An investigation of critical success factors for leveraging Human Resource Analytics in a South African Telecommunications organisation

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A research article submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Business Administration

Johannesburg, 2019

Protocol number: WBS/BA295571/631
DECLARATION

I, Dakalo Kangala, declare that this research article is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the Graduate School of Business Administration, University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Dakalo Kangala

Signed at Witwatersrand Business School

On the 18th day of June 2019
DEDICATION

Mother in heaven, I dedicate this piece of work to you. We spoke about this before you departed and I am happy that I was able to keep my word to you.

To my daughter Rito. I am grateful for you having allowed me to steal some of your time to work on this paper. I hope that you are one day inspired to follow an equally fulfilling life journey.
ACKNOWLEDGEMENTS

I would like to express my sincere thanks and gratitude to the following:

- Mr. Xolisa Mnyani, my supervisor, for his sustained valuable input and guidance throughout the compilation of the research.

- The organisation that permitted me to conduct the interviews on which the dissertation is based.

- All the people who gave of their time to participate through interviews.

- To my family I appreciate your remarkable support throughout this journey; I could not have accomplished this without you. Thank you for the unconditional love, support and encouragement at all times.

Above all, I would like to thank God for his immeasurable blessing and guidance at all times.
SUPPLEMENTARY INFORMATION


Supervisor / Co-author: Mr. Xolisa Mnyani

Word count †: 16614

Supplementary files: Interview Guide
ABSTRACT

Advances have been made in the usage of analytics in decision making within business units such as finance and marketing. However, this is not apparent within the human resources unit, rather the use of analytics in human resources is a relatively new area of practice and research. Human Resources Analytics is designated as an evidence-based approach for making better decision on the people side of business and consists of an array of tools and technologies, ranging from simple reporting of human resources metrics all the way to predictive analytics, all of this contributing to the evolution of the role of human resources.

The need for more human resources analytics research together with the practical application guidelines in the telecommunications industry provides the rationale for this study. This research set out to discover the ways in which human resources analytics can be applied in the human resources arena, to investigate the factors that will assist in crafting human resources into a decision science that will contribute tangibly to the performance of the organisation.

This research explores the presence of human resources analytics using a qualitative approach, a purposively selected sample of thirteen individuals with experience in human resources working for a South African telecommunications organisation were interviewed using a semi-structured questionnaire. Data gathered has assisted in revealing an understanding the level of practical application of analytics within the human resources discipline in the telecommunications industry. Furthermore, the research findings propose that; defining an approach to HR Analytics, establishing the true value of HR analytics and identifying the HR business problem to be solved by HR Analytics are critical factors for leveraging HR Analytics.

A conceptual framework based on the assumptions from literature review as well as the practical inputs from respondents has been proposed to support in the planning of HR Analytics strategy or projects.

Key Words: Human Resources, Analytics, Predictive, Telecommunications
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CHAPTER 1: INTRODUCTION

The purpose of this chapter is to introduce the research problem as well as the rationale and examines the background of the study. The chapters to follow explore the literature review, research methodology as well as the results and research findings.

1.1. Definition of Terms

**HR Analytics:** “An evidence-based approach for making better decision on the people side of business and consists of an array of tools and technologies, ranging from simple reporting of HR metrics all the way up to predictive” (Bassi, 2011).

**Predictive Analytics:** “A method for leveraging business intelligence tools such as data mining and statistics to make predictions of future events” (Fitz-enz, 2010, p266).

**HR Metrics:** Measurement used to evaluate HR deliverables and effectiveness (Chhinzer & Ghatehorde, 2009).

**Strategic Human Resource Management:** The pattern of planned human resource deployment and activities intended to enable the firm to achieve its goals (Agarwala, 2008).
1.2. Background of the Study

1.2.1. Overview of the Telecommunications Industry

The study focused on the human resource analytics discipline in the Telecommunications industry within the economy of South Africa with particular focus placed on one of the leading telecommunications company in South Africa. The South African ICT vision 2030 states, “by 2030, ICT will underpin the development of a dynamic information society and knowledge economy that is more inclusive and prosperous. A seamless information infrastructure will meet the needs of citizens, business and the public sector, providing access to wide range of services required for effective economic and social participation” (National Planning Commission, 2011). The above emphasizes government’s recognition that ICT can help fuel growth in Gross Domestic Product (GDP).

There is a widespread acknowledgement that technological progress keeps the economy moving and therefore more often than not technology is involved in almost all facets of the economy. ICT contributes 3% towards South Africa’s GDP with 62% emerging from telecommunication services (Stats SA, 2017). Organisations in the telecommunications industry are said to be “in turbulent and high-velocity business environments and are therefore facing rapid and discontinuous change in demand, competitions, technology, and/or regulations.

This then provides organizations with new opportunities for near-real-time decision making, but also intensifies inherent tensions in decision making processes that are not as obvious in less-turbulent and slow-moving environments” (Negash & Gray, 2008). It is for this reason the telecommunications industry is ideal for assessing the usage of human resources analytics.

1.2.2. The HR Analytics Discipline

HR analytics includes statistics, research design, identifying meaningful questions, using appropriate data to answer the questions, applying scientific standards to
evaluate the results, and translating the results into language that is meaningful for the business (Levenson, 2005). This has been prevalent for a while, however, the challenge for HR professionals is understanding which metrics to measure as well as how to utilise the insights thereof. “HR Analytics today is targeting critical workforce metrics that link workforce strategy to business results that finally provides HR a seat at the decision table and the integrity to make business and workforce strategy decisions by identifying cost saving opportunities, improving the retention of key talent and increasing workforce productivity and efficiency” (Higgins, Cooperstein and Peterson, 2011).

One of the ways of reengineering the HR function is through the introduction of HR analytics as the key to strategic HR decisions. Schramm (2006) in her research on HR technology competency refers to the evolution of HR into a decision science, which captures the concept of HR analytics, which she describes as meaning that as a function it has analytical rigor and empirical precision with a measurable impact on business results. Schramm further suggests that “the use of workforce analytics supports this by helping to define what is to be measured in order to better understand the return on investment of HR programs and processes and using the data derived from these measurements to make further improvements and drive change as it relates to human capital and talent” (Schramm, 2006).

1.3. Research Problem

Disruptive technologies call for new innovative ways of doing business that aim to drive organisational efficiencies. While most other aspects of organisations have transformed in an effort to remain competitive, the “people game” has not caught up and aligned with the required transformation. Fitz-Enz (2010) suggests that the Human Resources practitioner has rather remained comfortable with claiming that their value is immeasurable. A partial cause of this could be the fact that there has been no clarity or consensus reached on a number of matters pertaining to HR analytics. Bassi (2011) argues “who should or can do HR analytics as well as how we advance the HR analytics agenda in organisations has not been clarified”, essentially the future of HR analytics is at risk.
The telecommunications industry is said to be in the Top 10 industries to benefit from Big Data and Analytics. This is on the basis that telecommunications companies have access to a huge amount of customer data. It is therefore important that these companies develop tools to analyse this data to provide even more personalized services that users actually want, in this regard the role of HR is to source data scientists or analysts and build customer value management (CVM) and big data teams to support the journey.

The stance of this research is that in the same manner companies across the globe are investing in big data to gain a competitive advantage through the development of best in class products and services because of consideration of customer data insights, a similar exercise should be concurrently taking place within the human resources discipline. HR should build tools, and source and upskill employees that will be able to derive insights (predictive analytics) from HR data that will be used to derive employee value propositions that will assist in the retention of employees and ensure return on investment in the end.

1.3.1. Problem Statement

1.3.1.1. Main Problem

Human resources professionals recognize the importance of human resource analytics, however, there is little to no advancement of the area and hence the need for identifying the critical success factors for leveraging HR Analytics that will enable the human resources professionals to deliver real value in the form of business transformation and boosting productivity.

1.3.1.2. Sub-Problems

Sub Problem 1: HR Practitioners lack of understanding of the true value of HR analytics negatively influences the adoption of HR Analytics.

Sub Problem 2: Absence of a coherent HR Analytics strategic approach that caters for both the strategy and supporting operating model negatively influences the adoption of HR Analytics.
1.4. Research Rationale

According to Momin and Mishra (2015) to effectively use the latent competencies and skills of employees has always been the ultimate task for human resources managers, however measuring its attributes and performance is the crucial part of the HR department, and hence the emergent need for HR analytics. The research proposes that human resource analytics is that innovation which is required to disrupt the old and conventional ways of doing business from a human resources perspective.

The rationale behind this research is the need to derive the highest level of HR analytics adoption possible, in order to enable businesses to drive their strategic objectives and guarantee competitive advantage, through the delivery of organisational efficiencies as well as through the identification and retention of top performers.

Defining the critical success factors for leveraging HR Analytics will enable the HR function to drive organisational efficiencies through tracking of more meaningful HR metrics like the ROI of training programmes; the cost of attrition; as well as tracking measures like recruitment methods that produce the best performing recruits. This will essentially help realise the analogy of customer employee management with employee relationship management and result in the development of competitive employee value propositions.

The need to contribute to the limited yet slowly increasing body of knowledge on HR analytics specifically in the South African context is one of the other factors that triggered the researcher’s interest in this topic. In undertaking this research an opportunity to gain insight into the reasons why human resource analytics is not developing as rapidly as expected as well as the factors that may be contributing to this reality has been created.
1.5. Assumptions

The following assumptions have been made regarding the study:

- The sample selected to participate in the research is assumed to be representative of the HR practitioners in the telecommunications industry in general.
- The organisation selected to participate in the study is assumed to have advanced in HR analytics and hence, the objective of studying the critical success factors.
- The body of knowledge on HR Analytics specifically in the telecommunications industry is assumed inadequate.
- There is minimal understanding of the concept of HR Analytics by human resources professionals.

1.6. Ethical Considerations

Some of the ethical considerations for the study complied with are listed below:

- Full consent was obtained from all the participants prior to the study.
- The protection of the privacy of research participants was achieved through the treatment of personal information in a confidential manner.
- Adequate level of confidentiality of the research data was accomplished by ensuring that the individual participant’s responses are unidentifiable.
- Due to the nature of face-to-face interviews anonymity of individuals is not achievable however, the identity of the organisation under study has been withheld as per the organisations request.

1.7. Conclusion

The problem of limited development of human resources analytics in the telecommunications industry can be eliminated, although it will take a lot of effort. This research draws attention to the factors that affect the development of human resource analytics. The overarching rationale for this study is the quest for a deeper understanding of the phenomenon and contribution to the currently limited body of knowledge on this topic.
CHAPTER 2: LITERATURE REVIEW

Scholarly dialogue in the topic of HR Analytics is still in its infancy, the first research can be traced back to the work of Fitz-enz (2000). In this regard, it is no surprise that key constructs in the field are still in the early stage of formation (Marler & Boudreau, 2016). In their research, Chen, Chiang and Storey (2012) have found that the marketing and finance fields are the first and biggest adopters of data analytics as well as outline the big impact it has had on their business. This section of the research paper examines some of the literature put forward on the topic of HR Analytics that may help unravel the cause of the slow uptake of HR Analytics.

2.1. Understanding the Importance of HR Analytics

The importance of adopting the concepts of HR Analytics, workforce analytics and human capital metrics has been recognized since the early 1980s. This has been translated through the automation of some human resource management processes, which has led to the development of Human Resource Information System (HRIS), which serves as a platform or technological software that allows for storing and tracking of data over long periods.

The solutions offered by such systems would include solutions in training, payroll, human resources compliance, and recruiting. Some of the value derived from a business using HRIS includes the enablement of employee-self management, establishing of streamlined and systematic procedure as well as better quality of data. However, this alone is not sufficient for enabling HR Analytics.

“Analytics is the process of dismantling or separating into constituents in order to study” (Fitz-enz, 2010), it is about taking something apart in order to understand it better and therefore make better decisions. Analytics is a concoction of art; science statistics and logic with an attempt to derive insights that can enable decision-making (see figure 1 as cited from Fitz- End, 2010).
As with the generic concept of analytics presented above, HR Analytics is an end-to-end approach towards evaluation of data from different sources that comes in different formats with an objective of delivering against the organisational strategic objectives.

HR Analytics is “essential as it is associated with and can cause better performance and competitive advantage when it is unique and value producing” (Aral, Brynjolfsson & Wu, 2012). Also unlike HR metrics, HR Analytics are more productive as they propose more alignment of employee performance with incentives in the form of insight based decision-making.

According to Fitz-enz (2010), the importance of HR Analytics lies in resolving things that are not working right in human capital management such as, the crises in measuring systems, which ranges from a crises of there being too many indicators measured in HR instead of there being focus. The crisis in understanding what measurements and parameters mean and the crisis of rear-view-mirror vision which alludes to the fixation on measuring information from the unchanged past, which does not tell us anything about what to expect in the future.
2.2. Definition of HR Analytics

“HR analytics transforms HR data and measures it into rigorous and relevant insights, it includes statistics and research design, but it goes beyond them to include identifying and articulating meaningful questions, gathering and using appropriate data from within and outside the HR function” (Levenson, Lawler III, & Boudreau, 2005).

Levenson et al (2005) thoroughly express the true essence of HR Analytics, it is more than the storing and tracking of data, it is even more than gathering insights about the internal employee from statistical inferences. It rather presents an opportunity to position the organisation to be attractive in competitive markets through understanding what can lead human capital, the most important asset of the business, to be increasingly invested in the growth of the business, from an external perspective through the likes of social media.

Laurie Bassi in her definition emphasizes that HR Analytics is not a discipline aimed at proving the worth of HR, or enhance the credibility of the function although it does, rather she defines HR analytics as an evidence-based approach for improving individual and organizational performance by making better decisions on the people side of the business (Bassi, 2011). Herein lies an important clarification, in the quest to get a seat at the decision table, it is important that HR practitioners acknowledge the true value that can be derived from HR Analytics that goes beyond decision power. Failure to do so would ultimately result in HR Analytics being deemed a management fad and unsustainable.

Kapoor and Kabra concur with Bassi’s definition and add on that by defining HR analytics as “the integration of relevant HR data from different sources, the performing of organizational and workforce analysis on this captured data, and ultimately the gleaning of insights from the findings to shape decisions for better organization performance” (Kapoor & Kabra, 2014).
Janet Marler and John Boudreau in their study on HR analytics research have found the following in terms of what HR analytics is:

- HR Analytics is not HR metrics rather, it involves more sophisticated analysis of HR-related data;
- HR Analytics does not focus exclusively on HR functional data rather, it involves integrating data from different internal functions and data external to the firm;
- HR Analytics involves using information technology to collect, manipulate, and report data;
- HR Analytics is about supporting people related decisions and finally, HR Analytics is about linking HR decisions to business outcomes and organizational performance”

(Marler & Boudreau, 2017)

The definitions offered above capture very well, what HR analytics is, however, none of them explore the how of HR Analytics, which essentially is the question the research investigates. The assumption is that HR practitioners have an enthusiasm or even an infatuation with the concept of HR Analytics, just like what Big Data and Customer Segmentation is to marketing specialists, and the Internet of Things and Robotics is to the technologists. It is therefore important that HR practitioners see beyond the craze, and truly understand the value of HR Analytics and consequently start defining the journey to implementing and utilizing HR Analytics.

The discussion on defining HR Analytics and its importance thereof leads to the first proposition:

*Basic understanding of the concept of HR Analytics has influence on leveraging HR Analytics adoption.*
The how of HR Analytics should be two-fold. It should firstly address the process of adopting or implementing an HR analytics framework and secondly, it should provide guidance on how to define the business performance problems that can be resolved from a human resources perspective. The following section reviews some of the models that have been derived through research that are meant to provide guidance on the adoption and implementation of HR Analytics.

2.3. Common HR Analytics Tools (Models)

2.3.1. The Five Steps of Analytics Model

![Figure 2: The Five Steps of Analytics model (Source: Fintz-enz, 2009)](image)

This is deemed the most simplistic HR Analytics model that can be utilised. The focus of the model is on bringing together data from different sources to build a picture of current conditions and the likely future. Step 1 of the model is intended for gaining insight on how efficient the processes (i.e. recruitment, training and retention) are; step 2 speaks to how aligned the processes in step 1 are to the organisational strategy. Step 3 refers to decisions on which other organisations a specific organisation should benchmark themselves against; steps 4 and 5 focus on understanding past behaviour and predicting future likelihoods respectively, these steps add the most value to organisations.
2.3.2. HCM: 21 Model

The Human Capital Management for the twenty-first century (HCM: 21) is described as a framework of logic, meant to gather, organize and interpret data so that it can predict the probability of upcoming events. The model proposes that a few steps are followed in an effort to resolve critical organisational issues, i.e. (a) the strategic scan, (b) capability planning, (c) process optimisation, (d) integrated delivery, (e) predictive measurement and (f) analytics (Fitz-enz, 2010)

![Diagram of HCM: 21 Model](image)

Figure 3: The HCM: 21 model (Source: Fitz-enz, 2010)

The model identifies critical organizational issues and describes how they align, how they are interdependent as well as how they can be integrated to resolve human capital related business problems.

2.3.3. The LAMP Model

LAMP denotes “four critical components of a measurement system that drives strategic change and organizational effectiveness” (Cascio & Boudreau, 2008). The
model emphasises the need for defining the right logic that is, defining the right strategy to drive competitive advantage, efficiency and impact; the need for asking valid questions and therefore connecting the decision framework to the scientific findings. Furthermore, the model requires consideration of the right measure, that is those measures that are reliable and readily available and lastly the right process must be followed.

**Lighting the “LAMP”**

The frameworks reviewed above enable the process of designing an HR Analytics framework or strategy, in other words they are process oriented, however, they do not explore or rather there is little mention of how HR practitioners should go about formulating those longitudinal multivariate models and experimental designs that enhance the ability of making causal inferences. The question to ask then is, can behavioural sciences experts be expected to have these statistical abilities or is it
enough for HR practitioners to play a governance role and just borrow skills from other parts of the business.

2.4. Towards Predictive Analytics

Predictive analytics utilises big data to forecast future probabilities. Big data can be defined in two ways, one being the size of the data, described by Huang as “a large amount of data that is rapidly produced, from different types of data sources and data types that are both structured and unstructured” (Huang & Huang, 2015). The second is the ‘smartness’ of the data as proposed by George et al (2014). The smartness refers to “the extent to which data is able to provide the material to conduct fine-grained analysis that successfully explains and predicts behaviour and outcomes” (Angrave, Charlwood, Kirkpatrick, Lawrence, & Stuart, 2016).

In the HR context, predictive analytics refers to “the systematic application of predictive modelling using inferential statistics to existing HR people-related data in order to inform judgements about possible causal factors driving key HR-related performance indicators” (Edwards & Edwards, 2016). The HR function is a long way from realising predictive analytics, as the concept is prone to a lot ethical questions pertaining to the tracking of employee behaviour.

2.5. Predicting Employee Turnover and Retention

With the rise of global competitiveness and in a time of economic recovery there is a global trend of increased attrition, wherein employees move from one organisation to another, this leads to organisations spending enormous amounts of money as well as time and effort to retain their top talent which does not always work in the long run. Moreover, researchers have argued that the notion of a permanent job or long term commitment to an organisation in the ICT sector is no longer expected by either party (Mda & Madikoma, 2010). In an effort to retain top talent that will assist in the organisation realizing and maintaining an advantage over its competitors, it would be worthwhile to invest in creating an unconventional employee value proposition.
IBM has formulated a Retention Modelling Process using a statistical software package called Statistical Package for the Social Sciences (SPSS) that utilizes current data (structured) and data collected (unstructured) to predict the possibility of an employee staying or leaving a particular organisation and ultimately proposes retention incentives for the HR practitioner to choose from (IBM, 2010). Figure 6 below details the IBM retention modelling process.

![IBM Retention Modelling Process](source: IBM Corporation, 2010)

This model was created to address the ongoing challenge of high attrition rates of reserve soldiers of the U.S. Army. There was a need to determine the characteristics that lead to attrition and the types and levels of incentives that can aid in retaining a soldier (IBM, 2010). Adoption of this type of model may be the answer to increased levels of organizational employee attrition.
2.6. Analytics as a Driver of Strategic Human Resource Management (SHRM)

A decade ago Royal and O’Donell (2008) highlighted the emerging need for clearer intangibles analysis in the investment community. The intangibles in this regard refer to the contribution towards long-term sustainable organisational performance made by human capital. “Common mathematically-based approaches to financial analysis include: the capital asset pricing model, the weighted average cost of capital, earnings estimates based” (Royal & O'Donnell, 2008). In the same way, these tools are utilised to make investment decisions that will assist in meeting the goals of increasing shareholder value, maximisation of profits and reduction of costs, so too should similar tools be established to measure the culture and management systems that support the execution of the strategy.

Strategic human resource management plays a central role in the establishment of organizational strategic objectives and the development of plans of action to accomplish these strategic objectives, (see Figure 7 below). It therefore only makes sense for the HR function to adopt tangibles methods of calculating the value that the function contributes towards the achievement of organisational goals. Some literature has proposed that the HR metrics to be measured have already been defined in the form of the balanced scorecard, (Kaplan & Norton, 1996; Chrysler-Fox & Roodt, 2014), and what has supposedly been overlooked are the tools and models for measuring the value derived.

![Figure 6: Centrality of Human Resources for Organisational Goal Achievement (Royal & O'Donnell, 2008)]
To date the success of HR practitioner’s performing a strategic role has been questioned even with the support of the HR information systems. This is usually due to the inability of HR to produce accurate people information to make accurate and fact based decision. This is possibly as a result of the absence of innate analytical abilities and therefore poses the question of whether the analytics skillsets need to be situated in HR for HR analytics to be successful.

The discussion on analytics and strategic human resource management leads to the second proposition:

*Definition and adoption of an HR Analytics strategy influences HR Analytics adoption.*

### 2.7. Opponents to the Progress of HR Analytics

#### 2.7.1. Postponed Adoption of the Changing Role of HR Professionals

Only less than 25 percent of HR practitioners studied by Lawler III et al (2004) are said to be “very involved in change management, partnering to develop business strategies, having integrated business and HR strategies, and providing analytic support for business decision making” (Lawler III et al., 2004).

Dave Ulrich in his research on the new HR mandate interestingly points out that “even with being deemed an agent of continuous transformation HR cannot transform itself in line with its new mandate without the help of the Chief Executive Officer (CEO) and every other line manager by fully integrating HR into the workplace value creation process” (Ulrich, 1998). While this position pleads with business to support HR practitioners in this change journey, it simultaneously takes away the power from the HR field to own this change by assuming that change will be dependent on stakeholder acceptance.

HR practitioners have also been described as maintaining stubborn traditionalism in HR management (Boudreau & Ramstad, 2007). HR professionals are struggling with the realisation of or practical implementation of the changing nature of their roles, “many HR professionals are sceptical because they question whether people can be reduced to metrics” (Angrave et al., 2016).
While it is partly correct that intuition in the HR field should never be fully replaced by hard numbers in decision-making, in an effort to be a strategic partner in delivering organisational performance, HR needs to define more rigorous and measurable ways of contributing to business performance.

2.7.2. Skills shortage: An opponent to the establishment of the HR Analytics Agenda.

Some of the reasons for a slow uptake of HR analytics include the lack of skills required to retrieve useful insight from available people data as well as the platform or tools to shift HR from reporting what happened to predicting what might happen. Researchers have found that “at least one possibility for this is because HR lacks the type of analytic and data based decision making capability that are needed to influence business strategy, one of the reasons for this being a lack of the right metrics and analytic models” (Lawler III, Levenson, & Boudreau, 2004).

Traditional Human Resources Information Systems (HRIS) constrain HR professionals to continuous rehashing of the static data instead of capitalising on big and often unstructured data that tells us about what to expect in the future. In order to build an HR analytics orientated team the organisation would need to invest in advanced data management, analytics and business intelligence platforms like Qlikview and SAS. Research proposes that more and more organisations have invested in such platforms; however, finance, technology as well as marketing practitioners are currently predominantly using these.

McAfee and Brynjolfsson (2012) suggest that the analysis of Big Data requires Data Scientists who have skills in statistics, whom can work with large quantities of information and can clean and organise large data sets. Furthermore, according to the Chartered Institute for Personnel and Development (CIPD), “the HR function lacks the skills, knowledge and insight to ask the right questions of the HR data they have at their disposal” (Angrave et al., 2016). Fundamentally, HR will need to appoint data architectures, workforce scientists as well as change agents to drive the HR Analytics agenda.
The view of this research is that the internal lack of scientific or analytical skillsets within HR is not a justifiable barrier to the adoption to HR Analytics. There really is no value in trying to get a data scientist out of a behavioural scientist. The HR field should rather focus its efforts in defining the strategic value it will contribute towards business performance and rather borrow the skillsets from other areas of the business and provide guidance to the analytical modelling process.

2.7.3. Inadequate systems: An Opponent to the establishment of the HR Analytics Agenda.

The growing use of information technology is said to be “a clear positive with respect to the ability to change, the fact that most organizations now have an HRIS system means that enormous data warehouses are being created” (Lawler III et al., 2004). The trick now will be for organisations to maximise the opportunity to resolve key business challenges using both structured and unstructured data. To some extent, this is where HR practitioners seem to be stuck. HR practitioners have not defined what unstructured data could drive value, analysis has been limited to static data that does not predict future behaviours or explore employee views.

In their research Lawler III, Levendson and Boudreau (2004) found that “eighty-percent of the organizations responding to their survey have an enterprise-wide HR information system that could be linked to 11 business data, yet far fewer reported using metrics and analytics to connect HR investments to business outcomes” (Lawler III et al., 2004). The above reemphasises the view that HR practitioners to some extent do not understand the power of the data that they retain in their Enterprise Resource Planning (ERP) systems and how to use that data.

ERP systems with their HRIS component allow the shift of typically administrative functions from HR to line management; allowing HR additional capacity to contribute on a strategic level. One way of achieving this will be through the adoption of business intelligence (BI) technologies that are typically already available within the bigger organisations and using their functionality to drive business value (Dery et al., 2009). Figure 7 below, is a summarisation of an end to end spectrum of BI Technologies.
As illustrated above business intelligence technologies enable organisations in terms of reporting, online analytical processing, data mining and predictive analytics. The importance of these technologies is associated with the ability of business managers to make better and more informed business decisions regarding cost efficiencies as well as new business opportunities amongst other things. From a human resources analytics perspective BI technologies can be utilised to provide organisations with detailed analysis on workforce performance, integrating data in a centralised platform.

Herein lies a potential solution to the barriers to adoption of HR Analytics, most businesses are now using ERP systems that allows all data to be on one centralised platform. In the same manner, the data is centralised, so too should the analytics function follow an enterprise analytics model, where resources are allocated to different projects across the business.
2.7.4. Human Resources Data Predicament

Data integrity and employee rights to privacy are one of the multifold challenges to the course of HR analytics. This also poses a risk of failure of the HR professional to capture the strategic value of HR data. Manual processing of data introduces the possibility of data inaccuracies as a result of human error and warrants interrogation of data quality. On par with that, systems are also exposed to software bugs and hardware malfunctions which potentially lead to the violation of employee rights to privacy.

In terms of current data kept in traditional systems this draws concern in matters considered as sensitive, such as age, marital status, religious affiliation as well as HIV/AIDS in efforts for example to create effective Employee Assistance Programmes (EAPs). Concerning a more futuristic approach with predictive analytics in mind, this draws concern on whether it is ethically correct to track employee’s internet behaviour during working hours, for instance predict employee intention to leave an organisation. It is therefore very important for HR practitioners in their derivation of an HR analytics framework to ensure that the necessary consent is received from employees and that they ensure that compliance to the likes of the Popi Act, the GDPR policy as well as the Fourth King on Reporting Governance for South Africa (King 4) is met.

Organisations typically use engagement surveys together with the current data on the systems to gauge employees’ level of engagement through the assessment of key drivers like job satisfaction, rewards and recognition, employee net promoter score (eNPS), opportunity to advance and the general intention to stay with the organisation among others. The results of these surveys are often debateable due to some gaps between HR practice and the scientific research in the area of employee attitudes in general and the most focal employee attitude in particular; job satisfaction (Saari & Judge, 2004).

Another attempt to retaining employees or at least trying to understand why employees leave is the exit survey or exit interview. This a much-delayed attempt to fix the problem on the basis that the employee has at that point already decided to exit the organisation, but also the accuracy of point of view is very questionable. It is therefore important to find solutions to the above mentioned data collection related dilemma.
before proceeding with the HR analytics journey because the success of HR analytics is completely dependent on the availability of people data.

The discussion on opponents to the progress of HR analytics leads to the third proposition:

*Skills shortages, inadequate systems and ethical implications of people data influence the adoption of human resource analytics.*

### 2.7. Summary of literature review

Levenson et al (2005) thoroughly express the true essence of HR Analytics, that is, gathering employee insights that will ultimately drive the change in business performance. Bassi (2011) supports Levenson et al. (2005) by further highlighting in her definition that HR Analytics is not a discipline aimed at proving the worth of HR, or enhancing the credibility of the function although it does. Herein lies one of the challenges in leveraging HR analytics. HR practitioners are yet to acknowledge the true value of HR Analytics that goes beyond decision power.

Royal & O'Donnell (2008) have touched on another important point, that is, the role of HR practitioners in defining the business strategy. Ultimately, if the goal of HR Analytics is in line with delivery of business goals, it therefore becomes important that a HR Analytics strategy be adopted accordingly.

The LAMP model (Cascio & Boudreau, 2008) is the preferred reference point as it highlights the importance of strategic alignment in terms understanding what the function is trying to achieve, or rather the problem statement to be resolved by HR Analytics, although it has been designed specifically for talent management.

The Five Steps of Analytics model (Fintz-enz, 2009) as well as the HCM: 21 model (Fitz-enz, 2010) miss a very important step by automatically assuming the position that the defining of the goal stage has been completed and immediately starts with organizing around the data from which insights are to be derived.
The table below presents a summarisation of some of the barriers to human resource analytics that have been proposed through research in the last decade. Previous research in this area of study has proposed analytical skills, inadequate and unintegrated systems and challenges pertaining to employee data privacy as the core barriers to the uptake of HR analytics.

<table>
<thead>
<tr>
<th>Literature: Barriers to HR Analytics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bassi (2011) Consultant</td>
</tr>
<tr>
<td>Mondare et al. (2011) Consultants</td>
</tr>
<tr>
<td>Coco et al. (2011) Consultant and Business Professionals</td>
</tr>
<tr>
<td>Levenson (2011) Academic and Consultant</td>
</tr>
<tr>
<td>Aral et al. (2012) Academics</td>
</tr>
<tr>
<td>Giuffrida (2014) Consultant</td>
</tr>
<tr>
<td>Douthitt and Mondore (2014) Consultants</td>
</tr>
<tr>
<td>Rasmussen and Ulrich (2015) Academic and Business Professional</td>
</tr>
<tr>
<td>Angrave et al. (2016) Academic &amp; Business Professionals</td>
</tr>
</tbody>
</table>

Table 1: Barriers to HR Analytics

The three propositions that stem from the literature review are as follows:

**Proposition 1:**
Basic understanding of the concept of HR Analytics has influence on leveraging HR Analytics adoption.

**Proposition 2:**
Definition and adoption of an HR Analytics strategy influences HR Analytics adoption.

**Proposition 3:**
Skills shortages, inadequate systems and ethical implications of people data influence the adoption of human resource analytics.
2.8. Conclusion

The literature reveals the need for HR practitioners to embrace a strategic business-partnering role and to focus their efforts on defining HR strategies that can drive business value and realise organisational efficiencies. HR analytics is deemed the strategic stimulus to help HR practitioners achieve this through delivery of tested data insights.

Over the years HR Analytics models have been developed. The focus of these models is seemingly more on guiding HR practitioners on how to make inferences from the analytics, whereas there is a need for a framework or model to be used as a guide for implementing HR Analytics as a business strategy like other strategies.
CHAPTER 3: RESEARCH METHODOLOGY

This chapter purposes to put forth the data collection process that was followed in investigating the research problem as well as assessing the possible solutions to the contributing factors put forward in the literature review. This section describes the research design, sampling, data collection and analysis processes adopted.

3.1. Research Design

In considering the findings from the literature review a combination of primary and secondary data was used in this research paper, a qualitative in-depth interview method was adopted as the instrument of data collection for the study, supported by a document review in order to gather background information and to gather information to develop the interview guide. The organisation under study is a South African operating company of a multinational corporation (MNC). In this regard, some of the questions were generated through referring to both the local organisation as well as its parent company’s publicly disclosed documents, namely, annual integrated reports.

The objective of this approach was to present a complete and detailed account of the phenomenon under study. This approach was used to generate an in depth understanding of the level of adoption of HR analytics as well as to propose the critical success factors for leveraging HR analytics. This research took the form of a cross-sectional design in adherence to the stipulated timelines of the research programme.

3.2. Research Methodology

The research method adopted is a qualitative research with data generated through semi-structured interviews with both open and closed ended questions. Qualitative research is described as any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification" (Strauss and Corbin, 1990, p. 17) and instead, the kind of research that produces findings arrived
from real-world settings where the "phenomenon of interest unfold naturally" (Patton, 2001, p. 39).

The research adopted an inductive approach of gathering new theory. This method was used in the analysis of the research data that was completed through the transcription and coding by frequency of themes emerging from the research interviews. Zhang and Mildemuth (2011) propose that the inductive method is particularly appropriate for studies that intend to develop a theory, rather than those that intend to describe a particular phenomenon or verify existing theory.

3.2. Sampling Method

Due to feasibility challenges only a sample of respondents was selected instead of the entire population of HR professionals in the organisation. The researcher elected the use of a non-probability purposive sampling technique. The nature of this technique is such that the participants are selected based on certain characteristics in line with the objective of the study. The adopted approach was the criterion based sampling and the sample population consisted of individuals in the Senior Leadership Team of a South African Telecommunications organisation particularly fulfilling roles that in one way or another have an influence in the adoption of HR analytics. Table 2 below presents the profile of the respondents.

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chief Officer: Human Resources</td>
</tr>
<tr>
<td>3</td>
<td>Managing Executive: Talent Management</td>
</tr>
<tr>
<td>12</td>
<td>Managing Executive: Rewards and Benefits</td>
</tr>
<tr>
<td>5</td>
<td>Managing Executive: Human Resource Business Partnering</td>
</tr>
<tr>
<td>2</td>
<td>Managing Executive: Organisational Effectiveness &amp; Change</td>
</tr>
<tr>
<td>8</td>
<td>Executive Head: Talent and Performance Development</td>
</tr>
<tr>
<td>13</td>
<td>Executive Head: Human Resources Services (Operations)</td>
</tr>
<tr>
<td>7</td>
<td>Executive Head: Resourcing</td>
</tr>
<tr>
<td>10</td>
<td>Executive Head: HRBP Technology</td>
</tr>
<tr>
<td>9</td>
<td>Executive Head: HRBP CBU (Big Data &amp; CVM)</td>
</tr>
<tr>
<td>6</td>
<td>Executive Head: HRBP Finance Business Unit (Business Intelligence)</td>
</tr>
<tr>
<td>4</td>
<td>Executive Head: HRBP Enterprise Business Unit</td>
</tr>
<tr>
<td>11</td>
<td>Executive Head: OE &amp; Change</td>
</tr>
</tbody>
</table>

Table 2: Respondent Profile
3.3. Data Collection procedure

The process adopted for data collection commenced with gaining the necessary cooperation from the organisation under study. Consent was also sought from individual respondents before completing any process. As part of data collection in-depth and semi-structured interviews were conducted with a sample of the organisations senior leadership team, with the intention to explore the experiences of participants and the meanings they attribute to the concept of HR Analytics. An interview guide was used as the research instrument to conduct the interview.

3.4. Research Instrument

A self-developed interview guide has been constructed to be used as an interview instrument as a result of interrogation of existing literature as well as considering the objective of the research. The interview guide consists of four main interview themes (questions) as stipulated below that will be covered during the interview. The interview guide also consisted of 19 semi-structured questions directly related to the research question.

See appendix B for the interview guide

- **Research Question 1**: What is the analytic maturity of the organisation?

- **Research Question 2**: Is there a common understanding of the concept and value of HR Analytics amongst the HR Practitioners?

- **Research Question 3**: What is the future of HR analytics: critical success factors?
3.5. Data Analysis and Interpretation

The results were collected through interviews with 13 Human Resources Executives of a South African telecommunications company. The interviews were transcribed and coded. From coding, findings were generated and supported by direct quotes from the interviewees. In an effort to determine the validity of the interview data a construct determination technique of theme coding was be adopted as per below:

- Main themes that emerge from the transcripts of the interview were identified depending on the frequency.
- Themes were quantified by indicating the number of times the theme occurred in order to display their prevalence.

3.6. Validity and Reliability

According to Guba and Lincoln (1985), the concept of validity and reliability in a qualitative research cannot be applied in the same manner as it is applied in a quantitative research. According to them quality of an enquiry in this paradigm can be judged by its trustworthiness. Trustworthiness is measured by the transferability, credibility and reliability.

3.6.1. Transferability

Due to a small sample size, the research findings are not generalizable to the general HR practitioner population. However, the research findings can be utilised as a basis for quantitative studies of the same industry or qualitative studies in other industries.

3.6.2. Credibility

In an effort to ensure credibility the research engage in methodological triangulation by considering both the interview responses as well as concluding a document analysis to ensure alliance between the two.
3.6.3. Reliability

Reliability in a qualitative research is established through dependability. To ensure that the research is dependable, all aspects of the research process have been documented inclusive of unexpected changes or occurrences to ensure future replicability of the study.

3.7. Limitations of the Study

- The study was geographically limited and confined to Johannesburg, South Africa.
- The time allocated to complete the research was a limit to the outcome of the research.
- Demonstrating the internal or external validity of the study as well as generalisability of the findings as a result of the inadequate sample size.
- The interview responses may have been biased for a number of reasons, for instance, the respondent’s position within the organisation.

3.8. Ethical Considerations

Ethical clearance from Wits Business School was required before conducting data collection involving human participants (WBS, 2018) and the necessary documents were submitted for approval. The research met the requirements of the ethics protocol and a protocol number was given by the Ethics Committee. In line with complying with and ensuring confidentiality actual respondents names have been replaced with fictional names such as Respondent 1 and Respondent 2 in the results section.

See appendix A for the participant consent letter
3.9. Conclusion

The success of this study is dependent on the data collection and analysis process. To be precise, the ability to capture the perspectives, attitudes and behaviours of the human resources professionals under study as well as understanding the obstacles to the development of human resources analytics will determine the success of the study.
CHAPTER 4: PRESENTATION AND DISCUSSION OF RESULTS

4.1. Introduction

The purpose of this chapter is to outline the findings of the research in line with the objective of understanding the level of practical application of analytics within the human resources discipline in the telecommunications industry, and further investigating the critical success factors for leveraging the adoption of human resource analytics. This chapter starts with a description of the sample and then explores the research responses grouped by the research focus areas.

Qualitative research uses a naturalistic approach that seeks to understand phenomena in context-specific settings, such as “real world setting [where] the researcher does not attempt to manipulate the phenomenon of interest” (Patton, 2002, p. 39). In this study semi-structured interviews with both open-ended and close ended questions were conducted, in this regards all results from the closed ended questions is displayed in the form of graphs in an effort to display the frequency distributions of qualitative themes through a better method. It is important to note that the research is purely qualitative and not a mixed method.

4.1.1. Presentation of Results

The results have been presented in alignment with the four categories of questions asked to the respondents. The categories are as follows: 1) establishing an understanding of the analytic maturity of the organisation; 2) establishing a level of understanding of the concept of HR analytics; 3) evaluation of the level of institutionalisation of HR analytics and lastly, 4) determining the future of HR analytics: critical success factors. Categorising the responses in this manner enabled the extrapolation of a holistic account of HR Analytics within the organisation.
4.1.2. Respondent Demographics

The first set of questions sought to establish the participants years of experience in the human resources field and their tenure in the organisation. Another question explored the extent to which each of the participant’s roles interfaces with any data analysis process. Graphs 1 and 2 below represent years of experience and tenure in the organisation respectively.

![Graph 1: Years in HR Field](image)

The years in HR field question was asked in an effort to establish if the participants are qualified to give an account based on their experience in the human resources field. Graph 1 above illustrates that (9 out of 13) of the respondents have between 16 and 21 plus years of experience in the human resources field and the remainder of the respondents have between 11 and 15 years in the human resources field.
The high level of experience provides confidence in respondents having given a fair account of the subject under study, but may conversely introduce a risk of bias associated with a traditional account of human resources versus a modern unconventional account of human resources.

Graph 2: Tenure in Organisation

Graph 2 above explores the tenure in the organisation, (8 out of 13) respondents have been with the organisation for 2 to 5 years, while the rest of the respondents have been with the organisation between 11 to 16 years. There is significant confidence in the narrative offered by the respondents based on their extensive organisational experience.
4.2. Interface with Analysis Process

Table 3 below illustrates that all the respondent’s interface with at least one form of data analysis process, whether it be defining the approach, conducting the actual analysis, interpreting the data, reporting or making a data based decision. Most of the respondents interface with HR Analytics strictly in the form of decision-making and the some of the respondents fulfil an end-to-end HR Analytics role.

<table>
<thead>
<tr>
<th>Interface with HR Analytics Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Define Approach</td>
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<tr>
<td>-----------------</td>
</tr>
<tr>
<td>Respondent 1</td>
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<td>Respondent 2</td>
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<td>Respondent 3</td>
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<td>Respondent 4</td>
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<td>Respondent 10</td>
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<td>Respondent 11</td>
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<tr>
<td>Respondent 12</td>
</tr>
<tr>
<td>Respondent 13</td>
</tr>
</tbody>
</table>

Table 3: Interface with HR Analytics Processes

“Unless analytics is embedded in a full and comprehensive analytical model, the more limited information available in dashboard formats may be misinterpreted by operational and financial managers with a limited patience for or understanding of HR” Angrave et al (2016). The research results display what is said to be a barrier in HR practitioners adopting HR Analytics or even embracing a more strategic human resource management. The researchers insist that HR practitioners should be fully involved in an end-to-end analytical modelling process.
That above is but one perspective, the view adopted by this research is that it is ideal to have HR practitioners that strike a good balance between having excellent data sciences skills as well as excellent HR skills. However, it is not realistic and will take some time to develop. In the interim, what is more practical is to leverage on those with the necessary expertise, while simultaneously building an HR succession pipeline that will encompass both.

4.3. Results for Proposition 1
Basic understanding of the concept of HR Analytics has influence on leveraging HR Analytics adoption.

4.3.1. Establishing an understanding of the concept of HR analytics

In an effort to establish the level of understanding of the concept of HR Analytics, two related questions were asked, “What is your understanding of HR Analytics?” as well as “What is your understanding of predictive analytics and is it feasible in the human resources field?”.

The definitions offered by the respondents are aligned with the definition that has been adopted in the research. The definition is proposed by Marler and Boudreau: “An HR practice enabled by information technology that uses descriptive, visual, and statistical analyses of data related to HR processes, human capital, organizational performance, and external economic benchmarks to establish business impact and enable data-driven decision-making” (Marler & Boudreau, 2017, p15).

Respondent 12 further goes on to confirm that the organisation has rich sources of data, which is positive as it suggests that the organisation has sufficient data to enable the practice of human resources analytics.
4.3.1.1. HR Analytics

“HR Analytics is a discipline of applying analytics in the HR environments, where all the variables measured or evaluated are HR KPIs. It focuses on understanding the trend behavior of HR KPIs, measuring correlations and causality of HR variables, and predicting future patterns given the historical and current information.”

Respondent 6

“It is about gathering information about our people, our human resources, valuable information that's going to drive our talent strategy, that's going to drive our people development strategy, it's also going to drive the way that people act in our organization… behaviors… we've got rich sources of data to help with this”

Respondent 12

4.3.1.2. Predictive Analytics

In reviewing some of the responses given for the definition of predictive analytics, there seems to be a fair grappling of the concept of predictive analytics. However, the examples provided in support of the feasibility of predictive analytics within the human resources field are not from the internal organisation. Rather, the examples are predominantly from the other operating companies of the multinational corporation, including the head office.

“I would say that when you have something that is more predictive in your approach, you are then able to make conscious, informed effective decisions. but I think also you know, it helps you make very precise and very informed decisions, there's no guesswork… for instance in India, they are able to
predict attrition there are some data points that they utilize to predict intention to leave.”

Respondent 2

“Predictive analytics tells us about what typically happens, and one can draw an understanding in terms of what could the future potentially look like. In other words, what is the probability of something happening in the future and I think that’s really the big event because I think if you analyse the status quo, the data is only as relevant as when the data was analysed.”

Respondent 11

“Predictive analytics is an analytical field that focuses on forecasting future performance or behavior of HR KPIs.

Respondent 6

Scholarly articles on the practical implementation of predictive analytics particularly in the HR field are very limited. The very few that have been published also seem to be on the negative end of the scale, “Predict what employees will do without freaking them out” (Boudreau, 2014); “Should companies have free rein to use predictive analytics?” (Oehler & Salvatore, 2015) and “HR automation, predictive analytics still lagging” (Berman-Gorvine, 2015). These articles seemingly explore the contention that exists about whether business trying to predict employee’s behaviour in the same manner as they do customers is morally right. It is safe to say that HR practitioners still have a long way in realising predictive analytics.

4.3.1.3. Fact Based decision-making in Human Resources

Question 4 in this section dealt with whether the organisation was deemed as having assumed and to be leading fact-based human resources, while also elaborating on some obstacles that need to be overcome if applicable.
Respondent 4 excitedly expressed “the future of human resources is fact-based and that he believes the team is well ahead in the journey”. While Respondent 1 agreed that, the organisation has made head way by suggesting: “As HR we do have a seat at the decision table because of our ability to offer calculated and tangible options for solving strategic problems”, the respondent also highlighted the danger of human resources converting to a completely numbers based function. The respondent advised that there is a need for a balance between facts and intuition.

“I believe that we cannot avoid intuition as an HR function, with intuition one can gauge whether a decision taken is right. Facts based decision making can help in putting information together and help enhance decisions that would have otherwise been only based on intuition”

Respondent 1

Generally, the respondents seemed to express the need for a good balance between hard numbers and soft skills in managing the HR function.

4.4. Results for Proposition 2
Definition and adoption of an HR Analytics strategy influences HR Analytics adoption.

4.4.1. Establishing an understanding of the Analytic Maturity of the Organisation

Four questions were asked in this part of the interview, the questions in this section were devised to measure the existence of an organisation analytics governance and strategy as well as the supporting infrastructure.

The document review indicated that the organisation has committed to a 3-year digital strategy that entails innovation, agility as well as leveraging data for improved decision-making and using Big Data analytics across the business. Grossman (2018) devised a framework for evaluating the analytic maturity of an organization
called the Analytic Processes Maturity Model (APMM). This framework segments analytic processes into six key areas said to determine maturity levels, namely; “analytic governance, analytic strategy, analytic modelling, analytic operations, analytic infrastructure, analytic security and compliance” (Grossman, 2018).

When assessed against the analytic processes maturity model, the organisation is predominantly aligned to the standards for analytic processes maturity. Table 4 below outlines some of the key themes that surfaced through the process of interview responses coding as well as a review of the company documents. While on a surface level there is evidence of the presence of an analytic strategy, governance, infrastructure as well as security and compliance, there is no clear evidence of analytic modelling and analytics operations.

<table>
<thead>
<tr>
<th>Analytic Process</th>
<th>Evidence</th>
<th>Key Themes</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytic Modelling</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analytic Infrastructure</td>
<td>Yes</td>
<td>*Qliksense, *Oracle, *SAP EVO, *SAP SuccessFactors</td>
<td>Interview Responses</td>
</tr>
<tr>
<td>Analytic Operations</td>
<td>No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Analysis of Analytic Processes Maturity
Importance of analytics for delivery of Organisational Strategy

Question 1 probed about the importance of analytics in the organisation’s digital transformation strategy and how it is translated in their unique functions. The respondents showed evidence of understanding the value derived from adopting such a strategy and therefore the importance of it. Some of the key words used to describe the importance of analytics that arose are as follows: “very critical”, “strategic pillar” and “very important”.

Concerning the functional role of analytics, although the question had asked the respondents to comment on the role of analytics within human resources specifically; while some respondents elaborated on the role of analytics within their human resources function, some focused on the role of analytics within the bigger business, particularly in the consumer business unit. This function predominantly has a commercial, sales and marketing focus.

The organisation’s annual integrated report identifies the key deliverables of Human Resources Analytics under the 3-year strategy as follows:

- Turn data into value for employees in the context of society: use data analytics as a core in organisational decision-making frameworks.
- Accelerate a distinctive employee experience: develop tailored propositions for our people through segmented value propositions and a bespoke people journey.
- Collaborate and partner for future proof talent management: develop a strong, segmented talent proposition through collaboration and partnerships

*(Company Integrated Report, 2018)*

The focus on HR Analytics is explicitly highlighted in the human resources strategy, however some of the responses in the interview suggest that there is a level of disconnect between the targeted outcome (strategy) and the actual delivery (application), see responses below:
“Analytics is very important. For instance we use big data to customize our
customer offerings and it helps us with the market segmentation approach
which aims to offer unique products and services to uniquely categorise
customers”

Respondent 13

“HR Analytics has been a key lever over the last couple of years, it’s a pillar in
our HR strategy however it has not been driven or supported from a structural
point of view… We don’t have the necessary resources, and the budget to be
able to fully explore and resource… when I say structure, I also refer to defining
where HR Analytics should rightfully sit, should it be a part of OD or should it
be independent of HR”

Respondent 3

“I think it's at the core of the digital transformation strategy, we tend to realize
that we haven't leveraged analytics well enough. As an organization, as a telco
we have access to such rich analytics and big data particularly because we are
such a market leader. We've got so much access to information that we should
be behaviourists just like discovery… we know more about people than
discovery does but they do a lot of behavioural economics so I think its core to
our strategy to have the analytics embedded in mind… In my function in
particular that's what I've been doing a lot of, trying to bring the analytics in…
try and bring the objective elements into everything we do”

Respondent 8

In reviewing the responses it is clear that the importance of analytics in general is
understood, however, this is not clearly articulated in the human resources context.
Although the HR Analytics strategy has been in place for a few years now, the role
that each HR executive contributes towards delivering against the strategy is not
clear.
The talent management function confirms that they have invested in sourcing talent in data science, business intelligence and digital skills in support of the organisational strategy; yet, this talent or “critical roles” has been secured for the commercial functions and not necessarily for human resources. The above to some extent dismisses the idea that shortage of skills and capabilities is the cause of the slow uptake of human resources analytics. In other words if the organisation is already on a journey of investing in the required capabilities, then what stops the human resources function from utilising these existent skillsets. It is apparent that there exists an ease of association of analytics with the commercial functions and not human resources.

“Big giants like, Microsoft, Google, Ideate, and so on, are using data science vividly to sort out their HR issues” (Chattopadhyay, Biswas, & Mukherjee, 2017, 44). The researchers suggest that private sector organisations are more aware that they can achieve their set goals more effectively through efficient use of data. The same can be argued for subsidiary organisations that are a part of multinational corporations.

**Modelling HR Analytics: The experience of a subsidiary of a multinational corporation**

The constant reference to the parent company in this section of the interviews led to probing about the role that the parent company plays in the definition of the human resources strategy particularly referring to the human resources analytics strategy. It became very clear that to some extent there were mixed views about the role-played by the local market in determining what is viable for the local market, the question about where the ownership and accountability for the human resources analytics strategy lies would certainly have an influence on the adoption and leveraging of the strategy.

“what's very clear is that our parent company is heavily driving it in their HR operating model right now, HR analytics is a group function. There is a whole HR analytics team with an operating model with tools that have been
deployed. It is clear that it is a value driver for group, but it might not necessarily be a co-driver for ourselves.”

Respondent 7

“As with ourselves there's SAP success factors that has been deployed that enables HR analytics. This is definite proof of commitment and prioritization of the HR analytics strategy from a local point of view.”

Respondent 11

“Group is holding the accountability for data analytics and they have a very clear road map… we are not allowed… we are just following suit, we're not allowed to like implement unique things.”

Respondent 2

The comments suggest that there is an immense level of awareness and adoption of HR analytics by the MNC head office, while there is some adoption in the local subsidiary the extent of adoption may not be as high. Local subsidiaries it can be argued, tend to leverage on the frameworks and structures created by the head office. While this is an advantage as the local company gets a lead, which position it ahead of competitors, depending on the manner of knowledge transfer it could also be a disadvantage.

“We argue that transfer of HR practices is a social process where the governance mechanisms used by the MNC, characteristics of the subsidiary HR systems, the social relationship between the subsidiary and MNC headquarters, and the transfer approach taken by headquarters management will influence the outcome of the process” (Björkman & Lervik, 2007).
**Question 2** considered the level of sophistication of the analytics in the organisation as well as the HR function. Graph 3 and 4 below detail the research finding.

The above graphs indicate that Human Resources is lagging behind on the analytics journey as compared to the bigger organisation and is perceived by the majority of respondents as being on an intermediate level, while the rest of the respondents
deem it as being basic. Concerning the organisational level of analytics sophistication, majority of the respondents found the organisation to be on an advanced level, while the rest, believe that it is intermediate.

Based upon the above results, we can already deduce that, although an analytics structure or framework, in terms of the strategy, infrastructure and models is in place and mature, it has not influenced the level of analytics sophistication within human resources specifically.

**Question 4** was aimed at determining which of the departments utilises analytics the most. Chen et al. (2012) in their study of business intelligence and analytics applications discovered that the marketing function is the biggest user of data analytics. This has found support in the current research where when asked to rank the biggest users of data analytics within the organisation, respondents have rated the most for the following; 1) Consumer Business Unit; 2) Finance Business Unit and 3) Business Intelligence business unit.

### 4.4.2. Evaluation of the level of institutionalisation of HR analytics

In this section of the interview, 5 questions were asked with the intention of getting a good sense of how far the organisation is on the journey of adopting and leveraging the benefits of human resources analytics. Question 1 intended to gauge if the organisation has tapped into the use of unconventional platforms for collecting unstructured data to gather useful employee insights.

#### 4.4.2.1. Unstructured Data Utilisation

Structured data refers to the more traditional data formats, in other words i.e. Data that is organised in a database (McAfee & Brynjolfsson, 2012). Traditional text or numeric data (De Mauro, Greco, & Grimaldi, 2015). Unstructured data on the other hand refers to data that is not organised in a database (McAfee & Brynjolfsson, 2012). These include blogs, social media images and videos, text and human language (De Mauro, Greco, & Grimaldi, 2015) and can also be in the form of text
files and documents; server, website and application logs; images; sensor data; video and audio files; emails and social media data.

The commonly used unstructured data form in the human resources functions is the text files and documents (e.g. employee interview transcripts) as well as emails. However, from the interview responses it was clear the organisation is exploiting other non-traditional and digital platforms for generating employee insights. The evidence that was offered in the interviews is as follows;

- **Social Media**

  “So I think there’s a lot of information but it all depends on what you’re looking for but I think in terms of social media we are able to see trends in terms of what people are interested in that we could use in developing our employee value propositions as well as the attraction and retention of talent. We can learn a lot about what is a preferred organisational culture from what people talk about organisations… as well as a lot of insights around generational differences”

  *Respondent 9*

  “So like the new Workplace by Facebook internal engagement platform, it allows us to push data, we use that channel really to distribute a lot of stuff that we do as a function like selling our value offerings as HR… and we can also use social media to gather a lot of information”

  *Respondent 13*

The respondents view on the link between the use of social media and HR analytics is congruent with that of Sinha, Subramanian, Bhattacharya and Chaudhary (2012). Sinha et al (2012) have proposed that social networks provide employers with additional information they can use to screen applicants, including the benefit of social networking sites having some advantages over traditional human resource
tools such as being accessible without costs and being perceived as reliable sources.

While there is evidence for the appreciation and use of social media to gather employee insights as well as to promote the functional value propositions, there was minimal substantiation of how the data that has been collected is synthesised and modelled to derive the insights. Perhaps this is due to the lack of analytical skills within the human resources function.

Server, website and application logs

“In terms of insights from employees, future current and past... to say that the bonuses are or okay, salaries are okay, or our benefits are okay... we are not tapping into those sources of data. We sort of know that when somebody starts asking for the pension fund balance they are about to leave and we can actually see when employees go onto the websites and what they are looking for, but we are not tapping into those insights and how we record those. At this point we cannot tell if when an employee religiously checks their pension balance, they are checking it because they want to leave or are they checking to make sure that they will be financially secure in the future”

Respondent 12

Respondent 12 shared that in their function, they are able to access and view employee activity on digital platforms like the pension fund portal and ideally, this would enable the department to track flight-risk employees and potentially help reduce the attrition of talented employees. The respondent acknowledged that the function is not currently actively tracking the website utilisation in an effort to analyse and respond to the intention of an employee to leave. This attests to the thinking that the challenge of adopting and leveraging human resources analytics does not necessarily sit in the inadequacy of systems, rather, it lies in the inaction of some of the human resources practitioners.
**Text files and documents**

“We don't get the insights back from exit interviews, like insights about what people are saying we're not doing right, we're not closing the loop even from a resourcing function”

*Respondent 4*

“The annual people survey helps us gather some insights into how our employees feel about the organisational culture, we have partnered with a service provider who has helped us to build a survey dashboard that helps managers analyse their scores and also proposes action plans in light of the scores and commentary from employees”

*Respondent 13*

Researchers Chen, Chiang and Storey, in their work on text analytics have proposed, “a significant portion of the unstructured content collected by organisations is in textual format, from e-mail communication and corporate documents” (Chen et al. 2012). There seemed to be mixed feelings pertaining to the use of text files and documents to gather employee insights, over and above the traditional or structured data formats.

Respondent 4 highlighted the need for the human resources function to close the gap in terms gathering insights from exit interviews. Respondent 13 on the other hand referred to an internal employee engagement survey as one of the ways in which the organisation currently gathers insights from unstructured data that then aids decision-making through rigorous analysis.

Overall, the organisation seems to be comfortable with the use of unstructured forms of data in their decision-making, although their each of the unique platforms is not necessarily fully developed.
4.2.2.2. Human Resources Analytics Level of Adoption

A question that was delved into in this section considered the organisational level of adoption out of a total score of 10 (with 0 being very little adoption and 10 being fully adopted).

The above graph illustrates that on average the respondents believe that the Organisational human resources analytics level of adoption is ranking at 5 out 10. Respondent 6 commented that they would give the organisation a score of 5, however, this would be driven more from the business intelligence and analytics function and less from the human resources function itself. This may interestingly suggest the need for HR to collaborate with the traditionally analytical functions to drive interest in HR Analytics.
4.4.2.3. Enterprise analytics versus Independent HR Analytics function

A question in this section of the interview pursued to determine whether the organisation preferred their approach to human resources analytics to be an independent portfolio within human resources or rather a programme to be managed in conjunction with a centralised analytics function or portfolio. Majority of the respondents suggested that a more centralised agenda is preferred as compared to an independent portfolio situated within the human resources function.

This is very interesting as the respondent's preference for an enterprise analytics approach is contrary to the parent company’s adoption of a human resources analytics-operating model as discussed above. Furthermore, the responses suggest that a couple of formats have been tested in the organisation under study that range from a reliance on the business intelligence and big data team which was found to be the most effective approach; to human resources analytics portfolio and lastly; to a proposed agile approach to human resources analytics.

“I don't think the action we have taken to have an independent analytics function was informed by the data analytics process, we view it separately and we have now created and established an HR Analytics portfolio in HR that sits under the OE structure… When we realised the impact it was having in the finance business unit, we then took our team member assigned them to Finance for four months with a view to learn from the inside of an analytics function”

Respondent 2

“I think Hr functions do themselves a disservice by trying to be something they are not… I mean in business, you've got data scientists that are employed, okay as well as reporting and analysis specialists that are employed, and these people are engineers trained to do overall analytics, we cannot revert to taking a behavioural sciences employee and expecting them to be a data scientist”

Respondent 4
"In line with our agile journey we should establish a temporary team from diverse functional backgrounds that will help us approach our human resources analytics business problems in line with HR analytics strategy from different angles... This approach would not introduce any additional costs, as the expertise will be borrowed from the existing employees in other teams... it would also be beneficial as it promotes cross functional interactions"

Respondent 10

4.4.2.4. Human Resource Analytics Utilisation

The last question in this section considered the extent to which the human resources function at present is able to answer 4 questions using data analytics on a scale of 0% to 100%. Graph 6 below illustrates the ability to measure the 4 indices is still very low, averaging at 38%.

Graph 6: HR Analytics Measure by Index
4.4. Results for Proposition 3
Skills shortages, inadequate systems and ethical implications of people data influence the adoption of human resource analytics.

4.4.1. Determining the future of HR Analytics: critical success factors

The last section of the interview was dedicated to testing the barriers to the adoption of HR Analytics as proposed in the literature review as well as to establish the critical success factors for leveraging human resources analytics while also investigating the future level of organisational investment in human resources analytics. Some of the themes that emerged throughout the interview pertaining to the critical success factors for human resources analytics were as follows:

- **Lack of Analytical Skills**
  
  “Investment in people resources as well as the creation of capacity for HR Analytics would make a difference”  
  
  Respondent 1

- **Ownership and Accountability**
  
  “Analytics is a bit of an exploratory topic for many organizations and I think the reality is that from a South African perspective, we haven’t really invested enough human capital… we tend to slice and dice accountability between different topics as they become more important during the course of the financial year. When there’s a more important organizational project that has to be executed, you know, often it just so happens that something else then takes a bit of a backseat until there is more capacity”

  Respondent 11

  “I have to be honest, I think the reality of the environment that we that we work in… we work in a massive system, our parent company puts a lot of requirements on us and I think often we kind of just run and we tend to do what is the most burning governance… Well, I mean, sometimes you have to ask yourself are we doing things for the sake of the local business or in other
words are we doing things that will derive local value or are we just doing things because there's a perception globally that by doing this we will reap some benefits”

Respondent 9

The respondents agreed that they are currently driving an HR Analytics strategy however, later on in the interview there were comments that question where the strategy originates as well as who defines the strategy between the local company and the MNC head office.

The buy-in into HR Analytics of the local organisation was questionable as there seemed to be a disconnect between the adopted human resources analytics strategy and the actual implementation. Respondent 9 alluded that unlike the local company, the parent company is very advanced when it comes to the HR analytics strategy and that unfortunately the course of action is such that the local company has to wait for strategic direction from the parent company as well as the local company can’t advance until the direction has been set.

This then undermines the ability of the local organisation to take accountability and ownership and poses the question of whether in this regard, human resources analytics is the right strategic direction for the South African operating company or if it has been adopted because of it being a global organisational strategy.

• Unknown Value of HR Analytics

“HR, ourselves… we question the credibility of our own data, maybe it’s because we don’t understand the value and see the importance of our data, and this makes it difficult for use to convince the business of the value of workforce analytics”

Respondent 12
“The value that it drives is less than the rest of the strategic priorities intended for driving efficiencies”

**Respondent 13**

“The success factors for me are based on making sure that business finds value, but the other one is ensuring that within HR we are able see the value of HR analytics as well”

**Respondent 5**

Hota and Gosh (2013) in their research found that “the major challenge to widespread analytics adoption in firms is due to lack of understanding on how to utilize analytics to improve the business”. This view has found some support in the current study, respondent 12 shared that at times the credibility of the data presented by the human resources function is not credible and hence, cannot be presented to business.

### 4.5. Discussion of Findings

#### 4.5.1. Introduction

This chapter is aimed at discussing all the results that were presented in the former chapter. These findings will be explained in relation to current literature on this topic. This will be followed by a discussion of the limitations of the present study as well as suggestions for future research.

Some of the contributing factors to the slow growth of human resource analytics that have been proposed through research in this field include; skills shortages, inadequate systems, ethical implications of people data as well as the perception of the human resources professionals of HR Analytics. While the above have contributed to the body of knowledge in terms of beginning to understand some of the challenges, the research sought to delineate those factors that will lead to successful development of HR Analytics.
The organisation under study showed adequate evidence of strategic alignment between the overarching organisational strategy with the HR Analytics strategy, furthermore, there was adequate evidence of having invested in analytical skills sets such as data scientists, data analysts, software developers as well as data engineers. The organisation also illustrated having a wide range of systems for people data storage and analysis. It is perhaps for this reason the level of adoption was said to be at averaging 50%.

This exploratory study was aimed less at testing the validity of the literature review findings of the barriers to HR Analytics. The study was rather targeted at defining the critical success factors for leveraging HR Analytics and in this regard, three themes arose from the research, that are assumed to have the potential to drive the advancement of HR Analytics in the organisation studied. While these are at this point merely conceptual propositions, it would be worthwhile for another research study in this field to test the validity of these propositions.

4.5.2. Establishing the true value of HR Analytics

Although human resources analytics has been a growing topic for some time, the question remains are organisations truly ready for it? On average the respondents suggested that the organisation is sitting at a 50% percent adoption level. As per some of the responses, while human resources analytics has been adopted as an organisational strategy, there are some levels of tension when it comes to whether it indeed is a value driver for the South African market specifically.

One of the ways in which the human resources function can start addressing the question about the value that human resources analytics generates is through moving away from only strictly using structured and static data stored in the human resources information systems to developing insights and rather consider the many available unstructured data forms. This will help fast track finding a solution for data linearity or data monadology, where all data is limited to a snap shot in time, which by default introduces the question about the relevance and value of the insights by both the human resources practitioners and the business that they are supposed to strategically partner with.
Perhaps, the lack of analytical modelling skillsets in the HR field causes this discouragement and doubt in the value derived by the HR Analytics, in other words, ‘HR doesn’t know, what it doesn’t know”. However, instead of being discouraged, it would be advisable for the function to seek cross-functional collaboration with functions that have the required skillsets.

Another aspect of this dilemma is the growing need of Strategic Human Resources partnering with the business. A joint effort in defining the business problem as well as sharing the target for resolving the problem lead to both HR practitioners as well as business finally understanding the value of HR analytics.

4.5.3. **Strategy Definition: Identification of HR Business Problem to be solved by HR Analytics**

If organisations are to make human resources analytics work for them as well as drive value it will be important for the HR function to determine the business problem it intends to solve for and therefore define the unique approach or strategy to solving that problem. Angrave et al (2016) say that “this matters, because HR analytics involves complex multistage projects requiring question formulation, research design, data organisation, and statistical and econometric modelling of differing levels of complexity and rigour”.

In the organisation studied, the definition of an HR analytical strategy in line with the over-arching organisational strategy, whether defined by the MNC or the subsidiary gave the organisation an advantage in terms of the level of HR analytics adoption. Its important to note that this alone is inadequate to guarantee tapping into the maximum benefits of HR Analytics.

Another important factor in this phase would be the definition of the measure of success and the performance evaluation thereof. Without this HR Analytics initiatives are bound to be reduced to data reporting initiatives instead of insights generating initiatives.
4.5.4. Defining an approach to Human Resources Analytics: HR Analytics Operating Model

Contrary to the proposition that analytical skillsets should be sourced and allocated uniquely to the human resources function in an effort to aid the uptake of human resources analytics, the organisation under study has resorted to invest in these skills to be allocated to a function that supports all business units in terms of their analytics requirements. This resembles an enterprise analytics framework. As discussed in chapter 4, 76% of the respondents favoured driving human resources analytics using an enterprise analytics framework in comparison to establishing a ‘human resources analytics portfolio’. The above is aligned to Davenport, Harris and Morison (2010) whom have shown support for a companywide approach to analytics adoption. “To take advantage of analytics, you need the integration of data, analyses and processes throughout the enterprise. Too often, HR analytics are localized and one-off operations”.

Some of the limitations of a localized analytics function or a standalone human resources analytics function include mainly the lack of required analytical skills. Therefore, it would be easier and quicker to borrow the skills as opposed to building them in avoidance of this becoming a barrier to the enablement of HR Analytics.

It would be essential for HR practitioners to right at the beginning define the approach to be adopted to support their delivery of the HR Analytics agenda as described in the strategy definition phase. This would address the matter of the required systems as well as skillsets and answer the question of whether to build, buy or borrow. Both the HR Analytics portfolio within HR approach as well as the Enterprise Analytics approach have advantages and disadvantages that can be managed.
4.6. Proposed HR Analytics Conceptual Framework

The findings in the research have resulted in the derivation of factors or elements to be considered when commencing on an HR analytics journey. Various activities involved in the adoption of HR Analytics have a direct impact on the level and speed of advancement and sophistication. The key to leveraging HR Analytics lies in the rigorous HR Analytics strategic planning as well as the implementation process. As per the research findings, this should include the following:

- Alignment to Organisational Strategy (Vision & Mission)
- Identification of HR Business Problem
- Definition of Governance Process
- Implementation of Centralised Analytics Infrastructure
- Adherence to Risk Compliance
- Definition of Analytics Approach
- Service Delivery (Results & Decision-Making)
- Ongoing Change Management
- Ongoing Performance Evaluation

Figure 8: HR Analytics Conceptual Model (Own)
4.6.1. Implications of the Conceptual Framework

The conceptual elements present a useful guide to assess where configuration of the HR Analytics strategy relies on certain elements of the structure as per below, and therefore, ensure optimum functionality.

**Phase 1: Strategy Definition**

The strategy definition element presents a useful step for assessing opportunities for the HR function to exert a decisive influence on the direction of the organisation with a promise of driving value and future success.

**Phase 2: Definition of the Governance & Risk Management Method**

Completing a structured evaluation of risks is important as it enables the function to identify, assess and evaluate the potential challenges to successful delivery like, the standpoint on employee data privacy. It is beneficial to identify sustainable knowledge management systems that would deliver in line with the needs upfront.

**Phase 3: Operating Model Definition**

The significance of defining the operating model to be adopted is captured in the saying “operating models are the bridge between strategy and operations”. HR practitioners need to define the preferred HR Analytics approach upfront in order to ensure increased process integration and improved co-ordination and decision-making.

**Phase 4: Service Delivery**

This is the first point at which the value that HR Analytics generates is tested. The manner in which stakeholders receive the output of HR Analytics will determine the success of HR Analytics in driving organisational strategy. It is important that HR Analytics does not fail the test of delivering impactful insights by merely becoming another data tracking and reporting programme.
Phase 5: Change Management & Performance Evaluation

Change management will be important in ensuring that HR practitioners embrace the changed nature of their roles into a strategic business partner and the impact this has on stakeholders. Continuous performance evaluation on the other hand will be necessary for the function to learn from errors as well as to celebrate wins and drive confidence in the HR Analytics role across the business.

4.6.2. Applicability of Conceptual Framework

Due to research time constraints, the framework is merely derived from the consolidated perspective of the academic literature and respondents’ practical experiences. This therefore warrants the need for another study to test the applicability or generalisability. The HR Analytics conceptual framework proposed can provide HR practitioners with guidance or pre-emptive planning when executing HR Analytics projects.

4.6.3. Benefits of Conceptual Framework

The envisaged benefits of the framework include but are not limited to the following:

- Making informed and better decisions based on a rigorous strategy definition process,
- Making informed and better decisions based on the adoption of the most effective operating model,
- Measuring actual benefits achieved versus those initially anticipated at the time of defining the business problem and measures of success,
- Accurate planning and better forecasting to enable the parallel planning of other activity streams in the bigger business strategy,
- Delivering required quality and performance of HR Analytics within the right time and at the right cost.
4.7. Conclusion

HR Analytics has a pivotal role to play in driving business value. As with the research findings, typically, local organisations that are a part of multi-national corporations seem to be the front-runners in the adoption of human resources analytics through leveraging on the established processes, systems and frameworks for adoption of human resources analytics; however, that on its own is not sufficient to reap the benefits of human resources analytics. While the strategy has been defined, systems and supporting skillsets are in place, it is therefore important that local human resources practitioners establish true ownership and accountability of the strategy in order to guarantee definition and adoption of a local or internal approach that will drive a return on investment in the form of business value.
CHAPTER 5: CONCLUSION

5.1. Introduction

The effective implementation of human resources analytics is governed and facilitated by certain factors. The adoption of factors that are not suitable can impede the achievement of the desired outcome. This study has deepened the understanding of the factors that affect the adoption of human resources analytics, as well as highlighted the factors to be considered for leveraging it. The current study confirms that the most challenging factor of human resources analytics adoption faced by organisations is cultural and managerial rather than related to analytical skills, systems and technology.

Generally, the results of this research provide a foundation for future quantitative research on the critical success factors for leveraging human resources analytics. As well as investigating, the validity of the proposed conceptual framework for HR Analytics that has been devised on the basis of the qualitative assumptions from the research findings. Much more needs to be done in this area of study. HR analytics is an evolving area, and new uses and frameworks will be produced in the coming years.

For South African organisations in the telecommunications industry and those that are a part of multi-national cooperation’s where human resources analytics is fully embedded specifically the research findings suggest that it is expected that the local companies will at least have a basic to intermediate level of HR Analytics adoption level. This is predominantly because the governance, strategy and systems decisions and processes relating to HR analytics are already made by the MNC head office. Advancement is then dependent on the speed of establishing ownership and accountability of the strategy within the local market as well as establishment of the unique to local market value of human resources analytics programme. The integration and internalisation process is core to the success of HR Analytics.
5.2. Suggestions for Future Research

The following are some suggestions on research that could be conducted to further understand Human Resources Analytics in the South African context.

- A quantitative study aimed at testing the conceptual framework proposed for leveraging Human Resources Analytics.
- A quantitative study on the role of Big Data Analytics in the Human Resources field.
REFERENCES


APPENDIX A: PARTICIPANT LETTER

The Graduate School of Business Administration  
University of the Witwatersrand, Johannesburg  
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PO Box 98, WITS, 2050

To Whom It May Concern:

SURVEY / INTERVIEW PARTICIPANT INTRODUCTION

An investigation of critical success factors for leveraging Human Resources Analytics in one of the South African Telecommunications companies.

This is to confirm that Ms. Dakalo Kangala is undertaking a bona fide academic project in partial fulfilment of the requirements of the Master of Business Administration (MBA) degree at the Graduate School of Business Administration, University of the Witwatersrand, Johannesburg (Wits Business School), provided the student can produce a valid student card that confirms his/her current registration.

Wits Business School MBA students are required to carry out an Applied Research Project on a topic of their choice, which typically requires data collection and analysis grounded in academic literature. The final project report will be available to other scholars through the University library.

The project has been approved by the Wits Business School Postgraduate Committee and has been granted ethical clearance.

Your participation in this project is entirely voluntary, and if you choose to participate it is expected to take approximately 60 minutes. You are free to withdraw from the project at any time.

Please note that all responses will remain confidential and will only be used for the purposes of this project.

Should you have any questions regarding the project please contact the student, the project supervisor or the undersigned:

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☎: +27 82 880 4531
APPENDIX B: INTERVIEW GUIDE

Investigation of the critical success factors for leveraging Human Resources Analytics in one of the South African Telecommunications companies.

Date: ........................................................................................................................................
Respondent: ...................................................................................................................................
Role Title: ........................................................................................................................................
Tenure in organisation: ....................................................................................................................
Years of experience in field of work: .............................................................................................

Participant Background

To what extent does your role interface with any analysis process? E.g., Define approach/ conduct data analysis/ Interpret data/ Reporting/ use results for decision-making?

Establishing an understanding of the Organisational context

1. What is the importance of analytics in your organisation’s digital transformation strategy? How is this translated in your unique function?

2. How would you rate the level of sophistication of the analytics in?
   a) Your organisation (basic, intermediate, or advanced), elaborate.
   b) Your business unit (basic, intermediate, or advanced), elaborate.

3. How mature is the analytics technology used by your organisation?

4. Rank in order which departments currently take most advantage of your organisation’s analytics capabilities.
Establishing an Understanding of HR Analytics

1. What is your understanding of HR Analytics?

2. What is your understanding of predictive analytics? Is it feasible in the human resources field?

3. What is your view on “the concept of HR functions evolving into functions that support decision making in a way that’s fact-based”?

4. Would you consider your organisation as having assumed and to be leading a fact-based HR? What obstacles do you still need to overcome in order to get there? (Elaborate)

Evaluation of the level of institutionalisation of HR analytics?

1. What valuable data can HR professionals gather from social media and social networking sites?

2. Out of a total score of 10 (with 0 being very little adoption and 10 being fully adopted) where would you say, your organisation is ranking in terms of the adoption of HR Analytics.

3. In your view would it be more suitable for HR Analytics to be a centralised function (in another analytics specialising function) or for it to be situated within HR?

4. To what extent are you (function) at present able to answer the below 4 questions using data analytics (Scale 0% to 100%)? (Elaborate)
   a) What is the ROI of employee development programmes?
   b) Which screening techniques yield the best performing recruits?
   c) What is the cost of employee attrition?
   d) What will be the benchmark in the next 3 years for the different categories of salaries per function?
Success Factors for HR Analytics

1. What are the critical success factors for driving more effective use of data and analytics within your organization and business unit?

2. What benefits has your organization realized through your use of analytics?

3. What has had the most positive impact on the success of your analytics initiatives?

4. Over the next five years, does your organisation/business unit/function plan to invest more, less or about the same in analytics initiatives?

Thank you for participating!
### APPENDIX D: Other References

- **BI&A Applications from Big Data to Big Impact Chen et al. (2012)**

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<td>Structured web-based, user-generated content, rich network information, unstructured informal customer opinions</td>
<td>Fragmented information sources and legacy systems, rich textual content, unstructured informal citizen conversations</td>
<td></td>
<td>Genomics and sequence data</td>
<td>Criminal records</td>
</tr>
<tr>
<td></td>
<td><strong>Characteristics:</strong></td>
<td></td>
<td></td>
<td>Electronic health records (EHR)</td>
<td>Criminal networks</td>
</tr>
<tr>
<td></td>
<td><strong>Characteristics:</strong></td>
<td></td>
<td></td>
<td>Health and patient social media</td>
<td>- News and web contents</td>
</tr>
<tr>
<td></td>
<td><strong>Characteristics:</strong></td>
<td></td>
<td></td>
<td></td>
<td>- Terrorism incident</td>
</tr>
<tr>
<td></td>
<td><strong>Characteristics:</strong></td>
<td></td>
<td></td>
<td></td>
<td>databases</td>
</tr>
<tr>
<td></td>
<td><strong>Characteristics:</strong></td>
<td></td>
<td></td>
<td></td>
<td>- Viruses, cyberattacks, and botnets</td>
</tr>
<tr>
<td>Analytics</td>
<td>- Association rule mining</td>
<td>- Information integration</td>
<td>- S&amp;T based domain-specific mathematical and analytical models</td>
<td>Genomics and sequence analysis and visualization</td>
<td>Criminal association rule mining and clustering</td>
</tr>
<tr>
<td></td>
<td>- Database segmentation and clustering</td>
<td>- Content and text analytics</td>
<td></td>
<td>EHR association mining and clustering</td>
<td>Criminal network analysis</td>
</tr>
<tr>
<td></td>
<td>- Anomaly detection</td>
<td>- Government information semantic services and ontologies</td>
<td></td>
<td>Health social media monitoring and analysis</td>
<td>Spatial-temporal analysis and visualization</td>
</tr>
<tr>
<td></td>
<td>- Graph mining</td>
<td>- Social media monitoring and analysis</td>
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<td>Health text analytics</td>
<td>Multilingual text analytics</td>
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<tr>
<td></td>
<td>- Social network analysis</td>
<td>- Social network analysis</td>
<td></td>
<td>Health ontologies</td>
<td>Sentiment and affect analysis</td>
</tr>
<tr>
<td></td>
<td>- Text and web analytics</td>
<td>- Sentiment and affect analysis</td>
<td></td>
<td>Patient network analysis</td>
<td>Cyber attacks analysis and attribution</td>
</tr>
<tr>
<td></td>
<td>- Sentiment and affect analysis</td>
<td></td>
<td></td>
<td>Adverse drug side-effect analysis</td>
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<tr>
<td>Impacts</td>
<td>Long-tail marketing, targeted and personalized recommendation, increased sale and customer satisfaction</td>
<td>Transforming governments, empowering citizens, improving transparency, participation, and equality</td>
<td>S&amp;T advances, scientific impact</td>
<td>Improved healthcare quality, improved long-term care, patient empowerment</td>
<td>Improved public safety and security</td>
</tr>
</tbody>
</table>

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- **Analytic Processes Maturity Model (APMM), Grossman (2018)**

  ![Analytic Processes Maturity Model Diagram](image)

- **Transfer of practices in MNC’s, Björkman & Lervik (2007)**

  **FIGURE 1 Conceptual model**

<table>
<thead>
<tr>
<th>Governance mechanisms</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1 Subsidiary autonomy</td>
</tr>
<tr>
<td>P2 Performance evaluation criterion</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Intra-organisational social capital</th>
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<tbody>
<tr>
<td>P3 Interaction ties</td>
</tr>
<tr>
<td>P4 Shared cognition</td>
</tr>
<tr>
<td>P5 Trust</td>
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</tbody>
</table>

<table>
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<tr>
<th>Subsidiary HR system</th>
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<tr>
<td>P6 Satisfaction with existing HR practices</td>
</tr>
<tr>
<td>P7 HR capabilities</td>
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<tr>
<th>Headquarters’ management of the process</th>
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</thead>
<tbody>
<tr>
<td>P8 Due process</td>
</tr>
<tr>
<td>P9 Change management</td>
</tr>
</tbody>
</table>

  **Transfer of HR practices**
  - Implementation
  - Internalisation
  - Integration