

Project Dissertation
on
Business Advantages of utilizing HR Analytics

Submitted By:
Surbhi Arora
2k14/MBA/75

Under the Guidance of
Dr. Shikha N. Khera
Asst. Professor, Delhi School of Management



DELHI SCHOOL OF MANAGEMENT

Delhi Technological University

Bawana Road

Delhi 110042

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CERTIFICATE

This is to certify that the Dissertation Report titled **Business Advantages of utilizing HR Analytics** is a bonafide work carried out by **Ms. Surbhi Arora** of MBA 2014-16 and submitted to Delhi School of Management, Delhi Technological University, Bawana Road, Delhi- 42 in partial fulfillment of the requirement for the award of the Degree of Masters of Business Administration.

Signature of Guide:

Signature of Head:

Dr. Shikha N. Khera

Prof. P.K. Suri

Asst. Professor, DSM

HOD, DSM

Place:

Place:

Date:

Date:

DECLARATION

I, **Surbhi Arora**, student of MBA 2014-16 at Delhi School of Management, Delhi Technological University, Bawana Road, Delhi- 42 declare that the Dissertation Report titled **Business Advantages of utilizing HR Analytics** submitted in partial fulfillment of Degree of Masters of Business Administration, is the original work conducted by me

The information and data given in the report is authentic to the best of my knowledge.

This Report is not being submitted to any other University for award of any other Degree, Diploma and Fellowship

Surbhi Arora

Place:

Date:

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ABSTRACT

Usage of predictive analytics is lifting its head in the HR area. As predictive analytics in general is not yet widely used in India, the companies are cautious in taking the first steps towards this capability.

The purpose of this study is to explore and identify the possible business benefits of implementing predictive analytics into the HR area. The basic building blocks needed for predictive analytics are also covered, as well as the main challenges companies identify, in order to understand what could be hindering the analytics evolution in the HR area.

Predictive analytics aims to understand the past but also complements it by understanding the correlations of the key activities, estimating the future and predicting probabilities for the whole employee lifecycle- recruiting success, employee management risks and employee retention. This new capability delivered through predictive analytics is meant to help today's HR professionals to make better decisions related to HR activities, accelerating the processes and by eliminating the error of the sole human interpretation.

The main benefits perceived from the study were very company specific. Each company needs to decide what is of core value for them and take action accordingly. However, all companies saw great value in using the predictive analytics in the HR areas they identified to have the biggest business challenges in. Additionally, the following common business development possibilities for predictive analytics were discovered- increasing employee engagement, decreasing employee turnover and recruiting the best candidates and right amount of workforce for the future needs.

The companies perceive their main challenges to arise from the lack of people who would understand both analytics and HR business. Also the general level of the analytics maturity and data harmonization and integration were seen as challenges. Some interviewed companies wanted to improve the data governance processes, data integrations and data quality first, to have the basic building blocks in place before taking the next steps. This approach is partially supported by this study, but one should also not wait and build the whole world ready before experimenting with predictive analytics.

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CHAPTER 1 - INTRODUCTION

1.1 Introduction to HR Analytics

Numerous organizations today say their greatest resources are their employees. To deal with this most profitable resource one needs to perform analysis. As Oehler and Falletta (2015) state, , in order to believably reason the future investments into the employee management area, one needs to start demonstrating how employee management relates to the business value and how the predictive analytics can support the HR decision making. Already the human capital metrics have been missing on transparency and usability, as traditional metrics would require access to the company confidential data according to a study by Royal and O'Donnell (2008). In any case, they proceed with that there is a rising interest to produce more improved analytics for intangible resources, particularly in HR.

The war on talent is a major challenge for today's organisations. Companies are competing on attracting and retaining the talent, developing employees and dealing with their prosperity. Understanding predictive analytics and being able to leverage it in daily operations, supports HR business capacity in this challenge.

Since leading examiners in HR territory, such as Fitz-enz and Mattox (2014), have predicted the return on investments in HR, the early adopters and ones who need to increase competitive edge, have begun to practice analytics as the next big thing in HR administration. When one has investigated the range of analytics, a primary question emerges; where to begin. There are two distinctive beginning stages for this inquiry; one either has a HR issue or an inquiry as a top priority that one needs to handle through predictive analytics, or one can begin with information investigation and see, if something helpful comes up. This study concentrates on the first option of identifying in which HR process areas predictive analytics can support the HR business function. Thus this study gives to the HR analytics examiners a starting point when considering implementing HR analytics into practice.

Thus the main motivation for the research comes from the rise of the HR predictive

analytics as a critical information management topic. The area is quite new and niche, compared to the predictive analytics in sales and marketing area.

Through a shift from the industrial era to a service-based world, the intangible assets and metrics are gaining more and more significance. In some companies the intangible assets, such as employees and their knowledge – the human capital – create up to 80% of the business value. An intangible asset can be defined as an asset without a physical or financial existence such as the leadership, engagement, culture or loyalty, but it can also include items with some written evidence such as patents, research and development. (Fitz-enz and Mattox 2014.)

Traditionally, HR data and its measurements have focused on the tangible costs of the core HR operations, such as the costs of hiring and training, or for example quantities of the newly hired employees and trainings held. Nowadays, however, in order to gain a competitive advantage, one needs to be able to quantify and report the combination of intangible and tangible assets such as business effects of the employee engagement or employee culture, and specifically predict those phenomena. (Fitz-enz and Mattox 2014.)

1.2 Objective of the Study

The research problem emerges from the novelty of the topic; despite everything one needs to prove why predictive analytics is required in HR. Likewise when considering beginning the predictive analytics activities, one needs to build the knowledge on which elements influence and what should be considered in the implementation.

The thesis objective is to study how to leverage predictive analytics in HR and what is the expected business benefit of doing so. The aim is to increase understanding on desirable predictive analytics implementation areas in HR, as a premise for further quantitative analysis. For this reason the thesis covers the following three research questions;

- 1. To study the value of leveraging predictive analytics in HR.**
- 2. To study the main building blocks needed in implementing predictive analytics in HR.**
- 3. To understand the main challenges preventing predictive analytics adoption in HR.**

Thus this research will reason why the predictive analytics should be considered as a significant HR administration tool, by investigating what is the perceived business advantage of it. Additionally the main building blocks of predictive analytics are discussed, to understand what is expected to get to the targets and what could possibly be preventing the progress.

CHAPTER 2 - LITERATURE REVIEW

“Leaders need to put their money where their mouth is and get HR to do its real job: elevating employee management to the same level of professionalism and integrity as financial management. Since people are the whole game, what could be more important?”

Jack Welch, former chairman and CEO, General Electric

2.1 Definition of HR analytics

As per Gustafsson (2012), analytics targeting human resources has been given a lot of names in the past like Talent Intelligence (Snell, 2011), Talent Analytics (Davenport, Harris and Shapiro, 2010), HR Analytics (Mondore, Douthitt and Carson, 2011) or Workforce Analytics (Hoffmann, Lesser and Ringo, 2012b).

Bassi (2011) suggests that HR analytics ranges from fundamental reporting of HR management information or metrics, to the end of the range being that of predictive HR. To the predictive modellers, HR analytics involves forecasting, determining outcomes of policy changes and looking into “what if” scenarios. HR analytics is sometimes referred to as workforce analytics and involves using statistical models that integrate HR data to predict future employee-related behaviour and events (Deloitte, 2011). Hoffman, Lesser and Ringo, (2012b), further contend that the answer is probably both – that HR analytics is basic reporting as well as predictive modelling, not either.

Creelman (2005) derives the different expert views on the subject of HR metrics and HR analytics by saying that Dr Jac Fitz-Enz describes the difference as being that HR measures tend to look internally towards what the HR department is doing, whereas human capital (HC) measures look externally toward the firm. Bassi (2011) sees the essence of human capital as measures that determine and predict future business results.

Davenport and Harris (2006) describe analytics as the extensive use of data, statistical and quantitative analysis, explanatory and predictive models, and fact-based management to drive decisions and actions. Boudreau and Ramstad (2007) say that there is no widely accepted definition of a talent decision science. Boudreau and Ramstad (2003) have thus authored the term called “*Talentship*” – a combination of the words ‘talent’ and ‘stewardship’. The authors say that a decision science in human resources (talentship) would help enhance key decisions that depend on or impact talent, and ultimately would require certain measurement techniques.

In his work, Gustafsson (2012) citing Hoffmann, Lesser, Ringo (2012b) describes workforce analytics as a concept used for denoting analytical techniques and activities used in an organisation’s workforce, its employees. It concerns the importance of building a workforce that can achieve current business strategies. These techniques are used to get insight into how to organise and motivate the workforce. Ingham (2011) extends the description by offering that linking various measures to - for example, actual and potential recruitment levels or even something from the rest of the business, such as customer loyalty figures, may start to provide information that is valuable for decision-making. Given all the various definitions offered, it is perhaps Levenson, Boudreau and Lawler (2005) who offer the most comprehensive definition of HR analytics:

“HR analytics transforms HR data and measures 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, setting the appropriate standards for rigor and relevance, and enhancing the analytical competencies of HR throughout the organisation” (p. 2)

Chrysler-Fox (2011) determines that “it is clear from this study that there is still a conceptual confusion regarding the terms *human capital* and *metrics* as presented in literature and understood and applied in practice” (p. iii).

2.2 Importance of HR analytics

The application of analytics to human resources is not new. For decades, Gibbons and Woock (2007) state that statistics have been used to track such things as the costs of labour and employee benefits, manufacturing downtime, and worker productivity. However, the use of measurement in human resources was revolutionised in 1984 when pioneer Dr Jac Fitz-Enz and his firm, The Saratoga Institute, produced the first national study on HR metrics.

In Bassi (2011), cites Fitz-Enz as advocating that HR activities and their impact on business activities can and should be measured. Fitz-Enz had famously lamented that the days of anecdotal reporting are over, and that hard evidence is the new language. This was the beginning of what is now commonly referred to as HR analytics. The reaction to Fitz-Enz's proposal was then met with "apathy, disagreement and disbelief" (Caudron, 2004, p. 50).

In late 1980's and 1990's, many studies that attempted to link HR practices to organisational performance came. However, many of these were limited to finding correlations between two variables, and still left the question of correlation not equating causality open (Bassi, 2011).

According to Harris, Craig and Light (2010), HR departments are now beginning to look beyond historical data that is a by-product of transaction and compliance reporting systems. They are asking important questions about what really matters – questions such as - do our recruiting processes create an adequate leadership pipeline?, do we currently have the right skills mix to achieve our goals?, what skills will we need in five years?, which people and what positions create the most value for our organisation?

It follows then that the ability to effectively manage the organisation's investment in human capital can spell the difference between success and failure.

2.2.1 Towards predictive analytics

The predictability of HR has been a subject of discussion for many years, with models such as the job demands-resources model being used to predict the relationship between job demands and job resources (Bakker, Demerouti and Verbeke, 2004).

However, according to Ingham (2011) predictive analytics is not all about running statistical models. Ingham (2011) cites Jac Fitz-Enz's conversation with David Creelman (2010) when he said: "when we talk about predictive analytics everyone thinks you need to be doing statistics, but that is not necessarily the case. There are two steps. First, you need a logical framework or mental model, to think through what your problem is and identify the key variables. Then you may need statistics or metrics to help determine the best decision; but people forget the first part and fixate on the metrics" (p. 3).

In its recent report, the Institute for Corporate Productivity (2012) argues that predictive analytics are underused for human capital measures - even by high performing organisations. The list of HR predictive possibilities is endless as HR organisations can use predictive modeling to better identify candidates for succession planning and career development programs. The Institute believes that with predictive HR analytics, organisations will be able to answer questions such as:

- Where can we find new hires that are more likely to be superior performers?
- Who is most likely to select any new benefit offerings?
- Which employees are at the highest risk of voluntarily leaving the organisation?
- Which reasons have the statistical significance to why employees leave?
- What is the profile of employees most likely to leave?

Fitz-Enz, Phillips, Ray (2012) describe the three levels of analytics as descriptive, predictive and prescriptive. Descriptive analytics answers questions such as "what happened" and "what is happening now". It is the realm of common HR analytics for many companies which report on people and events in the past or, as they exist

today. The second level of analytics is predictive. Citing Bassi and McMurrer (2007), Chrysler-Fox (2011) defines prediction as the production of statistics linked to the organisation's desired business results. This helps an organisation predict where it is headed, and is an important attribute of an HR measurement system that will maximise decision support for executives. The ultimate, most rigorous level of HR analytics is prescriptive analytics. In this case, the data answers the question - what is the best course of action? This level of analytics combines predictions and decision making while taking into account the impact of those decisions. The difference with predictive analytics is that predictive describes what is possible given particular factors, while prescriptive suggests which course of action would be optimal given all the potential combinations of options and outcomes.

The technology available to organisations and their HR functions continues to expand and advance in sophistication (Davenport, Harris and Shapiro 2010). Wiblen, Dery, Grant (2012) cite Bassi and McMurrer (2007) who share similar views and advise organisations to use technology to facilitate the management of employees like other more traditional financial and physical assets because 'managing human capital by instinct and intuition becomes not only inadequate but reckless' (2007).

Kapoor and Sherif (2012) also contend with the view that by applying advanced analytical techniques, HR practitioners can get intelligent insights, predict changes and make informed decisions at operational and strategic levels.

2.3 Usage of HR analytics

Lawler, Levenson and Boudreau (2004) state that HR functions often collect data to measure their own efficiency, but do not measure the business impact of their practices. They argue that three different kinds of metrics are needed by organisations to better understand and evaluate the impact of HR activities on business performance and organisational strategy. Boudreau and Ramstad (2005) define the three anchor points of efficiency, effectiveness and impact as points that connect decisions about resources such as money and people to organisational effectiveness.

- a) **Efficiency** – described as productivity metrics such as time to fill position, headcount ratios, and cost metrics such as administrative cost per employee.
- b) **Effectiveness** – measures whether programs and practices have the intended effect on the people to which they are directed.
- c) **Impact** – demonstrates a link between what HR does and effects on the organisation's ability to gain competitive advantage.

Impact measures go beyond simply showing that HR has reduced its administration costs and improved the quality of the service by measuring the ability of the HR function to show an impact of their activities on the bottom-line. Lawler, Levenson and Boudreau (2004) have argued that this set of impact metrics assist in developing the strategic role for the HR function.

Lawler, Levenson and Boudreau (2004) maintain that most organisations currently focus on efficiency measures, even though there is some attention to effectiveness as well, by focusing on turnover, attitudes, and bench strength. However, organisations often do not usually consider the impact, defined by Boudreau and Ramstad (2003) as the relative effect of different talent pools on organisational effectiveness. Put differently, too often organisations focus on inputs such as hours of training completed rather than outputs and results such as improvements in workforce performance because of training (Harris, Craig and Light, 2010).

2.3.1 Key HR metrics being used

Dulebohn and Johnson (2012) contend that over the past three decades, scholars and practitioners have given attention to the need for HR metrics. Metrics are used by all core business functions and since HR represents a core function, a need exists for metrics. They define a metric as an accountability tool that enables the assessment of a function's results. With respect to HR, a primary idea has been that through metrics, HR units could build a business case for their work and this could contribute to an increased partnership between HR and the broader business functions.

Vokic (2011) suggested the indicators for valuating individual HR activities such as;

controlling of particular HR function, activity, program, policy or process. The assessment is done by assessing HR indicators in specific HR area or sub-area.

Vokic (2011) further states that academics and consultants in the human resources field have been wrestling the attempt to reorient HR departments toward measurements that are more meaningful to the business. HR executives must do more than use data to report on past performance, generate compliance reports and process administrative tasks. They need to start using data to ask some hard questions that are at the heart of how employees contribute to business performance.

2.3.2 HR analytics models commonly in use

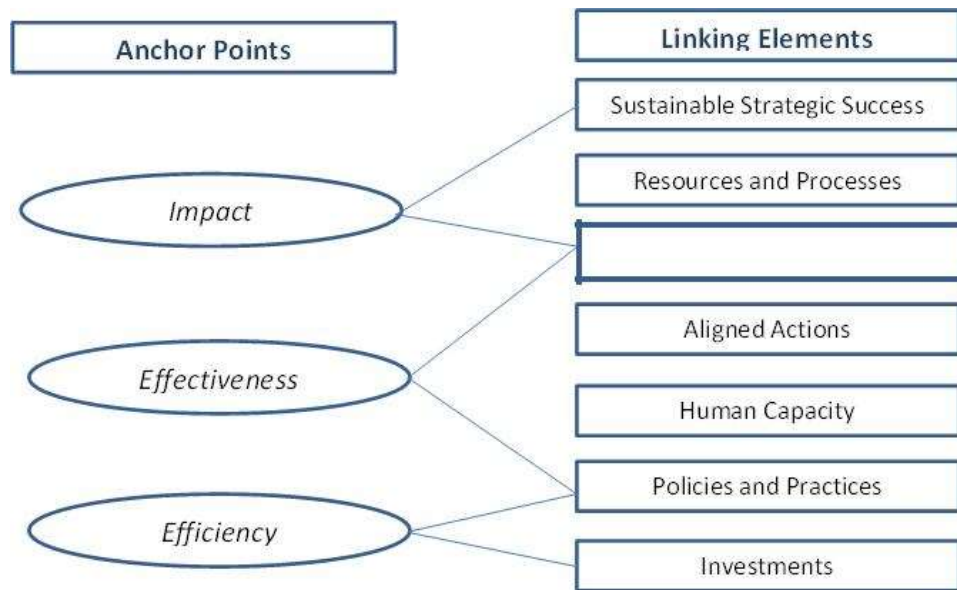
Because of the growing interest in the field of HR analytics, many models and processes have found their way into the human capital investment arsenal (Fitz-End, Phillips, Ray, 2012). This section will cover a few of these models that offer viable options for organisations wishing to venture into HR analytical practice.

2.3.2.1 HC BRidge™ Model

One of the commonly used models to address the challenge of linking HR initiatives to business is the HC BRidge™ framework. Boudreau and Ramstad (2004, 2007) developed the HC BRidge™ framework, which uses the metaphor of a bridge to describe the links between investments in HR programmes and sustainable business success. The model focuses on what the organisation should be doing about human capital and talent rather than on what HR management is doing.

The framework is based on the three generic elements of successful existing decision frameworks, namely efficiency, effectiveness and impact. In the HC BRidge™ framework, each of these fundamental anchor points are broken down further into a set of linking elements that can be used to articulate the framework more explicitly. The HC BRidge™ framework is useful as a planning tool in that it works from sustainable strategic success at the top to derive implications for HR practices and investments at the bottom.

Figure 1: HC Bridge Framework Source: Boudreau and Ramstad (2004, 2007)



2.3.2.3 Talent analytics maturity model

The Bersin and Associates talent analytics maturity model shows the four stages that an organisation goes through as it evolves from a tactical, non-strategic function into a fully integrated value-add business process. This model is shown in Figure below.

Figure 2: Talent analytics maturity model Source: Bersin & Associates, 2012



Source: Bersin & Associates, 2012.

The model above provides a way of defining where in terms of talent analytics maturity organisations are. It starts with level 1 as the level of reactive, operational reporting of HR data. Levels move up to 2 where organisations start being more proactive and advanced in their reporting and include benchmarks and multi-dimensional dashboards. Level 3 is what Bersin (2012) classifies as 'Strategic Analytics' and this involves more use of statistical analysis, development of models and segmentation. The ultimate level of maturity according to Bersin (2012) is predictive analytics which involves predictive models, scenario planning and integrates with strategic planning.

According to Bersin (2012), Level 4 organisations have 38 percent higher retention rates and generate almost three times the revenue per employee of Level 1 HR organisations. At Level 4, which they contend that only fewer than 10 percent of all organisations have achieved, the HR team is not only administering the basic personnel functions, but also staying intimately involved in strategic decisions about where to invest, how to grow the business, and where performance can be improved.

2.4 Building blocks for developing HR analytic capability

Much has been written about how HR analytics should be executed. Lawler, Levenson and Boudreau (2004) believe several things are required to perform the kind of analytics that show a relationship between HR practices and organisational performance. To begin with, good metrics are required, followed by, and perhaps more importantly, good analytic models and valid measures of company performance.

The most critical building block and challenge posed by analytical talent, according to Harris, Craig and Egan (2010), are the people at all levels that help turn data into better decisions and better business results. They describe 'analytical talent' as the people who use statistics, rigorous quantitative or qualitative analysis and information-modeling techniques to shape and make business decisions - the "quant jocks," "math brainiacs," "Excel ninjas" and other analysts who bring the data, the

quantitative analysis and the statistical models that organisations need to improve decisions (p. 4).

While HR dashboards can dissect workforce data in numerous ways, the dashboards cannot decide which information will be of most use to the business – that is the function of HR (Kasselman, 2006). The Deloitte's Human Capital Trends (2011) report states that when it comes to workforce analytics, the most important step is the first one: getting started. Most companies already have the data they need and that there really is no excuse for delays. The report quotes one executive saying, "If you're paying people with a payroll system, you have enough data required to begin". The Deloitte's building blocks, as defined in the Deloitte's Human Capital Trends (2011) report are:

- **People.** What kind of organisation and specific skills are needed to support an analytics capability?
- **Process.** What's the leading way to improve the impact of decision support tools?
- **Technology.** What tools and systems are necessary for data-driven decisions?
- **Data.** How do we get the most value out of internal and external data?
- **Governance.** How will data guide decisions — and who is accountable for implementing them?

2.5 Outlook for HR analytics

Cornell University (2010) found that HR analytics has to move in a number of directions to become beneficial for organisations. Firstly, the survey found that analytics should be used more often for forecasting and generating predictive models. Secondly, including HR analytics and HR data in annual reports (and most participants believe this will happen soon) would effectively spread the HR analytics gospel. Finally, participants agreed that once organisations and HR professionals get better at sharing best practices and developing a common language and standards; this would speed HR analytics' maturation as a discipline.

The IBM (2009) survey noted that of organisations that do not currently have workforce analytics applications in place, more than half plan to develop and deploy such capabilities within the next one to five years. This reflects the significant anticipated increase in the interest, usage and investment in this subject over the next few years.

Johnson, Gueutal and Marler (2012) assert that the following initiatives could be expected to unfold in the HR profession:

- Professional associations and universities will continue to make an important contribution to HRIS knowledge.
- The field will move forward through research. For example, in the last 10 years, there have been over 200 scholarly articles focusing on the use of HR technology in organisations.
- Formal education. For example, the University at Albany offers an MBA concentration in HRIS that is in alignment with Society for Human Resource Management's (SHRM) HR curriculum guidelines.
- HRIS content is slowly being integrated into introductory and advanced courses on HRIS.

Most of all, the HR professional fraternity itself will have to make the most advances. Johnson, Gueutal and Marler (2012) conclude that the most effective advances in HRIS knowledge will come through significant investments of time, talent and resources by individual HR professionals themselves.

HR guru Ulrich (2010) profoundly concludes that while many HR professionals went into HR to avoid the quantitative side of business, that it will no longer be possible to “sidestep data, evidence and analytics that bring rigor and discipline to HR”. He declares, “Statistics should become *de rigueur* for HR professionals” (p. 18).

CHAPTER 3 – RESEARCH METHODOLOGY

The research methodology is qualitative study with multiple case studies, where the data is collected via semi structured interviews backed up with a structured questionnaire. The interview questions are based on the proposed application areas of the predictive analytics in HR. The theory is supported or opposed by the interviewees' answers, which are then summarized and further analyzed.

The interviews are conducted as semi-structured interviews backed-up by a questionnaire. This enables more information to be collected and avoids limiting scope and possibilities of interviewees to voice their opinions. All of the case studies are companies where the internal HR is being interviewed on the usage possibilities of predictive analytics in their companies.

The case companies are interviewed based on the analytics maturity framework and information gained in the literature review. Interviewees' answers are used as such in the conclusions, on what are the challenges and current status with analytics capabilities. The answers are also used for getting a background for the answers on the perceived business value. The comparative illustrations between the companies are done to find out if there are any similarities or differences in the companies' views. At the end the conclusions are drawn and summarized based on both; the literature review and case study findings.

Two big research entities are examined in the case interviews. First of all, the interviews are based on a defined set of capabilities such as skills and technologies, in the questionnaire. These building blocks include the areas of infrastructure, organization, data management, governance and analytics. The term analytics is interpreted here as the implementation areas of the analytics, in other words the analytics processes. The companies are interviewed on what is their current state with each of these analytics dimensions and if there are any challenges related to each of them.

Secondly, the research proposes that implementation of the predictive analytics in HR has a positive effect on the organizations' outcomes. Different companies' perceptions to these statements are interviewed to understand, if they share this view on the business value. The interviewees will estimate and reason the business value to a set of predictive analytics processes collected in this study. The interviewees are given a possibility to add their own processes, should something important to them be missing on the list.

CHAPTER 4 - CASE STUDY ANALYSIS

The case companies are selected based on a preliminary estimation that their current maturity stages in the HR analytics would differ from each other. The aim is to get different points of view to the study. The interviewees' demographics and case companies' information are summarized in Table 1

	Case 1	Case 2	Case3
Company Size & Industry	Multi National in Retail sector	Large sized company in Real Estate	Multi National consultancy service provider
Company operating location	Global	India	Global
Title of interviewee	Director of HR systems and tools	Owner of Real Estate services and planning	HR Business Partner

Table 1. Company and interviewee demographics

4.1 Introduction to Case Companies

4.1.1 Case 1

The first case is described based on the interview of the director of the HR systems and tools from a large globally operating company in retail industry. The interviewee has worked in the current position in the HR services organization, which is part of the HR business organization, since May 2015 and has joined the company in 2014. More specifically, the interviewee acts as a business information officer, looking at the big picture of the whole system landscape working in close cooperation with business and IT people.

As a general overview concerning the current state of the analytics in the company, the interviewee describes that the company has currently descriptive analytics in use, from which some are global functionalities and many local ones. The company is slowly progressing towards having global data and global analytics services in place and possibly also advanced analytics capabilities, but to interviewee's opinion this needs to happen systematically during time, without skipping any of the needed basic elements. In general the biggest challenges in the HR analytics and predictive analytics area are related to the data quality and disorganization, need for growing the skills of the HR people, and the knowledge of all the stakeholders on the analytics capabilities.

4.1.1.1 Main Building Blocks of HR

Process areas

Company group –level HR has the following process areas in place; compensation & benefits, talent management including training, workforce planning function, including reporting process definitions and occupational health and safety. The HR measures in general are mostly internal and HR specific, not largely tied yet to business or financial outcomes.

Current System

The system landscape from HR analytics perspective consists of a recruiting system, which includes its own reporting. There is also one main employee master data management system, where some ad hoc reports can be produced. An additional data warehousing tool is used for basic descriptive reporting. This is the most important HR reporting tool for the company at the moment. There are no separate predictive analytics tools in use for HR at the moment. Time management systems are used in local level. Also basic spreadsheets, excels, are used quite extensively in the reporting.

People and Talent

The reporting work from organization perspective is scattered; all factories have their own reporting by the factory HR people, mainly due historical reasons. Recently one has started to shift to a more centralized view; first aiming at a country level consolidation and as next to global harmonization. At the moment there are very few

people dedicated to global level HR reporting; thus the priorities are still in the day to day business; annual reports and FTE–reporting. The company is not actively searching people with predictive analytics capabilities. The small team lead by the interviewee aims to create descriptive analytics in the global level and they will grow this talent organically, first taking care of the basics before going into predictive functionalities.

Data

The master data belongs to the basic elements that the company needs to organize. Master data quality is told to be one of the major challenges at the moment for the company, due to historical reasons. The employee data is still local in many countries and the maintenance practices not standardized. Currently there are initiatives planned and on-going to develop more coherent data globally.

Motivations

The main motivation to start exploring predictive analytics more in the company would be from the business –side. The company still has an internal development need in understanding the benefits of different KPI's. Leadership support for the HR descriptive reporting has been growing during the past few years and at the moment there is strong leadership support for the HR reporting.

Talent is one of the major challenges for the company in continuing from descriptive analytics to predictive analytics. One would need people who understand analytics, mathematics and statistics –capabilities, but also know the HR business and process area. Secondly one still needs to train people in HR and in leadership to understand the business benefits. Also, if the benefits are shown only in a long-term and not quantifiable there and then, it is harder to sell the functionality to management.

Future

As next, the company aims to develop the global data standards and data maintenance practices further. Also the automatization of certain reporting is currently being planned. All in all, the development activities concentrate on developing the descriptive reporting first and gradually shifting then further in this roadmap.

4.1.2 Case 2

The case company is a service company offering real estate services. The interviewee has been working in the current role for two years. He is the owner of the real estate service planning and production processes, responsible for example of the project planning and management of a new big ERP implementation project. The ERP in this case company revolves around the workforce and workforce capacity planning. Before that, he has worked in the company in the human resource area, in the workforce planning and analytics from the production planning perspective. The interviewee has experience also on analytics, reporting and KPIs related to the HR.

The company is doing descriptive analytics in some HR areas, but more in other business functions. Predictive analytics they are not yet doing at all in the HR area. The case company's biggest challenge is to get the basic data management in place, as the current system does not support data collection very well.

4.1.2.1 Main Building Blocks of HR

Process areas

In the case company the HR and IT functions are part of the centralized services provided for the different business units. HR consists of recruiting, finance and payroll, human resource development, well-being, compensation and benefits and resourcing, in the meaning of workforce planning. The HR KPIs are mainly HR internal measures. In other words, one has not tied the HR targets to financial outcomes.

Current System

The interviewee describes that HR is still quite isolated from the other business development activities; HR has systems and some reports, which are supported by the IT, but there are no development processes on-going at the time. There is one main HR system in use, which contains the basic employee data. The current HR data for reporting is retrieved from there and manipulated manually. The system is structurally old and it has limitations in providing sufficient information for the reporting usage. This is the biggest challenge in the HR area at the moment; the old system that does not support the data collection. The company has not found yet a

sufficient solution for their purpose to replace the old technology; they are missing a light and cost effective solution to store the HR data.

People and Talent

The case company has people with Business intelligence, analytics and some predictive analytics skills. The company is interested in growing their team with analytics skills, not only specifically predictive analytics but more of business intelligence and traditional descriptive analytics skills. The challenge in HR analytics organization is that currently there are no people who would be driving the usage of analytics capabilities on the HR business side.

Data

The lack of storing data in general in the HR area is a major issue, created by the current old system. Thus the data quality might also be lacking. Also data sensitivity creates challenges in the data management; it has been more difficult to experiment with HR data than other areas, as data sensitivity creates limitations on the access rights. Data governance and processes are centrally managed in the BI team and the awareness is only starting to grow in the HR data management area.

Motivations

Interviewee estimates that the leadership support is there, should one demonstrate the business benefits and want to initiate activities to correct the HR's data situation. At the moment there have not been many initiatives to fix the situation as everyone has got used to the status with the old system.

Future

The main challenge in the HR area is the old system in use. Another challenge is the lack of talent which would understand both the HR business and would be analytics oriented at the same time. The latter one has been developing positively and analytics awareness is increasing in the HR area.

The matching of the workforce availability to the need is one of the key interest areas around the predictive analytics, being the core business that the company offers. There is no active plan on proceeding in this area at the moment, but the team keeps

on discussing improving the HR data collection first and goes on from there.

4.1.3 Case 3

The case is described by the HR business partner of an international professional service company, offering business and technology consulting as well as outsourcing services in India. The HR business partner is responsible for supporting all the business units in India in a wide range of activities, but is also specifically responsible for the compensation and benefits area. The interviewee has been working in the company for 3.5 years and general in HR more than six years.

In general the company in India is doing descriptive analytics in the HR area, but there are forward-looking initiatives and plans on developing the usage of analytics further. The target for the company in the HR area is to find ways to provide more insights from the current data. For example, the “women leadership” is quite an important theme for the company that would benefit from the usage of predictive analytics; how to attract and keep women in higher positions in the company.

4.1.3.1 Main Building Blocks of HR

Process areas

HR consists of the recruiting, talent and supply chain (internal staffing) and field HR functions. The field HR includes all the other areas except recruiting or staffing. Each function has its own country level lead. Company has locally in India a lot of internal KPIs in use, which are followed regularly, but these are not tied to company financial outcomes yet. The KPIs are internal HR measurements. In other words, it has not been tracked yet, how the HR actions connect with the company financial outcomes. One understands conceptually how the low retention rate for instance keeps the costs low in the recruiting and training areas, but the effect is not reported in the financial terms.

Current System

The basic employee data exists in a centralized system. Reports are regularly pulled out from this centralized system in an excel format. There is no specific data

warehousing or reporting toolset in use for HR, but the needed reports are delivered from an offshore centralized location or pulled out from the local tool per the local HRs, where applicable. The main tool in use is still the Excel, for the ease of use and availability for all.

People and Talent

Currently, the local HR does not have many people working specifically in the analytics area. Some cooperation for developing the current practices is being done with the company's analytics –capability group, the same which is serving the client organizations' needs. Then again the daily operational reports are retrieved from the global centralized team, which is seen as convenient at the time.

Data

The data governance and management is operated also in a centralized offshore team. The data quality is being actively monitored and corrected, and global processes are in use in the operational data management area. This data management work is very important as the organization is huge and organizational structures complex, and currently the data quality is kept at a very good level.

Motivations

The need to develop HR into a more analytical direction and towards the predictive analytics would arise from the need to be more credible in all actions. One would want to demonstrate the leadership the current state more effectively and believably, and having numbers and exact predictions would back up this work. The company is also looking at the global and competitor situation on analytics usage, but this would not be the primary driver for taking action. The leadership also expects that HR will organize itself effectively in the analytics area, but currently the plan how to go on is not fixed.

Future

The global team is offering analytics implementations as a service, but it is not yet in use in India. Currently one is finding out the exact needs and formulating the vision for the future.

4.2 Findings

In this section the results of the interviews are presented, to be able to answer to the research questions. First the usage of analytics building blocks is discussed in the case companies' context. Then a summary of the companies' current usage of analytics is presented and analyzed. For this purpose, the perceived business value of the predictive analytics is presented as a summary. At the end the main challenges in adopting the analytics building blocks are also identified.

4.2.1 Building blocks of HR analytics

Building Blocks	Case 1	Case 2	Case 3
Sufficient Technology to perform predictive analytics	Y	N	Y
Gradual conversion to analytics deemed necessary	N	NA	Y
HR Data available to report	Y	N	Y
Good data harmonization & management	N	Y	N
Utilization of data in predictive analytics	N	N	N
Centralization of data management operations	Y	N	N

Table 2: Building blocks of HR Analytics

In the case companies' interviews 2 out of 3 companies referred to the fact that they do not yet have sufficient technology currently in use to be able to perform predictive analytics. Case company 1 also mentioned specifically that they want to progress step by step and gradually towards predictive analytics, first setting up the basic data management and governance processes before moving further on the analytics steps. Case company 3 would not see the gradual evolution as a mandatory step, as they have anyway used to ordering the needed analytics implementations anyway as a service. As long as they have the data in place, which they do, they could order the

analytics on top of that as a service.

In the data management and governance area there were issues hindering the analytics adoption in some of the companies. The assumption on the needed data management and governance practices in this research from technological point of view is that with the current technologies the provision of data for the use of analytics should be possible in any company. One needs flexible ways to experiment with data but on the other hand also rules and regulations on what is allowed and by whom. From the data management perspective the companies should strive away from the silos of data towards capability to pull data from every corner of the company for the data analyses, and in the optimal case offer the results as a self-service for the people needing the information.

This was largely not the reality in the case companies. Case company 2 reported that the data is currently not available in the HR area at all to be reported further. This is due to old technology, which does not store any kind of historical data. Thus even though different technologies are available, it is not self-evident the data would be easily available in all the companies yet. In case companies 1 and 3 the data was stored and one was able to pull different descriptive reports out of it, but none of the companies were offering the descriptive analytics solutions as easily usable and modifiable self-services to the users of the reports. Instead the reports had been predefined and often needed manual work by a specialist before they could be called as reports.

Furthermore, in all of the interviewed companies the data was in silos, each HR operation had its own data, which was difficult to combine to a holistic view. Case companies 1 and 3 saw data management, harmonization and development work as very challenging at the moment. Case company 1 had planned on on-going activities to develop their data management practices further at least in some of the HR areas to have sufficient level of data to use for reporting and predictive analytics. The case company 3 was the only one who stated that the data management practices work well at the moment and the data overall is in good quality. This is due to the fact the data management and governance practices are largely offered and managed from the global organization, which is already very advanced in the HR data management

and analytics area. All in all, none of the companies were utilizing their data to predictive analytics yet, nor were they using the unstructured data streams in their current data analyses as effectively as they could.

The assumptions on the analytics organization according to the study is that one should foster the relationship between IT and business teams; the stronger the relationship, the better results in analytics initiatives. A strong leadership support is also needed for defining what is needed in the company but also in helping running the analytics programs successfully through. One should also control different parts of the organization and in the best case centralize the analytics offerings, so the benefits on the synergies are gained.

The case company 1 has started to centralize its operations on the data management area. This would be a recommendable approach for the future predictive analytics services as well. They also have already people working who understand analytics and predictive analytics; however they are lacking people who would understand both the predictive analytics and HR business processes. The case company 2 is also lacking a HR analytics organization in total. The company still recognizes the need for emphasizing the analytics handling capabilities in the future. The case company 3 then again has analytics and predictive analytics people in house, but currently no one in the HR business side who would be driving the analytics usage. The business leaders are however driving towards getting the capabilities to use. One could conclude that without business need and leadership support, the predictive analytics initiatives will not start nor move forward. There seems to be people in the market who know predictive analytics, maybe less so still with combined HR business skills. However, the need to start building HR analytics has to rise from the business.

4.2.2 Current usage of HR predictive analytics processes

The assumption of the study on analytics usage is that using predictive analytics generates business value to the companies. All management decisions should be based on data and information, and companies need to define what is specifically important for them in their business context. The Figure below describes the current

usage of the analytics in the case companies. The scale starts from 0=no data collected to be used in the analytics and continues up to 5=most mature stage of analytics, prescriptive analytics, is in use in the named process area.

Process area	HR Predictive Analytics -processes	Case 1 current usage	Case 2 current usage	Case 3 current usage
Area 1: Predictive employee recruitment				
Recruitment	Predict future recruitment needs in the company	2	2	2
Recruitment	Predict the best candidates for the open positions	2	2	2
Recruitment	Predict which skills are needed in the future	1	0	0
Area 2: Predictive employee management				
Performance	Predict who will be the future top performer i.e. predict employee performance	2	2	1
Rewards	Predict which rewards produce best performance	2	1	1
Rewards	Predict optimal amount of rewards to be offered	2	1	1
Engagement	Predict best engagement package for top performers, (e.g.reward packages, trainings,	2	0	2
Well-being	Predict well-being activity needs on employee level (physical and mental health)	2	1	2
Well-being	Predict optimal amount of well-being activities to be offered	2	0	2
Well-being	Predict return on investment on well-being activities i.e. best performing activities	1	0	2
Training	Predict training needs on employee level	2	2	1
Training	Predict return on investment of trainings i.e. best performing trainings	1	1	0
Training	Predict optimal amount of trainings to be offered	2	1	1
Absences	Predict employee absences	2	2	2
Area 3: Predictive employee attrition				
Attrition	Predict resignations on organisational level (amount of resignations)	2	2	2
Attrition	Predict resignations on employee level	2	2	2
Attrition	Predict how employee resignations can be prevented	2	2	2
Attrition	Predict which skills will be lost and when	2	1	0
TOTAL SCORE		33	16	20

Current usage	
0	0 No data exists
1	1 Data exists, not reported
2	2 Descriptive reporting in use
3	3 Predictive analytics in use
4	4 Prescriptive analytics in use

Figure 3 . Current level of usage of analytics processes

It seems that the case company 2 is in the most immature state of the companies from the perspective of usage of analytics with 4 areas missing the data in total to be reported, and 6 areas where there is data but no descriptive analytics, in other words reporting, in use. Case company number 3 is a bit more ahead of the other companies on the HR analytics, still with 3 areas where one collects no data and 5 areas where there is no reporting in use. Case company 1 is only missing reporting in 3 of the interviewed areas. Then again the case company 3 has globally operating units, which are performing predictive analytics and prescriptive analytics in most of the interviewed areas. The other case companies are not yet this far on their analytics roadmap.

4.2.3 Challenges of HR Analytics

The biggest challenges identified by the interviewees are listed below per analytics building blocks. All the companies mentioned commonly one challenge; lack of people who would understand both predictive analytics but also HR business processes. This skillset would have been highly valued by the interviewees. Other common challenges were the lack of technology for data management in general but also missing tools for the predictive analytics. Also having data scattered around the organizations due historical business related reasons or just due technological reasons, were seen widely as problematic. Below a list of identified main challenges;

1. Infrastructure
 - Missing data warehousing capabilities
 - Missing predictive analytics tools and technologies
2. Data management
 - Lacking data quality and need for harmonization
 - Data disorganization around the company and around different HR areas
3. Governance
 - Missing centralized data governance initiatives and organization

4. Organization

- Very few people in the companies who would both understand HR business and predictive analytics
- Lacking leadership interest

5. Analytics

- Currently few facts available on the actual positive effects of using predictive analytics, as HR predictive analytics is not widely used yet, if at all in Finland
- Lacking business interest
- Lacking understanding on the analytics and predictive analytics capabilities among the stakeholders

Each of the challenges can be resolved and overcome. The technological reasons are solvable via cloud solutions, data integration possibilities and new opportunities on the predictive analytics toolsets. People from universities are graduating with analytics skillsets to fulfill the gap in analytics skills. Then again, people need to collaborate efficiently between IT and business, to deliver optimal outcomes. What comes to the proving of predictive analytics effects, most interviewees mentioned that if one sees the benefits, the buy in to continue in the analytics path would increase. Thus it could be recommended to try out with a light and simple initiative the effects of using predictive analytics in decision making. All the capabilities do not need to be adopted at once, but one can have a trial with some of the areas identified as valuable.

As a summary, all these challenges vary between the case companies. Thus one could recommend for each of the companies to make their own detailed situation analysis on their current state, what are their current problems, and target the identified challenges based on their needs and strategic goals.

CHAPTER 5 – CONCLUSIONS, RECOMMENDATIONS & LIMITATION

5.1 Main findings and implications to practice

To summarize the findings, let's repeat the key research questions and see how the study covered those. The research questions of this study were defined in the beginning and they are as following;

- 1. To study the value of leveraging predictive analytics in HR.**
- 2. To study the main building blocks needed in implementing predictive analytics in HR.**
- 3. To understand the main challenges preventing predictive analytics adoption in HR.**

To answer the question how the value of predictive analytics is seen in HR, one needs to define how HR in general is valued. Traditionally the HR has been seen as a cost center instead of a value creating function. This has partially been the effect of not having standard tangible HR measurements in place in the HR area, such as there are for example in the finance area. The center for talent reporting (2015) are presenting a set of standardized measures that is gaining popularity among the companies. A set of recommendations on how to start demonstrating the value can be generated as a result of the study, through which the HR can prove its usefulness to the company.

To start with, the HR people should define in detail with the leadership, what actually needs to be measured, to receive the wanted leadership attention and further commitment. A recommendation of this study is to start concentrating more on measuring and reporting the profitability and effects to the company outcomes, instead of following-up HR department internal measures only. Preferably one would use financial metrics to communicate the HR function to deliver the message to leadership most effectively. This is difficult but not impossible through analyzing data and specifically the effects of the HR actions to the financial outcomes. The leadership commitment to HR development activities would also be gained through

connecting the HR targets to personal performance incentives. These are the ways how HR function can prove its profitability and usefulness to the company.

The employee and company level factors, which have an effect on the outcomes were also described in this research, such as employee commitment to the company or amount of wellbeing activities to employee engagement. Not all of the listed benefits in the study or directly monetary, but they can be connected to financial outcomes by analyzing the relations. As the interviewed wellbeing provider states, the employees can turn their wellbeing and energy into actual outputs, be more productive and effective at work, when they have reached an optimal overall vitality. The benefits and values that HR can produce to the company are described in the following Figure

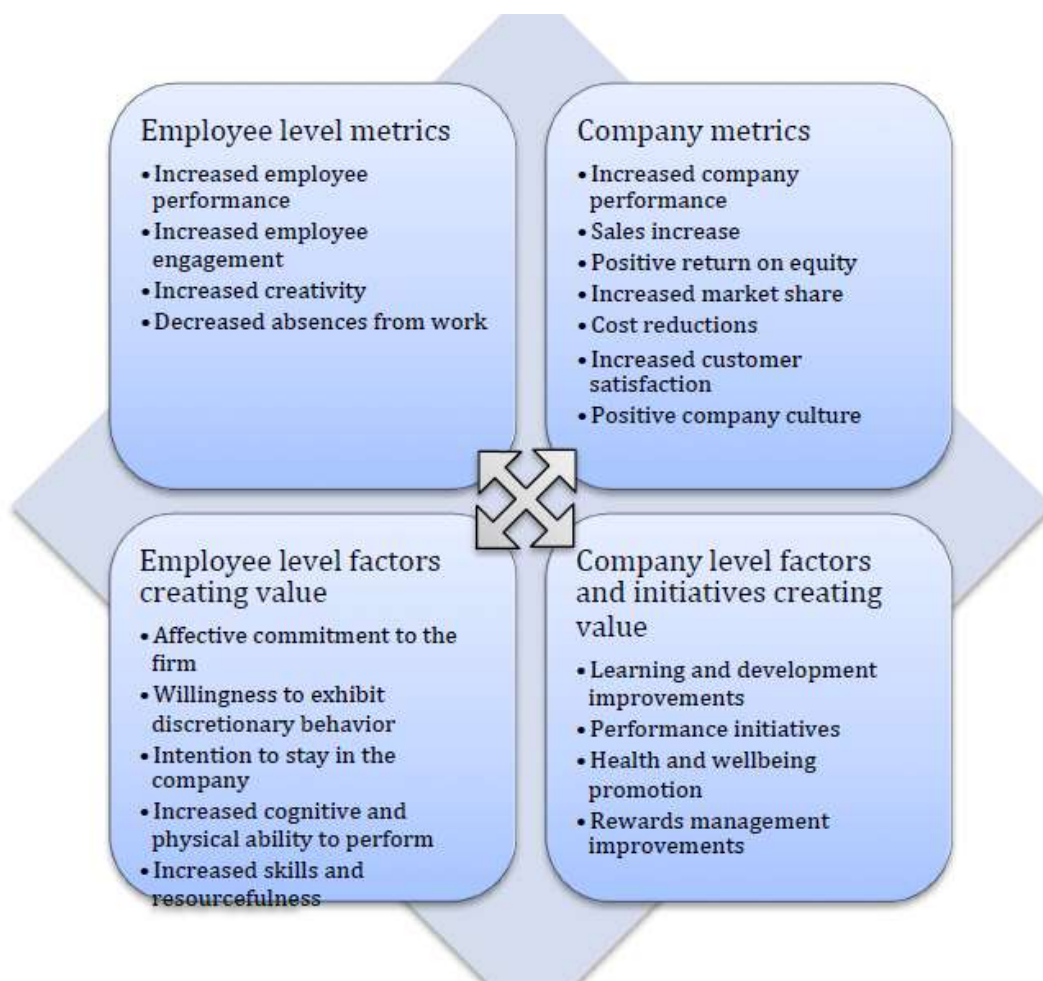


Figure 4. HR business benefits

As predictive analytics is a tool to support HR business leaders towards optimal outcomes, these outcomes would apply to the question “what is the value that predictive analytics can produce to HR”; optimize and increase the listed positive outcomes. In the interviews it was discovered that none of the companies were currently tying the HR measures to financial metrics or to company performance. An exception to this is the global team of the case company 4, who were already executing predictive analytics in advanced level, and were also following up the monetary benefits. All the results they had measured were positive, resulting into significant cost savings and profit increase for the company.

When evaluating the predictive analytics value per analytics processes, it was discovered, that each of the companies saw at least some value in all the listed predictive analytics process areas. A list of predictive analytics processes was collected based on the existing studies and expert interviews. Each of the company values the process areas differently, and tend to emphasize the value in those areas, which are important from their business point of view. One could benefit from a significantly greater sample set of interviewees to get actual trends visible better. In other words, one cannot draw too many general conclusions on which process area for example creates the biggest value, but the companies valued the processes from their individual perspectives.

However, there were still some indications on trends and similar views on the value in certain HR predictive analytics areas. These areas, which were seen to have high or very high value by all the stakeholders, were the employee recruitment related predictions from different perspectives, and predictions on employee attrition. Also predicting employee engagement, affecting to a longer employment relationship between the employee and the company, was seen as valuable by all the interviewees. The main benefits of the predictive capabilities listed by the interviewees were cost savings in employee recruitment costs, cost saving with lower employee turnover and thus with longer employment relationships. Also ability to optimize operations and target the budgets more effectively in trainings, wellbeing and workforce planning were seen as the most important benefits. Each company saw the biggest value in those analytics areas, which were strategically important for their core business. Case company 1 for example wanted to keep employees as

long as possible and predict that area, whereas case company 3 needs to predict the future workforce needs in the high employee turnover business area. Thus each company should define individually what makes sense and is the most valuable predictive analytics action in their case.

Based on the interviews one can also conclude that the companies, who are not working with advanced analytics and predictive analytics, are also not connecting the HR activities to the positive business outcomes very effectively. The listed benefits concentrated mainly on cost savings, whereas the literature review proved that the positive outcomes could be seen also for example as increase in performance and profits, increased customer satisfaction and increase in sales.

The analytics building blocks interviewed were the organization, technology, data management, governance and analytics in general. Some companies had already advanced analytics technology in house, but not in active use through missing competence in HR analytics area. There was also indication that that one wants to build the analytics capabilities gradually. The study supports the view that one needs to build leadership's and employees' awareness and understanding gradually on analytics. Then again the technology should not be an obstacle in the analytics path, with the current offering on flexible and easily accessible solutions. It is recommended that some sort of data storing solution is in place from where the data can be retrieved, but one single data store is not mandatory with current technologies able to solve complex integrations problems.

Currently many of the companies stated that the motivation to move further with HR predictive analytics should come from business. There is interest but not huge demand among the leadership to trial with analytics capabilities in the HR area. Another alternative which the interviewees suggested, on how the HR predictive analytics would be able to move forward was a quick win on some of the areas. If one could demonstrate with one trial the benefits in practice, one would get more buy-in to continue in the same route.

Biggest challenges on adopting predictive analytics into HR were also company specific, ranging from technological challenges to awareness and understanding.

The common problem was the lack of talent, who could combine the predictive analytics understanding to the HR business knowledge. Each company had their own technological challenges, one did not have any historical data in use in HR area due old technologies, one did not know how to operate the existing data mining tools most effectively and the other had data in silos and disorganized. Need for data harmonization was here again a common nominator among the other companies, than the one where global data team owns the area and takes care of the standards are followed and data stays in good quality. Another recommendation of this study is to manage the data harmonization efforts as a centralized effort, as well as the analytics efforts conducted from the data.

A valuable next step and a recommendation for each company would be to continue the internal development on the analytics path, especially in those areas that they see valuable. Before taking an action, the case companies could take a closer look into their analytics maturity, for example with the help of TDWI analytics maturity assessment tool that they offer online, or with any other similar service.

All in all, every company needs to do their own case specific analysis on where to start with HR predictive analytics capabilities, to generate value for the company. However, the start can be very light in a way and for example target one specific area only, to see if there is any benefit on continuing analysis. The technology is widely available, and the company does not have to have a complete analytics portfolio in use to be able to take the first steps. Some basic elements are still needed, such as capable people, available data and tools and an idea where to start.

5.2 Limitations and further research scope

This research is not a guide on how to implement analytics functionalities in practice, nor can this be used as a thorough process improvement guide. This is also not a comprehensive list of all possibilities there are on the HR analytics area, but a subset defined via a summary of former research and the expert opinions of the case companies. This research is also technology agnostic, different technologies for

implementing HR analytics are not covered in detail in this study, although general guidelines and opportunities for implementation are discussed.

In this study both the positive business value of the HR measurement in general and the positive value of the predictive analytics were discovered to exist, but there is also room for further research on this area. Theoretically and from the case companies' point of view the value exists, and thus the next recommended logical step would be to continue with more targeted empirical study on the identified most valuable HR prediction areas, such as the employee engagement, recruitment or employee retention. The list of the identified predictive analytics processes could work as a reference for a further study.

As future research area one could also consider the effect and significance of the unstructured big data sources to the HR prediction models, instead of only concentrating on company's internal data sources. The external big data sources were not directly out scoped from this study, but the interviewees also did not highlight them specifically during the interviews.

Additionally one could investigate the HR predictive modeling from technological point of view, in this study the technological aspects were not in the core of the research, but one only acknowledged the existence of the vast amount of modern possibilities, which enable the predictive analytics. The technological point of could be extended to include the next steps in analytics maturity ladders; prescriptive analytics. Or more specifically, how to automate the decision making based on received predictions and where could this functionality be applied to.

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ANNEXURE

General	
What is your position and responsibilities in the company?	
How long have you worked in the reporting/analytics/HR analytics area?	
How long have you worked in the current company?	
Main building blocks: HR & reporting	
Process Areas	What are the operational areas of HR in your company?
	What are the key performance indicators of these functions in HR?
Main building blocks: HR analytics	
Current System	What are the systems and technologies used in the HR reporting in your company?
	Do you have any challenges in HR predictive analytics area? If yes what?
	How is the current reporting work and possible/current advanced analytics (incl. predictive analytics) organised in your company?
People & Talent	What type of expertise do you need to leverage HR predictive analytics?
	Do you have any challenges in this area? If yes, what?
Data	How are you monitoring your HR data quality?
Motivations	What would be the main motivators for your company to start predictive analytics initiatives in HR area?
Strategy/Sponsorship	What kind of management support do you have for these kinds of initiatives?
Business Challenges	What are in general the biggest HR business challenges at the moment? How could predictive analytics help in those areas?
Visions/ Future	Are you planning any HR predictive analytics initiatives currently? What kind of initiatives?

Table 2: Questionnaire to case companies

ADHERENCE SHEET

Particulars	Last Date	Signature of Mentors	
Title of the Project/Area of Topic Finalization	21-Jan-16		
Literature Review/Objectives of the study	2-Feb-16		
Methodology	18-Feb-16		
Questionnaire/Data Collection tools	3-Mar-16		
Data Collection	17-Mar-16		
Analysis	24-Mar-16		
Conclusion and Recommendations	1-Apr-16		
First Draft	15-Apr-16		
Final Report/Binding and Submission	4-May-16		