration and benefits are currently functioning as separate units in different divisions

"…about segregation of duties in terms of good governance, payroll currently falls under the finance division and they deal with all the system requirements in line with the policy developed by us"

The remuneration and benefits division is charged with developing policy for payroll amongst other things, the same division they create policies for and often withdraw reports does not fall under the remuneration and benefits division, payroll falls under the finance division. This is based on good governance, at the same time the remuneration and benefits division indirectly manages payroll as they develop their policies and are often requested to report on payroll data.

5.2.9 Sub theme: Decentralized HR model

Individual/objects	HR at the central level, HR at faculty level
Classes	HR in the university
Attributes	HR in the university
Relations	University HR
Events	Decentralized HR in the university
Constraints	HR in the university not functioning as a single unit

"…So there are different faculty requirements based on the discipline, they will then determine the minimum criteria for each academic rank. There are 2 policies that are published where this criteria is available. So that is managed within the faculty and each faculty has a staffing and

promotions committee which signs off on those criteria, the professional and support staff is dealt with at the central office"

The approach to HR in the university is decentralized; this means professional and academic staff is hired at the central level. The faculty is responsible for hiring academics and their own support staff, a decentralized model often means there could be duplicates, and the two not working in synergy means that the university's aims and objectives might be challenging to achieve as communication is cut off from the central office to the faculty level.

5.2.10 Sub theme: Things falling through the cracks

Individual/objects	University employees and management
Classes	Working together across departments
Attributes	University employees
Relations	HR activities in the university
Events	A problematic employee being rehired
Constraints	A lack of communication across department sometimes can create such things to happen

"One of the shortcomings currently is that if you were dismissed in this department and go to medical school, and they don't go into the termination reason to see that you were dismissed. There have been cases where a problem employee was rehired because of failure to check such things. There are those things that sometimes slip through the cracks"

Often employees in different departments don't communicate, especially HR personnel, and that has a lot of negative implications on how HR is run in the university. A way to minimize this problem is to use HRIS for all HR related activities and if you need information on a certain employee you just log in to HRIS and verify that and eliminate problems associated with manual HR.

5.2.11 Sub theme: The issue of a physical staff file

Individual/objects	University employees and management,
Classes	Working together in the university
Attributes	Staff file for each employee
Relations	Employees in the university
Events	Creation of staff file when an employee gets hired
Constraints	All 4000 employees are opened a staff file, a duplication of information saved on HRIS

"Yes we actually, your contract letter, we do open a staff file for you; we put a lot of staff on the file. There are some things we are changing, but there are certain requirements in terms of auditors and all of that. They want to see a signed copy of your contract, that's the compliance issue. There are certain things they believe, you could have a record but they need a signed copy of the contract, probation reports, those sort of things"

The practice of the staff file was never eliminated when HRIS was adopted, the justification of the staff file is that it's for auditing purposes, but I do believe that auditors can check the system for signed and scanned copies of a document, there are ways around that. All 4000 employees in the university have a staff file stored somewhere, the space and personnel who service this need are a duplicate as HRIS can do the same thing.

"HRIS has a function of employee files; we can actually build it on the system and you have an employee file that's stored online but we're not using that function effectively"

The staff file that is created for all the employees upon recruitment and hiring in the university and can be created on HRIS, and eliminate all the problems associated with the manual file by automating it, although HRIS is enabled to use the feature, no one bothers using it

5.2.12 Sub theme: HR personnel and their value to the university

Individual/objects	HR personnel , HR department
Classes	HR value to the university
Attributes	University HR
Relations	University HR value
Events	HR personnel always there for employees in the university
Constraints	It's difficult to manage relationships of top management and employees, as a link between the two, the has to be a balance

"So you have to sort of manage that relationship between the head of school, the employees, and sometimes the dean…both of them tell you stories, and you can't transfer one to the other. So you have to be strategic in terms of how you manage both. And it's heavily based on managing relationships"

HR personnel at faculty level are tasked with a more difficult and complex situation of managing expectations and needs of management and those of employees, often the balance is difficult, but managing those relationships is important.

"For me it's going an extra mile to dig information as far as I can for me to help that person in need. Whether they are wrong or right, I tend to not judge. I tell myself that I'm in your situation; I want to help, whether you're wrong or right"

HR personnel are in a unique position as they get to interact with all the employees in the university and give feedback on what the employee needs help with. Being open and ready to serve people is an important skill that could assist HR personnel in the many roles they play for employees and management

5.2.13 Sub theme: HR personnel on a reactionary mode

Individual/objects	HR personnel and management
Classes	Planning strategies for university HR
Attributes	Planning for HR in the university

Relations	University employees
Events	HR personnel always reacting to situations and rarely taking the initiative to get something done
Constraints	A reactionary mode means things are always delayed until last minute and there is lack of planning on HR related matters

"So it's a reactionary mode, so if you're not reacting to it, you're parking it"

Due to time constraints and lack of planning related to HR, HR personnel are left to deal with situations as they happen, a lot of this reactionary approach could be avoided if there was planning and discussions around HR at the faculty level.

5.2.14 Sub theme: Recruitment strategy aligned with the university's brand identity

Individual/objects	HR personnel and management
Classes	Updating the university's recruitment strategy
Attributes	Recruitment to reflect on the university's brand identity
Relations	Recruitment strategy update
Events	Recruitment to be aligned with the university as a brand and what it aims to achieve
Constraints	Recruiting potential employees in old fashioned ways while the university has built a reputation and a certain image is a misalignment and an injustice to where the university is going

"*On our recruitment strategy can be improved or needs to be changed, move away from normal traditional recruitment. The strategy currently is much focused on print media that is newspapers… yes we are online where you can google and the vacancies pop-up and you can apply from there, but we should be moving towards a (I mean wits is a brand) so we should live the brand, we know what type of people we are looking for as a brand*.'

The recruitment strategy currently is to advertise predominantly in newspapers, this strategy is not in line with who Wits is; the reputation and image it has created, the HR strategy must reflect this. Aligning the recruitment strategy with the university's strategy

will solve some of these problems and it's a reflection of where the university is going and all of the processes must follow that.

5.2.15 Sub theme: The university and transformation

Individual/objects	University employees and management
Classes	Transformation objectives
Attributes	University employees
Relations	Working towards transforming the university
Events	Activities related to transformation objectives as set by the university
Constraints	Challenges of attracting and recruiting people who will assist in realizing some of the universities goals and objectives

The university and its transformation objectives seems to be a challenge as currently attracting and recruiting personnel who will assist with some of its goals and objectives, the subsections below describe transformation in the university.

Taking advantage of human resources from other African countries

> *"…so if I'm looking for a HR manager who can communicate at all levels, and can speak from an African continent point of view, then I shouldn't be advertising in Sunday times, but I should be looking across, broader view. We also have to think, are we looking at getting a HR manager who will sit and think about university and South Africa while the academics are actually saying I'm thinking of producing an article but collaborating with someone from Australia"*

If the university wants someone who is appropriate for a certain position, then the recruitment must not be limited to local print media, being in Africa is seen as also an advantage because you can recruit from other continents and not South Africa alone. In addition, university employee should be able to think beyond SA and into other territories and come up with plans and ideas of how things can improve.

HR fostering collaborations with the best universities in the world

"…are much better than here, what's the HR actually doing there. You need to ask yourself those kinds of questions, for me. Because I started seeing myself as a South African, black woman (you know the label) who is in the university or do I want to see myself as a South African who is communicating in continents to actually be able to meet the goals of the university, and to actually see the bigger picture and vision of where the university is going, understand it from that view…So we need to think, while the academics are also collaborating, we need to also start collaborating with what we see as best universities and find out what are they doing and learn from them"

The opinion is that HR should be able to visit other universities that are considered best in HR and find out what it is that they are doing right, in the hope that the university HR will copy some of the things that they are doing well and implement them in line with the university goals and objectives. The idea is that as much as academics can collaborate with other academics from all over the world, so should HR personnel.

Taking the power back-HR more in control of what they do

"…it's the academics who will go out there and find out what is happening and come back with information and say HR this is how we're going to do things. We have actually given our power to the academics and we should be taking it back and going forward and saying ok this is our proposal look at it and tell us what you think because this is where we want to go. But it become difficult because not everyone is in that mindset and not everyone is ready you move towards that mindset. And this is where the culture of the university comes in because sometimes it can be very strenuous"

HR personnel would love to go out there and find out what is happening in the HR field and implement that instead of academics doing that for them. That will be taking back their power as they feel they have given it to academics.

HR personnel as strategic partners

"…but we are still paper pushers as HR personnel, they don't give us that thing, even when we go for interviews, we're just there as an observer to tell them about the policies and that it. We can do more but we are not being used, I'm open to more roles and responsibilities, that's what we want, but they are limiting us. The employees use us but the problem is management, strategic things, they don't want to involve us."

HR personnel expressed that they still feel like they're paper pushers and are not involved in the strategic direction of the university. HR personnel would like to be involved in activities such as input in decision making, give advice and feedback. Currently HR personnel provide advice on policy and that is not enough, they would like to be more involved and are ready for more roles and responsibilities. Management is the one that could delegate more duties to HR personnel.

Quality of HR advice and its implications

"And traditional HR focuses on the quality of advice, which we've come to pay lip service towards because the stakes are too high in getting our businesses recognized as getting Wits as top 100 one day. In getting our fair share in the academic world, in being the top African institution… but because of the time investment also, which has begun to govern relationships- we meet for an hour, if its more than an hour somebody else is waiting"

If the university wants to realize some of its objectives, it has to be realistic about the quality of HR advice that is offered or given to the university. This has implications on the universities strategic objectives and relationships because of time management

Where the transformation office belongs

"If you looking at transformation as an OD (organizational development) function, which it is a part of, then it makes sense… So if it is an OD function, which it should be, OD in many respects as OD talks about joint ventures, which is not an HR function. Joint ventures we talking collaborations, certification, joint programs, that has become so common cause lately in higher

education… It can also go into basic HR interventions, the issues of morale, productivity, culture, equity etc. which are part of the transformation journey"

In the university transformation sits in the HR portfolio, if transformation is viewed as part of organizational development, which includes functions such as joint ventures, certifications, which is now very common in universities it could belong there. Or it could belong to HR, but the participant expressed that it's better if it belonged to OD instead of HR.

Internationalization

"Or it can go into internationalization because as you internationalize you need to develop systems that enable you to be productive in that internationalization exercise, in collaboration or in line with what your immigration laws would say"

Internationalization as another place where transformation could belong, because the university strives to be one of the top 100 in the world, it can bring in people from other parts of the worlds who could work at the university, so as to be able to compete internationally.

Transformation as development

"It can be about getting an international professor, with the understanding that they are coming to develop of his/her kind, a South African for that matter. So that when the contract ends, they go back home and some skills are left locally. That's also transformation and its organizational development."

Transformation could mean that it's a development of scarce and critical skills for the country through universities, an example of developing such skills is by bringing someone from outside for the sole purpose of transferring skills to local people, this could also be

internationalizing. The environment and immigration laws must be able to accommodate such needs, when the international person leaves; they would have transferred skills and therefore fulfilling the mandate.

Legislating transformation

> *"…because we have coined and legislated on transformation (white paper 3, transforming the higher education sector) we have been caught in that act, it is now a legal act. It will soon be illegal for anybody showing racist or utterances of racist because of what happened on Facebook recently, it's another transformation issue"*

South Africa has laws or acts passed about transformation, because transformation was slow in organizations, parliament decided to intervene by introducing laws and acts on transformation. Such laws or acts could inhibit or enable transformation within universities based on what the university is trying to achieve

The multilevel nature of transformation

> *"So in my view, transformation happens at an individual level, at process level, at system level before it becomes an organizational issue and if we're not going to consider the environment, people that make it happen and how organizational practices influence this whole thing, it may or may not happen"*

Transformation is a complex undertaking, so it happens at an individual, process and system level before it is organizational. It's individual who make decisions on issues as they arise and individuals have biases towards certain things, this influences whether transformation happens or not, processes systems need to be in place to enable the movement before the organization actualizes such objectives.

What is being transformed?

"Depending on what it is that we're transforming, because there's various ways of understanding transformation. As I management I could say this is what needs to be transformed. It is totally unacceptable for us to have at top levels a lack of representation of gender or race. And somebody could argue, being a union that we don't want to see anything different from what the country is striving for and that the black empowerment exercise… and in the bigger context of what is happening in Johannesburg, which is a multicultural cosmopolitan city and everybody converges into Johannesburg, from any country… And then comes the student element that says your curriculum Prof. So and do, who happens to be coming from Austria, does not recognize our local content/context and therefore we want you to decolonize the way you approach us, the way you teach us, the curriculum itself to make it more relevant to SA. So those debates emanate from the dynamics of cultural specifics that govern the same higher education that we want to grow and have more able students come to enjoy"

Transformation means different things in universities; transformation could be about racial, gender representation based on what the country is trying to achieve. Transformation again could mean curriculum overhaul, as a university in Africa, the curriculum must be reflective of the context because of South Africa's apartheid past where certain aspects of society where excluded. But at the same time, since the university is in a multicultural space, we have to be cognizant of the fact when thinking about transformation. Transforming both the staff make up and curriculum is a HR matter as both require people who can be able to fit into both.

Catch 22: To consider global immigration or not

"Then if that is the issue, the local content of equity gets diluted. And if you're focusing on local, you lose the international migration of knowledge that could have benefitted the country."

Because of South Africa's history, certain groups of people have been excluded in a lot of activities in the past, so transformation tries to create a balance by including those who have been excluded prior. There's global migration of people from all over the world that

are converging in Johannesburg, the university could take advantage of the knowledge and skills they come with, but at the same time that could dilute the employment equity objectives that the university is trying to achieve. So it's a difficult choice to make in terms of skills and knowledge by afforded by global immigration or try to balance equity that history has left to deal with, so striking a balance is key.

5.3 Theme two: Describe how university upper echelons were influenced by the environment, organizational and technological factors in the decision to adopt human resource information systems

This theme explains some of the decisions taken by top management during adoption and some outcomes based on the decisions that they took during the adoption. The sub themes dress interview questions such as: There are also IT systems which have been implemented as WITS moves towards vision 2022, what are some of the decisions to justify the implementation of these IT systems? How was the technology adopted/implemented? How did Technological Organizational Environmental factors influence the adoption of this technology? What changes came because of the technology? In the adoption of these systems, how were/are you involved?

Each sub theme is represented by the ontology table followed by the participant's responses in the box and an interpretation of the ontology table and response follows.

5.3.1 Sub theme: HRIS adoption resistance

Individual/objects	Employees, management, vendors, legacy systems
Classes	Transition from legacy systems to HRIS
Attributes	Adoption of HRIS
Relations	Colleagues in the university
Events	Smooth transition from legacy systems to HRIS
Constraints	A difficult process that was not well handled

"*I wasn't here but from what I'm told it was very difficult and it was not very well handled"*

System adoption within organizations are often complex and the technical and aspect of the HRIS was not properly managed and that created a lot of problems, some of which the university is still struggling with, one of the difficulties was the legacy systems which contained all the data to be transferred into the HRIS.

"I think a lot of people were still at wits when we went to the new system, there was a lot of negative views about it, a lot of people find it cumbersome, complex, time consuming, not user friendly. I think a lot of that is resistance…As a result there's that resistance around that, so when people resist something, it's very hard to buy them over, as a result you have to do that ongoing, I mean part of what this was supposed to was to integrate the entire university"

The resistance to the system currently is nothing new as it was resisted in the beginning when it was implemented, as a results people find the system complex, cumbersome and time consuming, given that it might be those things, a lot of the negativity is resisting for the sake of. So instead of HRIS pulling things together, it's actually doing the opposite

5.3.2 Sub theme: HRIS efficiency and effectiveness

Individual/objects	Various HR departments, HRIS users
Classes	HRIS users
Attributes	HRIS users
Relations	HRIS users
Events	When generating reports, looking up information
Constraints	When inaccuracies exist with data generated by HRIS, that creates problems as the HRIS is connected to other university systems

"One of the easiest things with HRIS is that there are certain screens which are mandatory, by completing those screens; you actually ensure that some of the key information that feeds into BIS, employment equity and other reporting is done accurately and correctly…So in that way, once you have signed somebody on to the system, it then feeds other units in the university, library, icem, BIS, security all of that. So you don't have to duplicate this, your record is done once… It also cuts down sending people from pillar to post… Also from a sign on point of view,

it's quite easy to complete a sign on, like if you join me now, I can sign you on in less than 10 minutes, so from a time point of view, it's quite quick, it's a live system"

One of the reasons HRIS was adopted in the university was bring about organizational effectiveness and efficiency, particularly on HR and the value it brings into the university. The above paragraphs prove that HRIS is assisting in that regard, there's time, and less duplication of records and ensuring that data reporting is quicker and hassle free.

Reports generated by HRIS

"Regular monthly reports generated by HRIS; that makes things easier"

HR personnel agree to the efficiency and effectiveness offered by HRIS in their job tasks, before HRIS was implemented, when compiling data for management, HR personnel had to run around collecting outdated information from different sources, currently the system generates the reports they need to give to management

Maintaining of employee records for easy access

"…because you'll have records… the less paper we have the better because it means we are now starting to keep records."

HRIS assists HR personnel by keeping records that they can easily access and it helps by cutting costs in terms of money spent on paper. These assist HR personnel, as they don't have to spent hours looking for a specific file, all the information can be accessed easily on the system.

Better leave management

"…and not consulting HR officers for that anymore, online leave application is no longer handled by us HR officers, employees do that on their own"

Through the HRIS self-service that employees can manage their own leave and not managed by HR personnel as it used to be. This leaves more time for HR personnel to focus on other HR related duties.

HRIS eliminating manual labor for HR personnel

"Before oracle we a had a legacy system but we used to do a lot of manual work, that old system could do some things but not all, even loading someone on the system, some we loaded some we didn't load, we always used the staff file a lot."

The legacy systems that HRIS replaced were cumbersome and difficult to work with, since the implementation of HRIS a lot of manual work has been eliminated and there is less dependency on the staff file.

Eliminating paper trail

"*The system has allowed us to reduce a lot of paper trail,"*

HRIS has allowed HR personnel to reduce paper use at faculty level, what used to happen before HRIS implementation HR personnel used to use a lot of paper for HR activities.

5.3.3 Sub theme: HR department involvement in HRIS adoption

Individual/objects	Various HR department representative
Classes	Part of HRIS adoption task team
Attributes	HRIS adoption task team
Relations	HRIS adoption task team
Events	When providing input and feedback on how each HR department works into HRIS
Constraints	When inaccuracies exist in the HRIS post adoption, such as grading codes and link to HEMIS

"So the policies around remuneration, job grading and a consulting company was used who were given the brief, we then formed a task team, to sit on this various modules and provide

input into how the system is designed. So those of sort of things is what we get involved in, in order to make sure that there are accuracies. Even now, if we are to load a new job, a glass blower, we need to make sure that job doesn't exist throughout the university, if it's a new job, we make sure that we load it on to oracle its linked to the correct HEMIS category and at the right school, a glass blower would typically fall into the chemistry division. This means someone in humanities for example, cannot load a job that belongs to another department. So we do that sort of quality control and to misalign things. We also correct those misalignment issues"

During the implementation of HRIS, various HR departments were involved in providing feedback and input regarding how each department works, so that the HRIS reflects this reality in line with policy. The statement above is an example of how the remuneration and benefits department was involved during HRIS adoption and already thinking and planning for the information that HRIS will produce for HEMIS. HEMIS (higher education management information system) is a system that contains information about students, employees, financials etc., HEMIS data about university employees is transferred from HRIS and this data is then recorded by DHET and DHET makes decisions on the data that comes out of HEMIS. The HRIS task teams with the various HR departments was to ensure quality control and align things; currently the HR department tries and corrects misalignment issues.

5.3.4 Sub theme: HRIS data integrity issues

Individual/objects	System designers, vendors, legacy systems, HRIS
Classes	HRIS data integrity
Attributes	HRIS data fields
Relations	HRIS data problems
Events	When migrating data from legacy systems to HRIS
Constraints	There was no data scrub performed on the data from the legacy systems to HRIS and that created problems

"Where you clean up the data and make sure that the data you are transferring is correct, up to date, even today we are still dealing with a lot of data issues, where data was never cleaned or scrubbed properly"

One of the technical aspects of transferring data from legacy systems to the HRIS, maybe the team didn't have experience with tis, meaning they didn't know or anticipate such, because the legacy systems data fields are different from what HRIS has. So a data scrub could have saved a lot of troubles but unfortunately it was never done, currently, the effects of skipping this important step are felt.

"…at that time data integrity was a big thing, even now it's still a big thing."

Data integrity has been a problem since the system was implemented in 2005 and unfortunately today the problem still continues, HR officers also expressed the problem of data integrity and the consequences on their HR activities.

"Data integrity is not only for the system, but real data integrity is about information stored somewhere, where the information can be reliably be pulled out. The university does not have enough physical space to archive things, so where should all these files go?"

The issue of data integrity is expressed by HR personnel at the faculty level, although this time as a different meaning to what was expressed earlier, for her data integrity means information stored somewhere that it is easy to access without hassles because with the practice of keeping staff files, it's difficult and time consuming to access those files when in need of information from them. The storage of those files is of concern because they'll need a big to be stored.

5.3.5 Sub theme: Change management

Individual/objects	Management, employees in the organization, HRIS designers
Classes	Organizational employees and management

Attributes	HRIS acceptance
Relations	Change management capability
Events	HRIS training and educating the users
Constraints	This has brought resistance to the HRIS as people don't like change, there's a constant comparison to the legacy system and the HRIS

"…that wasn't handled properly because wits doesn't have a dedicated change management capability, even up to today and so you found that people who are trying to learn a new system (managers, supervisors) who are expected to train and bring on board their fellow employees, so it's like the blind leading the blind"

The issue of change management when implementing the HRIS has impacted on a lot of areas within the university, because things were not handled appropriately, as a result there's issues with users resisting the system, as a result, the user's mindset is of HRIS as cumbersome and not easy to use.

5.3.6 Sub theme: Reduced support staff cost afforded by HRIS

Individual/objects	Management, employees in the organization, HRIS designers, legacy system programmers
Classes	Organizational employees and management
Attributes	Organizational employees and management
Relations	Organizational employees and management
Events	HRIS allows for efficiency in that you don't need specialized skills to support the system, unlike legacy systems, you deal with a single database, and all modules are integrated and speak to each other
Constraints	The different legacy systems required that they be designed and maintained, and the designers often use these specialist skills; and whenever they left the organization, there'll be a skills gap

"*All the modules are integrated; they all speak to each other, so you don't need to maintain specialist skills to write interfaces…you can reduce your support cost in terms of staff, IT staff, programmers etc."*

One of the reasons HRIS was implemented in the university was for efficiency for things to work better, what has also worked better is the reduction of support staff, programmers, designers who were maintaining the legacy systems are not needed anymore as all the information resides on a single platform. The reduced staff number means the university cut cost in terms of paying and maintaining the staff that assisted with the legacy systems.

5.3.7 Sub theme: Technological trends

Individual/objects	ERP (HRIS), management technology task team
Classes	ERP (HRIS) decision adoption influence
Attributes	Adoption decision team
Relations	Adoption decision team
Events	Technological trends in the world and the university decision making task team on HRIS adoption was influenced by current technological trends
Constraints	Moving from legacy systems to HRIS

"…integration, and ease for scalability…. So all of those gave rise to the decision to move and one has to keep up to speed with what is happening with the rest of the world."

The decision to adopt HRIS was partly influenced by technological trends in the world, as it was said during the interview that some universities are still using legacy systems. Wits university could have also stuck with their legacy systems and integrate that to come up with something, but instead they chose to a system that could easily scalable, easy to integrate with other systems as new application or updates are introduced in the market.

5.3.8 Sub theme: Industry influence on IT adoption decisions

Individual/objects	University governance structure, ICT industry people, operational and academic employees
Classes	IT decision adoption decision
Attributes	IT decision adoption decision
Relations	Provide input on IT adoption in the university
Events	When an IT is about to be adopted, the university governance structure, ICT industry people, operational and academic employees in the university provide input and ideas on the proposed IT

Constraints	ICT industry and the educational industry within which the university functions in might have different or opposing ideas about IT

"I mean those decisions are not made by one or two people, it's a collective and there's a consultation both in industry best practice and in education best practice and that drives the decisions that are IT related in the university"

The task team responsible for a feasibility study is not only the university that is involved in choosing the system, but industry people as well. These consultations with people from industry is to give expert advice on what is considered best practice and consultations with people from the education sector to discuss best practices in the field, and bring the two together for a HRIS that will serve the university community

5.3.9 Sub theme: HRIS best practice not a fit for university HR processes

Individual/objects	HRIS best practice platform, university HR processes
Classes	HRIS as a fit for HR university processes
Attributes	HRIS fit university HR processes
Relations	HRIS as a fit for university HR practices
Events	HRIS is built on best practices and when adopted, it didn't fit the university's HR processes
Constraints	Since HRIS is built on best practices, when adopted the university must change its HR business processes to fit the system

"…the systems are build, are all built on best practices, system shouldn't dictate business processes, business should dictate how the system works"

The system comes with new ways of doing things and that changes certain things and how they are done within the university, because it's based on best practices and runs the processes. HRIS should dictate to the system how things are done and not the other way round as it currently is. This is perceived as not a fit for university HR processes

because the best practice point embedded within the system; those best practices are based on what is happening out there, not necessarily from a university point of view

"I think at the time when the university chose Oracle, a lot of people were not happy because there were other products available that could have done the same thing. A lot of universities use ITS, which is a higher education type system"

The issue of HRIS (Oracle) not being a fit for a university environment is quite deep because it influences a lot of things in the university; people feel as that there are better options that are suitable for the environment. Currently there are issues that arise continuously as a result of HRIS not being suitable for what the university wants.

I think largely it's because oracle is not designed to meet the needs of the university, although I think the HRIS manager will disagree, because he always says it is designed for the university, it can't be designed for the university because that also is problematic, It's best when the system is a generic one

Once again the sentiments that HRIS does not fit the university environment are echoed by HR personnel who work and interact with the system for their daily HR activities. They also say that if it was better fitted for the environment, it will make their job a lot easier.

5.3.10 Sub theme: HRIS customization

Individual/objects	HRIS vendor, management, users
Classes	HRIS to support university HR practices
Attributes	HRIS customization
Relations	HRIS customization team
Events	Customizing HRIS to suit the university HR environment
Constraints	Customizing creates problems because customized code means it's not supported by the vendor, which you have to support yourself

"...other principle that we don't like, we don't like to customize because if you customize it means you're back to writing customized code and it's not supported by the service provider you have to then support it yourself, so you're no better off than when you had legacy systems."

Customization is both necessary and "the devil" at the same time, it's necessary because HRIS must fit the university's HR processes and that requires customization as an off the shelf version does not really enable the university's HR practices. Customization is also something that is dreaded by the university because customized code is not supported by the vendor and the university will have to maintain HRIS and have specialized skills, something they were avoiding by adopting HRIS and moved from legacy systems.

5.3.11 Sub theme: Business processes re-engineering

Individual/objects	University employees including management
Classes	Re-engineering business processes
Attributes	Transitioning from legacy systems to HRIS
Relations	Re-engineer university business processes to fit HRIS
Events	Business process engineering analysis
Constraints	There was a phase that was not done during the transition from legacy systems to HRIS, and that is business process engineering analysis, as a result there's been some challenges because of that

"...so you'd have to really have to do business process engineering analysis as part of the transitional change, I don't think that was done, that's another step not done, it was just old system-new system, bring the data across and it will work (hoping it will work)"

Because HRIS is not tailor made for the university, as part of the change management phase or during implementation, there was supposed to be a process re-engineering so that the university HR processes are well defined within the system, this has a knock on effect on other systems and HR processes within the university.

5.3.12 Sub theme: Specialized IT skills

Individual/objects	HRIS designers, HRIS programmers, management and users
Classes	Customization team
Attributes	Customizing HRIS to suit the university environment
Relations	Customizing HRIS
Events	Customizing HRIS or choosing an open source software which could have been cheaper
Constraints	Customizing HRIS means that the university will keep specialized IT skills to support the code, and specialized IT skills means you're dependent on those individuals and when they leave, they leave a skills gap in the university

"…so you don't need to maintain specialist skills to write interfaces."

Specialized skills are a result of customization, which the university has moved away from, but not customizing has created problems on its own. It's not a bad idea to have people with special skills in order to customize the system to suit the university, knowledge sharing and transfer is a problem for specialist skill because if there is no one with those skills you will be stuck with a skills gap.

5.3.13 Sub theme: Power dynamics with the vendor

Individual/objects	HRIS vendor, management, users
Classes	Updates, extension of HRIS
Attributes	HRIS updates or extensions
Relations	HRIS updates or extensions
Events	When the vendor updates HRIS or when the system is enhanced
Constraints	The university is locked into what the HRIS vendor wants and what the vendor doesn't want, often those HRIS updates are suggested by a community of users worldwide

"*HRIS will come with new features because the user, the community out there, the users worldwide, you are locked in what the vendor wants, what the vendor doesn't want"*

The university is at the mercy of the HRIS vendor, because it's all about what and when they think things should be done; upgrades and enhancements etc. the vendor can also discontinue to support a product after resources were spent acquiring it, and they will bring in a new product to replace that old one, which means the university will spent more in order to acquire the new product. These enhancements, upgrades are based on the larger software community in the world and what they want

5.3.14 Sub theme: HRIS as a strategic tool

Individual/objects	HRIS, users, management, other ERP (Oracle) systems
Classes	university ERP
Attributes	Generating reports, feeding information from the ERP to other university systems
Relations	University systems
Events	Assist management in decision making
Constraints	The information from the HRIS feeds other university systems and management can draw reports from these systems in order to make decisions

"…now all the data sits in one place, in your data tables, and now when you want to do reporting its easy, rather than in the old days, you had to go to department xyz, to get information from an excel spreadsheet or a piece of paper or something… We track, we measure, we report and based on that information it goes to strategic level"

Not only has HRIS made reporting easier, it generates reports that management can use to make decisions on where and what the university wants. This means management will make informed decision because of the data or information available to them as a result of HRIS

5.3.15 Sub theme: HRIS influence on university policies

Individual/objects	HRIS, users, management, other ERP (Oracle) systems, policies
Classes	University ERP influencing policies
Attributes	Generating reports, feeding information from the ERP to other university systems
Relations	University systems
Events	HRIS influence on university policies

Constraints	Based on data integrity issues, the information produced by HRIS, might be incomplete, inaccurate or not up to date

"…it's not as if HRIS has given rise to policies I think it's the other way round, it does influence yah"

Because of the information produced by HRIS, management could notice a certain pattern that is not what the university wants to achieve, because of that policy, things could change in order to drive university objectives.

5.3.16 Sub theme: HRIS assisting with compliance

Individual/objects	HRIS, users, management, other ERP (Oracle) systems, DHET, SARS
Classes	Compliance in the university
Attributes	Generating reports
Relations	University systems
Events	Reporting to DHET and tracking SARS compliance
Constraints	Based on data integrity issues, the information produced by HRIS, might be incomplete, inaccurate or not up to date

"…headcount, equity status, training, absenteeism cause there's money involved in wits content we look at staff members with PhD because it influences subsidies from DHET"

"What they do is report to DHET, the way the reporting is based on your job; it sort of assigns percentages to the time you spent on teaching, research, student support and on the basis of that data the university then gets it's subsidy. So if our HR data is flawed or incorrect, it could have a negative effect on how the university is, because it influences things like, the type of university you are, and based on that, it's quite an important part in terms of accuracy. And also you don't want to have a situation where we misclassify people. Where you overstate or understate what it is that you're actually doing in terms of your workload. So it's a very significant component of the system"

HR traditionally has been to assist with legal compliance such as tax, another added compliant has to do with reporting to DHET. Information generated by HRIS is sent to DHET for subsidy purposes, based on what the report says, DHET then funds the university based on that. The second paragraph highlights the importance and impact of the accuracy of HRIS data

5.3.17 Sub theme: Interpreting data analytics

Individual/objects	HRIS, management, employees
Classes	University employees and HRIS
Attributes	Analyzing and interpreting data analytics produced by HRIS
Relations	University employees and HRIS
Events	Analyzing and interpreting data analytics from HRIS
Constraints	The data or information produced by HRIS in the form of reports is often not properly interpreted to influence decision making in the university, often the people who are in charge of making sense of the data are scarce

"...data analytics and information to the key business figures and it allows them to see things they didn't know or weren't aware of..."

There is skills shortage in the university when it comes to interpreting data analytics to make it meaningful. Interpreting analytics requires both technical (statistician) and business or operational knowledge, without this balance, a statistician will only be able to come up with numbers, and there won't be meaning provided behind the numbers. So someone who understands the operational or business side and the analytics is a better fit.

5.3.18 Sub theme: HRIS information accuracy

Individual/objects	HRIS users and management
Classes	Information produced by HRIS
Attributes	Accuracy of information produced by HRIS
Relations	University employees
Events	Inaccurate data inputted into HRIS

Constraints	Inaccurate data and information produced by HRIS, and risks around that

"*The importance of having accurate information captured on HRIS can't be stressed enough, there are risks involved because it feeds into HEMIS. A lot of what we do on the HR side influences what they do, for reporting purposes, for universities to be considered important for the sector, and what we do in terms of strategy, if we incorrectly report to DHET, there's huge risks around that and this might pull together the importance of what is happening with this information, it pulls together the importance of what the system needs to do"*

Because HRIS is the central database that contains all employee data in the university, systems such as HEIMS draw data from HRIS to report to DHET. This information is used to make decisions by the university and DHET, the information is a reflection of what is happening in the university and it highlights the importance of the institution in the sector and how the university can move forward considering its vision and objectives

5.3.19 Sub theme: HRIS accommodating leave flexibility

Individual/objects	HRIS designers and university management
Classes	Customization team
Attributes	HRIS to accommodate leave flexibility
Relations	Improve HRIS functionality
Events	When employees request different leave types
Constraints	Examples of leave flexibility is half day, hourly leave provision

HRIS should be able to offer employees leave flexibility in terms of half day or hourly provisions, currently HRIS does not make provision for hourly leave or half day requests, this could save the university money in the long run and employees' hours worked will be accounted for.

"And another thing in terms of oracle, it distinguishes the class of employees, a full time continuous employee will have leave accrual at a rate of 2 days a month worked, what about a

fixed term employee who is part time? Or a full time continuous who is part time? Surely it shouldn't accrue at the same rate, does the system vary the accruing of leave? Because there is unfairness there, if I work half days, I shouldn't be accruing 2 days a months as opposed to a person who works 8 hours a day. So the benefit of leave shouldn't be blanketed like that. If we apply for leave and it accrues on the system, counting it. I think this might be a policy issue and what the policy says on leave accrual based on the employee classifications"

There is another issue with leave accrual for the different types of employees in the university, employee relations is worried about the number of leave days accrued by part time and full time employees, they argue that since full time employees work eight hour a day, its justified that they accrue 2 days of leave a month, while part time employees cannot accrue the same number of leave days as full time as they don't work the same number of hours a day. HRIS should make leave provision for the employee classifications as per contract agreement with the university.

5.3.20 Sub theme: HRIS as a date driven system

Individual/objects	HRIS, HR personnel
Classes	HRIS use at faculty level
Attributes	HRIS information accuracy
Relations	Information accuracy from HRIS
Events	When entering data ensure that it's captured on the day it's supposed to be
Constraints	There will be gaps in the information produced by HRIS if it's not date tracked

"*The thing is oracle is very much date driven, so if you don't date track, there will be gaps. So if I appointed you from the 1st august and I input information 1st of September it will not talk to 1st august.''*

Because of how HRIS is set up, the system is dependent on date for a accuracy of information, date means a lot to the system, that's how it was set up and HR personnel have to work around that. And this is one of the motivations to get a HRIS specialist,

whose focus will be to input data of employees when hired, that person will be conscious of date issues because that will be their primary function.

5.4 Theme three: Describe how acceptance and use of human resource information systems manifest in the university

This theme addresses the acceptance and use of HRIS in the university by answering interview questions such as: How is HRIS used in the university by the employees? What influences that use? How do you use HRIS? Customizing HRIS for a university is different from other industries out there, what are some of the requirements? What changes came because of the technology? Are things better or worse off? - how often and when do you use HRIS? How do rules and regulations of your employment contract force you/motivate you to use HRIS (in terms of absence, KPI (key performance indicators), training etc.? In your views, how does your work ethic influence you to use HRIS? To what extent have you accepted and are using this system as far as relevant to your employment here?

Each sub theme is represented by the ontology table followed by the participant's responses in the box and an interpretation of the ontology table and response follows.

5.4.1 Sub theme: Communication as a golden threat

Individual/objects	Management, operational and academic employees in the university, HRIS
Classes	Decision makers and users of HRIS
Attributes	Users of HRIS
Relations	Communicating to ensure HRIS is accepted and used in the university
Events	Involving and informing people on HRIS implementation, how it affects them
Constraints	Lack of communication and involving users by management on HRIS implementation creates feeling of resistance by the users towards HRIS

...good communication upfront, alerting people on what is coming, changing the mindset and the behavior and then sensitizing them to the system in terms of continuous training so that by the time the switchover.

As already indicated that communicating and involving potential users of HRIS is important; as you don't want users to be surprised once the system is implemented without their knowledge or with features they don't like. The users would have been a lot more comfortable having anticipated what was coming and not feeling threatened by the new system

"I'm just confused a bit and it's more a question more than a comment, if we're doing Oracle and IMS, how are the two fitting in?"

Another example of management not involving people who are affected by systems, the participant who is working at employee relations was asking the researcher about how the new system (IMS) fits in with HRIS, this indicates that there's little or no communication between what management is doing or planning and the people who will be interacting with the system.

5.4.2 Sub theme: Lack of comprehensive training around new technologies

Individual/objects	HRIS, HRIS users, training resources and time
Classes	Comprehensive training provision
Attributes	Comprehensive training provision
Relations	Training provision for acceptance of HRIS
Events	Training initiatives, follow up resources
Constraints	Lack of comprehensive training initiative, at the pre and post adoption phase s of HRIS or other technologies in the universities

"…training normally happens prior, but given the limited amount of resources we have, you find that the training is one or two sessions, 2 or 3 hours, it's not comprehensive enough, it's not followed up with resource tools like an online brochure"

Training is another way to ensure that there is little or no resistance from the users, users could be trained and involved from before the implementation, post implementation there could be training on updates on HRIS.

5.4.3 Sub theme: Sensitivity of HR data

Individual/objects	HRIS, HRIS users
Classes	Protecting HR data
Attributes	Risks associated with HR data
Relations	HRIS data sensitivity
Events	Unauthorized access to HR data on HRIS
Constraints	Someone who is not supposed to have access to certain HR data, that poses a risk as HR data is sensitive and confidential

"Now there's risk involved because you could have a situation where someone goes into your record and accidentally add or delete something not necessarily correct. So that is something we could look at, there's also questions raised around confidentiality around the records and the data"

HR data by nature is sensitive, having access to all HR information for HR personnel pose a risk, but the sensitivity of HR data issue was brought about a suggestion by one of the participants that maybe HR personnel should have access to all HR data and not for the faculties or departments which they work in

5.4.4 Sub theme: HRIS resistance

Individual/objects	HRIS, HRIS users and management
Classes	University employees
Attributes	Resisting the HRIS
Relations	HRIS users
Events	Not all HR activities are completed on HRIS
Constraints	Not being able to complete all HR related activities on HRIS creates room for other avenues where HR tasks are completed outside the system

"I think also in departments themselves they keep files of staff so there's like triplicates and duplicates of files, payroll downstairs too keeps manual files, they argue it's an audit requirement, we then say how can it be an audit requirement if the stuff is online? There's a lot

of that debate, there's also a lot of resistance, it's about the mindset, and I think a lot of people feel safer to have the staff file which is paper than to go online"

On top of the staff file created at central HR, there is one created at the departmental level, as well as another one created and kept at payroll, as an audit requirement its claimed. Employees have not moved from the old way of doing things, regardless of what HRIS can do, they keep holding on to what was and move along with that, this resistance indicates that there needs to be a complete mindset if things are to change for the better.

"…a lot of people find HRIS cumbersome, complex, time consuming, not user friendly. I think a lot of that is resistance"

Because of resistance, a lot of HRIS users find the system complex, unfriendly and time consuming, this could be a sign that the users refuse to accept HRIS as the system to complete HR activities in the university

"*The university not a place where it's very easy to change, it's difficult and complex and a lot of people don't want to change, people don't want to use the system because they prefer paper*."

The university on its own is characterized as complex environment where change is not embraced, so with that in mind, it's the difficult to convince the university employees to use HRIS for their HR tasks, as they prefer to use paper instead.

5.4.5 Sub theme: Context sensitivity of HRIS

Individual/objects	HRIS, HRIS users and management
Classes	HRIS users
Attributes	University employees
Relations	HRIS users
Events	Language differences on HRIS
Constraints	The language used by HRIS is different to what is used locally, so that context sensitivity is lacking

"I think the design of some of the fields, the language used to be precise. For example HRIS talks about assignment, organizations, locally we talk about departments, jobs, designations, so those sorts of things do put people off because it's American language and it's not in line with the SA context. I think that's something that was part of the resistance, because you're actually taking a system from another area and you're working around it"

Part of the resistance is that HRIS users find the language confusing and not what South Africans are used to, because HRIS (Oracle) is an American company, these are the names they use to refer to certain things, such issues could have been taken care of during implementation, and even now it can still be fixed to localize the system more, eliminating some of the issues related to HRIS resistance by its users.

5.4.6 Sub theme: HRIS feeding information to other university systems

Individual/objects	HRIS, BIS, system designers in the university and other university systems
Classes	Information match in all the university systems
Attributes	The same information throughout university systems
Relations	HRIS and other university systems information consistency
Events	When pulling reports from HRIS and BIS, when checking information, you might find that some information is different from the other
Constraints	The information or reports pulled out from the different university systems must all be the same as the systems are supposed to be talking to each other

"BIS is not properly pulling the data from oracle; somehow they're not talking to each other. It's not as if when I input data on oracle it automatically feeds into BIS, sometimes you find that there's information here and there's no information there"

HR personnel are of the opinion that HRIS is not properly communicating with some of the university systems that they have access to, one example is BIS Business intelligence system). They say that information from BIS sometimes doesn't match with information

from HRIS, this creates problems are management is dependent on this information for decision making and if you give a report with inaccurate information, the consequences are negative.

Sub theme: Employee initiative and attitude and influence on HRIS use

Individual/objects	HRIS, HRIS users, management and university employees
Classes	Employee and HRIS user's attitude
Attributes	HRIS use
Relations	Positive attitude towards HRIS
Events	Taking initiatives to use enabled HRIS features
Constraints	If the individual employee doesn't take the initiative to use HRIS, there's a big chance that the system will just be there dormant

"If you are not like me where you say today I feel like inputting this document on the system rather than printing it out. If it doesn't come from the individual, it won't be done, you'll be told about the function that there's this wonderful function, training. There is no one who says you know what this is the way to go and this is our new machine, we're moving that way…An example is with the recruitment and selection; a lot of people are still using paper. My team and I have just moved away from paper, we're now recruiting online"

A big challenge with HRIS use for HR personnel in the faculty is that there is no one who is providing guidance and direction on HRIS use, so HR personnel end up doing things on their own and a positive attitude and initiative helps in this regard because things get done on the system, otherwise the system just sits there unused. The lack of leadership on HRIS use creates situations where people continue with paper instead of using HRIS to complete HR tasks, as experienced in the university. An example provided above is one of the HR personnel who took the initiative to use recruitment on HRIS and the entire team came along with her and is doing the same thing.

5.4.7 Sub theme: HRIS as easy to use and navigate

Individual/objects	HRIS, HRIS users

Classes	HRIS use dynamics
Attributes	HRIS use
Relations	HRIS use
Events	HRIS users interacting with HRIS
Constraints	It's not easy to understand when there is an error message

"*For me it's easy to navigate, easy to use, it's not easy to understand when there is a problem so it's going to give you an error message"*

HR personnel find the HRIS easy to use and navigate, however, when there is a problem it shows an error message and that is the part that is a challenge, the HRIS users don't understand the error message

The language on HRIS is too technical and influences motivation to use

"...when there is a problem so it's going to give you an error message, and when you read the message is complex and you cannot understand the language and you ask yourself what am I supposed to do. And it's telling you what to do but you just don't understand what to do. And I think that's where a lot of people say you know what I don't want to deal with this, I don't even want to try because it said this I'm doing it and it's still giving me a problem"

The system functions properly and HR personnel find it easy to use and navigate, however error messages are not easy to understand because of the technical language used, this discourages users from using the system. These errors influence the motivation that users have; it discourages them from using the system

The user creates own navigation sequence

You can navigate but it's not an easy thing to say this is page 1 and then you move to page 2, 3…you either create your sequence, I just want to show you the environment and how it works (shows me the system on the screen) you'd have to create your sequence and that's where the trouble comes in because everyone has their own sequence.

HRIS has no specific sequencing when moving through screens and menus, the user creates their own navigation sequencing, which often creates problems as there is no navigation guide and often certain fields or screens are left because of lack of sequencing. Mandatory fields are highlighted in red but navigating the folders is a challenge because there is no sequencing.

5.4.8 Sub theme: HRIS running overnight to pick up errors

Individual/objects	HRIS, HRIS users and management
Classes	Working together across departments and responsibilities
Attributes	University employees
Relations	Completing HR tasks
Events	Completing HR tasks, especially across departments
Constraints	Lack of taking responsibility for one's actions and not trying to learn to learn HRIS independent of the HRIS team

"*For supervisors and managers, the system runs overnight and that is for picking up any mistakes on the system then the next day it will send a notification to the HR manager that there's these problems, and the manager will then forward it to you and then update"*

Supervisors and managers at faculty level receive notification of errors to be fixed on the system, HRIS runs overnight to identify such errors and the manager or supervisor them forwards those errors to the responsible people to fix them. However, there is not feedback to the manager or supervisor whether the error was fixed or not, but it will run again

5.5 Theme four: Determine how adoption as a dimension may influence effective use (another dimension) of human resource information systems

This theme is about the influence of adoption on HRIS effective use and answers questions such: - How can HRIS be in order for it to better assist in your HR tasks (navigation, output, level, ease of use, compatibility, system reliability, responsiveness)? How can things be improved based on what HRIS is currently? Describe how easy it is to use or how difficult it is to use HRIS? What will help you use HRIS more regularly? Given a choice between using HRIS and not using it, what will you do? What will improve the use of HRIS?

Each sub theme is represented by the ontology table followed by the participant's responses in the box and an interpretation of the ontology table and response follows.

5.5.1 Sub theme: Silo mentality

Individual/objects	HRIS, HRIS users and management
Classes	Working together across departments and responsibilities
Attributes	University employees
Relations	Completing HR tasks
Events	Completing HR tasks, especially across departments
Constraints	Lack of taking responsibility for one's actions and not trying to learn to learn HRIS independent of the HRIS team

"…who's responsible for what, because there's a perception that, if something does not make logical sense must be addressed by the HRIS office, it's about accepting responsibility which I find maybe not 100% of accepting responsibility. If I made an error, I have to find somebody else out there to blame that working in your own space and not going beyond that"

Taking responsibility is related to HR tasks completed on HRIS should something go wrong somewhere, often users don't take responsibility for that. As a result they end up functioning within their own territory and anything else beyond is not done. Silo mentality

limits collaborations across department, often necessary collaborations where work has to be completed.

"…one of the things we would do is things like I work in this section, I can only manage data here (silo mentality). If for example faculty of engineering needs something about you, they can view some of your records; they can't see other things, things like qualifications, salary data, so there's a bit of discussion around that. Shouldn't HR be allowed to view all that and work on records?"

Data on HRIS can only be viewed by those who are assigned to it, if you don't belong in a specific department, you can't have access to information to other areas of an employee not related to your area. Maybe things should be different especially for HR employees that the system enforcing silo thinking.

5.5.2 Sub theme: New features on HRIS to eliminate manual HR tasks

Individual/objects	HRIS, HRIS users, vendor and management
Classes	Added features and updates
Attributes	Adding updates and features
Relations	Better functioning system that serves it's user's needs
Events	Updates and addition of new features
Constraints	Currently some features are not enabled or they are enabled but not used on HRIS

"*We will soon automate the appointment feature*"

Appointment of employees is currently done manually, appointment is after recruitment has been done and the potential employee has agreed to what Wits has to offer. This process is done manually; this feature could be enabled to eliminate some of the problems associated with manual completion of HR tasks.

5.5.3 Sub theme: HRIS used to store basic HR data

Individual/objects	HRIS, HRIS users other HR departments
Classes	HRIS users
Attributes	The type of data stored on HRIS
Relations	Data input on HRIS
Events	Storing of more advanced data
Constraints	Because data on HRIS is so basic, if you need more than what is stored on HRIS, you'd have to run around searching for that

"*A lot of the data we have is basic data, although the facility is there, to do attachments such as disciplinary records, non-confirmation, poor references and add all of those on the system, it's not consistent, some people do that, and some don't….At the moment we have a culture that still needs to have a staff file, and a lot of the things go into the staff file, there's a huge push from the HRIS office to store a lot of the things online, it makes it better and easier to access. There's a bit with that sort of change that change management effort through the HRIS office, they're trying to change HR."*

One of the challenges at Wits has been to change things around, especially attitudes and mindset around HRIS, and as noted above that HR is culture specific, that has influenced how the HRIS is used and how it could be used better moving forward. Currently the culture is that for each employee in the university, there's a staff file that stores all the HR activities of each staff member, the file is opened upon hiring. This file defeats the purpose of adopting HRIS because one of the reasons the system was adopted was to eliminate paper trail. The information stored on the staff file could be transferred on to HRIS as the system has the functionality to handle attachments instead of depending on the staff file. Because of the existence of an alternative method for storing information, users tend not to use the system to its full potential.

5.5.4 Sub theme: HRIS underuse

Individual/objects	HRIS, HRIS users and management
Classes	HRIS users

Attributes	HRIS use potential
Relations	HRIS users
Events	A staff file for all employees while HRIS is enabled to handle this
Constraints	The existence of a staff file while there's HRIS that can store what is stored on the staff file is duplication of work, takes forever to update and retrieve the file, the storage and personnel who access these files

"*If you join wits university, we open a staff file like this (showing me a file filled with some papers inside), its manual currently and it's paper. Essentially, the only thing that is different from your oracle record, you have a signed copy of your contract*"…*"It's one of the points, it's not necessarily an efficient way, but it's currently still a practice at wits, we haven't moved into the space where we go online with a lot of stuff from an HR perspective. This system provides that sort of enabling, which is not yet being used"*

Imagine storing staff files for 4000 university employees, whenever an employee does something, the file is updated; there's the physical storage needed for the files and personnel who update and create these files. HRIS is enabled and capable of storing these files, yet it's not used for such purposes

I think it's a couple of reasons, historically the staff file was considered to be the main document from a disciplinary, probation view, people want to see the paper rather than the system. It's really a major, major mind shift we need to let go, you can see our desks, you go to any HR office, you'll see a lot of paper.

The staff file is considered the go-to document for confirmation of probation, disciplinary and there's a trust issue with technology compared to paper. HR needs to move processes online and eliminate the paper that is currently in use, otherwise this defeats the purpose of adopting the technology in the first place.

"A lot of the stuff is automated, except for the hiring function, which is still paper based, claims are still done on paper. There is a hiring function on the system but is just not used"

HR personnel at faculty level feel that the HRIS is there and capable of doing much more than what it is currently used for, as an example, the hiring function is still paper based although it is enabled on HRIS to be used, but they are not using it.

5.5.5 Sub theme: Enabling other functions for better employee management

Individual/objects	HRIS, HRIS users and management
Classes	HRIS users
Attributes	HRIS use potential
Relations	Employee management
Events	A staff file for all employees while HRIS is enabled to handle this
Constraints	Managers should be able to view other employee information without requesting a staff file

"If we're moving towards digitizing, managers should also view their employee's records such as salaries, absenteeism, qualification, you might want to open other functions for them to view that will enable them to manage staff better rather than to request a staff file."

Once the staff file information is digitized, other features on HRIS should be enabled for the effective running of the university. The problem at the moment is that HRIS stores basic data and that makes it difficult for management as they do not have access to other information stored on the staff file.

5.5.6 Sub theme: HRIS cost vs value

Individual/objects	HRIS, HRIS users and management
Classes	HRIS users
Attributes	Maximum value from HRIS
Relations	Employees and management
Events	Expenses related to HRIS and the value it the system brings
Constraints	The costs associated with upgrading or improving HRIS often do not yield much value

"I do think there are also issues around costs and budgets and HRIS in mot a cheap system, it's quite expensive, there's a huge challenge around that. These enhancement and nice to have are often not priority, which often go into the background, I think that is the reality if you want to make HR paperless"

The university is spending a lot of money around HRIS with little value as a result, there are also the enhancements and the nice to have are often not a priority but those are the features that users need in order to exploit the system, and in return getting value out of it and move HR online at the same time

5.5.7 Sub theme: Implementing more systems instead of using HRIS

Individual/objects	HRIS, HRIS users and management
Classes	System implementation
Attributes	HRIS use
Relations	University employees and management
Events	Implementing a new system while HRIS can be able to what the new system does
Constraints	Instead of exploring HRIS and enabling more features, management has decided to implement a new system at great cost while HRIS can be enabled for such features

"In terms of capturing reports, we use the IMS system that the university is trying to roll out"

The employee relations office will be using a new system soon which is being rolled out currently, instead of exploring and using HRIS, there are back door systems created to cater for other HR departments in the university at great cost. Employee relations is not unique to South Africa and their processes could be integrated into HRIS, for them to have a system of their own seems unreasonable and unjustifiable as the whole point of implementing the university ERP was to get rid of back door systems like this one that will be implemented soon

5.5.8 Sub theme: HRIS access according to employee job specifics

Individual/objects	HRIS, HRIS designers, HRIS users and management
Classes	HRIS users
Attributes	HRIS use
Relations	HRIS access
Events	Access to HRIS according to job specifics
Constraints	Currently access to HRIS for some university departments are not classified by job specifics

"*Another one, although we're assisted by third parties, if we want information of a person's comings and goings, that stuff we can't access, we usually sent an email to Sipho (pseudo name) to say I need this person's logins from this day to this day (to check times they come in), sometime if they logged in on a certain day and the person would have arrived late and you're trying to build a case and people always don't use their access cards (coming in by car pool). So it helps to see what time they log on to the computer or come through the gate if they did in fact swipe in. we request it and they make it available to us. If we could have access to such, it would make things easier because currently we have to call someone for us to access this type of information. This helps in cases where there are allegations of absenteeism and late coming."*

Employee relations department which is in charge of managing risks that might emanate from the employment relations doesn't have access to certain information that will make investigation easier, they have to ask a third party to access information about employees, this information can easily be made available to employees working on cases in the employee relation department

"One of the problems is that certain areas don't have access to the HR database, like the secretariat, they don't have access to those screens"

Due to an embarrassing incident that happened at the university that involved the secretariat (coordinating academic decisions), it was discovered that the department does not have access to important information that could easily be made available on HRIS.

5.5.9 Sub theme: A HRIS specialist to input HR data

Individual/objects	HRIS, HRIS specialist
Classes	HRIS data input
Attributes	HRIS use
Relations	HRIS use
Events	Data input into HRIS to be done by a single person for the faculty
Constraints	People input data differently on HRIS, creating inconsistencies and that has negative implication for HR officers in the faculty

"*So it's a long road to freedom, and personally my view is that I don't believe that everyone should be inputting data into the system, I've got a personal view that it's a specialized thing, HR officers here and anyone should just be doing maintenance"*

"…the HRIS specialist needs to then input that information so that it's inputted correctly, there has to be an accountability resting on one person, as opposed to 5 fingers that are doing different things"

"…rather than from the start where you put in a whole lot of information, sometimes you're in a rush, it happens, it's the nature of HR, you end up skipping certain critical information and that creates data integrity problems"

Because of the experience with data inconsistency and accountability, a specialized HRIS specialist who will be responsible for data input when an employee is hired will assist with some of the data issues on HRIS, currently all the HR personnel can input data into HRIS

5.5.10 Sub theme: Fixing historic stuff regarding HRIS

Individual/objects	HRIS, HRIS specialist, HR personnel
Classes	Fix HRIS data issues
Attributes	Better HRIS
Relations	Fix HRIS historic stuff
Events	Instead of a reactionary approach to HRIS, why not dedicate time and resources to fix the historic issues on the system

Constraints	HR is always functioning on a reactionary mode, the fixing of some of the issues on HRIS will assist in how the system is used going forward

"*Like I said to you, specialized, dedicated people who will on the system, who will put an effort in doing things right and fix what's incorrect, fix historic stuff. There are historic stuff, none of us were probably here at that time but we have to resolve them so it has to be done, we can't continue going on like this, where we're really reactionary every time. We can't be waiting for a new problem to come; we have to anticipate what we can possibly fix"*

This is also a follow up based on the suggestion of a specialized HRIS specialist who will be dealing with entering new employee data on the system. As a way to fix some of the data issues in the system, the HRIS specialist with fixing some of the historical problems that are currently still a pain. HR personnel are stuck with problems they have inherited, although they have found a way of working around these problems, but in order for them to be effective and efficient, these historical problems must be fixed.

5.5.11 Sub theme: Delegation of folders on HRIS

Individual/objects	HRIS, HR personnel
Classes	Field population
Attributes	HRIS data input
Relations	HRIS data
Events	A request to update HR information on HRIS which HR personnel never used to do
Constraints	HR personnel currently have information about employees that they can input on HRIS but they are not because it's some else's function, later that might change

"Certain folders we are currently jumping and they'll say in the next 3 years we have to fill those parts, currently I have information about medical aid but I'm not filling that part in because I'm still taking paper, forwarding it to you and you just deduct whatever from your system side. A few years down the road, they will say HR has to fix this, now again, it's a reactionary. Also new requirements come in from DHET with information you don't have and then I must suddenly chase down people for that information, there's a new mandatory field I

was told to fill in this morning, although it's always been there but don't input because no one said you can input anything there."

Certain folders or fields on HRIS are not filled in by HR personnel but by other departments in the university and HR has information on those fields, an example is medical aid information, HR has that information but they scan it and sent it to another department to capture that information. Due to regulations and instructions from authority bodies (such as DHET), things change and certain information will be required from employees and HR must now acquire that information to fulfill the requirement, which is a reactionary way of doing things.

Certain functions as view only for employees on HRIS

"The self-service sometimes makes our life difficult, when they change addresses and so forth, it duplicates entries on the system and you'll find 2 addresses for 1 person and that is confusing, sometimes we call that person to ask which one is correct, I have asked that the change address option for employees must be view only"

Certain functions on self-service must be view only as it creates problems with information consistency and that is confusing and frustrating for HR personnel to deal with, so it was suggest that the view only option is better for certain HRIS functions.

5.5.12 Sub theme: Cooperation between employees and HR personnel

Individual/objects	HR personnel and university staff
Classes	University employees
Attributes	Working together
Relations	University employees
Events	When HR personnel is searching for HR data, employees must make such information easily available
Constraints	Incomplete or inconsistent data on HRIS means there'll be data integrity problems

"The academics are very difficult to work with, when they refuse us with information, our data is compromised and they report us to the dean that data integrity is a problem, while people refuse to give you information"

Some employees are difficult to work with, sometimes HR personnel calls them for information in order to process claims etc. The employees often don't cooperate with HR personnel on acquiring such information.

This section provided an analysis of the interview data and presented the themes with their sub themes, an ontology table follows, a response from the participant and an interpretation of that sub theme; presenting the interview data in this way makes it easier to read and better organized. The section that follows is an analysis of university official documents.

5.6 Document analysis

Textual data can be analyzed using content analysis; the process involves documenting themes as they emerge from documents (Hsieh and Shannon, 2005). Content analysis in this research will be used to analyze documents such as policies and other official documents in the university that the researcher might come across and deem relevant.

The analysis is presented by mentioning the name of the document, the emergent theme, a quote to support the theme from the document and an interpretation thereof.

The document analyzed below is "*Wits vision 2022: Strategic framework*"

The document can be described as "*a positioning document that articulates the vision and strategic choices of the university to assert itself as an internationally leading research-intensive institution embedded in the top 100 world universities*" the objectives, indicators and benchmarks will be listed and described below, these are aligned to the interviews findings above. The objectives mentioned include:

Universities and globalization

"High levels of human resources mobility across national borders and the generation of new knowledge…the emergence of new disciplines and fields of knowledge"

Universities have moved from the traditional role of generating knowledge and enriching science has changed to places of knowledge generation, sharing and dissemination required to drive global competitiveness and economic growth. Globalization in of the university requires taking advantage of human resources from all over the world to assist the university to be where it wants to be. The issue of globalization was uttered by one of the participants as internationalization of HR, this brings with it new niche areas, skills and knowledge that South Africa can greatly benefits from. The danger with globalization (human resources, students or curriculum) is that the local context can get lost in this endeavor.

Impetus for a wider university African engagement

"Universities in Africa are expected by various socio-economic drivers such as the millennium development goals (MDG) to serve as critical players in national and regional economic and social development imperatives, including shaping research and development"

One of the objectives of vision 2022 acknowledges the influence of socio economic drivers in the region. National objectives often compete with regional and social development interests with limited resources. The university faces the same challenges, South Africa belongs to SADC (Southern African Development Community) with its own regional objectives, the country has its own objectives to meet, the university is driven by what the country tries to achieve. On HR, the university can leverage on SADC and the rest of Africa migration of their communities living in Gauteng, Johannesburg with skills that the country is battling with. Not to dilute the transformation agenda of the country and the university, that is, employment equity and student access from previously disadvantaged backgrounds.

Managing the university

"The changing role of universities in society and the economy have led to the realization that management of universities has become increasingly important and specialized. Two cultures exist within the university, viz. academic culture geared towards knowledge, scientific excellence, academic freedom and sharing of results; and a business culture geared towards producing wealth, profitability and appropriation of results."

The university is recognized as a special kind of a business entity and needs to apply business principles if they are to prosper. Academic scholarship and intellectual leadership are no longer the sole requirement for managing universities and therefore require their own business models. Wits wants to position itself as a research intensive university supported by "sophisticated" administration and business systems. HRIS could be argued as one of the systems in place to ensure that the university is managed efficiently and effectively. At the same time, all this business language and the acknowledgement that a university is a "business" does that mean what the university provides, which is education, is it now classified as a commodity?

Extensive networks and partnerships

"Wits is positioned to participate in economic growth and social development agendas, locally and on the continent. It is through extensive networks and partnerships (e.g. through the Pan-African University partnerships strategy) that the university seeks to pursue its international excellence in research and teaching, students and staff recruitment"

Building and maintaining networks all over the world is important for the University for research and teaching, for students and for staff to learn how recruitment should be if the university wants to attract top scholars to help fulfil their mandate. The staff recruitment collaboration could be done by HR personnel as they are the ones who are engaged in recruiting personnel in the university, not by academics as it's currently the norm. This will help them benchmark some HR practices and processes and improve on those that they think could be improved on.

An IT savvy university

> *"The university positions itself as an IT savvy institution to enhance all its core processes, by providing new and innovative ways of engaging students and staff in academic activities…a business intelligence capacity that turns data into information that is available anytime anywhere*"

Despite the engagement to support students and research, the university aims to support core academic activities using the latest technology and approaches. HR processes could be improved greatly from this as its one of the core functions in the university. Business intelligence, on HR is provided by HRIS which is underused, that needs to change as there is reliance on the system to provide information for decision making.

Remuneration and reward policy

The remuneration and reward policy states that it is focused on holistic remuneration policy and strategy in order to attract, retain and engage high quality academic and support staff whilst at the same time ensuring good governance, equity, fairness, consistency, and transparency in remuneration decisions

> *"To attract, motivate and retain the right employees who will deliver against the university's goals*

The university must ensure that appropriate personnel are attracted retained in order to assist in realizing some of its objectives. In becoming top one of the 100 universities in the universities, the university should get the right

> *"To offer a holistic employee value proposition"*

University personnel want to feel valued in the form of better career prospects, organizational culture and beliefs, the work environment and compensation and benefits that the university offers its employees.

"To ensure that the university complies with corporate governance guidelines in the way remuneration is managed"

This is to adhere to rues or guidelines set by the remuneration policy in the university, as a way to attract, retain and motivate employees. This also assists the university in setting fixed salary scales for all employee levels in the university, in scares skills, a potential employee could negotiate above the normal scale if necessary

"The university is committed in ensuring that the guaranteed remuneration of all its employees is competitive in the relevant marketplace"

Competitive remuneration is set according to market conditions, remuneration ranges or pay scales and midpoints of pay scales. According to the remuneration policy academics and senior or executive staff remuneration is relative to the higher education market, as it is the primary market to which the university attracts and loses academic and senior management to. Support staff remuneration rates are relative to the national market.

The section that follows discusses the field notes as part of the data collected for this study.

5.7 Field observations

Observations were made during the interviews as participants went about their mundane and routine tasks. A participant drew a sketch, figure 19 below, in order to elaborate on a point he was making regarding the positioning of HRIS with respect to the university structure.

Figure 19: HR as a “point of truth” in the university

Figure 19 above was drawn by one of the participants from HRIS management who was highlighting the importance of HR in the entire ERP system and at Wits, HR at the center of it all. The other systems around are student system, CRM (customer relationship management), procurement, payroll, general ledger (GL) and i-recruitment (iREC). The systems feed into BIS (business information system) which management draws reports from based on data from the ERP, with HRIS at the center. In addition, the reports provide an indication of trends and decisions can be made from them. The next picture is a depiction of HR and HRIS in the university.

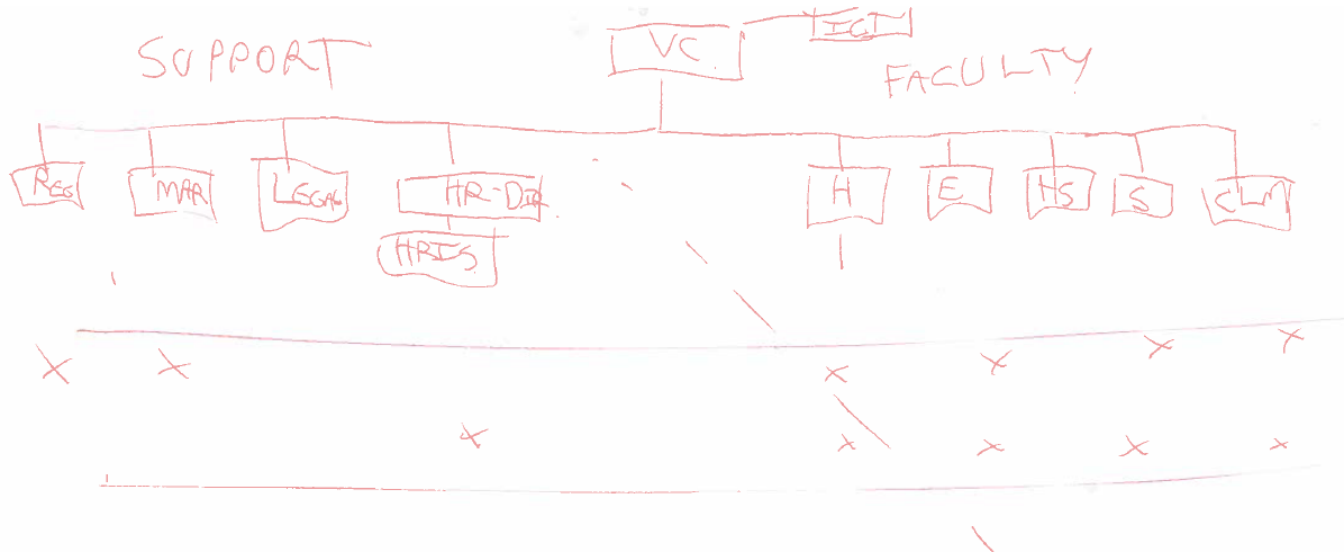

Figure 20: HRIS as a tool supporting both admin and academic functions of the university

Figure 20 demonstrates where HRIS and HR sit in the university; it is regarded as a support function and cuts across IT and HR. HRIS management have experience of both and seamlessly between the two functions, as HRIS is a combination of the two. In addition, it shows the decentralized nature of HR within the university; with central HR at one end and faculty HR at another.

The section that follows is a brief historical journey of HRIS in the university and this section serves as context to the system adoption and use.

5.8 Brief historical journey of HRIS

In 2005 the university purchased an ERP (enterprise resource planning) system which is Oracle. Before the implementation of Oracle, the university had legacy systems which were not communicating with each other and made reporting difficult and often with inaccurate or outdated information. There are other ERP's in the market like SAP, ITS, SAGE, MICROSOFT DYNAMICS, ITS (Integrated tertiary software) is specially developed for higher education institutions, while Oracle is widely used in other organizations with different functions from a university. Oracle provides a software base

that looks at the entire organization, finance, HR, payroll, and a student system for the university.

Oracle manages the business processes, records information, runs operations at the end of a period, people can draw reports and do predictions etc. With HR as a “point of truth” or as a place it all starts, HRIS (part of Oracle ERP) feeds other university systems with information captured by HR personnel and has the whole view of the university.

HRIS is important in the university as it even has its own department, and they report to the senior HR director, this specialized function within the university is the only one dedicated to a component of the ERP, this highlights the importance of HRIS and its implications in the university.

The next section mentions some of the challenges the researcher faced during data collection.

5.9 Challenges during data collection

Top management at the university were generally welcoming when I went to their offices the first time to request interviews, but because of their busy schedules the interviews were moved a couple of times causing delays.

Another challenge was communicating with a potential participant through the secretary, after three weeks of postponement; the secretary eventually called to refer me to someone that she thought will assist in what I needed.

HR personnel where worried about who I was and why I wanted to talk to them, I got the sense that they thought I was spying on them. One HR personnel refused the interview request, the others that I approached where a bit worried at the beginning of the interviews, not wanting to talk much, but they later opened up and the process became smooth. The section that follows discusses rigor and relevance in this study.

5.10 Qualitative rigor/ research validity and reliability

Thomas and Magilvy (2011) define rigor in qualitative terms and validity/reliability in quantitative terms as strategies to establish confidence or trust in the research findings or results. Lincoln and Guba (1985) say that over time rigor provides trustworthiness of the research approach and ensures that the research population is well presented. The following are components that represent trustworthiness in qualitative research: truth-value/credibility, transferability, consistency/dependability and neutrality/conformity.

5.10.1 Credibility /truth-value

Internal validity in quantitative research is equivalent to credibility in qualitative studies Merriam (1998). Credibility allows others to identify participant's experiences through their interpretation. According to Shenton (2004) the following are ways of establishing credibility in qualitative research:

Adoption of appropriate, well recognized research methods. These include a line of questioning during interviews. The interview questions were based on those that have been successfully used in previous similar studies and field notes based on what the researcher is observing.

Development of early familiarity with culture of participating organizations. This included the reviewing of related HR documentation and preliminary interviews with participants to establish trust and to get an understanding of how things work within the university

Triangulation (Denzin, 1978). Through use of different data collection methods, the research used interviews, document analysis and observations of participants as data collection methods. Supporting documents also provide a background and verify details that participants have supplied.

Debriefing sessions between researcher and superiors. Constant engagement not just with superiors but also with peers along the journey, as to give feedback and to developed and test ideas, and to recognize one's biases and preferences.

Peer scrutiny. The researcher engaged with others in the field such as colleagues, academics and peers. The fresh perspective they brought challenged some assumptions made along the way.

5.10.2 Applicability/transferability

Transferability/applicability is about transferring the research methods from a set of people to the next one or "how one determines the extent to which the findings of a particular inquiry have applicability in other contexts or with other subjects/participants" (Tracy, 2010:290). External validity in quantitative research is similar to applicability in qualitative studies (Lincoln & Guba, 1985). The research can be transferred to other university contexts, as they are similar in structure and offering. A way to ensure transferability according to Shenton (2004) is the researcher provided thick descriptions on the demographics.

5.10.3 Consistency/dependability

Dependability, is similar to reliability in quantitative studies, is when another researcher can follow the research path of the current study and apply it in another one (Thomas and Magilvy, 2011). The researcher provided a systematic approach of the research process, a detailed description of the research methods, and described changes that occurred in the research setting and documented them.

5.10.4 Neutrality/Conformability

Conformability is when transferability, credibility and dependability have been established and the research findings could be verified by others (Denzin, 1978). The researchers' admissions of own biases, an understanding of belief that underpin decision made, methods adopted are well documented in the thesis. Another way to ensure conformability is "audit trail", which would allow others to be able to trace the course of the research every step of the way (Shenton, 2004:72).

5.10.5 Reliability

Long and Johnson (2000) define reliability as the level of consistency or dependability which an instrument measures the attribute it was designed to measure. Brink (1991) suggested three ways to test reliability in qualitative studies. They will be discussed briefly below.

5.10.5.1 Stability

Stability is established when asking similar questions from participants at different times and get similar responses. The researcher did preliminary investigations with some of the participants before the interviews took place.

5.10.5.2 Consistency

Consistency refers to responses given by participants on a given topic as the same or similar.

5.10.5.3 Equivalence

Equivalence is tested by asking the same question differently during an interview or by simultaneously observing participants by two or more researchers. This is to check if the responses are similar, although posed differently, and to ensure that observations by the researcher are similar to what another researcher might observe.

5.11 Summary of the chapter

Chapter four detailed the research methodology that the research followed in order to answer the research questions posed in chapter one. This chapter analyzed the empirical data and discussed the findings. The analysis and discussions were done according to themes and emergent subthemes; where themes follow the research objectives, as detailed in chapter one. The analysis of university documents related to HR and HRIS were discussed, including sketches drawn by participants. Lastly, the chapter reflected on the qualitative rigor, with respect to the study. The chapter that follows interprets the findings against literature, and subsequently the theory for HRIS adoption and use is articulated.

CHAPTER SIX: INTERPRETATION OF FINDINGS AND THE FRAMEWORK FOR HRIS ADOPTION AND USE

The previous chapter analyzed and discussed the study findings. This chapter interprets the study findings against literature. This is done following themes and subthemes emanating from the empirical evidence. These themes include HRIS integration and disintegration; inconsistent leadership and direction; competing regional, national and university objectives; decentralized HR; university and HRIS vendor; customizing or not to customize HRIS; recruitment strategy; the university brand and identity; administrative versus academic staff; people and management; HRIS and data analytics; planning; and lastly the theory of adoption and use of HRIS, the multi-dimensional framework, in a university is given.

HRIS integration and disintegration is discussed next.

6.1 HRIS integration and disintegration with other university systems

There are existing HRIS integration and disintegration issues. For example, HRIS has not integrated well with other university systems such as the business intelligence system (BIS). Among other uses, BIS draws data from HRIS. BIS turns the data generated by HRIS into reports. Management usually uses these reports generated by BIS to be submitted to DHET (Department of higher education and training) for subsidy and other compliance purposes. However, it was highlighted that there is **data integrity issues on HRIS** because there was no proper data clean up when institutional HR data was moved from legacy systems to HRIS. Currently the university is still trying to correct this important step that was not appropriately handled during HRIS implementation.

Waring and Skoumpopoulou (2012) explored the issue of culture and how a system influences how HR processes are completed. HRIS has influenced the HR culture in the university; one of the cultural consequences of HRIS is the compliance value that it has a “go to system” for all HR information and compliance needs. Further, the issue of data accuracy was explored by Skoumpopoulou and Nguyen-Newby (2015) that data going

into the IS has to be accurate, if not, then the entire system becomes questionable. HRIS with its compliance requirements must store accurate HR information.

Change management processes were not handled properly, things such as communication during HRIS adoption were not dealt with appropriately and as a result, some employees have a negative attitude towards HRIS. Gates (2004) in her study of SAP implementation in universities discovered that change management is crucial as it assists employees make the transition from legacy systems easier, promoting communication, and a plan for role transition. Further Yusuf et al. (2004) and Momoh and Shehab (2010) highlight the importance of handling the transition as a change management initiative. When HRIS was implemented change management was never dealt with, this has had some dire consequences such as user resistance to HRIS.

It was expressed that **HRIS does not fit the university's business requirements**, firstly university employees feel that there are better systems such as ITS, which are developed specifically for higher educational institutions and such dedicated systems eliminate some fit challenges that Oracle has. Secondly, Oracle is an American product customized to the local setting; however, that is not enough as issues of language can discourage HRIS users from engaging with the system as American English on the system is not the same as the one that is spoken locally. Pollock and Williams (2009) suggest that the underuse of organizational systems is often due to incompatibility with how the organization operates, this is the same with HRIS in the university, and users commented that they have to find their way around the system.

Because of this misfit, HR personnel have found a way of working around the system by using other systems (such as SharePoint) to distribute documents for meetings. Such systems are called **feral information systems** or **shadow systems** are by products of end-users seeking professional efficiency and to reduce operational costs imposed by enterprise systems (Spierings et al., 2016), this might be due to customization issues or the users not using the system effectively, instead of exploring the system, they find alternative ways outside of it.

HRIS customization/lack of customization is another matter that the university management is battling with; one of the reasons for adopting HRIS was to get rid of highly customized legacy systems that required specialized skills, and HRIS doesn't support specialized code. If HRIS is customized, it means the university will go back to what used to be, therefore defeating the purpose of adopting it. Lack of customization also means some university requirements are forfeited, as a generic HRIS does not satisfy some university HR requirements.

HR business process reengineering means redesigning HR business processes that will typically come as a result of implementing HRIS. Unfortunately, this was not done in the university when HRIS was implemented, before HRIS adoption and post adoption, things are still the same, processes and positions have not been tailored according to the new system, this has created some problems as new roles and responsibilities normally are part of a new system and must be catered for. Bologa et al. (2009) mention business process reengineering as a success determinant of ERP's in higher education environments.

Because of users resisting the system and data integrity issues, **HRIS information accuracy** is at risk, this creates problems as HRIS data feeds into other university systems as it's referred to as **"the point of truth".** This has a ripple effect on subsidy as this information about university personnel is reported to DHET and management use that information to make decisions and trend analysis in comparison to where the university wants to be.

Lee and Myers (2004) assert that implementation of an ERP, which HRIS is a part of, may change the organization and its social structures to reflect a new organizational identity. The changes may be integration, disintegration and reintegration at all organizational levels, with the assumption that integration is inevitable with the new organizational system. However, this is not always true as HRIS has not integrated the university, some of the social structures and processes remain the same in spite of its presence.

6.2 Inconsistent direction/leadership

Lack of consistent direction or leadership in the university has influenced the current state of HRIS and how users engage with the system to complete their tasks. One example of this is **lack of communication when HRIS was implemented**; HRIS is a massive investment in the university, because of that management had to be careful in ensuring that things run smoothly without interruptions. Unfortunately communicating and involving system users during HRIS adoption was not done properly. As discovered to be true by Nguyen et al. (2015), that failure in communication can make employees doubt the usefulness of the system, creating a negative attitude towards the change, fear of job security, and low levels of support for the system. Management should make employees aware of their purpose behind the adoption, roles and contribute towards it and eliminate users worries.

Currently management has plans of implementing **another HR system separate** from HRIS and the people who are affected by this are in the dark. Also, why implement a system whose features can be activated on HRIS? Does that not defeat the purpose of HRIS as the “point of truth” if there is other systems in the background? This way, some HR information will get lost as a result of that new system.

HRIS resistance can be placed on management within the university, the university functions with a lot of autonomy; as a result, university management relaxed about enforcing HRIS use, trusting HR personnel will use the system at will, which was not so as HR personnel still complete some HR tasks outside of HRIS.

Another issue of management inconsistency is the **use of a staff file** in the university as a go to file for all employee information. HRIS is enabled to store copies of important staff information contained in the staff file. Unfortunately, the information is stored on a staff file somewhere and management always refer to this file when auditing and for other compliance purposes. Management could enforce the use of HRIS for all staff information and get rid of the staff file as it defeats the purpose of implementing and using the system if other HR related tasks are completed manually. It’s as though management is going in their own direction, the staff is just confused on what to do.

6.3 Competing university, national and regional strategies

One of the objectives of vision 2022 is for the university to focus on **globalization**, this means getting international scholars to come to Wits to impart scarce and new skills. The country's objectives are to see the representation of previously disadvantaged individuals, that is, race and gender disparity minimized that exists in the country (**Employee equity** objectives) as a priority. SADC (Southern African development countries) which South Africa is a part of has its own regional objectives that must be fulfilled by the country.

All three competing strategies have to be realized somehow, the university is charged with transforming HR through the representation of previously disadvantaged communities but at the same time, it has its own objectives of focusing on globalization. This tension could be resolved by bringing in international scholars for developing a new breed of scholars from previously disadvantaged communities and imparting those critical skills that the country needs. However, unfortunately this is not the situation on the ground as there is little to almost no change at universities when it comes to HR representation.

6.4 Decentralized HR

HR within the university is decentralized; central HR is responsible for personnel at the university's top level, both management and support staff. At faculty level the deans are responsible for hiring staff that they feel will complement their vision; academics and support staff. The problem with a decentralized model at the university is that the university's goals and objectives might get lost along the way at faculty level. Centralized power means that the deans can do whatever they seem necessary, that doesn't necessarily translate into feeding the university's goals and objectives; subjective decisions can be made that suit individuals instead of the university's vision.

Central HR is involved at faculty level when it comes to hiring or promoting at professorial level, but before someone can be a professor, they often start out as junior academics at lower ranks. The junior academic can come into the university on a developmental basis; there could be mechanisms in place to ensure that central HR/top management is kept up to date about the development of certain junior academics. Often the deans are entrusted to ensure that junior academics reach the professorial level, but this isn't the

case as you find junior academics frustrated at some of the HR processes and end up leaving the university.

So there's some disconnect when it comes to central and faculty HR, things could be improved in ensuring that HR at faculty level feeds directly into the university's goals and objectives. Kinemo et al. (2015) have focused on the benefits of centralization in organizations; they mention reasons such as the availability of highly skilled HR personnel to perform complex tasks such as the design of recruitment and selection procedures, no need to reinvent processes per unit, central decision making reducing biases towards certain candidates, equal and fair treatment of employees. These reasons could minimize some of the tensions that exist within the university because of the decentralized HR model used.

6.5 The university and the HRIS vendor

The HRIS vendor, Oracle, which is the ERP implemented in the university is an American based company with offices in South Africa, although they provide support and services to the university, there's some tensions with the support and services they provide. Oracle decides when things are done, upgrades, maintenance etc., it is all about what the vendor can do or cannot do. The vendor can also discontinue to support a product after resources were spent acquiring it, and they will bring in a new product to replace that old one, which means the university will have spent more in order to acquire the new product. A lot of the enhancements and upgrades are often required by what other Oracle users want, and that will be pushed to the university. The university can request some enhancements and upgrades; these often cost extra resources on top of the mandatory upgrades from the vendor.

A coalition between top management and the HRIS vendor transformed the structures of the university (Lyytinen and Newman, 2015). This means the HRIS vendor had to understand the type of organization it is dealing with, universities are special places; they have decentralized decision making structures (Hardy 1991; Heiskanen et al., 1998). Lyytinen and Newman (2015)'s study discovered that with the implementation of an ERP

it created centralized control with a focus on the vision, that is top management and at faculty level, and to reconstruct the university as complex.

Power dynamics are discussed by Silva and Fulk (2012) as one of the factors that disrupt integration, in this instance disintegration, this however is not to be viewed as a dichotomy but a continuum which can change at any moment. The dynamics between the university and the HRIS vendor can be theorized as power dynamics, with the vendor being in charge.

This research revealed the opposite of that, with the adoption of HRIS, the consequences were that top management and faculty level are following a decentralized model, faculty level and top management seems to be focused on different ideologies on HR and the university remains complex.

6.6 To customize/not customize HRIS

Because HRIS is not specifically developed for the higher education environment, unlike systems such as ITS, there's customization that goes with that. When HRIS was implemented, the university saved costs in terms of keeping specialized IT personnel who worked on customized legacy systems and no longer needed to keep such skills. Unfortunately, HRIS is not customized in the university because Oracle does not support customized code, as a result HRIS users have to navigate and complete HR tasks on a system that is not a fit for the environment. Because the university doesn't want to keep specialized developers, it has followed the trend of not customizing with severe consequences as a result.

The lack of fit for HRIS with the higher education environment means often things fall through the cracks; there's lack of user trust for HRIS, HRIS underuse, implementing other systems that duplicate what HRIS does and a negative attitude towards the system. Gates (2004) is of the view that customized code is strongly discouraged provides a great dilemma; an option is to choose a vendor that supports customized code to meet the university needs. The academic community supports this notion as ERP's should support academic activities and not the other way round, this increases satisfaction among the

users, support for customized code is crucial for universities implementing ERP's (Noyes, 2003). However, Momoh and Shehab (2010) note that excessive customization has negative consequences as it was noted as one of the critical failure factors in organizational systems. University management could have chosen HRIS or an ERP which supports customized code as the users feel that they are working around the system as HRIS is not a fit for completing some of their HR activities due to minimal customization.

6.7 Recruitment strategy and the university's brand identity

Another dichotomy is how HR personnel are advised to recruit; the university is still using traditional recruitment methods such as newspapers; specifically Sunday newspapers. Wits have created this brand as a leader and trendsetter, so in accordance with the image created, the university must recruit in line with this. One of the ways that Wits could recruit is using social media and a lot of online presence through HRIS.

6.8 Administrative versus academic staff

There is a divide within the university on academic and administrative staff; this is also enforced by management. One of the divisions that management endorses is that of **salary grading**, currently the practice is that the salary for academic staff is graded according to the higher education sector and that of administrative staff is graded according to industry standards. This is also enforced by policy, in order to minimize the divide between academics and administrative staff, the university could start by grading both academics and administrative staff the same way to minimize the divide.

Gemmel and Pagano (2003) explored the conflict between academic and administrative staff in UK higher education sector. Such tensions could be managed easier if roles for both are specified from the beginning. Waring and Skoumpopoulou (2012) discovered that since administrators have their own data deadlines to meet, they find academic attitudes difficult to deal with when they are approached for certain data requirements, the same attitudes are prevalent within the university as HR personnel often require data from academics and there is little corporation in that regard.

Another inconsistency is the use of titles, some people are called directors, others are called managers on the same level grade, I think some consistency should be there, if the terms used are manager and deputy manager, which should reflect on the entire university structure. Also, if the university goes with using director and deputy director, that should apply to all, not a combo of the two, especially for good governance.

6.9 People and management

HR personnel have expressed the desire to give more input on HR related matters, as in other organizations HR personnel give input to strategic related matters1. As is, HR personnel give input on policy matters during HR meetings and they want to **add value** in the university. Lyytinen and Newman (2015) discuss “constancy of vision” by top management and they stuck to the vision of what the ERP was to do and how to handle the change as a consequence in universities. Dong (2006) highlights the importance of **management and employees coming together** during IS implementation as management could assist with resolving conflicts, encouraging user trust, aligning organizational roles with the strategy, helping users adjust to change and overall direction. Further, Skoumpopoulou and Nguyen-Newby (2015) emphasize the issue of preparedness for change by employees during IS implementation, if this process is not handled properly, denial and chaos will precede the implementation. This is the stage where things are in the university with some of the issues not dealt with.

Another consideration that management was supposed to have for HRIS users is the type of system Oracle is, as documented by Skoupopoulou and Nguyen-Newby (2015) Education.Com implemented Oracle and was forced to abandon the project completely, after spending resources, because the system was complex, not easy to use and required a considerable amount of training. Some of the participants expressed this sentiment about HRIS in the university.

Another facet that came from the data was that of departments within the university functioning with a silo mentality. The ERP and HRIS was meant to integrate people, processes and organizational systems, instead of bringing all these organizational factors, the opposite happened, a more pronounced silo thinking within employees

happened. Elbanna (2007) discovered the same results where teams were isolated, did not communicate with each other and others expressed a sense of superiority over others as an outcome.

Due to lack of synergy between management and university employees, were still being implemented during the data collection phase that were not part of the ERP, such systems are acknowledged as **shadow systems** in literature (Huber et al., 2016). Shadow systems exist outside of the ERP and are not integrated with other university systems, because HRIS is not used effectively or due to lack of customization to fit user's needs, hence the need of such systems by university employees.

In the university when HRIS was implemented a lot of what management was focused on was not really about a bigger picture outcome of HRIS, unfortunately this lack of vision for the system created problems that they are still trying to fix today. Because of the lack of vision for HRIS, there was little communication to the rest of the university about HRIS, maybe because they didn't know what to communicate. The planning for the system was insufficient and some technical and people issues were not appropriately dealt with.

6.10 HRIS data analytics and HR planning

It was expressed that there is a struggle on how to interpret some of the reports produced by HRIS. The data analytics could assist in forecasting and checking some trends and adjusting HR planning according to that, this will assist the university keep track of some of its HR objectives and goals.

The above mentioned contradiction or tension are summarized and presented in figure 19 as a summary of findings from the research.

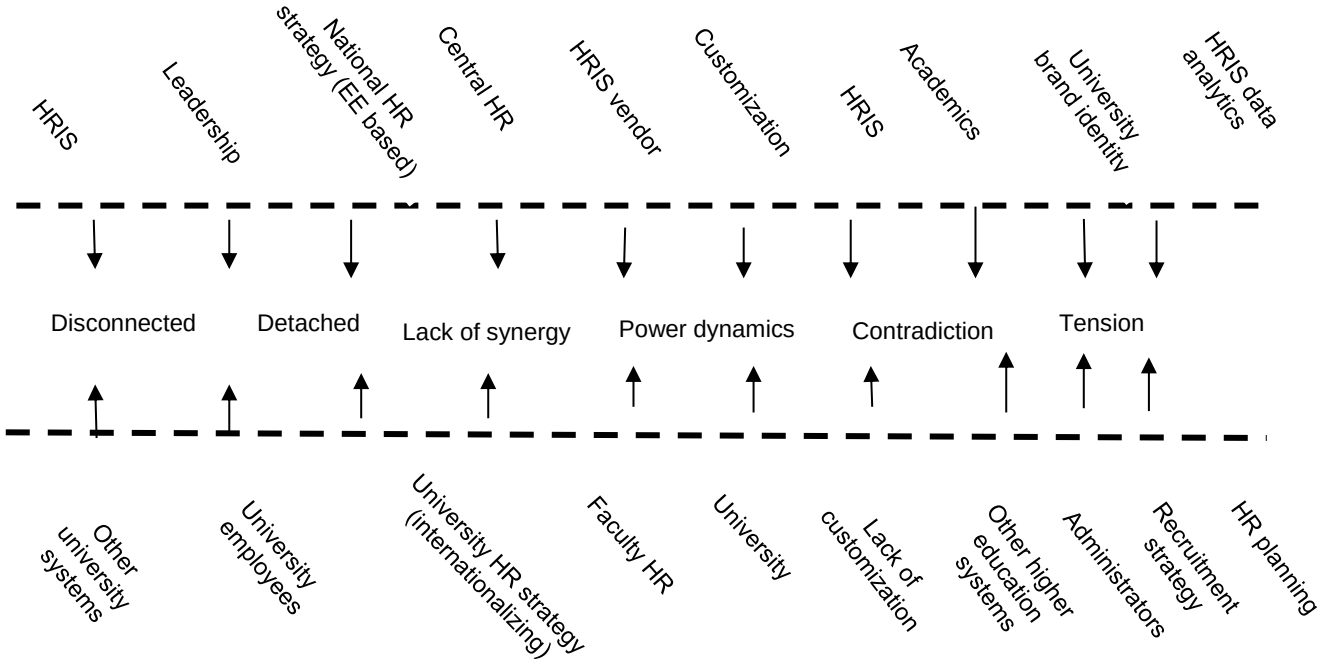

Figure 21: A summarized view of the study findings

Figure 21 is a summary of the study's findings; enterprise integration is considered one of the key aims in implementing information systems (Elbanna, 2007). However, this research highlights the opposite, unintended consequences of HRIS as part of an organizational ERP, the disintegration is threefold, technical, operational and social as affecting all levels of the university. Because of the complex nature of the university and the underlying historical culture, HRIS was adopted and implemented with great difficulty. Even when users engage with the system, there are often issues there because of the complex adoption.

Regardless, Langenwalter (2000) assert that organizations that attempt to implement information systems run into difficulty, because the organization is not ready for integration and the various departments within it have their own agendas and objectives

that conflict with each other and that of the university. This normally occurs when the plan for the system implementation is not properly considered.

From the summary of the findings above, all the contextualized determinants listed as opposites could come together and minimize the divide, and eliminate the tensions that are there as a result. This working together will benefit the university and assist in realizing some of the intended benefits of HRIS and other organizational systems in place. Based on this, a theory of adoption and use of HRIS was conceptualized and is discussed below.

6.11 Theory of adoption and use of HRIS in a university

Informed by the interpretation of findings and literature, the theory of adoption and use of HRIS was conceptualized in a multi-dimensional framework. This framework is discussed as follows: firstly the figure capturing the multilevel and multi-dimensional elements of the framework is given; this is followed by discussions of these elements.

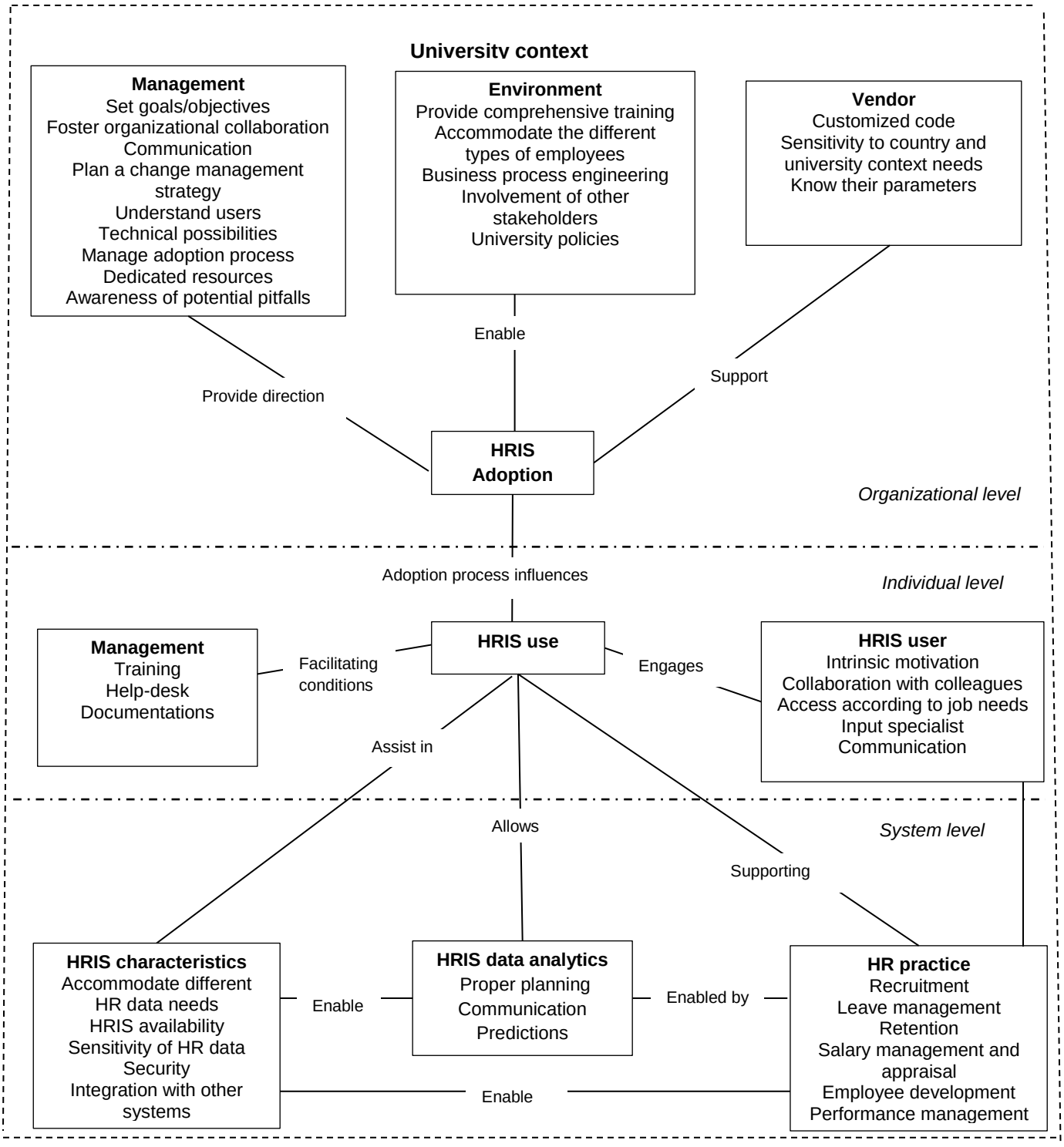

Figure 22: A multidimensional framework for human resource information systems adoption and use in a South African university

In a nutshell, the argument driving the thesis, the framework, is that how HRIS was adopted actually influences its subsequent use in varied ways, and that the adoption and

use is multidimensional in nature. In order for universities to use HRIS efficiently, all these dimensions and levels ought to be acknowledged and attended to accordingly.

6.11.1 Management at adoption/organizational level

Management is often tasked with setting *goals and objectives* of the university, often these goals depend on information systems such as HRIS to enable the different business processes; HRIS could assist the university in enabling its HR processes to meet HR goals and objectives set. Management should sensitize employees within the university before users adopt HRIS through communication and collaboration to minimize resistance.

A *change management plan* is essential before adoption, not only to minimize resistance but also to communicate with users what the system is about, how they are affected by it and their role in the entire adoption process. This process also helps with *understanding HRIS users* and their expectations about the system depending on the different roles they play in the university.

As essential as it is to understand the different types of users, it's more important to realize the *technicalities* of accommodating the different user categories cognizant of the environment HRIS will be used in. Further, resource availability during the adoption process will assist management to focus on other issues that could later become a problem. These *potential pitfalls* could arise at any given moment during the adoption process and should be managed when identified.

6.11.2 The environment

The **environment** in which HRIS is adopted into is important as it could inhibit or enable the adoption process. Consistent *comprehensive training* before adoption and when the system is in use is essential. The university has *different types of employees*, each type has different HR needs, and processes, HRIS could accommodate such needs.

HRIS within the university will affect all the HR processes and employees, during adoption; *business process engineering* must be done to accommodate the changes brought by the system. One of the major *stakeholders*, DHET, who act as a regulatory

body and financier, has many report requirements that the system must accommodate. In order to accommodate this need, it's important that DHET is involved at the adoption phase to discuss their expectation of the type of reports they will need. *University policies* that will be impacted by the HRIS must be updated during this process.

6.11.3 The vendor

The **vendor** whose software adopted should be able to accommodate the university needs by *customizing code* to suit the special environment. The cultural preferences and differences between the vendor country and adopting country must be taken into consideration. The system developers must collaborate with the users at this point. At the same time, the vendor must be *realistic* on what they can and cannot do. The entire adoption process is an organizational process that requires constant engagement between management, the vendor and HRIS users.

6.11.4 Management at individual level use

Management at this level provides support as users engage with HRIS to complete their HR tasks. They provide facilitating conditions such as training, help desk support and documentation in the form of training manuals. They also provide a *plan* or guide on how HRIS will be used in order to facilitate HR processes for the university to realize some of its HR objectives. There's also constant *communication* with HRIS users and the vendor to ensure that the user's needs are met.

6.11.5 System level

Further, **data analytics** generated by HRIS have to be interpreted in order to forecast future HR needs and make provisions accordingly. These can only be done is the system is used appropriately to make accurate predictions.

One of the things that influence IS use is **HRIS characteristics**, the system could be added in order to accommodate the evolving environment and what it needs. The *different HR data needs* by different users of the system could be accommodated so the system is perceived as a "go-to-tool" for all HR related information needs. HRISs' *availabilit*y is just as crucial so that users can engage with the system whenever they need it.

HR practices recruitment, leave management, employee development could all be completed on HRIS. These practices are enabled by the systems characteristics and in turn enable HRIS data analytics. Often some HR practices have to be completed by different departments in the university, and this need must be accommodated by HRIS. Despite this interdepartmental collaboration, HRIS *security* must always be prioritized due to the *sensitivity of HR data*.

HRIS users engage with the system whenever they complete HR practices however not all HR tasks are completed on the system despite their features already active on HRIS. HRIS users must be *intrinsically motivated* to use the system beyond using it for basic HR tasks, which requires the individual to want to explore and minimize some manual HR tasks. *Collaboration* and *communication* with colleagues could help while using the system; if they get stuck they can contact someone within the environment instead of calling the HRIS office for problems that colleagues can help with. Further, a *HRIS input specialist* who deals with inputting HR data into the system will help users with conformity and consistency of data similarity, currently different HRIS users input data the way they see fit.

6.12 Summary of the chapter

The chapter interpreted the study findings; it gave recommendations and conceptualized a theory of HRIS adoption and use in a university. It started by mentioning the themes and emergent sub themes identified from the previous chapter as HRIS integration/disintegration with other university systems, followed by inconsistent leadership/direction, competing regional, national and university objectives, decentralized HR, the university and HRIS vendor, to customize or not to customize HRIS, recruitment strategy and the university brand identity administrative versus academic staff, people and management, HRIS and data analytics and planning. The next chapter is the evaluation of the research.

CHAPTER SEVEN: EVALUATION OF THE RESEARCH

The previous chapter interpreted the findings and gave recommendations and conceptualized a theory of HRIS adoption and use in a university. Building on that, this chapter reflects on the thesis completed and the chapter is organized as follows, an overview of the research is presented, followed by revisiting the research questions and how the empirical data and analysis concluded from that addresses them, the research methodology is evaluated with discussions on rigor and relevance. The contributions and conclusions of the research are discussed, followed by a discussion of findings and future research concluding the chapter. The purpose of this chapter is to assess whether the study addresses what it said it would.

The section that follows discusses the overview of the research from chapter one to chapter six and what each chapter represents.

7.1 Overview of the research

This section is aimed at reminding the reader how the thesis is structured and what each chapter is about. The chapters are outlined below as:

Chapter one introduced the thesis, provided background to the research problem, problem statement, the research argument, the research objectives and question broken down into sub questions. The research is premised within the reasoning that in order to understand and explain use in organizations, adoption ought to be understood and explained prior to understanding and explaining use. Examining adoption and use simultaneously contributes to the multidimensional nature of the research. HRIS is understood to be an organizational innovation as both a process and an outcome, further, the deployment of multiple theories, frameworks or models of IS adoption and use as lenses alludes to the multidimensionality of the research.

Chapter two was focused on the review of related concepts in literature of the study and a survey of scholarship. Some HR theories were discussed briefly; the reviewed concepts were grouped according the research objective and its sub-objectives. The meaning of

human resources is discussed at the beginning, a discussion on HRM research and IS follows, the systematic literature review that was conducted is discussed and IS adoption and use research areas discussed last.

Chapter three focused on the theoretical framework for IS adoption and use. The purpose of this chapter was to discuss lenses for the research as upper echelon theory (UET) which was used to understand top management decision making during HRIS adoption, technology, organization and environment (TOE) framework for examining technological, organizational and environmental variables from the individuals in the university. Social cognitive theory (SCT) as a lens for studying HRIS user's behavior and the environment. Task technology fit (TTF) framework as HRIS enabling HR tasks. The conceptual research framework is highlighted and how it came to be, the antecedents and contextual determinants of the conceptual research are discussed and how they are understood as informing the research. The different dimension of HRIS adoption and use are discussed last.

Chapter four discussed the various methodological approaches adopted in information systems research and the ontological and epistemological assumptions in information systems research. The chapter further discusses how the research was conducted and its philosophical, making the reader aware of other methodologies and philosophies that can be used in information systems research. The chapter further describes the research design and the methods used to carry out the exploratory study at Wits University. The chapter also introduces contextual inquiry, an interpretive field research framework that depends on conversations with HRIS users in the context of their work, as a relevant approach to collecting evidence. The data was collected in formal office environments were users of HRIS interacted with the system while completing their HR tasks using semi-structured open-ended interviews, official university documents and observations. The interview data was analyzed using thematic analysis, documents using content analysis. The analysis focused on the research questions, sub-questions, and objectives based on the conceptualized research framework developed in chapter three of the research.

Chapter five presented discussions and interpretation of the findings from the case study. The main findings of the study are discussed and interpreted in terms of their emergent themes and sub-themes from the collected data based on interviews, observations and organizational documents. The research question were used as themes to guide data collection. The analysis focused on HRIS adoption decisions taken by top management and use of the system by university employees. The first theme discussed a university's key HR practices and emergent sub-themes, the second theme described how a university environment, organization and technological context influence the decision to adopt HRIS and the emergent sub-themes, the third theme described the role of acceptance and the role of HRIS use and the last theme was about how HRIS may be used effectively in the university.

Chapter six focused on interpretation of findings from the case study. The main findings of the study as presented in chapter five are discussed and interpreted according to the themes discussed in chapter five. The chapter commenced with discussing the emergent themes and their summary presented using a framework. The chapter concludes by discussing the theory developed based on the findings discussed in chapter five.

7.1.1 Research questions revisited

The research was undertaken to address the primary research question: ***How is HRIS adopted, how it's currently used and how can it be used effectively***? With three secondary questions to assist in answering the research question, the research questions are discussed below.

7.1.1.1 The primary research question

How is HRIS adopted, how it's currently used and how can it be used effectively?

7.1.1.2 The secondary research questions

The first secondary question is *"What are a university's human resource processes and practices?"* from the interviews that were conducted, the data revealed that "HR is a point of truth" and assists with legal compliance within a complex university; transformation objectives reveal to be a major challenge as these compete with national and regional objectives.

The second secondary research question is *"How were university's upper echelon influenced by the environment, organizational and technological factors in the decision to adopt human resource information systems?"* University's top management as upper echelons' decision to adopt HRIS was highly influenced by operational and managerial efficiency that comes with HRIS as part of an organizational ERP. University employees resisted HRIS adoption and the move from legacy systems to HRIS was not handled well technically. Because of this mishap, there is rejection of HRIS and data integrity issues persist today, affecting the quality of information produced by the system.

The third research question is *"How does acceptance and use of human resource information systems manifest in a university?"* Operational level employees expressed a lack of communication and involvement from top management during HRIS adoption, as a result that has created user resistance to the system. Because Oracle (HRIS) is an American company, there is issues around language that is used by the system compared to local languages and that influences user's attitudes towards the system. Further, the lack of customization for HRIS, which is not specifically developed for higher education institutions compounds to the problem as HRIS users feel that the system is not a fit for a university's HR processes and activities.

The last research question is *"How does adoption as a dimension influence effective use of human resource information systems?* HRIS is underused in the university, HR personnel would like some functionality to be activated so they can be used, because the practice is that each staff member has a physical staff file, they would like to see that eliminated as HRIS has similar capabilities and the system becomes the only way to

complete HR tasks. There is a lack of direction from management on how and what the system could be used for, HRIS users must be motivated on their own to explore the system in order for it to work for them.

The research objectives were, *Analyze the university human resource processes and practices. Describe how university upper echelons were influenced by the environment, organizational and technological factors in the decision to adopt human resource information systems. Describe how acceptance and use of human resource information systems manifest in the university. Determine how adoption as a dimension may influence effective use (another dimension) of human resource information systems*.

The section that follows evaluates the research methodology and the significance and contribution of the research. To guide the evaluation, accepted criteria was used.

7.2 Evaluation of the methodology

7.2.1 Why a case study is relevant for this research

This study sought to understand how HRIS is adopted and used in a university. Preliminary investigations revealed that HRIS (as part of an ERP) that was adopted is not a typical higher education system such as ITS (integrated tertiary software), which is used by a majority of higher education institutions in South Africa, this makes it a unique and interesting case. The multidimensional and multilevel nature of the study allowed the researcher to understand and explain HRIS adoption and use within the different university departments/units affected/infecting HR/HRIS from top and middle management to HR practitioners and general users at faculty level.

Further, to highlight the importance of HRIS within the university there is a dedicated department that is for managing the system within the university. The researcher felt that with how things are in the university, it is a unique and interesting case that must be explored and understood, hence the choice of a case study strategy with multiple case units of a university. Further, the interaction of the researcher and participants in their natural setting allowed the researcher to make insightful discoveries that would not have

been possible if survey data were used from a large group of participants followed by a statistical analysis.

7.2.2 What is the Research Theme; is it relevant to IS?

IS adoption and use is a complex process involving users at different levels within the organization and since adoption influences use, a simultaneous examination of both is relevant to IS scholarship. For that reason, a case study methodology was appropriate to understand the decisions that top management took during adoption, how the environment, technology and organization influence the decision to adopt, the role of HRIS acceptance and the role of the systems use and subsequently how the system could be used effectively as an outcome. Benbasat and Zmud (1999) categorized relevance as inclusive of following categories: *interesting*: *does the research address problems that are of concern to IS professionals?* The research problem that this study addresses is of concern as organizations still battle with comprehending why systems they have heavily invested in are not effectively used and/or not bringing immediate tangible results.; the issue includes non-realization of benefits and IS underuse, despite large sums of organizational resources allocated to IS adoption and use initiatives. In order to minimize such challenges and issues, organizational upper echelons should pay special attention to their contextualized environment when making adoption decisions and similarly when the adopted system is in use.

Applicable: does the research produce research knowledge and offer prescription that can be used by practitioners. This research offers practitioners a framework (prescription) that may inform them on how they could better adopt and use HRIS, notably in a university. The framework highlights contextual determinants which practitioners ought to be cognizant of during HRIS adoption and use. In other words, the relevance of this research is in giving practitioners knowledge on ways HRIS, as an information system, may be adopted and used effectively.

Current: does the research focus on current technologies and business issues. Information systems that are specific to human resources are in their infancy. HRIS is a new information systems technology that is just in recent years is adopted by

organizations. Organizations are experiencing challenges and issues with this information system, especially in relation to how it enables the business. This research offers ways by which HRIS technology may enhance the business. That is, it offers how HRIS could be used to enable the functions and practices of university human resource.

Accessible: can the research be understood in terms of tone, style, structure and semantics by IS professionals. The thesis is written in a tone, style and structure that researchers, learners and practitioners alike can understand and its discussions beneficial whenever needed. By ensuring that the manner in which topics are written is in simple English and sections are introduced before they are discussed,

The purpose and objective of the research was to learn and understand the phenomenon of adoption and use from those who make decisions and those who use HRIS- the goal was to have an informed understanding of "why" and "how" HRIS was adopted and how it is used by employees in a university environment. The research aimed at contributing towards understanding how and why top management team members take adoption decisions in universities to adopt systems such as HRIS and how the environment, technology and organizational variables influence system use. Thus, an understanding of the phenomenon of IS adoption and use as experienced by university management and employees adds to the adoption and use knowledge building process.

7.2.2.1 Appropriateness of the data collection techniques

The thesis is premised on the argument that HRIS adoption and use is multidimensional and occurs at multiple levels in an organization. To this point, data was collected using semi-structured, open ended interviews (face-to-face and a focus group) so as to get depth or profoundness from the participants' lived experiences, document analysis of policies and observations because of the contextual nature of the study. Using three sources of data revealed the complexity of HRIS as a social system. The rationale of using three data collection methods was to get different views of experiences and participant's subjective interpretations of actions to assess contradictions from the data.

The interviews conducted involved top management, middle management, HR

practitioners and HRIS general users, and the interviews allowed the researcher to draw understandings from the different organizational levels and captured the experiences of the participants while they engaged with the system. Official university documents were analyzed to understand some of the university's ways of conducting HR practices and activities.

7.2.2.2 Appropriateness of the unit of analysis and population

This was a case study of how organizations adopt HRIS and how employees within the organization use HRIS for completing HR tasks. To this end, the unit of analysis is an organization and individuals; due to the multidimensional nature of the study, at the adoption phase is the university, and the use phase is individuals who interact with HRIS for completing HR tasks. University employees were interviewed, because of the multilevel nature of the study, top management were interviewed about some of the decisions taken during HRIS adoption and the university's strategic directions and objectives, middle management were interviewed about the happenings in the university, and HR practitioners were also talked to about how they complete HR tasks on HRIS. The multilevel observation is to get a comprehensive, university wide picture of how things happen at the top, all the way to the bottom, this adds to the profoundness and depth of how things are and how they happen.

The section that follows discusses the theoretical methodological and practical contributions emanating from the study.

7.3 Theoretical, methodological and practical contributions

Before the three contributions from the study are discussed, the section that follows discusses generalizability as related to theoretical contribution based on an interpretive case study.

7.3.1 Generalizability

Generalizability refers to, among other things, the validity of a theory in a setting different from the one where it was empirically tested and confirmed (Lee and Baskerville, 2003).

According to Walsham (1995) and Lee and Baskerville (2003), there are four types of generalizations in interpretive case research and will be discussed briefly below.

7.3.1.1 Concept development

Concept generalization is the introduction of an idea or "concept" that wasn't used in the IS literature before (Walsham, 1995:79). The concept then becomes part of a broader network of ideas, propositions and world-views. As an example; Zuboff (1988) introduced or coined the concept of "informate" in her book. Amongst other things, this research highlighted HR or HRIS as a "*point of truth/heart of the system*" in an organization, this could be used in IS research moving forward.

7.3.1.2 Theory generation

Theory generation means drawing on empirical work to construct a theoretical framework concerned with IS organizational consequences (Walsham, 1995). One of the goals of this research is to build theory, so this sits well with interpretivist generalizability and the multidimensional theory of the adoption and use of HRIS was conceptualized.

7.3.1.3 Drawing on specific implications

This type of generalization draws on specific implications in particular domains of action (Walsham, 1995). Generalization in this area is about taking the implications generated from the research and applying it to a different context such as a different organization or in a different country.

7.3.1.4 Contribution of rich insight

Case study research is about depth and richness. Richness is meant to capture insights from documents (policies, memos etc.) and empirical data from the case that are not easily categorized as concepts, theories or specific implications (Walsham, 1995). The rich insights on how HRIS is adopted and used in organizations, specifically universities, provides researchers with an understanding of how things happen and contextual determinants to be cognizant of when an IS is adopted and used.

Tsang (2014) critiqued Walsham's (1995) view of generalization that only two of the above, that is, generation of theory and drawing on specific implication, are constant with

the meaning of generalization. However, development of concepts is an abstraction, because there is no conclusion drawn from it, it is easily answered with true or false statement (Tsang and Williams, 2012). Contribution of rich insight cannot be generalizable because it is a mixed category referring to capturing ‘‘insights from the reading of reports and results from case studies that are not easily categorized as theories, concepts, or specific implications’’ (Walsham, 1995: 80). However, not all such insights are concerned with generalization, such as inferring from the observation of the particular to a general statement or proposition, although some of them might.

7.3.1.5 Empirical generalization

Empirical generalization is concerned with whether the findings of a case study are typical of the population from which the cases are drawn or if the study can yield similar results with a different case (Tsang, 2014). The idea of empirical generalization does not fit well with interpretivists as emphasis is on interpreting meanings and actions according to the actor’s own and probably unique frame (Orlikowki and Baroudi, 1991). Interpretivists often maintain that rather than making empirical generalizations, we are making theoretical inferences, that is, we draw conclusions from data about the necessary relationships that exist amongst categories of phenomena (Williams, 2000).

Malhotra et al. (2001)’s study dealt with the issue of generalizability, by saying that generalizability of the results can only be assessed by observing future similar cases. Multiple studies of the same phenomenon are required in order to determine whether these results can be generalized. However, the study is still an important initial step. The study build on what IS is in organizations, specifically universities; a system’s adoption and use, and what studies have done prior.

7.4 How the research constitutes a theoretical contribution?

In determining this, we are guided by the works of Corley and Gioia (2011); Whetten (1989) as follows:

What’s new? The theory of HRIS adoption and use in a university highlights the multidimensional nature of the study and allowed the researcher to understand HRIS

adoption and use from the different levels within the university. The thesis is premised within the IS adoption and use area. Since a majority of IS adoption and use studies are focused on intention and antecedents of adoption and use; this study's focus is on HRIS adoption and current use in universities. A majority of IS adoption and use studies are positivist; this study being interpretative and using a case study as a research strategy, shows an alternative way of understanding how a HRIS is adopted and used and subsequently how it could be effectively used, in line with why and how it was adopted.

Despite HRIS assistance with some organizational efficiency and effectiveness, assisting with compliance issues and the system as "the point of truth", its challenges must be acknowledged. An overarching theme from the empirical data shows there is a disconnect, tension of some sort, lack of synergy, contradiction or power dynamics that are at play in the university, one of the reasons why ERPs and HRIS as a part of were implemented, is to integrate processes, people, systems and the entire organization to function as a single unit. However, there is disintegration, in the university as the status quo remained as if legacy systems that were replaced are still in use. It can be summed up a case of competing narratives in the following ways, customization vs lack of customization, HRIS vs other university systems, central HR vs faculty HR, academics vs administrators and HR planning and the use of HRIS data analytics as examples of disintegration within the university. HR Transformation agenda of the university is not in line with that of the country and the SADC region, this theme was solid as the university battles to realize some of its transformation objectives.

The theory developed also highlights some issues that could be paid attention to in order for HRIS to be adopted successfully and how its use by university employees could help in realizing value from the HRIS investment and manage the "IS conflict". As outlined in the NDP 2013, there are imperative national objectives that are related to HR, from this point, HRIS could enable HR processes for universities to realize some of the national mandates set.

So what? The framework from the thesis informs IS theory and could be used to practically guide policy makers and relevant decision makers to be cognizant of

antecedents and contextual determinants that influence IS adoption and other antecedents and determinants that influence IS use.

The disconnectedness that remained despite the new system, post legacy systems, reflects on what the leadership could have done during the adoption phase and what they can do currently to get value for implementing HRIS. The complex nature of universities requires different ideas and approaches to organizational problems, and this was taken for granted, as a result, when HRIS was adopted, there were minimal change management objectives, improper planning, lack of consideration for technical and social issues. The unintended negative consequences of HRIS adoption in the university are an outcome of the above mentioned change management deficit. The use of feral information systems and shadow systems highlight the level at which HRIS is not meeting the needs of the university; there is lack of fit with university processes and activities.

There is the added pressure from DHET and other funding sources for detailed reports, which might have hurried the adoption process and data integrity issues emerged because of the rushed manner in which things were handled. Despite what is going on in universities, the framework suggested for HRIS adoption and use could assist management turn things around and get value for the HRIS investment.

Why so? The research argument for this study is that an empirical and theoretical multi-level and multidimensional approach to understanding how HRIS adoption happen, HRIS use and subsequently how it may be effectively used is the optimal way to understand the phenomena.

A multilevel approach has assisted in revealing some of the decisions that influenced top management when HRIS was adopted, middle management provided insights on the workings of operations and how top management decisions influence all these workings. Operational employees provided perceptions on how HR users are dealing with consequences of decisions taken by top management in the university.

Multidimensional view of HRIS is not limited to adoption and use, there are other organizational, environmental, social and technological issues that influence how things happen and all these provide a holistic, profound understanding of HRIS adoption and

use in universities in South Africa.

Why now? Universities have adopted and implemented human resource information systems for effective and efficient HR practices. How the system is adopted and used remains an open IS issue, and this research aimed to bridge this gap in literature.

Universities in South Africa are no longer confined to the traditional role as knowledge creators and enriching science; they have become places were the society generates, shares and disseminates knowledge and ideas to drive the country's global competitiveness and economic growth. Such objectives and drive often require human capital to make them a reality, human capital in the form of researchers and educators. Information systems created for managing human resources have to be understood in order to ensure that policies and organizational objectives are tailored to these changing dynamics and environment.

Well done? Well done answers questions related to *What, How, Why, When, Where Who*. *What* is a question of what was studied and revealed? What was studied was the adoption and use of HRIS in universities, exploring adoption and use simultaneously. Further, the study conceptualized HRIS as multilevel in nature, that is, it occurs at top management, middle management and operational levels. Lenses used to guide the research were useful in conceptualizing the research framework and its contextualized determinants that the researcher was cognizant of when going in to the field with an openness to explore as themes emerged.

A retrospective view of adoption is important as to understand how that influences the way HRIS is used, this proved to be accurate as there is a lot of historic adoption mistakes that the university is still dealing with that affect how users engage with HRIS. Theorizing information systems in organizations as multidimensional and multilevel is of extreme importance as it gives a holistic understanding of how things happen.

How questions are related to how the research was conducted, an interpretivist, qualitative case study approach was adopted, unlike positivist research that uses measurements; the approach the researcher took was to get a profound, deep understanding of how and why things happen, by studying HRIS in its natural setting in the university.

Why the research is important is because universities invest a lot of resources into information systems such as HRIS, yet little is known about how things happen when such systems are implemented and how they impact organizations. Based on empirical findings, the study revealed a lot about the workings of a university that would otherwise still be based on speculations.

When the study started the country's mission through the NDP 2030 was to grow academics, research outputs, increase postgraduate student's throughputs and accommodate increasing student numbers, despite that only 34% of academics possess doctoral degrees. The university's mission and objectives were highlighted and marketed heavily in the media, the objective reads "*Vision 2022: to become a leading research intensive university, firmly embedded in top 100 world universities by 2022*", as the direction the university is headed towards. Against this backdrop, the study was conducted and these objectives can only be achieved by getting the right human resources in place, and systems such as HRIS could be used to enable HR processes in acquiring and retaining such resources. HRIS is meant to be enablers of HR processes and activities within the university; this highlights the significance of HRIS in order for the university to realize its HR goals and that of the country and region.

Where and what the university signifies is situated plays a big role in South African society, as a place of hope. The university is situated at the heart of Johannesburg, a metropolitan world class African city, with diverse cultures and people; this could be leveraged when attracting scholars to assist the university with some of its objectives. The socio economic importance of the university cannot be ignored; universities are tasked with developing skills, through graduates, that the country needs in order for the economy to grow. All these are at the hands of educators who are the human capital that the university needs in order to realize its objectives, HRIS could play an important rle in this regard.

The *Who* part of the research was top management who made decisions during HRIS adoption, middle management, and operational employees who interact with HRIS to complete their HR tasks.

7.5 Methodological contribution

The study used an interpretivist, qualitative case based research approach to study HRIS adoption and use in universities as a multifaceted and multidimensional phenomenon. The research heeded the call for studying information systems as multidimensional and multilevel in organizations (Chan 2000; Burton-jones and Straub, 2006). Theorizing the research as multidimensional and multilevel coupled with an interpretive case allowed the researcher to be in the natural setting of HRIS, which is in the university. As a result, profound, rich, holistic understanding of HRIS adoption and use in universities was attained.

A majority of studies carried out on adoption and use are focused on individual's cognitive variables such as intention and prediction, with little understanding and explanation on how an IS is adopted and used in organizations; moreover universities in South Africa. Since a majority of the studies in adoption/use of an IS, and HRIS in universities are positivist, an interpretivist lens uncovered new consequences that assisted in understanding how HRIS was adopted and how adoption influences use.

Case study contribution: A case study contributed in the following ways:

The rich case data provided inspiration for new ideas in theory building.

The data contradicted and revealed previously unseen shortfalls in the theoretical lens guiding the research, leading to a reassessment of literature.

Furthermore, the conceptualized framework as a theory of HRIS adoption and use in a university assisted in adding detail to theory. It also assisted with identifying further investigations as future research.

7.6 Practical contribution

The thesis offered an alternative conceptualization of HRIS adoption and use in universities. The conceptualized theory provides insightful implication to practice on how to integrate an organization, some issues which could be dealt with during adoption, some post adoption of an IS. A practical contribution from this research is for top management to be cognizant of and prioritize planning; planning the adoption process and how that will unfold, inclusion of change management initiatives, technical and social aspects, what

are some of the organizational objectives the IS is adopted for, the IS vendor choice, the IS fit to the organization and the changes that might be because of the existence of the IS within the organization. To minimize negative unintended consequences or "IS conflict" because of the system implemented in universities.

Moreover, the thesis emphasizes the importance of knowing and understanding the type of organization one is dealing with during HRIS/ERP implementation. As a developing country, the South African government through universities have invested huge portions of their annual budgets on ICTs that include technological innovations such as HRIS, despite other pressing human needs. Therefore, it is imperative to have an idea of how ICTs such as HRIS are serving or not serving universities as enablers of HR activities and functions to justify the investment and value.

Universities are special, they are a decentralized decision making structure which has evolved over hundreds of years and defy traditional business logic. The study shows that more centralized control and integration could happen with the help of HRIS if management, academics and HR personnel come together to reconstruct the university as a complex business. Management's commitment and maintaining a consistent vision could create a new order and assist in excluding alternatives. These are some of the important lessons for other universities and organizations as well embarking on risky and complex ERP implementation, to get some return on HRIS investment.

Further, the research findings inform and empower HR practitioners who interact with the system in ways in which they could overcome some of the challenges they face, however, some of these challenges need a leadership role for some of their initiatives to work.

7.7 Contribution to context

South African universities are evolving and are moving towards becoming businesses, how information systems such as HRIS are adopted and used to enable HR activities and processes sensitive to the evolving environment is still not well understood. Troshani et al, (2011:472) argue that there is no "one-size fits all approach" to technology adoption as there's fundamental differences that exist between innovation types, context and

industries. As part of their vision and mandate, the government has developed "*National development plan 2030"* which outlines some of the HR directives that universities have to implement following what is happening in the region and country. Therefore, it is important to understand HRIS adoption and subsequent use in universities based on their unique evolving context and the mandates they have to fulfil. Further, it is imperative to understand how HRIS is enabling HR activities within university environments as the context in which the mandates ought to be fulfilled. The social context in which the university is operating in is unique, and thus important and relevant to conduct the research in a complex regional, country and university context where the use of the HRIS is mandatory for practitioners

7.8 Limitations of the research

The study took place in a university setting, the scenario provides a different context for studying IS adoption and use, this might provide some limitations of the applicability of the research in other industries, which are different from universities.

As this was a doctoral study, this means the research was limited to one researcher and thus could not obtain a multiple researcher perspective as proposed by Wynn and Williams (2012). However, continuous engagement with the supervisor to get a different view, guide or ideas of certain aspects of the research process always happened. Although the retrospective view of HRIS adoption was considered, a longitudinal perspective might reveal other findings as compared to a cross sectional approach that the study adopted.

Because of availability and access, other role players such as the vendor and DHET could have given their account on how they do certain things, as is, it's just the view of the university's, other stakeholders could be studied as well.

7.9 Suggestions for future research

Future studies could focus on how tensions mentioned in the conceptualized framework could be resolved, or examine each of the contextualized determinants mentioned as disconnected and how such could be minimized in order to realize the objectives of implementing an information system in organizations. The study could be duplicated in other organizational settings or a university environment. Further, the existence and use

of feral information systems and shadow systems could be investigated. Other stakeholders such as the vendor and DHET's role in the adoption of information systems in universities could be looked at, not only in universities but the role of external stakeholders and their influence of IS adoption and use in other organizations.

7.10 Summary of the chapter

The chapter evaluated the completed research against the research objectives and question and sub questions, the research methodology was evaluated and the contributions emanating from this research were discussed. The limitations of the research and suggestions for future work were deliberated on last.

ETHICAL CONSIDERATION

The research ethics are addressed as follows: *Informed consent*, *the right to privacy,* and *Protection from harm* (emotional and physical).

Informed consent

Participants were informed about what the study is about so they make a judgment on their participation. They were informed that they have the right not to participate and to withdraw from the interview at any moment.

The right to privacy

Privacy was guaranteed by anonymity and confidentiality. Anonymity and confidentiality are guaranteed as there is no need to reveal names or other identity related information. Participants were informed that the information collected from them will not be shared with any person for whatever reason and will be used for the study only.

Protection from harm

Participation was voluntary and involves no risk, penalty, or loss of benefits. The permission letter from the University of Witwatersrand for staff as participants has been granted, and the ethical clearance by the University Human Research Ethics Committee (Non-medical), protocol number H15/05/32 was approved.

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APPENDIX A: Interview guide

Operations and finance management

- What characterizes this portfolio, what do you guys do, and a brief historical background of the portfolio, how it happened to be what it is today?
- What happened that it changed from that to what it is today?
- What influenced the change?
- There are also IT systems which have been implemented and the university is moving towards vision 2022, what are some of the decision justifications for implementing IT systems?
- In the adoption of these systems, how were/are you involved?
- Customizing these systems for a university is different from other companies out there, what are some of the requirements?

Central HR directorate management

- What is your portfolio in charge of-how does it assist WITS with achieving its goals and objectives?
- Describe some of the daily HR activities per each department, how things used to be (what happens when an employee is hired to exit)-what influenced this change?
- Are there technologies that support HR in the university? How is each used by the different HR sub-units
- Which problems did the technology resolve? Why was it adopted”
- How was the technology adopted?
- How did Technological Organizational Environmental factors influence the adoption of this technology?
- What changes came because of the technology? Are things better or worse off?

- How is it used in the university? What influences that use?
- How can things be improved?

HRIS management

- Please describe the HRIS management department, what is the department in charge of?
- What is the importance of HRIS in the university (why is it that important that it has its own portfolio)?
- How was it initiated, adoption process, what worked, what didn't work, how things could have improved?
- How did organizational, environmental and technological contexts influence the adoption?
- Post adoption- what changes came with HRIS, how was it implemented in the university?
- What was HRIS supposed to do, initial mandate, is it fulfilling that? What's making things not to happen as they should?
- How is it used? How can things improve? What influences how it's currently used? What support is offered to users?
- What policies are in place to support HRIS or which policies are affected by HRIS?
-

Employee relations and compensation and benefits management

- What is the department characterized with?
- Background of HR activities- what used to be?
- How things are currently done?
- HR technologies introduction- how it was introduced, your involvement
- Why do you appreciate the system (make things easy) or difficult?
- Challenges resolved, challenges that came because of HRIS

- What makes you use (external or internal influence) the system?
- How does HRIS assist in your HR tasks (navigation, output, level, ease of use, compatible with working style, authorization, system reliability, training, responsiveness, task problems (not well defined business processes, task interdependence (from 2 business units))?
- How can things improve from how you use the system today?

HR practitioners at faculty level (HR manager/ senior HR officer, HR officers and HR administration)

- What are some of the daily HR activities?
- Background of HR activities- what used to be?
- How things are currently done?
- HR technologies introduction- how it was introduced, your involvement
- Why do you appreciate the system (make things easy) or difficult?
- Challenges resolved, challenges because of HRIS
- What makes you use (external or internal influence) the system?
- How does HRIS assist in your HR tasks (navigation, output, level, ease of use, compatible with working style, authorization, system reliability, training, responsiveness, task problems (not well defined business processes, task interdependence (from 2 business units))?
- What will improve the use of HRIS?

Focus group interview schedule

- how often and when do you use HRIS?
- How do rules and regulations of your employment contract force you/motivate you to use HRIS (in terms of absence, KPI (key performance indicators), training etc.?
- In your views, how does your work ethic influence you to use HRIS?

- To what extent have you accepted and are using this system as far as relevant to your employment here?
- Describe how easy it is to use or how difficult it is to use HRIS
- What will help you use HRIS more regularly?
- Given a choice between using HRIS and not using it, what will you do?
- What will improve the use of HRIS?

APPENDIX B: Ethical clearance certificate

Research Office

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)
R14/49 Phahlane

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER: H15/05/32**
PROJECT TITLE	Use of human resource information systems to support a University strategy: An institutional approach
INVESTIGATOR(S)	Ms M Phahlane
SCHOOL/DEPARTMENT	Economics and Business Science/
DATE CONSIDERED	22 May 2015
DECISION OF THE COMMITTEE	Approved unconditionally
EXPIRY DATE	28 May 2017

DATE 29 May 2015 **CHAIRPERSON** (Professor T Milani)

cc: Supervisor : Professor R Kekwaletswe

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10005, 10th Floor, Senate House, University.

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to completion of a yearly progress report.**

_____ _____/_____/_____

Signature **Date**

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES

APPENDIX C: Permission letter

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG | **OFFICE OF THE REGISTRAR**

TO WHOM IT MAY CONCERN

"Use of Human Resource Information Systems to Support a University Strategy: An Institutional Approach"

It is hereby confirmed that the enclosed research material has been distributed in accordance with the University's approval procedures for such a project. Please be advised that it is your right to withdraw from participating in the process if you find the contents intrusive, too time-consuming, or inappropriate. The necessary ethical clearance has been obtained.

Should the University's internal mailing system be the mechanism whereby this questionnaire has been distributed, this notice serves as proof that permission to use it has been granted.

Students conducting surveys must seek permission in advance from Heads of Schools or individual academics concerned should surveys be conducted during teaching time.

Carol Crosley
University Registrar
29th April 2015