UNIVERSITY OF KWAZULU-NATAL

TAKING THE 'HUMAN' OUT OF HUMAN RESOURCES IN THE FOURTH INDUSTRIAL REVOLUTION?

By

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DECLARATION

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ABSTRACT

Human resource functions have been revolutionised in recent times because of the emergence of new advanced technologies, including artificial intelligence. However, evidence suggests that artificial intelligence and advanced self-learning machines threaten the global workforce entirely and eliminate human interference. From these perspectives, the current study aimed to examine the impact that AI and technological advancement have on human resource functions. An exploratory research design was adopted to understand the subject matter better. Moreover, mixed-methods research was employed to collect and analyse quantitative and qualitative data. The total population of the study was 46, which included the chief executive officer, senior management, and human resources. Given the small size of the population, the entire population (the consensus) was used as the sample. Multiple data collection instruments (questionnaire, interviews, and focus group interviews) were used to collect the data to enable the triangulation of results. Concerning the quantitative research, 40 questionnaires were sent to the respondents. However, only 29 completed and returned the questionnaires. Moreover, there were 6 participants in the interviews and focus group discussion. The quantitative data was analysed using Statistical Packages for the Social Sciences (version 27.0). The validity and reliability of the questionnaire were determined by computing factor analysis and Cronbach's alpha coefficient respectively. On the other hand, the qualitative data was analysed manually using thematic analysis. The quantitative results indicated that the various constructs measured in the study were significant. The results of the Pearson's moment correlation suggested no significant relationship between some of the variables, except human function will be transformed by artificial intelligence and the impact of artificial intelligence on skills set/competencies, and impact of artificial intelligence on skills set/competencies and the impact of artificial intelligence on business. In addition, the results of the analysis of variance suggested no significant difference in employees' perceptions, varying by age, tenure, and race, respectively, regarding the current status of the use of artificial intelligence, advantages and disadvantages of the use of artificial intelligence, attitudes of human resource practitioners towards artificial intelligence, human resource function will be transformed by artificial intelligence, the impact of artificial intelligence on skills set/competencies. However, a significant difference existed in the employees' perceptions, varying by race regarding the impact

of artificial intelligence on business. Additionally, the sample t-test indicated a significant difference in the perceptions of male and female employees regarding all the variables measured in the study. On the other hand, the qualitative findings suggested that the adoption of AI in the HR department had impacted most of the human resource functions, including human case management, recruitment, learning, and chatbots. Furthermore, the qualitative findings revealed that the most significant advantage of using artificial intelligence was removing the mundane work and adding value. The study is unique as it sheds more light on how artificial intelligence has transformed most human resource functions. Therefore, the study recommends that organisations continue to invest in artificial intelligence.

Keywords Artificial intelligence, human resource management, information technology, fourth industrial revolution, digitalisation.

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1.1. Introduction

The perception of the Human Resource function has changed drastically within organisations in the last decade. Previously, the functions were perceived as extremely operational in nature and this has since moved to a more strategic role and earned a seat at the boardroom table. Whilst this change was a positive one and proved beneficial, this research aims to examine if the role of technological advancement and rapid development in artificial intelligence (AI) seeks to undo this and replace typical operational HR activities.

One could argue that systems are more efficient and accurate to implement rather than human error and managing staff. On the contrary, do we still require HR to analyse data and implement recommendations to management? Given some companies' requirements to downsize due to the state of the global economy (that is, the global financial crisis), should they be considering more robotics, chatbots, and various other types of AI? AI does have the potential to work together with humans as the role of AI is typically to replace tasks and not jobs. One can draw an analogy to the medical profession in that the x-ray machine or CT scan results are not helpful without a human doctor's interpretation and corresponding recommended treatment. Is the world ready for HR to work hand in hand with AI in a similar way? What change management will be required in order to initiate this transition? What skills will the future HR professionals require in order to adapt to and adopt this change? Which part of the employee life cycle could this be the most beneficial to alleviate time wasted by a HR professional on mundane tasks such as HR statistics, scheduling of interviews, computing payroll, determining learning and development needs?

There are a number of AI software readily available from the large software companies that can conduct interviews for organisations as well as predict employee turnover. What are the limitations of what AI can perform for HR is the main question and could this result in a decrease of HR professionals that typically carry out these administrative tasks?

In exploring the benefits and uses of AI, one should also be mindful of the pitfalls as well such as cost, change management and the reduction of the workforce.

In the State of the Nation Address of South Africa, President Cyril Ramaphosa stated that "Our prosperity as a nation depends on our ability to take full advantage of rapid technological change. This means that we urgently need to develop our capabilities in the areas of science, technology and innovation. The drive towards the digital industrial revolution will be underpinned by the availability of efficient networks." (The Presidency, 2018, p. 1). In contrast, Gauteng Premier, David Makhura in his State of the Province Address affirmed that whilst the 4th Industrial Revolution offers enormous opportunities, it also poses some real challenges. He said, "It is estimated that over 35% of current jobs in South Africa… will change and others will disappear completely" (Polity, 2018, p. 1).

According to Viljoen (2018), the Fourth Industrial Revolution can be seen as the merging of digital and physical technologies. This offers an advantage that companies can leverage off by developing new and higher value business models. Given the advances in AI, companies are able to vision self-sufficient operations whereby machines enable entire facilities to run themselves (Viljoen, 2018). The Fourth Industrial Revolution can be viewed as a continuation of previous revolutions from the 18th century with the invention of the steam engine. According to Viljoen (2018, p. 1), "the main difference between previous revolutions and the Fourth is the pace of change - breakthroughs are happening at a rate unprecedented in history and the scale of disruption; today, every industry is being transformed at an accelerating speed".

"The current workforce is becoming more digital, more global, diverse, automation-savvy, and social media proficient. At the same time, business expectations, needs, and demands are evolving faster than ever before. While some view this as a challenge, many see it as an opportunity; an opportunity to reimagine HR, talent, and organisational practices; an opportunity to create platforms, processes, and tools that will continue to evolve and sustain their value over time; an opportunity to take the lead in what will likely be among the most significant changes to the workforce that we have seen" (Deloitte, 2017, p. 5).

AI has been around since the 1950's but is evolving rapidly in recent years (Ludik, 2018). According to Burns (2021, p. 1), "deep learning is an artificial intelligence function that imitates the workings of the human brain in processing data and creating patterns for use in decision

making". Deep learning is a subset of machine learning in artificial intelligence that has networks capable of learning unsupervised from data that is unstructured or unlabeled (Burns, 2021). Deep learning has evolved hand-in-hand with the digital era which has brought about an explosion of data, which is commonly known as "Big Data". According to Burns (2021, p.2), big data "refers to the growth in volume of structured and unstructured data and the speed at which it is created, collected, analysed and the scope of how many data points are covered".

Rapid changes are not only restricted to technology but also expands to the wider society and demographics in our personal and business lives. Business and HR practitioners can no longer continue to function according to old models (Deloitte, 2017). May (2017) agrees and states that there are a few reasons why AI will be game changing for HR. One of the main reasons is that certain HR tasks which are administrative and time consuming prevent HR professionals from more strategic aligned tasks which can be completed by simple AI assistants, thereby freeing up such capabilities for more strategic activities and thinking.

Mamacos (2017) believes that robotic workers will become more eligible for job roles and AI machines will become part of the everyday workforce. Improvements in machine learning will streamline many recruitment systems, allowing recruiters to focus more on the human side of recruitment, in their personal interactions and interviewing processes.

AI is likely to be the game changer when it comes to productivity for HR professionals and one can describe AI as "an area of computer science where computers are 'developed' to behave as humans do" (wePow.com, 2018, p. 1). The four areas of HR which could potentially be impacted are on-boarding, scheduling, candidate engagement and predictions:

- Training and development. Similarly, to algorithms making recommendations to humans on lifestyle choices based on patterns and data collected from various sources, it is predicted that this can be applied to employee training. Each individual employee has different learning and coaching preferences, which AI can guide in customising.
- Scheduling Assistants are commonly used today and is a process whereby a machine assists in the booking and managing of meetings.
- Candidate Engagement. AI can assist with automation emails to update candidates throughout the recruitment process.

- Prediction. Several software from leading IT institutions are available that can predict future turnover, engagement, and other workforce trends. This information can prove critical to HR for planning.

According to Meister (2018), AI is on the brink of penetrating every major industry including healthcare, transportation, finance, legal, education and finally, the workplace. Chatbots are becoming more popular and the use of this in our everyday life such as Siri invented by Apple and Brixby which was created by Samsung. Individuals rely on these chatbots and virtual assistants in their daily everyday lives for activities such as commuting, time management, online shopping and so on.

Chatbots can be defined as a computer programme designed to stimulate a conversation with human users, especially over the internet. Chatbots have the potential to digitise HR and can help to answer frequently asked questions.

In a survey of 350 HR practitioners, 92% of respondents agreed that the future of providing an improved level of employee service will include the usage and implementation of chatbots (Meister, 2018). As Diana Wong (cited in Meister, 2018, p. 1), says "Technology is an enabler to delivering world-class Advisor and Investor experiences to our customers. So, we believe HR must mirror these best-in-class experiences by leveraging artificial intelligence for all phases of the employee life cycle from recruiting to on-boarding and developing employees". Wong believes the piloting and usage of AI will improve the productivity and effectiveness of the candidate as well as the employee experience. In addition, it will also make employers an attractive institution for the millennial workforce (Meister, 2018).

In a similar study, Viljoen (2018) cites a recent survey conducted by Deloitte to measure business and government readiness for the new industrial revolution. The survey consisted of 1600 C-Suite executives across 19 countries. Overall, 87% of executives believe that the Fourth Revolution will lead to greater equivalence and steadiness and responded positively to the effects on their organisation. One of the concerning results was that only 14% of respondents stated that their businesses were ready to fully adopt the changes associated with an industrial revolution and only 25% of respondents believe that they have the right work force and skill set necessary to make this transition (Viljoen, 2018).

However, there are hindrances along the journey as reflected in HR trials with implementing various artificial intelligence. A number of obstacles to using AI in HR were identified, namely, the fear of job loss among HR professionals, lack of abilities to truly embrace these new technologies and the change management needed to adapt to new ways of recruiting and engaging employees (Meister, 2018). Wong (cited in Meister, 2018, p. 2) emphasises this when she says, "One of the critical success factors to adopting artificial intelligence for HR is the cultural orientation around change and on-going employee communications on how and why the organisation is digitally transforming HR".

1.2. Problem Statement

The dynamics of the Fourth Industrial Revolution is being increasingly acknowledged within companies in all sectors. Hence, the transition requires the necessary forward planning and preparation. An important part of this process requires the contribution of human resources, which then poses important questions, one of which this study addresses: to what extent will the current role of strategic HR change due to technological advancement and the adoption of artificial intelligence (AI) within the banking sector?

1.3. Focus of Study

The study focusses on assessing the extent to which the AI and technological advancement with impact the role of HR and in particular will address the following questions:

- What is the current status of the use of artificial intelligence in HR?
- What are the possible advantages and disadvantages of the use of artificial intelligence?
- What attitudes do HR practitioners hold towards the use of artificial intelligence and are they ready to work with artificial intelligence?
- Where in the HR value chain would artificial intelligence be most beneficial?
- How will the HR function be transformed by artificial intelligence in 5–10 years?
- How will artificial intelligence impact on the skills set or competencies required of HR practitioners of the future and what is needed to manage this change?

- What impact would AI have on the business in terms of talent management, empowering people, emotional intelligence, organisational practices, and creating a conducive environment for the nurturing of organisational values of creativity and empathy?

1.4. Motivation of Study

This research will add value as little literature exists on this topic since it is fairly recent and evolving thereby necessitating this research. The findings from this study will enable organisations to better prepare for the change and utilise HR to its full capabilities. Organisations have already noticed significant changes in the workforce by the millennial generation and change management associated with this transition. The question remains on how to leverage technology to fully engage with this new generation.

The recent Covid-19 pandemic highlighted the need for organisations around the world to rapidly change business models to accommodate remote working. This unprecedented event caused massive disruption which companies remain nimble and responsive to adapt to ensure their continued success.

1.5. Objectives of Study

This study aims:

- To assess the perceived impact of AI and technological advancement on the Human Resources function (current status of AI, transformation of HR in a decade as a result of AI; advantages and disadvantages of AI; attitudes of HR practitioners towards the readiness to work with AI and the competencies required in the future; the most beneficial place for AI in the value chain, and lastly the impact of AI on the business).
- To assess the impact of the biographical variables (age, length of service, race, educational level and department) on the dimensions of the study to provide a better understanding of the 4th industrial revolution with a view of providing a framework for effective management thereof.

- To determine the extent to which the AI within HR is perceived to account for the variance in changing the strategic nature.

1.6. Hypotheses of the Study

This study tests three hypotheses based on the sub-dimension of AI. The sub-dimensions of AI include:

- Current status of AI
- Transformation of HR in the next decade as a result of AI
- Advantages and disadvantages of AI
- Attitudes of HR practitioners towards the readiness to work with AI and the competencies required in the future;
- The most beneficial place for AI in the value chain
- How artificial intelligence will impact on the skills set or competencies required of HR practitioners of the future and what is needed to manage this change.
- The impact of AI on the business in terms of talent management, empowering people, emotional intelligence, organizational practices, and creating a conducive environment for the nurturing of organisational values of creativity and empathy.

Hypothesis 1:

H_1: There exist significant inter-correlations amongst the sub-dimensions of AI that have the potential to impact on the Human Resources function. .

H_0: There are no significant inter-correlations amongst the sub-dimensions of AI that have the potential to impact on the Human Resources function.

Hypothesis 2:

H_2: There is a significant difference in the perception of respondents varying in biographical profiles (age, gender, race, educational category, length of service and cluster) regarding the sub-dimensions of AI respectively.

H_0: There is no significant difference in the perception of respondents varying in biographical profiles regarding the sub dimensions of AI respectively.

Hypothesis 3:

H_3: The sub-dimensions of AI significantly account for the variance in determining the impact of AI on HR in the 4th Industrial Revolution.

H_0: The sub-dimensions of AI do not significantly account for the variance determining impact of AI on HR in the 4th Industrial Revolution.

1.7.Key Variables of the study

Figure 1.1 summarises the independent and dependant variable of the study.

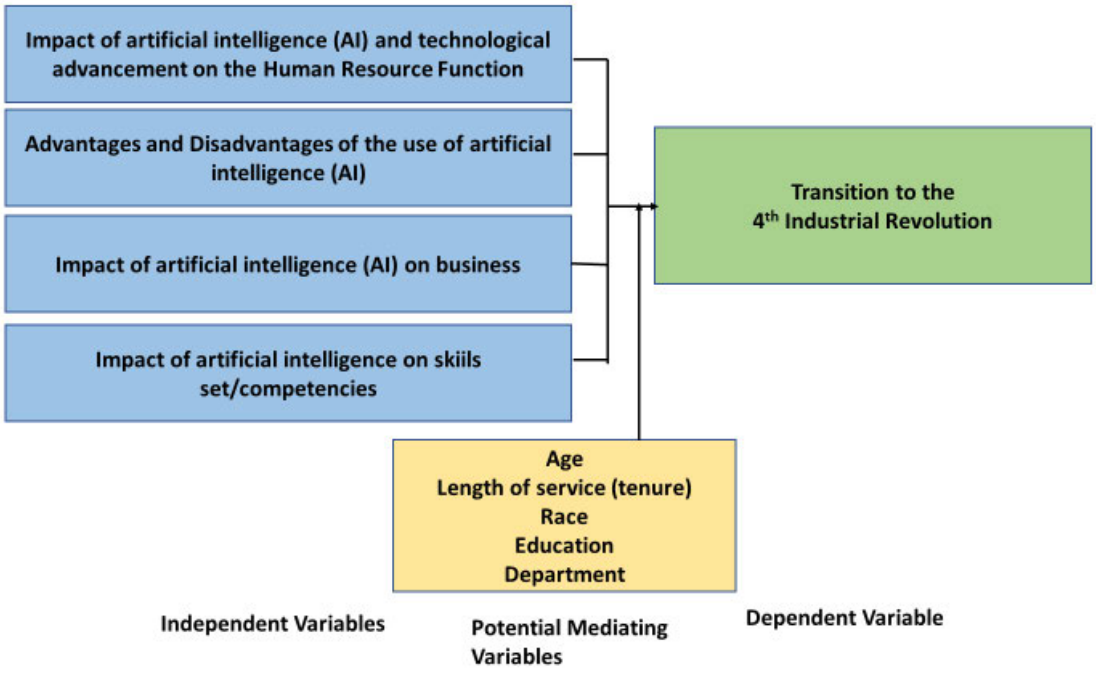

Figure 1.1 summarizing independent and dependent variables of the study

Compiled by Researcher

1.8.Limitations of study

- A limitation identified is that this study is based on one International Bank. Results presented and interpreted are only applicable to this context and cannot be generalised to other organisations or entities.

- The sample size used in the study only included relevant employees from one International Bank within South Africa.
- The study focused on senior managerial perceptions as well as the Human Resources team only and not all staff were included in this study.
- Due to the Covid-19 pandemic and in strict compliance with lockdown regulations, focus groups were held remotely via an online platform (Zoom).

1.9. Summary Outline per Chapter

- Chapter 1 provides an introduction and overview of the study and encapsulates background information of the various areas that are going to be discussed in forthcoming chapters.
- Chapter 2 commences with the literature review of management theory over the decades and the transformation thereof.
- Chapter 3 entails a discussion of AI within HR, advantages and disadvantages, different tools available and the skillsets required by HR practitioners in order to work with AI.
- Chapter 4 details the research methodology that was adopted in this study. The various data collection methods and research instruments used in this study is detailed as well as the plan for data analysis.
- Chapter 5 presents the results from the data collected by use of descriptive and inferential statistics.
- Chapter 6 discusses the results and provides a comparison to similar studies and researchers in the field.
- Chapter 7 seeks to make recommendations based on the results with a view of to providing a framework for effective management thereof.

1.10. Conclusion

This chapter highlighted the focus, objective, limitations and lastly, a chapter outline of this study. The limitations provide insight into the jurisdiction of the study and the boundaries within which the results may be applied.

Prior to examining the area of AI, one should explore the evolution of HR management theories to better understand and contextualise the basis of these models of which the foundation of HR

was built upon. It is also imperative to outline the changes occurred in the previous Industrial Revolutions to leverage knowledge from these to apply to the Forth Industrial Revolution in order to quantify the changes that could disrupt the HR field.

CHAPTER 2: The Evolution of Management Thought and Action

2.1. Introduction

This chapter offers a synthesis of human resource management theories, with attention given to the current stages of the development of the field of theory (HRM). It analyses the philosophies that helped formulate management theories get off the ground. One of the most illuminating narratives in which the historical development of management theories can be traced is from the years prior to the industrial revolution and the two world wars, and from the late 1960s through the present period of rapid economic growth. Recent years have seen management philosophies turn to behavioral models, as well as quality assurance (Rolando & Bahaudin, 2011). Also, it is predicted that, as globalisation accelerates and cultural awareness becomes more important, extra work will be needed in international and multicultural workforce management. The present globalisation and technology development advancement has brought new dimensions and approaches.

When "the future of management within the context of the emerging information age must become a salient topic for research and scholarship" (McDonald, 2011, 806), then the same should be said for management theory's future. Management research is responding to this challenge in many ways. First, it is providing a long list of increasingly relevant future topics such as digital transformation, artificial intelligence, algorithmic finance, robotisation, gig economy, ubiquitous organisation, and environmental orientation. Second, the sector is becoming more adept at leveraging future technology and seminal social advances to drive trend-setting process and system creation in contexts as nuanced and diverse as big data foresight, multi-stakeholder collaboration, and future-oriented crowdsourcing. Third, the majority of major management ideas and paradigms are now being applied to the above list of potential subjects. In order to understand date present context as mentioned here, we need to look at the history of the development of thoughts, Management theories and their contributions leading to present days' future orientation (Ghoshal, 2005, Poperwi, 2018).

We know the stories of how management theory has evolved and ideas have developed. If you understand their growth, you will be able to handle people better because each such evolution comes with new skills, new competencies, new knowledge and new approaches. Moreover, do not lose sight of the fact that something has changed about management. It is less important to place importance on structure and control now. Once the focus was on workers, now it is on employees. Once it was more of a rule to manage; now it is your employee engagement matters. Regardless of the motivation theories, though, it is critical to comprehend what motivates workers in order to control motivation theories. When one understands how management has changed, one will better be able to manage the business. It is not just with motivation theory alone, it holds good with all theories in practice (Alireza, Esmat and Hakimeh, 2016).

Management can be tracked through history. There are plenty of strong precedents for current-day management techniques in the Roman Catholic Church and the Greek military. This is a great illustration. It brought about an immense transformation. This coincided with the need for the development of a more systematic and nuanced management theory. Traditional theories of management originated in the industrial revolution when technological advances, trade/market expansion and increasing populations produced possibilities for mass production through a systematic and mechanised process (Kwok, 2015). The official relationships between departments, responsibilities, and procedures, as well as the promotion of greater efficiency and productivity among employees and staff were discussed by the traditional management theories.

Three main sectors, namely, red tape, administrative management and science management, can be classified into traditional formats. All three management conceptual principles arose from the 1890s to 1990s and primarily stemmed due to the efforts of engineers interested in increasing factory productivity.

2.2. Management stages of evolution

This subject is large, so it takes a lot of thought and consideration. One cannot fully comprehend or properly evaluate evolution without seeing the different locations. The management theory discussed in this chapter can be split into four evolutionary stages.

- Era of pre-scientific management
- Classical theory
- Neoclassical theory or a behavior-based approach
- Bureaucratic Model of Max Weber

2.2.1 Era of pre-scientific management

Management played a large part in the industrial revolution in the 18th century. In the middle of the 18th century the rise of the industrial revolution had an impact on management. The industry revolution led to a total shift in manufacturing processes, machinery and equipment, labour organisation and capital raising methods. It affected companies as well as individuals' ability to mobilise resources. An entrepreneur has the capability to have all three of these essential resources: land, labour, and money. They sought to manage the various variables in order to reach their targeted outcome.

Nevertheless, the recent management changes cannot be overlooked, particularly in light of prominent figures from the Industrial Revolution. The executives in charge of this company were able to bring valuable concepts and methods to management with them. A few examples include:

- ✓ Professor Charles Babbage – United Kingdom (1729-1871)
- ✓ Mathew Robinson Boulton (1770-1842)
- ✓ Robert Owens – United Kingdom (1771-1858)
- ✓ James Watt Junior (UK 1796-1848)

A forerunner of scientific management was one of the early British managers, Babbage. He had strong ties to Adam Smith (an economist), which he highlighted in measuring employment, determining costs, bonus schemes and sharing the profits in order to improve managerial performance, splitting work into different positions. He also reflects his observations in the science management of Taylor. He developed methods for measuring jobs, determining costs, scheduling

bonuses and sharing profits to increase industrial productivity. Few others who contributed in this period include Henry Robson Towne-US, James Watt Junior-UK, Seebohm Rowntree-UK; James Montgomery- Scotland and Andrew Ure-UK.

2.2.2. The Classical Theory

The classical theory emerged in the 1930s industries and continues to have a significant impact today (Markle, 2011). The classical theory includes professions of mechanical and industrial engineering and economics. Classical theory started in the early part of the 20th century and continued until the mid-1920s. During the last decade of the nineteenth century the true beginning of management science happened. At this time, the foundations for management have been established such as F.W. Taylor, H.L. Gantt, Emerson, Frank and Lillian Gilberth. This epoch in management history is remembered as a period when conventional management techniques were questioned, past experience in management has been scientifically systematised and management concepts distilled and propagated. The pioneers' contributions to the development of management expertise and management concepts have had a significant influence on them. The vast majority of what it does is with increasing the productivity of employees and companies through management methods, and striving for efficiency via science, administrative, and managerial avenues. Emerson, F.W. Taylor, and others pioneered Scientific Management. In Ancient era, the management had a goal of job content, division of labour, and an empirical method of operation. It was also linked to the growth of large-scale corporations. The following are the defining characteristics that demonstrate the nature of management in classical theory: Universal Process, Production Factor, Goal-Oriented, Supreme in Thought and Action, Group Activity, Dynamic Function, Social Science, Organ of Society, Authority System, Profession, Process, and the like (Mahmood, et al, 2012; Poole & de Ven, 1989, 570).

2.2.3 The Neo-Classical Theory

The foundations of the Theory of Organisation by Philip Selznick were the primary contribution to the Neoclassical School (Shafritz et al., 2005). The present period of development has brought a refinement to management theory. As a result, the non-classical principle has been extended and strengthened. Neoclassical theory is derived primarily from the Human Relations Theory and the Social Science perspective. For instance, the classical theory emphasised handling of physical

resources like building sites, while the neo-classical theory gave more attention to interpersonal relationships. Neoclassical managers turned to behavioral psychology in order to help overcome the challenges created by classical management. The premise of this concept of management was focused on using workers to accomplish tasks. The neoclassical theory did not concentrate on the building, the factory, or technology, but on the employees. Neoclassical theorists considered various ways of motivating, structuring, and supporting workers inside the company, but they ignored the organisational context and objectives studies conducted during this period, such as the famous Hawthorne studies, demonstrated that interpersonal relations were of critical importance, and if you didn't think about how they would feel, you would inevitably encounter opposition. The desire to find meaning in their work was absent because it was highly standardized; Instead of treating employees as individual people, we might organise them based on projects they worked on, where they had regular cross-tasks and information-sharing. The theory assumed that if workers were provided with this new working environment, they would socialise their way to greater productivity. To conduct research that aims to examine and illuminate the human side of the company, one may apply the neoclassical method or the neoclassical theory. The study of many sociologists and psychophysiologists contributed to the birth of the human relations movement, which studied how people communicate in communities. Behavioural psychology was derived from a variety of different people, who tried to understand the particular aspects of behaviour. We may gain a greater understanding of these different trends by looking at the work of various sociologists and psychologists on management and reviewing the theories they contributed to management's thinking.

The human relations movement emerged from the studies done by Elton Mayo and Fritz J. Rolihsberger at Western Electric's Hawthorne plant, which aimed to improve efficiency by enhancing the workplace conditions, including the lighting and the amount of time workers took for rest. The researchers kept a close eye on those who were taking part in the tests to ensure that nothing bad would happen. While productivity levels went up in response to Mayo and Roeth's experiment, not due to the conditions themselves, but the increased productivity could not be related to the working conditions under consideration, and alternative causes were sought." Ultimately, the researchers came to the conclusion that the community was more effective when people were treated more humanely. According to this theory, the improvements the researchers

made to working conditions may have raised worker morale and efficiency was incidental (Carroll & Gillen, 1987; Davis, 2006). However, according to Scott (1987), Elton Mayo was the most important interpreter of the analysis.

2.2.4 The Bureaucratic Model

Max Weber, a German sociologist, employed this model in 1922. Weber describes a bureaucracy as a complex collection of structural arrangements and the manner in which those in the organisation work. The design involves a division of labour based on functional specialisation, division of responsibility for that division of labour, the command and control systems and the rule structure. Bureaucratic management, as the name implies, focuses on a rigid structure with a fixed hierarchy, simple division of labour, and detailed rules and procedures. It offers the most effective way for an organisation to function. Seven features of administrative management were: (i) Regulations (formative guidelines for employees' conduct when they are in the work place); (ii) Impersonality (an evaluation of all workers based on laws and objective data); (iii) Division of labour (the division of duties into simpler, more specialised tasks); The bureaucratic approach is the best way to manage a vast amount of common information for the organisation, to understand the customer's needs and not to alter them, to make the technique normal and consistent and to organise the activities of many staff so that they can provide standardised service to the customer (Sandro & Carlos, 2019).

2.3 The Industrial Revolution

In modern history, the industrial revolution transforms an agricultural and manufacturing economy into one dominated by industry and machinery. This phase started in Britain in the 18th century and spread to other parts of the world. Though French authors had previously used the term "Industrial Revolution," it was English economic historian Arnold Toynbee (1852–83) who popularised it to describe the British economy from 1760 to 1840 and the concept became more common since then.

The Industrial Revolution was notable for its technological, socioeconomic, and cultural dimensions. (1) using new raw materials, especially iron and steel; and (2) using new energy sources, including both fuels and motive power, such as coal, steam engines, electricity, gasoline,

and internal combustion engines (3) developing new machinery, such as spinning jenny and power lines, to allow greater output with iron and steel. (4) The use of natural resources and the mass manufacturing of production products was significantly improved as a result of this technological change.

Frederick Winslow Taylor (1856-1915), who pioneered Scientific Management, is regarded as one of the most influential people in the history of management services and management. Taylor built on Smith and McCallum's work by concentrating on increasing performance through the use of scientific methods to discover the quickest, most effective, and least tiring production methods (Shafritz et al., 2005). He has been dubbed the "Father of Scientific Management". The primary goal is to improve overall production, especially in the labour department. It was one of the first attempts to apply engineering concepts to management processes that we are aware of Frederick Taylor's management philosophy also being known as "Winstonsism". Taylor's approach to theory emerged in the United States in the late 1800s and early 1900s, especially in industries such as steel. It was at its most powerful in the 1910s and 1920s. Scientific management did not begin to compete with and engage with conflicting ideas until the mid-1920s.

However, outdated the philosophy of scientific management was in the 1930s, its concepts are still highly relevant to contemporary business and engineering. These values include: analysis, synthesis, logic, empiricism, professionalism, performance, and inattention to tradition only for the benefit of those with certain skill-sets; amelioration of processes, tools, methods, and documentation to create bulk production; creation of output in the industry of mass quantity. Possibly the best known among conventional theories, scientific management consists of four main objectives:

- The development of science to substitute for each part of a human job the old rule-of-thumb methods.
- Scientific selection, training and advancement of workers rather than enabling them to pick and prepare as best they can for their own tasks.
- The creation, in line with scientifically established procedures, of a spirit of warm collaboration between employees and the administration.

- The division into near equal shares of work between employees and management; every party takes on the work for which it is ideally suited, not the previous situation under which the worker's duty rests primarily.

Taylor led the scientific management movement, a management methodology that emphasises how to improve working practices with observation and study, in his 1909 publication, "Scientific management principles". It also became associated with financial incentives, namely, the financial rewards given to employees whose performance exceeds certain defaults. The structure for effective organisation included: (i) consistent authority delineation; (ii) accountability; (iii) operational differentiation; (iv) employee compensation schemes; (v) exceptional management; and (vi) role specialisation.

Taylor researched extensively and emphasised the relationships between the human workers and the machines in manufacturing facilities. Through a time and movement analysis, he was able to detect and quantify the physical movement of a worker during a task that allowed him to evaluate the effect of these movements on the productivity of a worker. Taylor has also advocated the division of the job by means of functional management, where many foremen and their skills are allocated to each workplace. Taylor's approach to scientific management is based on the fundamental assumptions:

1. The life of a capitalist system and a money economy in which free market businesses depend on productivity enhancement and profit maximisation.
2. The working ethic of those individuals who feel that they work hard and rationally to maximize their own earnings to priorities the perceived demands and aspirations of their organisations.

The most renowned theorist of Scientific Management was Frank B. Gilbreth (1868-1924), Henry Gantt (1861–1919) and Charles Bedaux (1887–1944), Horace K. Hathaway (1878–1944), Morris L. Cooke (1872–1960), Sanford E. Thompson (1867–1949). Some were also regarded as technical experts on the management of scientific research. Gilbreths developed the laws of human movement from which the concepts of moving economy arose from their various studies. He coined the word 'motion analysis' as a means of separating your area from those who participated in 'time study'. They still believed it to be a technique before the process analysis. They also

advocated the concept of employees having standard days, scheduled breaks and lunch times, rest between the work, and cutting of monotony work process. Their work had a considerable effect on legislation and regulations on child labour in order to protect workers from hazardous working conditions. Frank Gilbreth's theory focused on waste disposal and illogical methods. It provided the background, including time and motion studies, the best approach to working, productivity and performance of the workforce's education. He suggested a three-position advertising arrangement. Employments considered dignified should be aware of their actual status, above and below. This means learning from above and guiding the lower places to flourish. Gilbreth's work centered on people by creating best practice and movements. "His unique contribution centered, however, on human initiative and techniques for showing a wasteful, unproductive movement," said Urwick (1891-1983). In order to enhance employees' ability, he used social science concepts.

At the start of scientific management, Henry Gantt was the third prominent visionary. The humanising effect on situation management that promotes psychological effects in the worker should be remembered in Gantt. The development of quota and compensation programmes for employees who met their quantities or production targets was also a credit to Gantt. It was further remembered that the Gantt charts describing the various phases of work to be performed in a project were created. It's used instead of quantity, weight or length to schedule work in time.

Table 2.1 Scientific Management: Pro and Con's

Advantanges	Disadvantages
• Advancements in production • Growth in innovations and inventions • Workers earned higher wages • Improvements in transportation networks	• Deplorable working conditions and child labor • Unsanitary living conditions and pollution • Food shortages

Compiled by Researcher

Table 2.1 illustrates a summary of the main advantages and disadvantages of sciencfic management. An additional pioneer in the field of scientific management was Charles Bedaux (1886-1944). He implemented the idea of rating evaluation in timing, which resulted in significant productivity gain. He adhered to the implementation by Gilbreth of a rest benefit to enable fatigue recovery. While it was rough and badly received at first, the system had a major impact on the further progress of the work report. He is noted for expanding the range of tools used in the research, including meaning analysis.

2.4 General Administrative Theory

In comparison to bureaucratic management, administrative management focuses more on how the company is managed and how simple management roles are differentiated. Henri Fayol (1841-1925), a French industrialist, was the first to execute group management tasks that are now summarised as plan, organise, direct, arrange, control, and workers. He outlined fourteen management principles, including: (i) the division of labour (specialisation can contribute to increased efficiency); (ii) authority (managers have the authority to do things); (iii) control (members of the organisation must follow the rules and regulations that regulate it); and (iv) unity of command (avoid conflicting and/or contradictory directives). (ix) Scalar Chain (one continuous line of authority must be established between top management and the lowest level of company

position); (X) order (materials and people must be in place at the appropriate time); (XI) equity (managers must be friendly and equal to their subordinates); Many companies still use Fayol's management principles today, but with different methods and frameworks, viz: (1) The Quantitative Approach: (2) The Behavioural Approach.

The science management trend focused primarily on manufacturing, management, organisation, technology, and science, with little emphasis placed on how people could be impacted, and how they adapt and react to the future. C.W Churchman and his collaborators promoted the quantitative method around 1950. This technique is also regarded as operational research or analysis. The classical method emphasises the physical capital while the neo-classical approach gives human resources priority. These two methods remain quiet on some of managers' more serious issues. The quantitative accounting methodology allows several recommendations to address the various managers' issues. It advises administrators, using mathematical and statistics formula, to solve their problems. Some special formulae for solving management problems have been created.

Behavioural theories developed during the progressive social and cultural movements of the 1920s and 1930s emphasise the importance of group dynamics, diverse individual desires, and management style. It also emphasises workers' social and economic needs, as well as the impact of the social environment on the amount and quality of work done by the organisation, and it focuses on two skills: communication and teamwork. Because of the emphasis on human factors, this expansion has come to be recognised as the "human relations school of management. "Particular influential theorist in that area included Mayo (1880-1949), McGregor (1906-64), Likert (1903-1971), Herzberg (1923-61) and David McClelland (1917-1988), Chris Argyris (1923-1998).

2.4.1 Elton Mayo

Elton Mayo and Mrs. Mayo and its breakthrough research on the Chicago Hawthorne Plant by Western Electric Company with Fritz Roethlisberger & William Dickson around 1924-1933 are one of the most influential behaviour theorists. During Mayo's research, he (they) managed to turn the emphasis on the value of groups that need sociological and psychological consideration away from the person and the physical considers. Some of its key findings included: (i) workers thought

and behaved as a group rather than as individuals; (ii) workers can compromise self-interest in the face of group pressure; (iii) money is not the only source of motivation; and (iv) supervisors have a major impact on productivity. Toward the end of his studies, Mayo realised the importance of understanding the positions of others in the workplace as part of his responsibilities.

2.4.2 Mary Parker Follett

Amongst the first management theoreticians, Mary Parker Follett recognised it as vital that employees be involved in the resolution of issues, which is not static, but a dynamic management mechanism. Management was defined as "humane work" and noted: (i) the people closest to action take highest decision; (ii) decision-making subordinates; (iii) coordination is essential for the efficient management of businesses; (iv) communication between managers and employers improves decision-making.

2.4.3 Chester Barnard

The first organisation's thinker to write "Functions of the Executive". Chester Barnard was a powerful book of the 20th century on organisational philosophy and the roles of managers within organisations. Barnard pointed out that social structures involve the successful collaboration of employees and introduced the concept of analysing the external world and the internal framework of the organisation in order to reconcile the two. He noticed that the manager's main roles are: (i) interacting with the employees; (ii) inspiring them to work hard to help achieve the organisation's objectives; and (iii) successful management involves good interactions with people outside the organisation, with whom management regularly handles.

2.4.4 Abraham Maslow's

A groundwork for the further advancement of compliance policy teachings was Abraham Maslow's groundbreaking work on human behaviour. In his 1943 document entitled "A Theory of Human Motivation", Maslow's Hierarchy of Needs is a psychological theory originating from Abraham Maslow. He proposed that five sets of human purposes can be referred to as essential needs. These include: (i) physiological (hunger, thirst, sleep); ii) security; iii) love /sense of belonging; iv) self-esteem, and (v) self-actualisation or self-fulfillment.

Over a period of time, the theories are seen from different angles and framework, and has replaced by security needs that represent their need to protect them from danger or deprivation. Those are replaced, in turn, by the need of love or belonging, which is the function of manhood and his ability to belong to a community of people and share them with others. Only when satisfied is the need for self-esteem and respect, which is conditioned by prestige and recognition and appreciation. Finally, people have an urge to update themselves or to achieve themselves, an urge on the part of people to grow self, to be creative and to be satisfied with their jobs.

2.4.5 Douglas McGregor

In the 1960 book, The Human Side of Business, Douglas McGregor was mentioned for his X-Theory and Y-Theory of two different kinds of workers. Theory X indicates that the typical individual does not like work, so he stops it if he can. Consequently, most people must be watched and harassed before they work hard enough to be motivated, fear responsibility and want security. This is the management philosophy, which is called "stick and carrot". Theory Y, on the other hand, argues that spending on mental and physical work is as natural as spare time and relaxation and that discipline and punishment isn't the only way for people to work. Moreover, the average worker finds and sees his award in good working conditions not so much in cash as for diligent and demanding work in his freedom. McGregor recognises all these concepts as two very distinct behaviours, applicable to different organisations/situations, but also notes that employees can make a more effective contribution to the organisation if viewed as responsible and valued workers.

2.4.6 Rensis Likert

He has performed a large number of behavioural studies in organisations, particularly in the industrial situation. He researched different organisations and leadership styles, saying that every organisation must make the best possible use of human capital in order to achieve maximum profits, good working relationships and high productivity. He maintains that human capacity "is used in its totality by highly effective working groups in an overlap pattern, linked by other equally effective groups." Likert has also established four key management styles: I use and authority; (i) a beneficial method – authoritative system; (ii) an advisory system and (iii) the participatory community system, which has been regarded as the best solution for superior officers who have

complete confidence in their subordinate system and are inspired by economic incentives based on the best solutions.

2.4.7 Frederick Herzberg

Frederick Herzberg was responsible for both hygiene and motivation theory. The organisational and working environment hygiene factors include organisation, its processes, and its management, form of supervision of the workforce, working conditions, interpersonal relationships, salary, rank and security of jobs. These triggers are not more driven, but deception without them is possible. The second aspect of Herzberg's motivational theory is what people are doing in the workplace to motivate employees. The motivators are recognition, growth/progress and employment interests.

2.4.8 Chris Argyris

The organisational counterpart (organisational counterpart of theories X assumptions) compared Chris Argyris's bureaucratic/pyramidal values with a more humanistic, democratic system of values (organisational counterpart of assumptions of the Theory of Y) and concludes that this former leads to bad, flagrant and mistrustful relations. On the other hand, trustworthy and authentic connections between people, where humanistic or democratic ideals are valued within the organisation, would result in increased interpersonal competence, collaboration between the classes, flexibility and the like and lead to an increase in organisational performance.

2.5 Human Relations Theory

It is focused on individual conduct, whereas group dispute is considered as the adverse factor affecting the productivity of the company. The workers are considered to be a 'social human being', The hierarchical organisational structure attaches significance, the social system views organisation, the study of human behaviour does not include empirical vision, methods of self-direction and self-control shall be used to a minimal degree, to a small degree, it only allows community decision-making to routine decisions. A management strategy therefore centered on the idea that employees are driven by different social factors (e.g., praise, a sense of belonging, performance sentiments and pride in one's work) rather than by monetary incentives. The idea that behaviour, connection, and leadership all play a role in an organisation's success, originated from observer-based research carried out in the 1920s and 1930s.

Table 2.2 A List of Major Theories and Contributors

Compiled by Researcher

Theorist	Contributions
Adam Smith	The Division of Labour
Daniel McCallum	Superintendent's Report
Henry R. Towne	The Engineer as Economist
Carl O. Barth	Scientific Management (with Taylor)
Cap Henry Metcalfe	Cost of Manufactures Adam Smith
Luther Gulick	POSDCORB
Chester Bernard	The Economic of Incentives
Philip Selznick	Foundations of the Theory of Organisation
Richard M. Cyert James G. March	A Behavioural Theory of Organisational Objectives
Irving Janis	Groupthink
Tom Burns G. M. Stalker	Mechanistic and Organic Systems
Peter M. Blau W. Richard Scott	The Concept of Formal Organisation
Arthur H. Walker Jay W. Lorsch	Organisational Choice: Product vs. Function

Table 2.2 above provides a summary of the major theories and their contributors.

2.6 The Modern Theory

Theories of organisation are derived and in essence serve activities from organizational practises. Nicholson describes them as "a collection of scholarly points of view aiming at explaining the diversity of the hierarchical and functional structures (Nicholson, 1995). Modern management philosophy (Modern Phase 1960 to present), stresses the use of rigorous statistical methods to

assess and comprehend the interdependence of management and personnel in all respects. Global company ideologues acknowledge and think in comparable terms the ethical roles of business practices. Over the years, management ideals entered a point of perfection and refining. Big corporations were formed and ownership and management were separated. Instead of "own bosses", this shift in management has eventually led to "salaried and competent managers". The supervision of the employed management led to the broader use of scientific management techniques. Around the same period, moreover, the competent management of different sectors of society, including clients, lenders, manufacturers, workers, industrial associations and other government bodies, has been socially conscious. Current management philosophies are divided into three streams: quantitative approach, system approach, and contingency approach. In 1960, managers thought about the extreme ideas of human relations, particularly about the direct relationship between morality and efficiency. Current management want to emphasise man and computer in the same way.

2.7 The Systems Approach

On the assumption that everything is a structural and its components are interdependent, the methodology under consideration here emphasises the interconnectedness. System approach allows organisations to define strategies that support corporate and social goals. Corporate activity in the social system and social values are important components of enterprise business culture, principles and ethics. The overall effectiveness of the system is predicated on interdependence and interrelation of different sub-systems (inputs, processes, outputs, feedback, goals, relationships). Key aspects of this strategy include the following: (1) The whole system is composed of subsystems; (2) All subsystems are interrelated; and (3) Organisations should not be examined in isolation; they should be sensitive to environment effects. The system solution incorporates objectives in the organisation's entirety from various sections (sub-systems or departments). It also combines the objectives of the organisation with the objectives of its environment or society. Target integration ensures harmony or balance and allows organisations to evolve in a competitive world. A work can be mentioned here of Irving Janis, who popularised the idea of groupthink in his 1972 classic thesis Victims of Groupthink. He wanted to figure out why organisations, mostly made up of people of extraordinary intelligence and abilities, made unreasonable decisions. He summarised that organisations often encountered groupthink, a style

of thought that individuals indulge in while they are actively engaged in a collective group, when the participants' desire to realistically appraise possible courses of action overrides their motivation to strive for unanimity and agreement. Burns and G. M. Stalker - Mechanistic and Organic Systems set out to investigate whether variations in technical and business conditions influence firm structure and management processes.

Modern Theory reflections examples are contained widely in some of the following sources:
Work by Peter M. Blau and W. Richard Scott - The Concept of Formal Organisation; Arthur H. Walker and Jay W. Lorsch -Organisational Choice: Product vs. Function (Shafritz et al, 2005); Henry Mintzberg -The Five Basic Parts of the Organisation; Richard M. Burton and Borge Obel - Technology as a Contingency Factor.

2.8 The Contingency Approach

This was Lorsch and Lawrence's strategy, originated in around 1970. This is an innovative management technique, and the foundational principle to be followed when planning for any scenario is that businesses and organisations react in different ways. The managers should take actions based on these circumstances, not on values. It implies that in all cases, there can be no single principle/formula/management operation. Its main explanation is that the world is continually evolving. In this environment, all the factors affecting the company are summed up. Variable plans and approaches should be developed for the requirements of each case. The principle that managing efficiency depends on or is dependent on the interaction of the management activities and on particular circumstances is based on a contingent approach to management. In other words, according to the situation, the management style will shift. There's no one-style approach for everybody. For instance, a particular management style cannot be generalised to all cases. Likewise, there are several incentive and regulation strategies, but not one approach should be used in all cases.

2.9 Operational Approach

This approach to management was supported by Koontz and O'Donnell. This approach acknowledges that there is a fundamental centre of management expertise that only exists in the management field. For example, management, management assessment and various management

control techniques and management span. Moreover, knowledge from other areas such as the structure method, decision-making, theories of motivation and leadership, communication theories and teamwork are derived from this approach.

The Management approach is seen as a widely applicable knowledge body, which can be applied to all management levels and to any form of company. At the same time, the method recognises that the real challenges manage the face and atmosphere of organisations and levels. It also recognises that a professional must take cognisance of the application of science when constructing realistic solutions.

Operations management aims to track the production process and the running of the company and see how effectively and efficiently it is conducted. The operation management theory looks at methods for the most efficient use of resources, as well as an improvement in production. The two basic precepts that any good company strives to follow are using the smallest number of resources to provide the greatest possible customer satisfaction and striving to provide the best service. The aim of maximising capitalisation is to have greater control over the use of raw materials and labour in the manufacture of finished goods and services. In addition to business process redesign (BPR), these four methods of lean manufacturing are common tools. These are commonly known as: Lean methodology, reconfigurable manufacturing, Six Sigma, and business process re-design (BPR).

The new thought of management theory was introduced in the 1950s. Organisations want to implement innovative approaches and strategies to boost job productivity and give staff and consumers more attention. More focus is given to employee satisfaction by modern management theory. This theory says that employees not only work for money, but also work for free instead of making money. It does not mean they work freely. You want respect and consideration between your other workers and you want an understanding of your job ability, which positively enhances your working efficiency. This approach allows workers to work with greater loyalty and productivity and to maximise the profitability of their company. That is, modern management philosophy is not only based on the set-up, methods and techniques of work, but is also concerned with improving the productivity of the company with the field of employee satisfaction.

2.10 Theory of Peter F. Drucker

Drucker (1909–2005) the 'Father of Modern Management', and the promoter of the well-known – Management by Objectives. He had his theory based in the present business experience and happenings. His philosophy and theory includes - Management is a Profession, Focus on Business Organisations, there is a systems approach to Management. In his pitch for an MBA, he describes four primary organisational issues, which MBO helps:

- ✓ Specialisation is vital in the work of all managers
- ✓ Hierarchical management structure
- ✓ Differences in perception and approach and
- ✓ The management's rewards scheme

Since MBA has greater positive impact, most organisation and Managers follow this principle, while it holds good at all levels of Management- be it Lower-Middle-Top level decision making process. Drucker describes management as follows: "A manager has two distinct tasks." Nobody else in the company handles these responsibilities. And everyone in charge of them is a boss. The manager's job is to "create a true whole that is greater than the sum of its parts,"... [and to harmonise] the needs of the immediate and long-term future in every decision and action (1989, pp. 335–336).

2.11 Theory of Thomas J. Peters

Tom Peters (1942-1980), supports "liberation management" philosophy that opposes a hierarchical system of organisation, that limits the imagination of people.

(i) Structures of the organisation should be versatile. Modern management is concerned not only about what is going on within the organisation but also with what is going on beyond it.

(ii) It should be empowered to create new concepts, goods and ties. Peters calls this freedom the release management. Control includes how people perceive each other's relationships. The idea of power and freedom are interconnected. Managers exercising authority inspire group members as individuals and as organisational members to develop their strength and abilities.

(iii) Jobs to have greater, valid and expert authority should be compensated and redefined. Empowerment shows what managers are doing in these positions.

2.12 Theory of Michael Eugene Porter

Michael Porter (1947-1979), theory focuses on several major models, such as the Strategic Management Theory and Five Force Model. The most practical are Expectancy Theory and Value Chain Analysis. The following headings will study his contribution to management thinking: Analysis of Five Forces which are: New Competitors Entry Threat; Bargaining Power of Buyers; Threat of Substitute Products; Bargaining Power of Suppliers; and Complementary rivalry among businesses.

A simple form of Business Valuation used by academics in which five factors are considered, such as competition, past profitability, future profitability, and growth, net profit margin, sales, and industry trends, is widely accepted as the academic business valuation method which takes into consideration all five, including how profitable you are in the present and your competition, how much money making potential you have in the future, your sales, the health of the industry, how likely your sales will increase, and industry growth, and then calculates profit. In his book Competitive Advantage - Creation and sustainability of superior performance Michael Porter popularised the idea of the value chain in 1985. For its survival and growth each organisation depends on its customers. Customers trade money for the goods and services they derive from. "The efficiency, properties, characteristics and attributes of the products and services for which customers are prepared to give up resources (usually money) are the added value."

2.13 Theory by Peter Senge

Peter Senge (1947-1990), presented his theories about management, and introduced the principle of the learning organisation. He suggests the following for creating a learning organisation: Systems Thinking, Personal Mastery, Mental Models, Shared Vision, Team Learning. Senge's theory influences and reflects on how organisations have a duty to build environmentally sustainable environments from which subordinates and leaders can learn. Because of the definite reality, nothing was born and learning is an ongoing process. His contribution is focused more at Learning Organisations & Systems Thinking.

2.14 Theory of C.K. Prahlad

Prahlad's (1941-1910) management concepts concentrate mainly on the core expertise of the business. Core competence is an organisational competence and capacity that the rival firms do not possess. It is a package of skills and technologies which allows an enterprise to offer customers a particular benefit, while Managing an Organisation, customers and others, he propose the below are the following ideas:

a. Rivals are superior and superb organisations who take advantage of their key skills. Business companies must also focus on key expertise areas as well as externalise other fields to external agencies.

b. Focus on issues such as statistical quality control, complete quality management, planning and monitoring of output. Core skill provides business companies with a strategic edge. The main competency of a firm is a range of knowledge, skills and experience that everybody has (managers and non-managers).

c. It shall not be a commodity or business unit of a specific kind. It extends in each product to the full range of products and varieties. Proctor & Gamble has a wide range of nutritional products, drugs, cosmetics and so on. It produces detergents, soaps, shampoos in the cosmetic industry. Its core competency is expressed in all product lines (detergents, soaps, cosmetics and pharmaceuticals).

2.15 McKinsey's 7-S Approach

The McKinsey 7S Framework (MBWA, the "Management by Around" motive) and authored in the 1980s in the quest for excellence, a strategic vision for companies, business divisions and teams to be included. McKinsey and Company developed this approach and served as the basis for research into two well-known books on management: The Art of Japanese Management and Excellence. The seventh S stands for strategy, structure, system, style, personnel, common values and skills. The model is usually used as an organisational analysis instrument to assess and track changes in the internal circumstances of an organisation. The model is based on the idea that these seven components must be aligned and mutually strengthened to achieve good performance in an organisation. The model may thus be used to define the necessary adjustments for improving performance, or to keep alignment (and performance) during other changes. Regardless of the form of change – transformation, new processes, organisational fusion, new structures, leadership

change – the model can be used to recognise the interrelation of the organisational elements and thus ensure a broader effect is taken into account by change made in an environment.

2.16 Quantitative Approach or Mathematical Approach

The quantitative approach to management employs statistics, optimisation models, knowledge models, computer simulations, and other quantitative techniques. The idea that organisations are decision-making entities is central to the quantitative method. These decision-making units can be rendered more effectively with the help of mathematical models that translate related variables into numerical terms. Basically, the four major divisions of quantitative management are divided into the following:

- Management Information Systems
- Operations Management
- Management Science
- Management of Total Quality

The methods and the analytic techniques are: probability and regression analyses, respectively.

2.17 Contingency or Situational Approach

In 1958, Robert Tannenbaum (1915-2003) and Warren Schmidt developed one of the early situational theories. Fred Fiedler created a leadership scenario model, which is referred to as leadership contingency theory. Fiedler theorised that good leadership is a matter of balancing the leader's personality with his situation or atmosphere. The contingency approach, also known as the situation approach, is founded on the assumption that all management is basically situational. All managers' decisions shall be influenced by the contingencies of a given situation (if not controlled). There is no way for any decision to be addressed. Different environmental conditions cause contingencies. Managers must also take these contingencies into account as they decide on the organisation. The theory of contingency builds on agreed system theory components. The agency has acknowledged that it is an open structure consisting of interconnected subunits. However, it adds that the action of each sub-unit depends on the internal and external ambient conditions. This could involve the connection of two other sub-units or external systems. This is particularly true if these external units/systems have an influence on a subunit's desired outcome. Contingency theory often suggests in an organisation that reacts to the environmental

contingencies systemic changes or designs, leadership styles, and control systems. Martin Evans introduced the path-goal theory of leadership, which was later expanded by Robert House. The theory is similar to the situational/expectancy motivation theories.

The below figure presents a summary of the different management approaches on a time scale and the main contributors that originated the approaches.

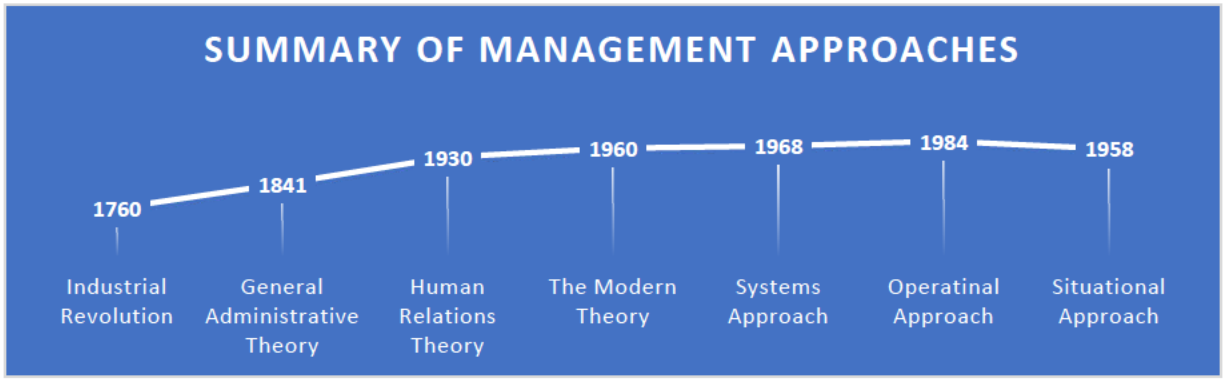

Figure 2.1 A summary of Management Approaches

Compiled by Researcher

Table 2.3 also provides a summary of management models, contributors and time periods compiled from the literature above.

Table 2.3 Summary of Management Models, Contributors and time periods

Compiled by Researcher

Model	Contributors	Period
Era of pre-sciencfic management	Professor Charles Babbaage, Mathew Robinson Boulton, Robert Owens, James Watt Junior	1700 - 1858
Classic Theory	F.W. Taylor, H.L.Gantt, Emerson, Frank and Lillian Gilberth	1930s
Neo-Classical Theory	Philip Selznick	1930-1960
The Bureaucratic Model	Max Weber	1905
Industrial Revolution	Frederick Winslow Taylor	1760-1840
General Administrative Theory	Henri Fayol	1841-1925
	Elton Mayo	1880-1949
	Mary Parker Follett	1868-1933
	Chester Barnard	1886-1961
	Abraham Maslow's	1908-1970
	Douglas McGregor	1906-1964
	Rensis Likert	1903-1981
	Frederick Herzberg	1923-2000
	Chris Argyris	1923-2013
Human Relations Theory		1920
The Modern Theory	Frederick Winslow Taylor	1960
The Systems Approach	Ludwig von Bertalanffy	1940-1950
The Contingency Approach	Lorsch and Lawrence	1970
Operational Approach	Koontz and O'Donnell	1909-1984
Theory of Peter F. Drucker	Father of Modern Management (Management by Objectives).	1909–2005
Theory of Thomas J. Peters	liberation management	1942-1980
Theory of Michael Eugene Porter	Strategic Management Theory and Five Force Model	1947-1979
Theory by Peter Senge	Principle of the learning organization	1947-1990
Theory of C.K. Prahlad	Core competence of a business	1941-1910
McKinsey's 7-S Approach	7S Framework	1980s
Mathematical Approach		1939-1945
Contingency or Situational Approach	Robert Tannenbaum and Warren Schmidt	1915-2003

2.18 The Present-Day Human Resources

From the dawn of Industrial Revolution (1760) to present day, there are several developments and approaches by many Scientists, Academics, Practicing Managers, Management Gurus in contribution towards the development of Management of Organisation and Human Resources (Lin, 2005). In each of such generations, the emphasis got changed depending on the need and the requirements at that point of time. From the time of Machine management, Production efficiency, Quality focused, Sig sigma application, the focus now has been more of "Human" as the focal point of Management. Even the terminology changed - from Welfare to Social Security to Personnel to Labour to Human Resource Management to Human Resource Development to 'Human". Even the role of HR Professional changed. It was more of Welfare and Security to Personnel Management to Labour Laws. Now the role of HR and HR Professional is more of Strategic Decision and being at the table as business partners. Now HR role is not that of line management and social security, instead, it is HR who plays the role of Strategic Planning, Advising the Board Member of the next course of action, and is part of all the Business investments. HR is now a part of the core team of any of the companies. The 1980s saw the birth of a new philosophy known as 'Human Resource Management'. Further, the HRM area has attempted to incorporate into the strategic management process by developing a new discipline known as Strategic Resource Management (SHRM). The HRD feature has grown with the times, and, and in recent years, it has found use in diverse tasks like hiring and payroll and is now critical in growing the employee development. Today, most HR theories speak about the changed role of HR Professional, HR competency that is required for new age economy and the strategic approach HR adopt for corporate competitive advantage. In this scenario, People are the most crucial asset for the organisation. Putting people first is one of the main success drivers of high-performing organisations and organisation across the globe. Today's human resource executives are challenged to create productive and reliable, quick but powerful solutions for the people side of business. However, determining the precise contribution of the HR role to achieving these goals remains difficult. In doing so, Organisations define human capital value towards an effective HR strategy. A complete understanding of the competition as well as a comprehensive understanding of the strategy is important. In changed HR role, the HR role concentrates on activities that add value to the business plan and objectives. HR leaders are increasingly being asked to assess and increase the quality and effectiveness of their HR role (Davis and Marquis, 2005; Gianpiero, 2020).

2.19 New Human Resource Management

The modern human resources management system and digital and social media tools/platforms in digital and social media alter the way employees seek employment and the way businesses recruit, retain, pay and train staff. In doing so, they invented a new way of managing people's resources. With few examples, Glazdoor, CareerBliss, CareerLeak and JobBite allow their members to share insights into thousands of employers, such as corporate comments, salary reports and approval ratings for CEOs. A survey shows that approximately 48 percent of job seekers surveyed reported using Glassdoor even before applying for positions in a business during their job search. This will lead proactive managers in the human resources industry, among others, to ensure they have fair internal processes (such as promotional decisions, pay allocations and performance assessments) and civil recruitment processes, for example by responding to refused employment candidates. Recruitment is another popular example of how social media has changed the management of human resources. For instance, managers use LinkedIn to search active candidates and find candidates for passive work (who do not search for work actively). The changed role of HR as strategic intervention has emerged. Why does a company require HR strategies? Corporate objectives are in sync with strategic human resource management. To achieve organisational goals, the organisation must employ effective individuals who are capable of achieving those goals. As a result, HR decides what kind of qualified individuals would be required to be recruited at the highest level. The top level people make the majority of the organisation's decisions. Strategic HRM is a series of strategies that directs the organisation's people down paths that aid in the smooth running of the organisation's operations. Strategic human resource management is critical in any enterprise. It is, in reality, the beating heart of human resource management. These collections of methods are created in advance so that the strategic team is aware of what needs to be achieved next. This eliminates costs and ensures the productivity of human capital in an enterprise. Setting viable targets that are actually reachable and observable is one of the top HR tactics since goals that are measurable and reachable, are easier to achieve. As a result, strategic HR establishes attainable targets for individuals (The work by Hamel & Breen, 2007; Johnson, 2015).

Performance assessment in human resource management enables an organisation to establish appropriate benchmarks for workers to meet. These requirements may also assist an organisation in determining each employee's expertise, skills, and abilities (KSAs) for their position. Another

application of performance management in human resource management is to identify good workers who are capable of taking on more responsibility, possibly through a promotion. Usually, the human resources director and the employee's immediate supervisor are in charge of setting guidelines and overseeing the evaluation process. Feedback is also an important aspect of this phase since it explains the discrepancy between perceptions and actual performance.

The role of HRM in the development of sustainable corporate organisations has become more and more prominent. As a guiding principle, sustainability can be employed for HRM and Sustainable HRM's tasks are dual. On the one hand, it provides conditions for the sustainable development of individual employees and enhances the capacity of HRM systems to constantly recruit, regenerate and cultivate motivated and dedicated employees through sustainable development of the HRM system itself. Sustainable HRM, by collaborating with top managers, key stakeholders and non-governmental organisations, and achieving economic, environmental, social and human sustainability aims, contributes to the sustainability of the business organisations.

Employee engagement is the new buzz word. Regardless of company size, market, or business strategy, most managers will agree that empowered, efficient workers are important for organisational success. Employee engagement is a workplace strategy designed to ensure that workers respect the priorities, objectives and principles of their organisation and at the same time empower employees to contribute to organisational success (Locke and Latham, 2004). All the results at work, of course, reflect the employees' commitment that is reflected in their ROI.

Why HR is more important now than ever?

Whichever sector, scale or location they are, businesses face five crucial market challenges today. These problems collectively demand new skills for organisations. Who has these skills to grow at the moment? Such a vacuum is an opportunity for HR to play an important role in the development and management of human resources and strategic intervention to take the companies to the next level.

Globalisation

The days when businesses produced and delivered their goods "as is" at home have gone. Managers struggle to reconcile a paradoxical demand for global thinking and acting locally with the rapid growth of global markets. This demands that individuals, concepts, goods and knowledge be transported around the world in order to satisfy local needs. In order to develop strategy, they have to incorporate fresh and significant ingredients: uncertain political environment, controversial global trade problems, fluctuating currencies and unknown cultures. They must be more professional than ever before in the way of global customers, industry and competition. In short, globalisation demands to improve organisations' capacity to learn and cooperate and handle diversity.

Revenue via growth: Profitability

Over the last decade, most Western businesses have eliminated waste using reduction, reengineering, delay and restructuring to boost productivity and minimise costs. However, the benefits from this kind of yard work are mostly realised, and the managers must now pay attention to the other part of the equation of profitability: sales growth.

Needless to say, the push to increase income places a company on specific demand. The companies which aspire to acquire new customers, create new products and promote a free flow of information and shared knowledge between employees must be creative and innovative. They must also concentrate more on the market — more in contact with their customers' constantly shifting and disparate needs. And businesses pursuing growth through fusions, acquisitions or joint ventures need other skills, including the skills required to incorporate the work processes and cultures of various organisations.

Technology

Technology has made our world smaller and quicker from video conferencing to the Internet. Ideas and huge quantities of knowledge are moving constantly. Managers are challenged to use what technology provides in a meaningful way. Every technology does not add value. However, technology can and will influence how and where work is carried out. Managers will have to find out in the years to come if technology can play a viable and profitable role in the working

environment. One must keep up with the knowledge curve and learn to use information for business outcomes. Otherwise, a tidal wave of data would swallow them —not concepts.

Intellectuel Capital

For businesses that have ideas and partnerships (think of professional service, software and technology) and for all companies that aim to vary from their service to consumers, the information has become a direct competitive advantage. From now on, successful organisations will attract, grow and maintain the best individuals able to drive a global organisation, which reacts both to its customers and to the rising technological opportunities. The task for companies therefore is to ensure that these talented individuals are able to find, assimilate, produce, reward and maintain them.

Modification, Change, and More Change

Maybe the biggest competitive challenge faced by businesses is to adapt to – indeed, embrace – constant change. They must be able to learn quickly and continually, constantly innovate and take on new strategic imperatives more quickly and conveniently. Constant change means that companies must be unhelpful to the status quo, must be able to recognise emerging patterns faster than competition, must be able to make swift decisions and must be agile to explore new ways of doing business. For businesses to prosper, that is, they must be in an endless state of transition, which will constantly create profound, sustainable change.

The Future

Most recently in the HR rounds there has been a debate that HR has to find a way to improve itself so that a "seat at the table" can be secured. In order to generate more strategy results and business-unit-aligned support, appeals have been made from both inside and outside HR's role. HR transition has resulted in a challenging path in many organisations to reduce costs and simplify administrative work in relation to individuals. In these cases, a successful HR transition just saved costs. Others have tried to modify HR in various ways, including reorganising many forms, introducing expensive HR solutions and even outsourcing most of the HR function.

HR was mocked, blamed, and 'transformed' by Fast Company magazine after its 2005 article on 'Why We Hate HR.' Since the feature was released. Several papers from Harvard Business Review (HBR) recently tried to explain what HR has to do to keep it going. All that has been suggested to address HR, from separating the strategic and logistical sections of HR to taking a more organised approach to helping the middle 60% of performers. Just last summer, the post from Peter Cappelli's HBR, 'Why We Love to Hate HR... and What HR Can Do About It,' explained what HR is to do now.

The "transformed" HR function does not have a strong significance and empirical evidence to show its efficacy. As a result, we regard the HR pattern as merely iterative and do not believe that it will ultimately be transformative. Unless the gap between production of value and essential human capital is bridged, HR continues to fall short. The issue is not a table seat. The difficulty is that the table has shifted. After all, HR is fixed on people's positions in the most "transformed" HR environment much like the industrial era, in which workers were forced to manipulate their properties. The new value driver for our new economy is intelligence capital (IC), which is why it is governed by the talents created by it. Knowledge workers are the most valuable commodity for today's businesses, and the challenge for HR is a scarcity of supplies and far higher portability than previous production properties.

HR in Technology Era

Currently, there are only a few hypotheses which have propelled management over the past century, providing the layout and reasoning for doing so. Currently, these are science management, human relations, competition advantage, shareholder value maximisation, disruptive innovation. The management has also influenced it and provides an idea of what managers must be. Coronavirus has changed the economy and labour force dramatically. We have seen enormous changes in how we operate, where we work, and technology that we use. Whereas technology has altered every aspect of our lives, it is unsurprising that it has also had a significant effect on human resources. New technical advances have altered how we communicate with our workers, store corporate files, and assess employee efficiency. Technology, when used correctly, can have a positive effect on any company's HR practises. This is achieved by making the Human Resources department more systematic, coordinated, and effective. Nevertheless, it should be noted that

misuse of it can have a detrimental effect on the whole organisational structure. The fourth industrial revolution coined by the founding and managing director of the World Economic Forum, Klaus Schwab, describes a world in which people switch between digital fields and offline reality using connected technologies to enable and administer their lives (Miller. 2016).

A "Future Workforce" study claims that HR is the most vulnerable to automation replacement. The argument sounds disconnected from the facts if we examine the historic effect of the technology. What technology has traditionally done in the near future to generate new types of work, replacing labour-intensive jobs, is the same for the Human Resources department. The HR industry has developed productive and data-based operating solutions with predictable ROIs, driven by the latest wave of technologies such as automation, digitisation, in full 1st ML and AI, indicating a progression from the position of HR from a management and enforcement department to a key decision maker. Some of the most important patterns have emerged: (1) Process Automation; (2) HR Analytics; (3) Learning and Development; (4) Talent Management; (5) Recruitment and Background Verification; (5) AI Adoption; (6) human capital management (HCM) solutions; (7) Data Privacy; (8) Digital Tools to Support Employee Mental Health.

In terms of the understanding workers and their feelings, motivations, behaviour and dynamics HR departments have traditionally relied on human judgement. Though operational automation has begun long ago, new age technology driven by artificial intelligence and machine learning is now ready to allow the HR department in terms of the nuance of human psychology and emotions to draw data-driven conclusions. This technology changes the HR world's environment and makes it impossible ten years ago. Whether it's direct learning and growth functions, payroll administration, onboard, employee participation or outsourcing such as employee background screening, HRMS, etc., technology has enabled the HR sector as never before in history. The HRM industry is expected to hit $30 billion by the year 2025. The McKinsey Institute reports that the global economic effects of AI will be about 7 to 13 trillion dollars. The HR feature would be able to step beyond the worldly to build business efficiency through timely investment and technological education. A seats top table will be available to active HR leaders of the future to engage in dialogue on work to achieve a future that is not supposed to be linear, but sensitive to the new generation's great needs to expand in different sectors, verticals and departments. The future of

HR contains a combination of technology with manpower, and it is time for HR leaders to develop their own future.

Thought and experience in management have reached a point of inflection. The "mid-life crisis" of management is very much like this in our lives except in this case, as with the death of one's own body, we are thinking with capitalism and our global system. We can only start forming it into something different, more free and meaningful by bidding farewell to what we are trying to do and why rather than how it can be achieved more easily and efficiently.

However, we do not need any new theories of management. It needs a broader approach. We do not need to make major announcements, but to engage and engage others in ongoing debates which challenge theory. These debates are much more helpful at the existential crossroads like this. They are a much stronger way of liberating us and bringing us to create a human turn in the management and finally in our working, technological and world relationships.

2.20 Conclusion

Automation, robotics and artificial intelligence (AI), as we organise our working ties, are increasingly changing, dramatically altering our form and number of workers. The ability to build and enhance the world of work through digital technology and artificial intelligence is unlimited. Consider three phases of intelligent digitalisation in order to better understand AI's role in this. Artificial intelligence (AI) is a technology that enables computers to learn from previously collected data and make choices or recommend them. Artificial intelligence can be used in a number of ways to streamline processes and improve human resource management efficiency. Accorder experts agree that AI will provide opportunities for learning skills and gaining more free time, thereby encouraging HR professionals to broaden their current roles and be more strategic within their organisation, according to the latest poll conducted by Oracle and Future Workplace.

Digital intelligence transforms the workplace. Man and learning machines work closely together in neural networks, driven by an increasing number of cloud data and the application of big data and artificial intelligence. This force cuts through several organisational and disciplinary borders that require a significant shift in the way we conduct and operate. However, AI will give us more time, more capacity, more room for the budget and better details. PwC's research shows that 40% of foreign corporations' HR functions already use AI software.

Although technology trends in 2020 have been progressing for several reasons - and particularly because of COVID-19, they are here for 2021 and beyond. Technology adoption and interface will be increased as more companies begin to realise the importance of the homework model and to create attractive jobs for workers. The world of work is shaped by virtual/remote workplace, contactless recruiting, digital monitoring, virtual reality, chatbots (CUI), The Employee Experience platform (EXP), to name few. For this reason, the current mandate for HR requires a whole new range of HR management, strategic intervention, skills and HR and Business skills for HR professionals.

Chapter 3: Demystifying Artificial Intelligence in the Digital Age

3.1. Introduction

According to Forbes (cited in McKinsey, 2017), 85 percent of businesses plan to use AI in by 2020, and McKinsey's Global Survey on the subject found a 25% annual growth in AI use in normal business processes, with several companies reporting cost savings and revenue increases. This opening statement on AI shows the importance and need for the adoption of AI in business, and more so in the HR function. In the near future, HRM will move away from the administrative functionality that has been built, such as recruitment, selection and assessment and it may include topics such as automated processes, artificial intelligence, and robotics. Nowadays, the motto is AI and how human resources are completely transformed and now AI seizes millions of jobs worldwide in all sectors.

Artificial intelligence (AI) refers to the capacity of computers to mimic the intelligence of human beings. Artificial intelligence technology allows machines to learn and adapt automatically in response to data analysis, which leads to more accurate responses to situations. The question is therefore how AI affects the management of human resources, a process which depends heavily on human interaction. When "AI" was originally used, it was used to describe technologies that allow a computer to function like a human being, such as decision-making. HR is traditionally not linked to the technologies; if AI is not used with HR practices, it could prove a horrifying sin that makes it difficult for organisations, driven by these advanced technologies and engines, to grow large and survive in this world. AI and advanced self-learning machines threaten global workforce entirely and eliminate human interference or involvement in every aspect. But, in fact, advanced technology is advanced only because it helps the majority of people, not to harm them. It's a challenge to prepare the workers to be as well as to keep up with AI and advanced machinery. According to a study conducted by Bain and Company, approximately 87 percent of HR leaders agreed that emerging technology would reshape the way HR functions are performed (Heric, 2018). Nevertheless, few companies have even reached the stage of big data in terms of workforce management where a more advanced decision-making pledge is made loudly and frequently. It is not clear how advanced the analytics are for these firms, and in one of the studies undertaken, 22 percent of companies reported that they have implemented human resource analytics in managing

and understanding HR at workplace, be it Recruitment, Training, development, Compensation and Performance Management system (LinkedIn 2018).

Technology has always been a part of achievement and optimisation of business results. Let's take a moment in order to define a certain terminology before we explain how. Artificial intelligence and machine learning are closely related terms that are often used interchangeably. AI is a computer science area where the development of intelligent machines functioning and reacting like humans is emphasized (Smith & Anderson, 2006). AI is a high level generation that allows computer systems to analyse and produce movement based primarily on previously accumulated statistics. AI can be conducted in phrases of human resources management in many extraordinary approaches to strategies and efficiency improvement. In all functions of Business and Human Resource Management, AI can be used to streamline the functions, bring in efficiency and more effective decisions related to the workforce.

Machine learning (ML) is an AI subset that is tightened to the interpretation and learning of data by computer programmes. A researcher or an engineer may use machine learning to recognise patterns and predictions instead of relying on a programmer to complete a task. A ML system can, for example, catalogue employee conducts to assess whether they start for a new chance. Vigorous interfaces are those where users can talk in their own voices. Similarly, completing Onboarding digital activities will help and support new employees. Intranets can also help workers find the answers they are looking for without having to look at other sources of information or websites.

When speaking, intelligent personal digital assistants are equipped with machine learning algorithms to help discern natural language and intents. The main difference between artificial intelligence and machine learning is that artificial intelligence is described as 'all types of intelligent decision-making in computer programmes', while machine learning emphasizes the methods of obtaining and using data, not the content. Even though the AI has been around for centuries, the real capabilities of the field became realised after the 1950s.

3.2. Different Types of AI

It is important to understand the different types of AI before expanding into their applicability to Human Resources. According to an article published in Forbes by Joshni Naveen in 2019, there are four main cording to this system of classification, there are four types of AI or AI-based systems: reactive machines, limited memory machines, theory of mind, and self-aware AI.

Figure 3.1 was created to summarize the four main types of AI:

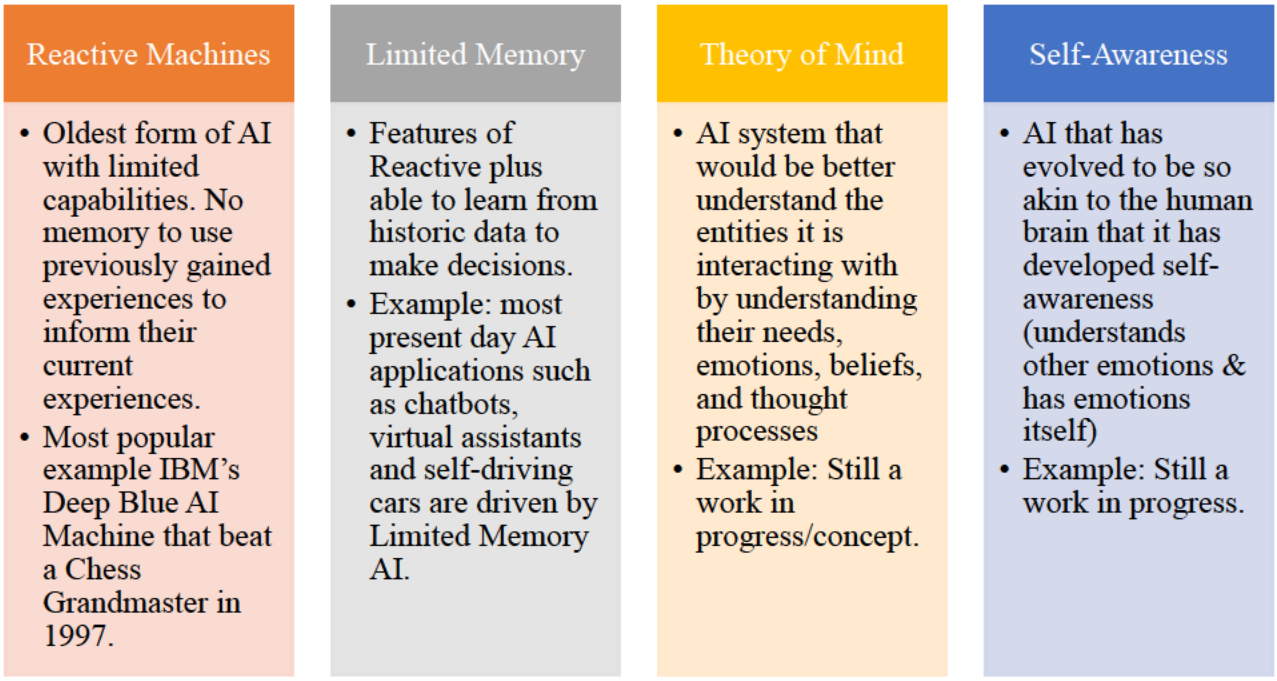

Figure 3.1 Different types of AI

Source: Naveen, J. (2019, 1). 7 types of AI. [Online]. Accessed by the World Wide Web: https://www.forbes.com/sites/cognitiveworld/2019/06/19/7-types-of-artificial-intelligence/?sh=2528bd95233e. [19 July 2021].

3.3. The growing impact of Artificial Intelligence on HR

Artificial intelligence, the domain of all industry, is advancing rapidly. Moreover, artificial intelligence is now a primary tool in workplaces, which means more and more companies rely on it to advance their success and overall well-being. Human resource management is about coping with people's personalities and attitudes and behaviours. It is a main focus on recruiting, selecting, preparing, and developing (Comin & Hobijn, 2010). Human resources have become more

sophisticated, capable, nimble, and refined. Most recently, McKinsey is forecasting that by 2030, AI will create over 13 trillion dollars of global economic value.

Perhaps one should briefly begin by commenting on terminology because many concepts deal with artificial intelligence (AI), which can be strictly confined to 'smart agents' which imitate 'cognitive' behavior. A broad approach is taken to include the use of technological algorithms, including Systems-level modelling, learning, natural language processing, and robotics are three different aspects of creativity. AI used to be described as revolutionary because of being able to revolutionise new technology; now many innovations are routine and therefore is no longer a selling point. We are sometimes able to mainstream the chat-boxes (where a computer programme or an AI speaks to customers via voice or text), and cobots (robots that work with humans). How artificial intelligence and machine learning can affect human resources activities is also brought to light in a variety of literature such as Anupam Jauhari's book (2017).

One of the many ways AI is used to help with job applicants is to make automated communications a part of their own. Candidate recognition and workflow capabilities are perhaps the two most commonly supported fields where AI helps remove human preference and raises the value of evaluation and communication. AI may not ignore keywords. Everybody gets enough time to find suitable expansions for those, and because they are not entirely dependent on word count, no one is turned away. One can either manipulate keywords to have high density by expanding their content to hit the specifications, or one can apply more carefully when they are hand-punching with them to specifications. In the Edge Admin study (2017), the usefulness and value of advanced technologies is brought to light.

Another factor HR also looks for is the use of AI-powered approaches in activities such as contracting, hiring, recruiting, training, and intake. With AI, the following can be done: enhancing the credentials of the applicants, compiling a database of all candidates, and offering candidates to share them with competitors who have yet to meet their recruiting goals. It will eliminate recruiting waste by the depth of our talent pool. This saves both time and money because it allows employers to allocate their resources to finding only top-tier candidates who make the greatest impact on their company. AI also helps to address the issue of showing applicants to dissimulate as well as setting

interviews with them by removing the growing need for written resumes by ensuring the two-way communication between employers and candidates is possible through one chat conversation. In order to keep track of the details for those who have left previously, Recruit bases employee records on personality tests, hours and evaluations of their working behaviour, as well as job history data. People who may be at risk are asked to fill out a questionnaire, and the issues that arise are discovered become issues that the executives may deal with (Evans & Kitchin, 2018).

These are only a few short examples of a beneficial partnership between AI and HR. AI software can also recognise the face, recognise the sex and mood, decode interviews and decode the level of education - both lying and cognitive - in conjunction with robotic technology. The research essence of AI use in HR is focused on data commonly referred to as personal analysis. This is a completely new area for most HR agencies. People are, after all, the most important asset of an organisation, with analysis leading to creativity. An appraisal of capability differences is an example of the shift in AI in HR departments. Creating skill gaps is a routine task for human resources practitioners, since nearly all organisations struggle with skill gaps because of unreasonable standards or their existence.

AI manages the gap between the skills required for the job and the capacities available to its applicants, whether on a team or at an enterprise level. A predictive analysis will be taken into consideration when describing jobs, business goals and company values and potential future skills needed. This understanding is vital for a company's growth. They allow HR to concentrate on strategic initiatives management and execution, while AI automates the process and enhances knowledge to promote better decision-making. AI has an enormous benefit in monitoring the entire workforce at once. It is thus possible to automatically analyse skills and develop areas, and to instantly evaluate the performance of the existing employees. AI can educate staff on the skills the organisation desires or reinforces, and can provide additional training if needed instead of hiring specialised skills. In order to strengthen their leadership skills, for example, developing or coaching HR managers themselves could help HR managers build an atmosphere that can encourage their team members' lives. This refers to areas such as efficiency and enforcement in which the analytical treatment of large quantities of information will best support individual observations and opinions (Graetz & Michaels, 2017).

The appropriate talent is determined by AI in respect of succession planning for any position in or around the department. The organisation's success and long-term wellbeing needs to be strengthened in terms of job opportunities. Through its computer education ability, AI will unlock individual growth opportunities and points of interaction between its strategic vision and opportunities and its employees' best strengths and capabilities without distorting specific candidates in the field of potential management roles. As the majority of tasks that take time by smart data harmonisation are done, all processes are faster and better.

In the coming years, AI is going to be a game changer in a number of fields. It starts with the applicant’s involvement and is fully expressed in succession planning. As the roles of the department grows, HR will change expertise quickly and require a new approach to evaluation and workforce development. Many current job and employee configurations will present the greatest challenges, so that high AI competence offers more oriented perspectives from various data sets. If HR leaders follow a wide range of AI levels to enhance the value of their organisations, the job is more profitable and efficient. It remains to be seen if this transformation is planned for the individual and organisational levels. Everything that needs to be done is the required steps and this work is already laid out. The below mentioned Artificial Intelligence statistics demonstrates the above:

- Statista predicts that the global demand for artificial intelligence will reach $ 118.6 billion by 2025.
- PWC Global estimates that developments in artificial intelligence will increase the GDP of different countries by $15.7 trillion by 2030.
- According to Accenture, Artificial intelligence software has the potential to increase company efficiency by 40%.

3.4. Evolution of Machine Learning

In 1959, Arthur Samuel was invented by American firm IBMer as a pioneer in computer games and artificial insight (Samuel, Arthur, 1959). A series of instructions to solve a problem are algorithms. The algorithms of the programmer are the foundation blocks of today's digital environment for computers to handle new tasks. Computer algorithms organise vast volumes of data on the basis of certain instructions and laws in information and services. It is necessary to

understand since algorithms – not programmers – set up learning machine rules. Machine Learning (ML) is an algorithm study that automatically enhances data use and experience (Kohavi & Provost, 1998). The artificial mind contains this. Machine learning algorithms construct a sampling model, known as 'training data,' based on sampling data in order to predict and decide not specifically programmed. Machine learning algorithms can be used for a range of purposes, including medicine and computer visualisation, if it is impossible or unachievable to create traditional algorithms (Brynjolfsson, & Mitchell, 2017). This method gives the machine guidance on how to learn from the data in every step without the programmer receiving new step-by-step instructions. Computers can also be used for complicated new tasks that cannot be programmed manually. Picture recognition programmes for photographs or text translations with visual impairment are included. The basic method of master education is a learner algorithm with training data. A new set of rules is then generated by the research algorithm based on data findings. This introduces a new algorithm that is officially known as the learning machine. The same learning algorithm is created for different models using different training data. For example, a machine may be taught how to interpret or forecast the stock market with this sort of algorithm. The central strength of machine learning is new data instructions. The key feature of the data is underlined: the more information the algorithm can exercise, the better. In fact, the huge volume of data from the Internet and not the radical development of learning algorithms is responsible for many recent developments in the field of AI. Judea Pearl addresses the question, "What's the difference between ML and AI?" The paraphrase shaped as such, ML learns and predicts from passive observations, while AI includes an environmental agent who has learned and has taken steps to increase their chances of success.

Figure 3.2 illustrates the relationship between AI, deep learning and machine learning.

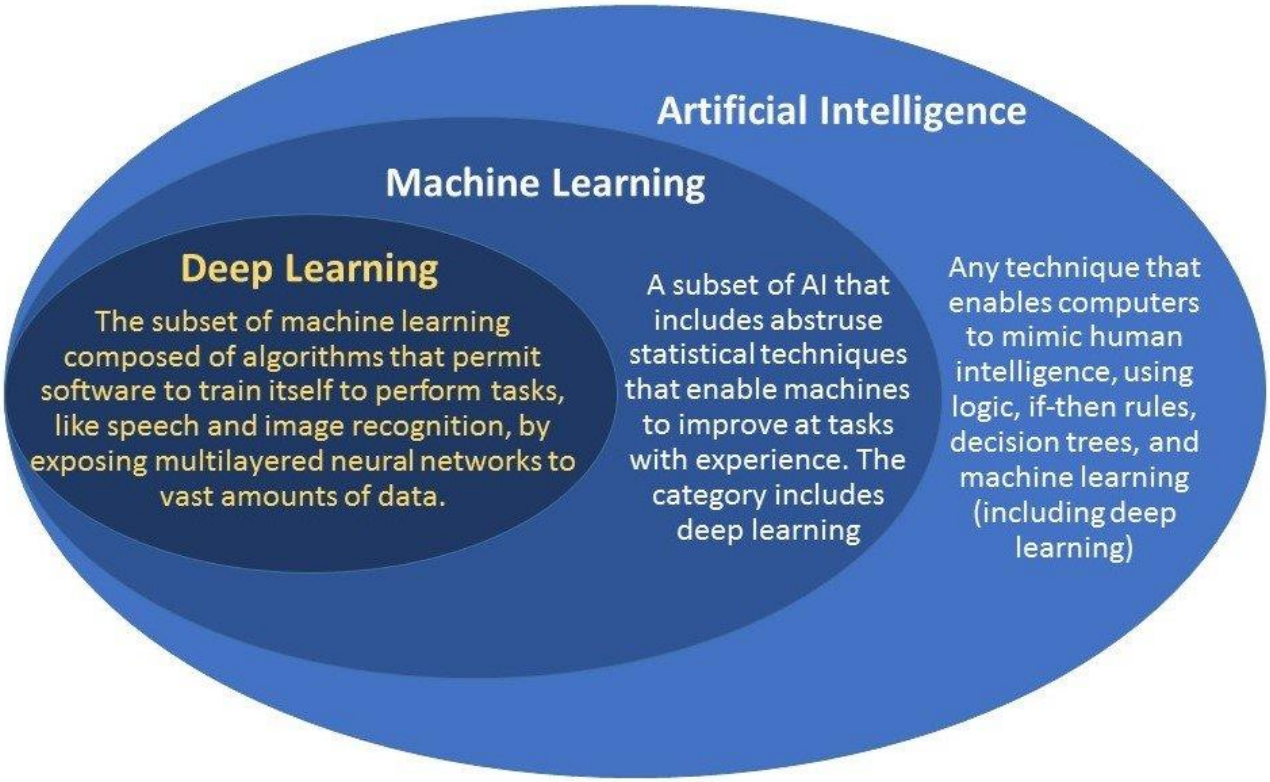

Figure 3.2: Machine Learning as part of (subfield) of Artificial Intelligence

Source: Dhande (2020, 1). What is the difference between AI, machine learning and deep learning. Accessed by the World Wide Web: https://www.geospatialworld.net/blogs/difference-between-ai%EF%BB%BF-machine-learning-and-deep-learning/. [20 June 2021].

3.4.1. Machine learning and HR

Internally, machine learning can be extremely beneficial to the HR function. Many conventional tasks, such as "talent acquisition" and "employee engagement," can be significantly enhanced by using machine learning. Machine learning will assist in rapidly sifting through thousands of work applications and shortlisting applicants with the qualifications most likely to succeed at the business. This, while also providing HR managers with continuous insights into how their workers feel about their workplace and how engaged they are; a significant change over comparing engagement surveys (Walger, 2016).

While advances in computing power and cloud-based server capacity over the last 20 years have enabled machines to analyse data and make useful predictions, their adoption within businesses has been relatively slow. Organisations are unable to reap the benefits of machine learning due to a lack of talent, mistrust of newer technologies, and insufficient data management. While machine learning has historically been the domain of technology companies, the benefits of investing in its growth are increasingly trickling down to other industries. Machine learning, when applied with the right vision and goals, will help businesses make significant strides in an increasingly unpredictable world (Kohavi & Provost, 1998).

From the aforementioned knowledge, Figure 3.3 was created to reflect how AI can be broken down into Machine and Deep learning. Machine learning will be primarily processing vast volumes of data quickly whilst deep learning works on natural networks for non-linear thinking. The output from both of these are combines in algorism, which will lead to better decision making.

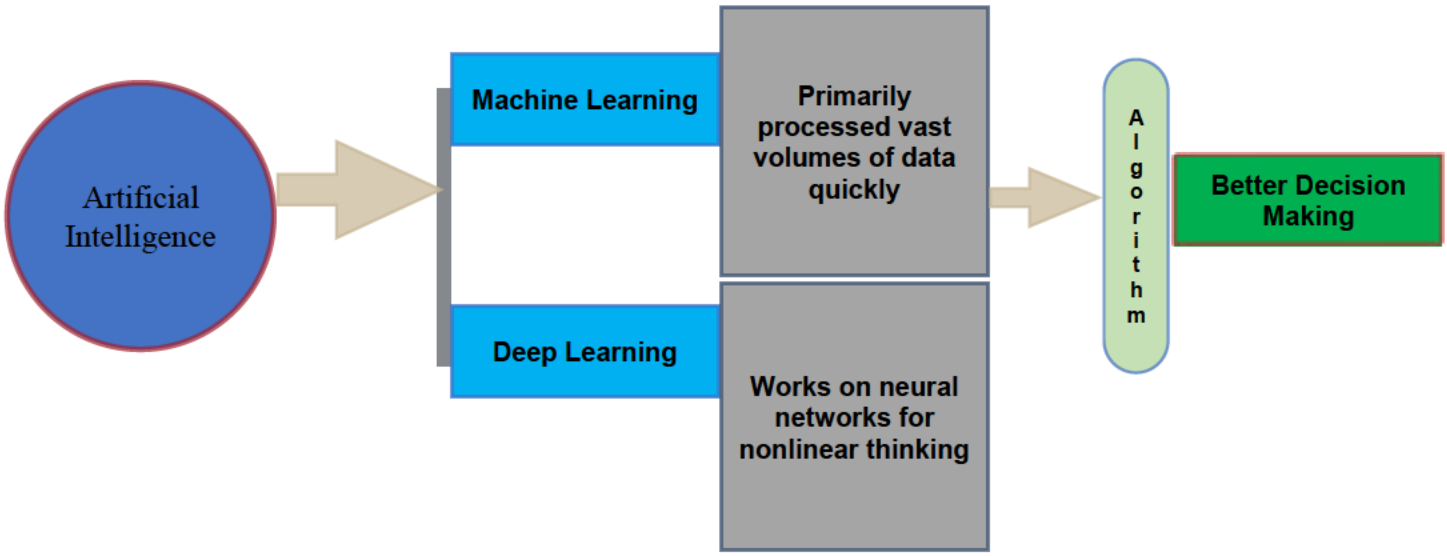

Figure 3.3: AI and different platforms

Compiled by Researcher

AI different platform include:

- **Cloud providers** (Amazon, Google, IBM, Microsoft) provide modular tools to build their own smart internal HRTech tools using a very large number of HR operations.
- **Data Workbench**: A small number of external data sources are available and models of HR data are currently understood. You can use the template data models to 'roll your own' tools. One model, SwoopTalent and Visier are some examples.
- **Service Micro-service** : The vast majority (and nearly every e-mail volume) of risk-based solutions include very focused one-point solutions which are part of a large standard workflow. Evaluation, acquisition, hiring, interview planning, forecasting, performance management, contingent employees, vendor management and data transformation have made significant efforts.
- **Embedded**: Intelligent software is embedded for providing better quality data and services from HR Solution providers to data vendors. The leaders include Workday, Oracle, Last Software, Ceridian, Kronos, Paychex, Salary Com, Glassdoor, and ADP. Tailoring and age are major benefits. Nearly always more data is better in AI.
- **AI First suit:** On a basis of Intelligent HR new systems are being constructed from the beginning, which work across entire ranges of talent management and talent acquisition tasks. The key examples are Ascendify, Bridge by Instructor, and Google.
- **Robotic process Automation (RPA):** Including data from disparate systems in order to perform routine tasks; this family of solutions is sometimes called Intelligent Automation. It is one way to get rid of brain breakdown.

3.4.2. Voice Acknowledgement

The AI can translate text, vice versa, search websites, videos, podcasts, key phrases or topics and provide information, if requested, automatically in the speech or text format selected to other analytical programmes. This technology is typically used by AI personal assistants. However, speaking recognition is primarily related to vocal command-based actions like file opening, websites, programmes, adjustment of the climate, control of the household and the office and other basic command features.

3.3.3. Bots

The major researchers and engineers use keyword phrases to scan the Internet. Bots help to read, talk, ask, guide, retrieve routes and other useful features. These artificial intelligence systems are typically used for browsing systems. Present AI systems should learn, but they can go a long way to solving complex conceptual issues. Because thousands of variables are present in the simplest decision, consider how much you search for a single database. AI is exponentially speeding up repeated search activities.

3.3.4. Algorithms for AI

The AI feature directs the step-by-step instructions for AI algorithms. Sophisticated human resources algorithms can be created to automate many functions such as market intelligence collection, information for the right parties, tracking of key performance criteria and monitoring employees and social media activities' external desires.

There are many different AI algorithms that is currently used in candidate sourcing, screening, assessment, interviewing and onboarding. Figure 3.4 was created from various research into examples of some of the most common tools that are available:

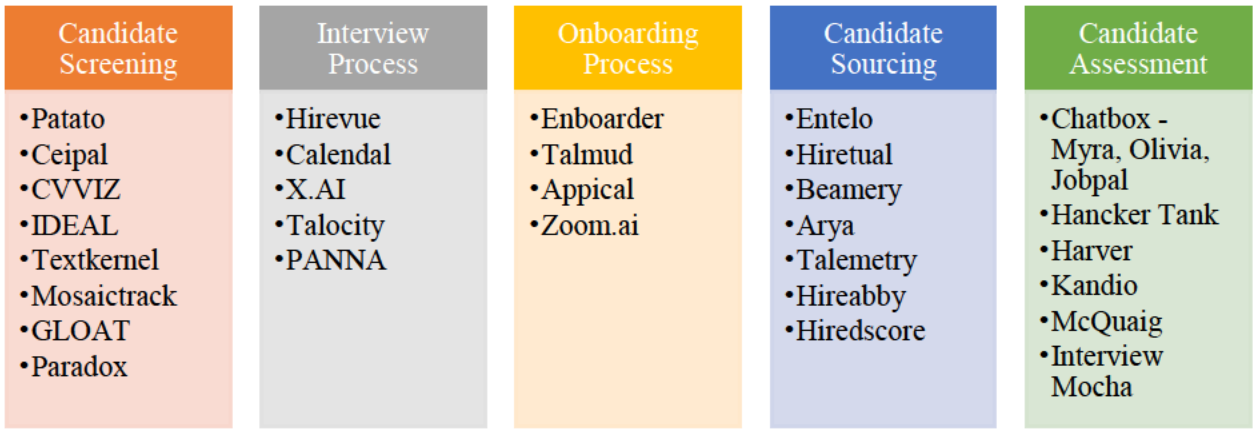

Figure 3.4: AI algorithm driven tools in HR

Compiled by Researcher

3.5. Advantages and Disadvantages of using AI in HR

A recent survey of Oracle and Future Workplace shows that staff believes that AI can offer new skills and more freedom in order to enable resource professionals to extend their current role in an

organisation that is more strategic. There is no function with more data and analytical needs than HR. AI technology would enhance the capacity of every department to collect, process and change predictions. The same amount of information that AI processes can acquire in seconds takes weeks to collect or analyse. For the following reasons, speed is critical in the rapidly moving business environment today, namely:

- Providing the ability to make quicker decisions at the right time to capitalise on market opportunities.
- Obtaining truthful knowledge expeditiously.
- Facilitating pattern recognition in order to identify emerging patterns.
- Accelerating all internal business activities.
- Taking lessons from previous failures and successes.

Figure 3.5 illustrates a summary of advantages and disadvantages created from various sources of the use of AI and will be covered in detail later in subsequent chapters:

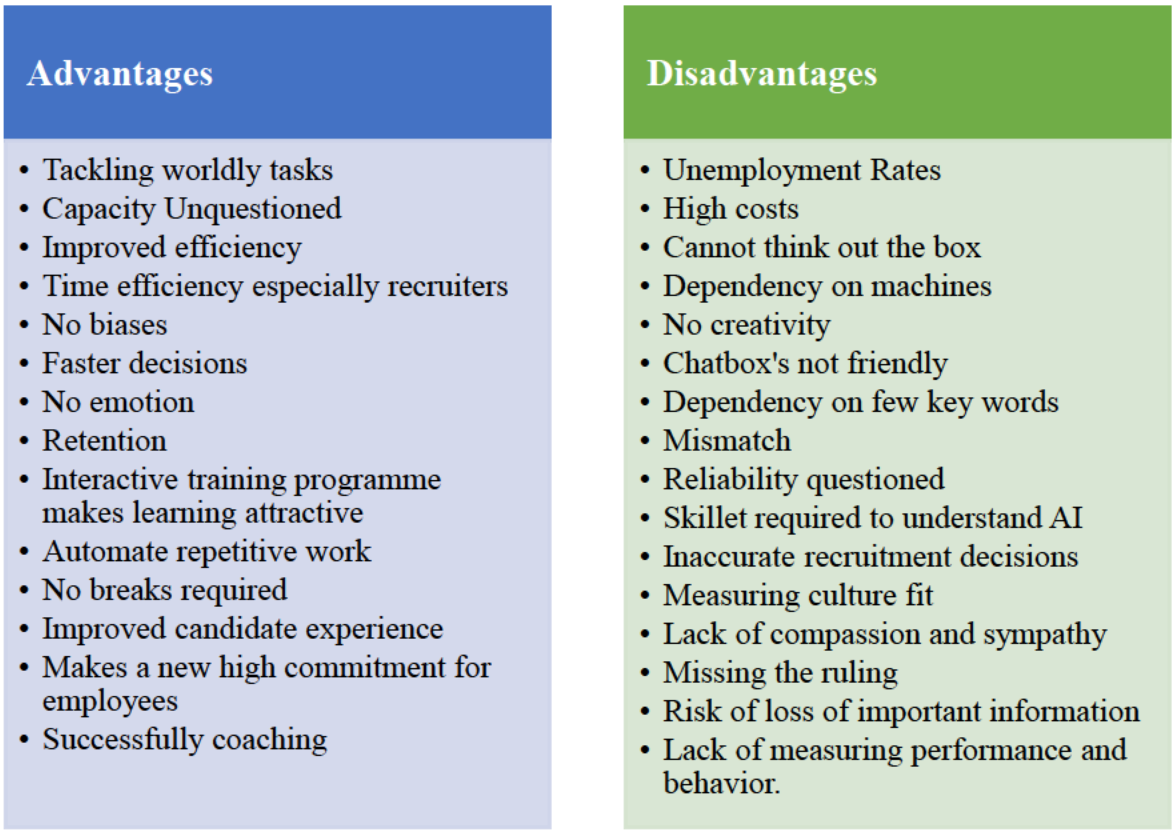

Figure 3.5: Advantages and Disadvantages of AI

Compiled by Researcher

3.6. Use of AI in HR

AI can choose from pre-programmed algorithms and effective computational technology in real time. Businesses would have enhanced employee and candidate experience by using an AI department of human resources. Andrew Ng, a Chinese-US machine learning and artificial intelligence specialist, said "Deep learning will revolutionise every industry. McKinsey's machine learning forecast supports his claim that the effect of artificial intelligence on the global economy will be $13 trillion by 2030. The effect will also be of artificial intelligence on departments of human resources. Human resource professionals realise that it is important to optimise the interaction of the human mind with machine learning to create an intuitive working environment and smooth workflow. AI will decide with pre-programmed algorithms and powerful computing technologies in real time. Enterprises will have better knowledge for their candidates and employees in their departments of human resources by combining the human element and artificial understanding. Furthermore, artificial intelligence can allow businesses to better understand their target market and encourage sales campaigns guided by performance (Acemoglu & Autor, 2011).

3.6.1. Recruitment

Although many organisations are starting to integrate AI technology into their recruitment efforts, the vast majority of companies do not do so. Indeed, the 2019 Global Human Capital Trends survey by Deloitte found out that only 6% thought they had the best recruitment processes in technology, whereas 81% considered the processes of their organisation to be either standard and lower. For that reason, professionals can adapt their processes and benefit from the use of this advanced technology. There are huge opportunities; AI can not only be used by the recruitment company, but also by its employees, during the recruitment process. Artificial intelligence technology, for instance, can streamline application processes by developing more user-friendly formats that a job applicant can complete to reduce the number of applications that have been discontinued (Schwartz, Bersin, & Pelster, 2014). Figure 3.6 summarizes the use of AI in HR and Recruitment.

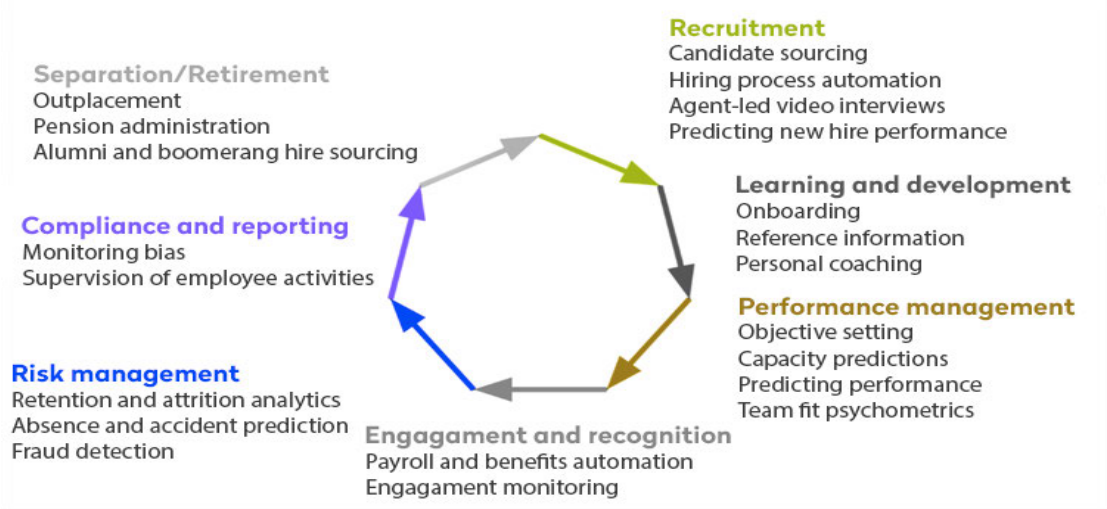

Figure 3.6: Use of AI in HR and Recruitment

Source: French, M. (2019). HR Technology Issues You Need to Consider in Your Business. [Online]. Accessed by the World Wide Web: https://www.subscribe-hr.com.au/blog/hr-tech-issues-you-need-to-consider-in-your-business. [20 June 2021].

While this approach has streamlined recruitment of the Department of Human Resources, it allows for easier and more realistic implementation for the applicant as well. For example, at Unilever the time necessary to hire was reduced by 75% (Heric, 2018). Front-end recruiting procedures are likely to be automated, such as screening of applicants. First of all, speed and precision are more critical than participation by the human being. Even if the Line Manager is the sole decision maker, the human resources of the candidate selection are almost likely to take part in some areas. This may include the negotiation of the terms of a job offer, the setting of a beginning date or the conduct of contract requests. More fundamentally, AI advocates argue that systems can improve choice by recognising characters that supplement the high performance of current workers by techniques such as speech analysis and micro-expression reading (Buranyi, 2018).

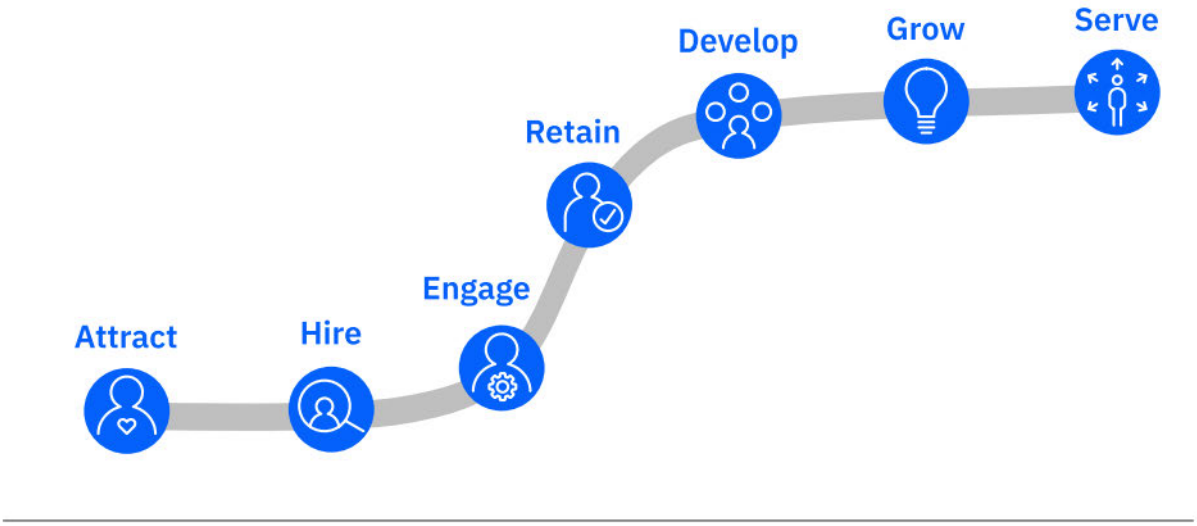

Figure 3.7: AI in HR life cycle and Recruitment

Source: Tavis, A. (2019). How is AI supercharging HR. People Matters. [Online]. Accessed by the World Wide Web: https://www.peoplematters.in/article/hr-technology/how-is-ai-supercharging-hr-22800. [20 July 2021, 1].

Furthermore, AI performed a major role in the rediscovery of applicants. The AI technology can analyse the existing pool of applicants and identify those that are suitable for new roles as they open through the maintenance of a database of previous applicants. HR professionals are able to use this technology to identify skilled employees more quickly and easier than ever before than to spend time and resources looking for new talent. Once recruitment managers have found their position to be the best suited, the embarkation process begins. This process must not be limited to standard business hours, with AI's help, which is a big improvement on past Onboarding processes. AI's technology instead allows new hires, through chatbots and remote support applications, to utilise human resources support every day, in any location. This change not only allows employees to proceed at their own pace through the on-boarding process but also reduces the administrative burden and leads to faster integration. Figure 3.7 demonstrates the above AI within the HR life cycle of recruitment.

3.6.2. Interviews

A ML-analysed video interview will allow one to decide whether the applicant tells the truth or not, and more. With the use of ML-driven chatbots on company, the early interviewing steps will become much easier to provide applicants with on-board services. The way the interview works is then documented and the neural network is given parameters for analysis such as musculoskeletal contractions and voice tones. This may for instance be an indication of negative if a candidate scores in the definition of his previous work. The tone of the voice will reflect the excitement or indifference of a candidate in a job or in his duties. Machine learning does not differentiate an applicant's sex or age, judges or criticizes and has no bad day as is it totally impartial.

3.6.3. Onboarding and Orientation

The AI-powered system will train a new recruitment company the first day after the hiring process. The reporting authority, team members, roles and other relevant information are automatically made available to the participants via an app or laptop, from job descriptions to corporate policies. The word 'onboarding' covers the whole operation. Onboarding is important for the improvement of employee satisfaction and productivity of human resources. An Onboarding study shows that employees with a positive Onboarding experience are more likely to stay with a company on a long-term basis. Artificial intelligence enables systems to be adapted to the specific needs and tasks of each individual employee. To automate the following functions, algorithms can be used:

- Explanation of the job profile, responsibilities, and benefits
- Contacts within the company who are relevant and significant
- Responding to frequently asked questions from new hires
- Verifications of documents
- Requests for devices, and more.

3.6.4. Talent Acquisition

The most common use of AI is in talent management processes in human resources. It reduces the time spent on routine tasks, such as selection of applicants, maintenance of databases, interview schedule and response to job seekers' requests. It significantly reduces the process of recruitment and makes the HR staff more focused on other activities, such as procurement, recruitment and managerial workforce. AI-assisted screening will help select candidates whose skills and

experience are most suitable to meet the requirements of the company. Intelligence artificial chatbots can communicate and adjust their profiles to work requirements with prospective employees. The pool of candidates will be limited to those which fulfil the job description requirements. The artificial intelligence system will then arrange interviews and employ the most skilled candidates. It saves the department of human resources time and money to focus on other activities. In 2017, at Eva Wislow, AI redevelops the management of staff and the proposals to increase efficiency and the participation of employees generally. The management of talent is crucial and forms the long-term strategy of the company. HR Managers can remove much of the boring, repetitive work by searching, reading and assessing candidates by using talent management software. The recruitment process makes 75 percent of them easy to remove.

3.6.5. Precise forecasts

A feature of Machine Learning is that it can predict key trends such as turnover, job performance and even negative items such as unethical behaviour. An example of recruiting an applicant to illustrate the forecasts that machine learning can provide. The success chances of an employee rely on past information such as previous achievements, expertise and abilities, enhancement programmes, data from forum discussions and social media. The forecast is based on an interpretation of the data mentioned. Results can be transformed into analytics and decisions can be taken.

3.6.6. Internal Mobility and Employee Retention

Personal resource professionals should utilise artificial intelligence to increase internal mobility and retention for employees. The ministries are now able to evaluate their engagement and happiness more exactly than ever through personal feedback surveys and employee appreciation programmes. However, there are several important corporate advantages for having this information, given how important this is to understand the general needs of employees. A Human Resources Professional Association report indicates that some AI software can assess key indicators of employee success to identify those that need to be promoted to promote domestic mobility. This would significantly reduce the cost of acquiring talent and increase the retention rate for employees. This technology can, however, also predict who will most likely leave the team

and not only recognise opportunities for internal promotion. In this perspective, human resources professionals are using retention efforts to reduce employee turnover strategically (HRPA, 2017).

3.6.7. Sentiment analysis

An AI-based tool that provides organisations with an insight into their work processes and problems is a sentiment analysis programme. This will help them overcome the issues and the efficiency of the employees. An AI platform-based sentiment analysis framework called Ultimate Software has been developed to measure employee feelings and solve problems in workplace. The method of Perception uses algorithms for interpreting the machine language – the AI subdomain. Perception measures employees' emotions through it by gathering and analysing the cumulative languages over a period of time. The organisation uses its knowledge to resolve problems related to the well-being of its employees, and to improve employee commitment.

3.6.8. Learning and Training

Systems allowed by AI will support recruitment and training of employees in their respective fields. There are constant changes in the competences required for any given role. It is critical that we continue to learn and adapt to emerging technologies in order to remain competitive with new technology and applications entering the market. AI evaluates the skills of workers and offers videos or learning programmes related to the work they do. One can read documents and analyse the behaviour of your employees automatically and create appropriate education programmes. Artificial intelligence will analyse over years' experience and notify the Department of Human Resources which employees need training in which field. Artificial information technology will also suggest an ideal approach to learning by using intelligent algorithms more efficiently and easily. In conjunction with e-learning sites, businesses can also use AI to support employees' skills development. It will develop for each employee a customised training programme based on their credentials and organisational requirements. E-learning resources may be used by employees to gain new ability, improve existing skills and more to their own extent. Finding the career path of an individual based on their training schedule, an AI system can be combined with an algorithm. The findings can be used by managers to help their team build a greater sense of unity.

3.6.9. Cognitive-Supporting Decision-Making

In 2017, IBM released an impact study on human resources from cognitive computing. The study discovered that artificial intelligence can help professionals make quick everyday decisions (Guenole, & Feinzig, 2017). The human resources department accounts for mental and emotional health of an employee, apart from their contributions to the workplace. Artificial intelligence-led systems can play a role in monitoring and evaluating the moods of employees before and after customer calls for example. After that, the department of Human Resources decides whether or not the person needs a break. AI can also identify anxiety on the basis of a person's behaviour and expression. It helps employers decide whether to investigate and correct the problem before it harms employees and the business. A major benefit from the use of AI is the consistent performance of routine activities (Brynjolfsson, & Mitchell, 2017)

3.6.10. Talent management

Employers who want to get employees more engaged face a continuing challenge of retention. Talent management, guided by a position in which five generations coexist with an ever-growing emphasis, remains a priority. However, because of their passive career development practices many organisations struggle to live up to career growth expectations for the whole workforce. They must also fully take advantage of the ability to sustain high revenues in modern talent administration. Though AI's conventional property plan is being sued, many enterprises continue to use a reactive property plan to prevent the proprietor from disappearing. With regard to salary expectations, employers are always looking for better possibilities, even when they approve a bid, while they based their decisions on market data. However, one might argue that AI offers an opportunity for HR to make an impact, whether on pay management or training, talent management and growth generally, and many HR leaders have argued (Wood, 2017).

3.6.11. Understanding Employee Referrals

According to Adriana Bokel Herde, Artificial intelligence also helps human resources departments to better understand employee references, by analysing the types of applicants' and gaining insight into who refers to the most promising candidates. Herde, the Chief Human Resources Officer for Pegasystems, added that the AI would analyse data from previous references to find out if applicants are advisable (Nicastro, 2020). AI allows HR departments to enhance their candidate

and staff experience by automating routine, low-value activities and reassigning resources to function more strategically and creatively that HR teams want. Herde explained that these measures can be intelligently automated and freeing teams to focus on critical tasks such as mentoring and feedback gathering, rather than managing every step of the new employee Onboarding process (Nicastro, 2020).

3.6.12. Succession Planning

Any company will experience a degree of attrition as staff quit or retire, even with the best conservation techniques. When important employees or domain experts go away, it also creates huge company holes that threaten the success of the company. In order to ensure a smooth transition, comprehensive succession plans are crucial for organisations. On the other hand, preparing for succession can be one of the most difficult factors in the management of talents. Leaders do not communicate succession plans for their teams and navigate a two-way succession process. AI helps in:

- **Identify flight risk:** the flight risk prediction draws its conclusions from various attributes and conducts. The attributes include the sense of employee, the mentors and influences, the number of years of their job, the length of time that they report their potential career experience, their wage history to their current manager and whether they received an increase at the last time. All of this contributes to an expected attrition rate and offers leaders a number of helpful hints on how their most valuable persons are to be retained or is there a policy in place for their succession plan.
- **Uncover most competent successors:** Use data models to analyse the behaviour of employees and determine which employees are ready to step up on the basis of their cultural fit, leadership and achievements. This helps for the right placement, thus, avoiding the errors later may crop up due to non-suitability of candidate for the right job.

3.6.13. Career Development

The evolution of employees and job seekers to grow their careers is one of the emerging nuances. In the distant past, employees have often been with their workers throughout their careers and have gained leadership from entry level roles. With a rapidly moving economy, higher layoffs and new start-ups, employees can now move at a much higher rate. There are data that thousands of

employees and Gen Z employees change jobs at least four times when they are 32. Organisations must adopt a strategic approach to career development in order to retain their employees. Employees expect learning and professional opportunities to help them develop and achieve their career objectives. AI helps to understand the issues, nature of such issues and what and how can there be a career plan and career graph for each employee. While it draws such plan, AI will have analysed all the parameters of the candidate and come up with solutions which address such attrition issues (Becker, & Gerhart, 1996; Burke, Sims, Lazzara, & Salas, 2007).

- **Personalised recommendations:** Employees can obtain guidelines on career development that will move with the company and maximise their career potential. Carefully customised content is not only an addition to management guidance, it will also demonstrate that employees are invested in their careers.
- **Personalised career patching:** AI gathers insights on and offers individual insights into each employee's career progression. Each person can map his own career path to meet the current and projected knowledge gaps. They can draw up specific learning experiences. The provision of clarity and the tools required for career transitions for employees is one of the best ways to encourage learning.

3.6.14. Workforce Analytical

Businesses are increasingly interested in workforce analytics and planning, especially as it relates to AI and machine learning. As used in HR, AI assists managers in identifying issues, addressing challenges, and making better decisions that affect employee and organisational performance. Managers will see the effect of open transfers, time off, absences, and sudden schedule adjustments on main performance indicators using real-time workforce analytics. In this way, AI aids in the making of better decisions and the prevention of future issues. The data includes a complete behavioural analysis and work related outcomes of the organisation, and come up with matrix for further prevention of any sort of issues which kills the performance and reflect the productivity.

3.6.15. Employee Engagement

Employee involvement is one of the most important characteristics of a company, but it means different things to different companies. Employee engagement is described by everyone being informed of their obligations first thing in the morning. For some, it may mean using artificial

intelligence to raise worker's awareness of upcoming events. Every company is looking for something different and trying to measure various facets of employee engagement. However, the overall goal is to increase employee engagement in order to improve company performance and revenues. These days, AI-powered chatbots are everywhere, providing a new way for employees to communicate with HR and the rest of the business. Via web and mobile apps, these automated conversations allow managers and employees to gain access to a wealth of knowledge about future opportunities, programmes, and hiring opportunities within a particular geographic region. While the use of an AI-powered chatbot to provide assistance is not fresh, the manner in which these insights are delivered is.

3.6.16. Compensation

The compensation payable by employers is a continuing problem on the labour market. Workers believe that they are looking for jobs elsewhere, or that pay increases are being sought in order to increase their quality of life in this tight labour market. Employers also have the duty to ensure that the required salary is not paid for the appropriate positions. Leaders must work systematically to recognise the trends of their rivals to respond to employees and keep high-performance talent. It is crucial to the way compensation is calculated, as the human resources continue to change. Organisations need a wider spectrum of experience to create a strategy that is adapted to the individual wishes, roles and strengths of their workers.

- **Give market insights:** By using a wealth of compensation data points that contrasts current and rival company and a detailed and up-to-date statistical analysis, it can be concluded how the relative positions can be determined.
- **Competency:** The study of each employee's competency level is graphed, the skills inventory is put and based on what could be the combination of work X Skills X Competency X outcome, the predictions are done, about the employee's possible performance and outcome at workplace. AI will draw the employee's potential in each job based on the present input X output, and come with what can individual do, what can be done, what is preferred further course of action, namely, is it training that has to be given to orientation or is it replacement (Cappelli, & Keller, 2014; Heric, 2018).

3.6.17. Learning

The act of learning was never given greater significance. Technological developments are forcing companies to redefine training and expertise as a requirement, and can't afford to value them as a valuable value anymore. For the World Economic Forum automatic data, from 2022 the workers need to adjust or face a prospect of irrelevance, with 75 million jobs and 133 million new jobs worldwide. Learning may be an important competitive advantage, helping organisations remove skill gaps, promote development and involve and maintain top-level talent. But even organisations that prioritise learning are challenged, because curses are often meant to drive workforce agility and performance rather than compliance. These basic changes resulted in re-skilling. Therefore, companies are increasingly focused on L&D in several functional areas to fill skill gaps. AI:

- **Offers personalised learning:** Relevance, adaptability and significance, regardless of the direction you chose, are fundamental to learning. In order to develop more useful classes and success classes, AI can provide guidelines for the advancement of employees by capturing how employees function, acquiring skills, assignments, interests and work styles.
- **Promotes collaborative learning:** Corporate employees in various departments often have to learn from one another, and AI is also being used to help. Working across various departments enables teams to operate more effectively, reduces operating activities, increases coordination and enhances performance. Teaming up for this form in the current work setting, where a great deal is done in groups, is very useful.
- **Optimises learning management:** AI can reduce managers' workload by altering curricular programmes based on their role, locations, and business lines while capturing data on learner involvement, interactions and results. Leadership can effectively manage and report on how learning works for the organisation with greater optimisation and insight.

3.6.18. Automation of Administrative Tasks

Other topics include, apart from HR, the development of a whole new methodology for assessing job robbery patterns and the evaluation of new employees by using those patterns; the development of new methods for the identification of robbery in workplaces; the development of an extensive methodology to identify and vet new applicants (2018). With this approach extended, human resources would be able to use AI to simplify low-value workflows, which would have the added advantage of having more flexibility to spend on organisational strategic planning rather than

wasting time and money that is usually replicated in other fields. Extending the department enables the business to become a strategic partner with HR, Advantages like programme automation, online planning, preliminary candidates and the like are useful as they can allow the company to automate different processes. The time and money allow organisations to do the same and not always cost-effective. HR managers vary from each other: by investing more time and resources on personnel growth, they can make the business more competitive and profitable.

This can be alleviated by the implementation of AI software for the automation of administrative tasks. For example, the Eightfold study found that staff using AI software were 19 percent more efficient in administrative tasks than departments that do not. During saved time, HR professionals can use more energy at the organisational level to develop strategic planning. The growing use of AI is not safe and HR has not only been aware of it, but it can limit its speed of use. As PwC's chief economist, John Hawksworth, pointed to: 'law and regulatory obstacles will slow the shift to AI and robotics when this becomes technically and economically practicable' (PwC, 2018a). In fact, "HR leaders' appetite for more digital devices can outdo their ability to absorb the instruments" (Heric, 2018). In addition, there is, obviously, one of the obstacles to this absorption in the HR domain: the lack of AI skills and the difficulty of recruiting sufficient talent.

3.7. AI at IBM - The Experience

The new engine of business growth today is the human resource powered by AI, are the words of HR Chief, IBM India/South Chaitanya Sreenivas. An integral part of human resources (HR) activities has quickly become the Artificial Intelligence (AI). In HR repetitive, low-value activities are automated and the emphasis on more strategic work is increased.

AI can be deployed in the HR during the whole lifecycle of talent. In nearly every field of HR, including attraction, recruiting, learning, rewards, career management and help for the HR, AI can be used in our experience (Talking of IBM experience). They believe that AI can tackle urgent market problems. In addition, AI attracts new talents, improves employee experience and provides good support for decision-making. During the implementation of AI solutions, ongoing problems may be solved, such as having employees' resources to implement the business plan and allocate financial resources accordingly. The new engine of business growth today is human resources driven by AI. It is also not surprising that AI is used to strengthen decision making and

relationships with staff, by both the HR managers and managers. The era of intuitive decision-making is gone. Now, when making a pick, you have to use the data.

While sharing the experience at IBM, Chaitanya Sreenivas says the HR life cycle has been infused with IA: attracting, engaging, retaining, developing, increasing and serving. The Candidate Assistant from Watson assists job seekers with the positions that are ideally suited – both for the candidates and the IBM. As for other career pages, candidates apply for jobs in IBM 3x more frequently. It cannot only check the resume of the applicant but can also recognise its digital media presence as it can absorb large amounts of data.

At IBM, the learning is an individual learning platform based on a variety of cognitive AI and Watson technologies. This gives the individual consumer a personalised learning. The tools that are in use includes Chatbots - HR chatbots were a perfect initial way to incorporate AI into HR roles for human resources organisations. The benefit to employee experience is also more significant, while it is also driving productivity. Chatbots free managers and non-managers with 24 x 7 accessible transactional function. It gives our employees around the world a smart helping handles all HR-related requests, saves time and gives them a better overall experience. Over 900,000 workers surveyed the chatbot in 2019. Cognitive Talent Insights, among other things, offers a unique analytical perspective that helps human resources practitioners and managers to quickly explore data, forecast results confidently and communicate results widely. Based on different factors like consumer demand of skills, internal forecast demand for skills, and data from attritions with the same capabilities, CogniPay aids managers in taking compensation decisions.

While IBM experience in reducing diversity and inclusion prejudices issues, the development of AI solutions has the potential to alleviate prejudices in order to allow a broader and more inclusive working environment. Unlike people, computers do not have intrinsic inclusion and diversity preconditions. AI can delete attributes leading to biases when established and deployed properly and can learn how to delete possible biases, in particular unintended and hard to uncover implicit biases in decision making. AI will alert HR or managers that the prejudices will occur after detection.

3.7.1. The IBM experience using AI in HR

- **Solving urgent market issues**

AI offers new insights and resources to HR companies without ballooning headcount or costs. The thoughtful implementation of AI solutions will overcome persisting problems such as requiring staff capacity to achieve the business plan and allocate financial resources accordingly.

- **To develop new skills**

There is continuous disruption in the corporate environment. Companies have to react quicker to opportunities, operate agilely, and remain ahead of rivals to cope with this disruption. This means seeking an appropriate way of competing in this modern operating environment for the skills needed to innovate. AI applications help HR departments in lock-up with changing market demand to acquire and improve skills.

- **To increase the quality of work life of the employees**

Instead, people want something new when they come to work: to improve the quality of work life for employees: they want personalisation and they do not want the same old service they get in the past. You want to produce customised items from the beginning to the end. Another breakthrough has been of greater benefit because those who were not allowed to access lookout sites in addition to those inside have now had access to sites like Glassdoor, which provides them with inside knowledge about compensation and business opportunities.

- **Strong levels of support for decision**

Today's, information is much faster compared to the way businesses will assess and analyse their decision-making choices. The amount of information to be considered is enormous and should therefore critically analyse it and make sensitive recommendations. Therefore, if managers and employees need details, they can only access this information if it is available. AI staff will have the opportunity to talk and hear and answer in real time.

- **Make the most effective use of HR budgets**

With its funding, AI can make HR more effective. Without lowering quality of service to staff with more routine HR requests, higher value and more complicated problem solving can be used.

HR savings will then be reinvested into further AI implementation, the HR's ability to address market problems, developing strategic expertise on a continual basis, generating meaningful work experience and providing excellent employees with decision-making support.

- **HR Functions**

IBM has also developed enabled IP systems to support its human managers in the management of employee training, reviewing their performance and even compensation and retention. The organisation has developed an internal programme that monitors a worker's skills and recommends courses or training to promote their professional learners, which compares to a Netflix for employee growth. (Themes vary from leadership-oriented public-speaking sessions or negotiation to more technical instructions on chatbots and other software types.) There is also what IBM calls a software for "proactive retention," which devices when an employee readies to leave—and warns supervisors, which may be a good time to raise, promote or otherwise encourage people. After the implementation of this technology in 2011, Louissaint, Vice President, People & Culture, IBM, reports that IBM has saved approximately $300 million in recruitment and lost-productivity costs.

- **Continuous Learning**

Though talent strength lies in its skills and abilities fluctuate quickly in the modern age, the talent's real power lies in its capacity and commitment to new skills. In order to promote an advanced workforce, you first and foremost need a strong learning platform. At IBM, it's your learning portal, which provides a highly personalised and personalised Netflix-style user reviews for internal and external training. The pressure is placed on employee experience to fit customer experiences and at IBM, a user focused approach towards developing 'Your learning' has contributed to a net promoter score (NPS) of five-three on the website.

- **Measuring Employee Skill set**

The data capabilities of the 'Your Learning' platform are focused, for example, on the ability and competencies of the employees. IBM analysis examines the digital footprint of an employee to determine this. "The abilities are not what you know, they are what you share, but what you know. For example, a project overview or a sales pipeline is a trail if you share an ability. IBM has employed specialists in different fields around the company and sectors in which IBM operates for

many years to verify skills. This year, 2020, IBM has shown that all 350,000 workers have the expertise and relevant level of proficiency. 80% confirmed it as 100% accurate when IBMers were asked to check their profile. In this step, human distortion has been removed and the results are better than self-reported abilities.

However, it is not just about technology, it is also about culture. The ethos of continuous learning is important for her leaders. Leaders are encouraged to publish data concerning their learning, abilities and badges. It is important for organisations to eliminate any remaining impression that learning is somehow weak – as if a gap in information is a negative thing and not just the normal thing. The days are long gone when, in the first step of our lives, we could absorb everything and apply it effectively for forty years without refreshment.

- **IBM connects the dots between learning and careers**

Every piece is to connect the points between the demand for skills, the provision of internal skills, and closing gaps with strong, addictive learning experiences. Understanding where market leads both internally and externally in terms of expertise and new functions enables workers to match their professional aspirations and learning objectives. "The worker believes that studying and job go hand in hand," And so: "If you take the time to read, you'd like to see what job possibilities it can provide". To tackle this problem, 'Your Learning' recommends internal ability and learning opportunities. When an employee finishes a study stage, a badge will be awarded and this badge will be used internally to apply for other positions. The emphasis is once again on the employee's ease and usability. The career experience is seamless by integrating learning and career management on one platform.

- **Engagement of IBM nominee for AI**

IBM's mission was to establish a meaningful and first-world experience which involves job seekers while also developing a mutual understanding of their suitability to roles which correspond to their abilities. IBM's Watson Candidate Assistant solution designed to solve this problem (WCA). The way job seekers work with IBM has changed with WCA. In the past, applicants and managers met at the job interview for the first time, after being told that a work-board or career web site was an opportunity. Through using AI's, applicants and employers can now connect in real time using a

chatbot to make the jobseekers more personalised. The rich information received by candidates contributes to an increase in the number of job seekers. With every contact these chatbots become cleverer. In this step, videos can also be incorporated to provide a significantly more accurate glimpse of what the organisation is like. The end result was the increasing flow of high potential candidates in the implementation of these functions in IBM. "IBM receives 7000 curricula a day, and surfing a good candidate in a fair period is like finding a needle in a haystack. IBM has significantly reduced recruit time, doubled NPS and significantly improved the matching of applicants to jobs since the implementation of WCA".

3.7.1. Alerts from IBM AI Boss

IBM provides management with reminders customised to each employee's needs. For instance, if someone has a long time on a team, is qualified and willing to promote him/her, the manager will be notified of the events. Likewise, supervisors are notified to workers with a higher absence. Early intervention to get people back on track while salesmen are at risk of missing quotas is suggested. These alerts allow managers to make decisions that conform to the talent management strategy of a company by suggesting decisions that HR wants to be taken.

3.7.2. Study of IBM AI chatter

At IBM, chatter analyses are used to identify the top three issues in the corporate firewall from social media sources. This includes recommendations tailored to a particular leader to enhance their team involvement. For example, IBM can suggest to its managing director to enhance the feedback by sharing with others if an employee is recognised for an excellent job. IBM noted that such acts enhance interaction. 'Engage at IBM' is a learning AI programme, the leader provides input on the suggestions and improves the framework. As the structure improves, the managers handle and inspire their teams effectively.

3.8. AI in HR at Microsoft

In 2015, Microsoft started collecting data about its workers to see if they could make improvements in the management of human resources by using the details. In early 2018, the data revealed that 700 workers in one division had widespread discontent. Much was involved, including disgruntled

staff of engineers with specialist expertise that were impossible to substitute. Microsoft wanted to find out why the staff was disappointed and looked for evidence to justify why it was unhappy.

3.8.1. Artificial Intelligence Harnessing Happiness

Microsoft has processed data volumes using a data analytics company. The firm reviewed calendars for employees and meetings frequency. It might say workers spent 27 hours a week on average, mostly at every meeting, with a staggering 10 to 20 staff. Moreover, while the data indicate that the employees mostly performed well after their transition into separate divisions, Microsoft prohibited the transfers of staff without 18 months' work in their current division and authorised the transfer by a supervisor. The use of e-mail was examined and it showed how hard workers used this media — how long they used to examine and respond to emails and when. The findings showed that these activities have been spent for several hours. After reviewing the results, the organisation changed its approach to meetings, new strategies promoted time away from e-mail and staff were able to move to various departments quicker. It seemed that data analysis worked.

"This set of data enables overseers to help gain a clearer understanding of areas of process development including in machine addition, new software upgrades and even new employees. Microsoft experience has shown that “AI tools are a positive step in protecting employee health and in finding ways to make employees' jobs more efficient and successful.” The People chief official uses automated instruments to find organisation's talents and that employers would better evaluate their employee engagement through the analysis of employee experiences and activities on an AI-driven internal platform. For example, AI Tools will tell managers which departmental employees want to transfer into another department, or how many employees want a job change.

3.9. Attitudes and Skill set required for HR practitioners

In the 21st century, companies have to develop and build an AI package that provides product news. It is almost difficult to achieve the mission without a clearly established HR schedule or the final target and without a highly qualified workforce. In order to train the HR managers for a global marketplace, if you can get an excellent education, it will improve your chances for efficiency and

quality services. Awareness is an important lesson to learn here. Human resources (HR) are a process which provides a foundation for the company and also a resource for other strategic tasks.

- **A data-driven environment of purpose and creativity**

Today, data is an amazing driver for businesses around the world. Vast volumes of data continue to be used every day from conventional HR technology applications like HRIS to payroll and digitising benefits or LMS. In addition, data are also provided from an e-mail address for employees, their footprints for social networking, business networks and other online platforms. HR leaders should behave like 'data scientists,' master all of the knowledge, assess all of it, and collect advanced views and points of action. In addition, human resources departments must also identify employee intelligence, use statistical models to optimise employee planning and periodically update this strategy with ecosystem changes. Over time, self-service analytical platforms and algorithms can automate the evaluation of metrics in granular or simple levels. Instead, HR leaders will need to concentrate on long-term plans, look for potential growth areas, acquire new skills and duplicate commitment efforts.

- **A business-first outlook**

The internal running of the company – its short and long-term results – must not only be seen by technology, an HR leader too. This would align every HR KPI and KRA with company objectives, increase efficiency and profitability for employees. The writing on the wall is - HR is now a Strategic Role, be it HR or Organisational Development, HR has to be business savvy.

- **Design Thinking in HR**

Design Thinking revolutionises the way in which people communicate with technology, developing solutions that concentrate on the consumer, are easy and intuitive. Companies would also be affected by design thinking, the transformation of decisions and the transition of corporate culture to a more technological, yet human and analytical approach. That is to say, HR leaders will need to develop new capabilities and revisit organisational design and preparation of the workforce. In addition, it transforms employee commitment through the creation and shaping of an enriched story focused on powerful stories that truly enthuse modern employees. Take inspiration from Education Design Lab, a non-profit organisation which uses design to build new

pathways between education and work. These models may also be extended to internal HR, which would result in better career development and succession planning.

- **Cross-cultural and technical competences**

In other words, HR teams must always keep an eye on something which could influence their business decisions if they are going to enter new projects. This means that it is easy to establish new avenues and business areas and lines. The company changed its structure, as did the type of talent required for personnel. Managers of human resources should also understand the various viewpoints and experience and capabilities in the preparation and promotion of different employees.

As jobs are constantly being transformed as a result of new and different tasks undertaken by digital technology, those working at this age will need new titles, names, qualifications and positions. Digitalisation would need more strategic organisation process management functions in the near future. HR must be able to mobilise the leaders of the enterprise to provide necessary resources and domain expertise to new strategic tasks at the front line of future business.

- **Understanding new media**

In order to improve contact with both internal and external people, HR leaders would need to mix together with a broad spectrum of corporate and external parties in the new media era. The technology will consistently include new options such as wearable devices, virtual assistants and other types of virtual reality as well as enhanced reality and simulations which link applications to real-world interviews, automatic learning, etc. The organisation as a whole must analyse these emerging communications technologies and content generating platforms in a realistic way and adjust to each new distribution medium and use the best available methodologies to carry out pervasive modelling. In the quest for new systems, tools have now made it possible for human resources leaders [Product name hereto complement collecting more and comparing] information from various sources. This helps encourage more altruistic behaviours, which enable higher human resources to promote personal growth and support organisational advancement more easily.

- **Ability to analyse**

This is the data from which the bits are linked. In several analytics processes, which lead to smart tools, data from multiple sources are fused to something more rich and complete, at least in the particular application. The integrated dataset can be the starting point for decision-making tools that straddle workflows and departments.

- **Effective communication**

When knowledge on human resources is well communicated, workers understand better the intent and value of the policies and practises. When managers communicate HR activities and strategies efficiently to their staff, workers see the organisation's HRM as more efficient, and employee satisfaction and efficiency in the business unit are influenced positively. HR professionals must make sure that message delivery is straightforward, succinct and easily understood through their communication skills in order to successfully perform their duties at all career levels.

- **Consultation**

An HR consultant or a specialist is someone who often assumes a role within his or her organisation that includes focusing on the issues that your team has in terms of human resources. Human resource (HR) experts may help businesses meet people-related challenges such as building or retaining strong human capital, solving or addressing employee needs, as well as handling current human resource performance problems, providing the needed formation, promoting and career growth, delivering HR consultation and support. Good at HR management is not only to keep all information track but must also be able to act as an in-house stakeholder resource (or resource (or asset) advisor. This concept implies the absence of too many twists or turns for simple end users, that HR consultants with specialised HR experience are better able to establish practical HR policy and/or implementing guidelines (e.g., hiring managers). An HR department should be in a position to analyse market dynamics, develop new concepts and provide appropriate and timely knowledge and best practises strategies for both internal and external stakeholders and make recommendations.

- **Ethical practice**

HR workers also need to develop ethical HR processes or to strengthen the ethical environment of an organisation. These actions serve many functions, but the most important way to defend a company from adverse employee conduct is by enforcing a clear ethical environment. And it is essential for companies to adopt ethical processes because ethical human resources systems are correlated with higher levels of business efficiency.

- **Critical evaluation**

By informing their progress and tracking performance, HR will increase the efficacy and usefulness of human capital projects with accurate data by means of critical assessment. Human capital metrics are such a source of data. HR metrics not only add value for human resources in organisations, but are also seen as more reliable strategic collaborators with HR functions collecting and correctly using HR metrics to inform HR behaviour. Another example of this pattern is that "big data," in HR agencies, is becoming more popular. HRM-based approaches including the use of HRM data have been rapidly expanded. HR professionals are currently required to rely on data in decisions. For the next few years, it will continue.

- **Business acumen**

HR managers should have a firm understanding of their business skills. You must have a clear understanding of all three different processes and functions, a strong understanding of the overall business as well as the factors which influence it in order to succeed in that role. And by taking into account the various external factors (such as competition and staff), you can see how internal constraints affect the performance of the company. HR managers must be able to demonstrate such corporate roles successfully in order to succeed. For example, as marketing addresses HR management, it often needs to show how it is connected to corporate success.

- **Technical expertise / think digital and build a digital mindset.**

Traditional HR and interactive HR are not available. Every HR is digital now – and it ought to be if it is not. Why does this happen? Digital HR content would also be consumed at work by the same customers who consume digital marketing content. HR not only think digitally but also think

like a marketer in order to develop an employer value proposal (EVP) that makes employees want to remain in a business.

- **Cross-cultural awareness**

Since many organisations, as well as the growing global workforce, are trying aggressively to increase the diversity of their workforce, good HR leaders must be able to communicate with their colleagues, consumers and customers of diverse backgrounds and cultures efficiently and respectfully. The creation, delivery and evaluation of these diversity programmes also involves the technical staff. Different legislation and policy often mandate the use of inclusive recruiting practises for organisations. Again, because of their key role in recruiting staff, HR practitioners are also mainly responsible for compliance with the laws and regulations. In view of the role of HR professionals in the promotion and preservation of a diversified workforce, the need for global and cultural efficiency and its value are easily understood.

- **Relationship management**

With continued growth, HR professional development provides strategic and expert guidance on all facets of the organisation to create constructive partnerships with company leaders. Once the information is recognised you can link it to the strategic goals of the business, so that you can identify the context of the information, interpret decision-making information and assist other members of the organisation with the information. The good performance of an HR manager depends primarily on his or her capacity to cultivate and assist other employees. " An Iowa study showed promising results when workers would excel in a safe and supportive climate. Positive and organised relationships (e.g. cooperation between an employee and a supervisor) also help workers feel more engaged, better at their work, better self-esteem, more job mobility, and incentives and awards. Greater feeling of commitment, greater overall satisfaction, steady efficiency, stable team loyalty, greater company dynamism, improved business and less willingness for leaving have all shown to be associated with lower organisational power imbalance. It is usually easier for people to work together with people who have close relationships or have successful relationships with others. These people are more ready to give their organisation their time and effort as they also feel relaxed with the others around them. They will have more organisation and a clearer aim and conform to the company's general goals and targets.

- **Leadership and Navigation**

In general, it is important to be conscious of management's challenges and expectations that positive work habits which promote job retention and greater business productivity are linked to improved business results. The different duties and objectives of HR identify key functions such as management and guidance, and reflect on the kind of features that stakeholders need to have in order to participate in organisational initiatives.

- **Strong Organisational Skills**

You have many responsibilities at your office when you are working as a human resource professional: recruit, fire, keep office records, handle conflicts at the workplace and train your staff. You will not only play a significant role in the daily life of your employees, but also need to keep pace with a lot of paperwork. In addition, the laws and the rules are changing constantly, which makes it important to keep organisational skills up to date. If you want a fantastic resource to keep up with changes and to find organisational instruments. So, in the context of HR as a career, focus on human resources, social skills, communications, ethics, conflict management, and the like.

3.10. The Impact of Artificial Intelligence in Business

Machine learning has been used ever more often to meet three major business needs, since it can help companies automate back office processes (usually back-office administrative and financial activities) and get business insight through data analysis. To make the most of AI, organisations must first understand clearly what practises are to incorporate and in a short period, then develop a project portfolio to address these needs and develop strategies to implement it quickly. The ability to produce results is a positive sign for business an artificial intelligence may respond. Artificial intelligence is incredible because it can predict results by improving a company's overall data-driven strategy. It can detect trends on its own and send that information to the appropriate people in the company. It also has the capability of predicting when demand for particular goods will decline.

In all of the recent technologies, artificial intelligence (AI) has taken on a larger role. When it comes to selling or running different business operations, this technology assists companies in

saving money and time. Any company that relies on the internet to service customers can benefit from AI technology. The philosophy of digital marketing is based primarily on artificial technologies, but it can also have several operational benefits. The arts and entertainment industry, education, information and communication technology, healthcare, financial services, and gaming are among the major industries benefiting from artificial intelligence. Figure 3.8 illustrates the business benefits of AI from a survey conducted by Deloitte in 2017.

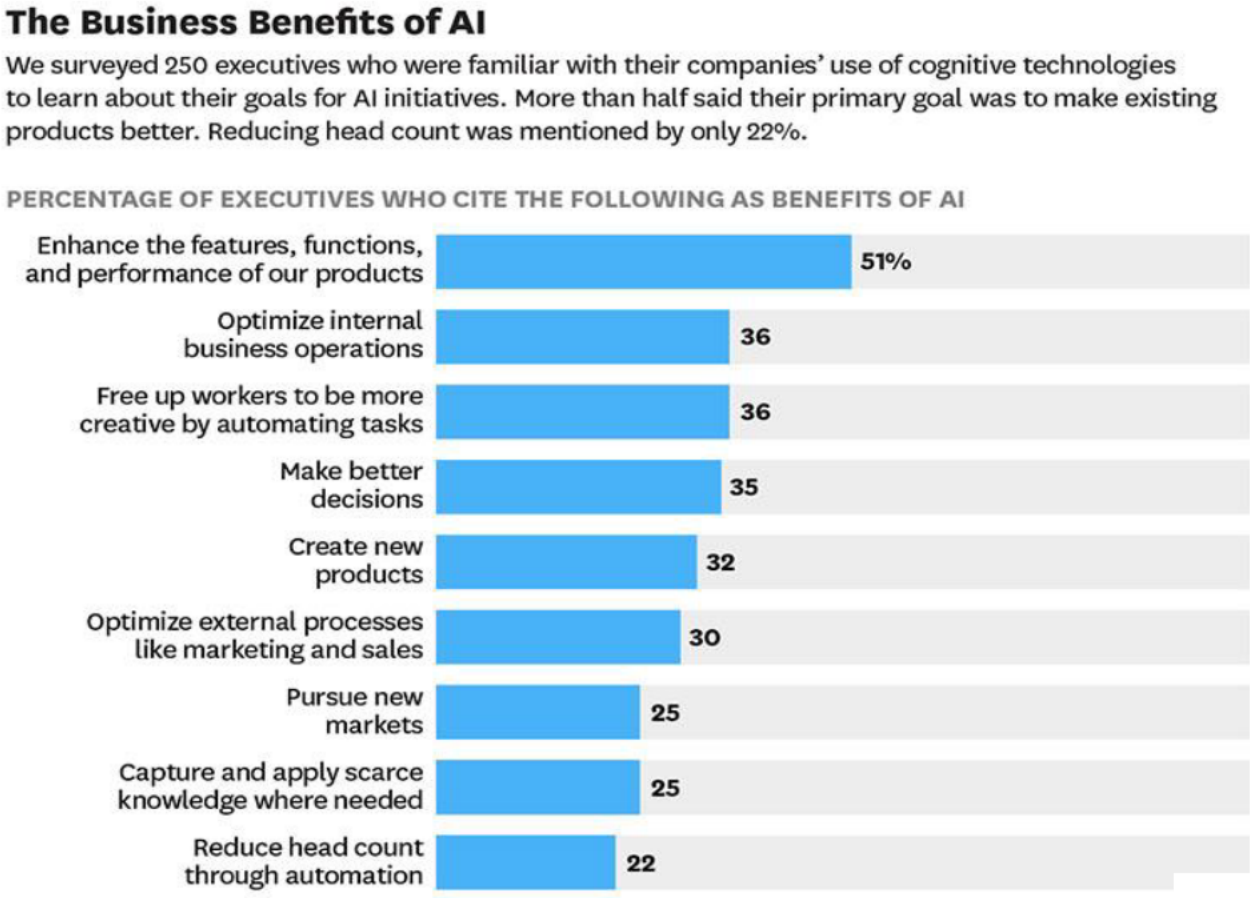

Figure 3.8.: Business benefit of AI application and practice

Source: Schwartz et al. (Eds.) (2014). Global human capital trends 2014: Engaging the 21st century workforce. Westlake, TX: Deloitte University Press.

Business process management (BPM) and integration management are also important application fields (IM). By automating both manufacturing and distribution processes, artificial intelligence

may help solve the conventional business model. For example, it also carries out tasks such as accounting, checks and manages the distribution environment, handles customer orders, conducts payment processing and records transaction information. In addition, AI can assist in data processing in tasks human beings need to perform to analyse data and in helping human resources workflows improved using AI-powered workflows to simplify and increase their performance. As AI plays an important role in reducing costs and improving profitability, it can also help companies cut their costs. Automation does not only divide people by eliminating repeaters; it frees up their time; it increases their capacity to operate on more demanding and varied tasks and also allows them a way to spend more time on what they would want. This allows companies to: 1) monitor processes round-the-clock; 2) estimate potential repair and maintenance requirements; 3) reduce production delays; 4) minimise delays in the process. AI offers significant cost and rental value.

AI offers a technical approach to the systemic problems faced in emerging markets by governments, businesses and the poorest members of society. Integrating data from various sources (for example blogs, social networks and conventional channels) will help businesses to improve data processing systems, formulate sound corporate strategies, reduce corporate barriers, develop new business models and stimulate economic development (Arora, Rahman, & Alon, 2017). Development businesses will take advantage of advanced artificial intelligence (AI) technologies to improve the autonomous distribution of products and services, automatically produce products and build mobile service and credit AI applications (Strusani & Houngbonon, 2019). AI-based technology will broaden markets and build opportunities by improving efficiency, process automation, financial solutions and government services. Public and private sectors in emerging markets should leverage AI to identify new solutions for poverty and inequality reduction and work together to improve economic mobility and development (Andrews et al., 2019). New obstacles to the acceptance, use, integration and implementation of AI in emerging markets have emerged as businesses embrace AI solutions. Numerous conceptual studies have been performed on the challenges of AI in service (Kumar et al., 2019), personalisation, advertising (Kietzmann et al., 2018), sales management (Singh, Flaherty, Sohi, Deeter-Schmelz, Habel, Le Meunier-FitzHugh, Malshe, Mullins, and Onyemah, 2019), industrial marketing (Martnez-Lopez and Casillas, 2013). While academic contributions to artificial business intelligence remain scarce in emerging economies, with increasing interest. In developing

countries there are dramatic differences in institutional environments from in developed countries and problems and questions about legitimacy of AI-led business applications. (Yang et al., 2012).

3.11. Human Resources in 2025: Critical Strategies to Prepare for the Future of Human Resources

Three decades ago, human resources administrators acted like school principals: Taught those who violated the laws, scolded those who broke them, or, in rare cases, suspended those who broke them. People-centricity is more important than paper-centric today, and like teachers in the past, today's managers will assist both learners and achievers. And what about the future? Think of hiring-level people as national championship coaches, who mentor people for the rest of their lives and help guide them into business analytics and strategy. Machines and technology will continue to eliminate tasks which used to be done by human beings, just as HR has done, though there is still significant growth in the workforce and economy. Managers and employees aren't less important; it simply means that people are the essential part of their job. Tomorrow's leaders will need to have the ability to think creatively and be flexible enough to adapt to a workforce that is highly responsive to technology (Nedelkoska & Quintini, 2018). There are increasing opportunities for HR roles as the demand for talent grows because HR must respond to the needs of an increasingly diverse business.

Table 3.1 contains HR jobs of the future based on an article: HR2025: 7 Critical Strategies to Prepare for the Future of HR (Milligan, 2018).

HR data scientist/chief technology officer	Data and analysis will propel HR more and more – and this is the individual responsible for the effort.
Employee experience specialist.	This HR specialist focuses on the whole relationship between the employees and the business, from advantages to education to career.
Head of talent-acquisition technology selection.	New talent acquisition tools are being developed and developed. This specialist trains you to find the most appropriate organisation.
Head of candidate experience.	The recruiting process should ensure that online users have the fastest, comfortable and reliable experience. This person is monitoring this initiative to ensure that not all applications seem to be in a "black box."
Performance coach.	This HR professional would help optimise management and non-management personnel's individual contributions.
Organizational psychologist.	In spite of the fact that corporate or industrial psychologists don't use psychology concepts technically in order to create a more systematic approach to human resources, marketing and sales.
AI Auditor	A specialist who uses data science capabilities to understand the data used to develop AI algorithms and to translate the performance of the staff, the C-suite and all those for whom this information is important.
AI Bias Expert,	An organisation specialist who verifies the data used to build algorithms for key HR functions such as recruiting to ensure the bias-free approach.

In the future, HR people will no longer has to contend with existing HR developments; they will have to deal with future developments. HR needs to look at these areas in future preparedness:

- **Embrace Technology and Analytics**

Recruitment analytics are now employed by savvy HR teams for anything from job retention to health services. As it allows candidates and employees to have human-to-computer interactions, chatbots enable candidates and employees to have highly customised dialogued conversations. A worker could inquire about the number of sick or recovery days he has left, and the chatbot could check for procedures covered by their dental insurance plan. A job applicant will be able to answer questions, perform tests, and keep track of their application status using a Personal Assistant. The millennials, now the workforce's largest generation, are able to get answers quickly via a computer or smartphone. A broad variety of employee interactions - from application to in the hiring process to handling pay and benefits issues - should be available to satisfy the digital customer-service employees prefer. The incorporation of technology is giving us the opportunity to provide employees with a more streamlined customer experience by providing them with constant access to the resources they need and expanding their reach. HR frees itself from the burden of activities such as payroll, benefits question-answering, arranging conferences, and keeping track of appointments, so it can focus on strategic planning more effectively (Huang, and Rust, 2017).

- **Understand How the Company Succeeds using AI**

One must be fluent in the language of human resources to truly understand HR Human resources practitioners must embrace and support the organisation's mission, vision, and financial performance, or they will not be respected by the C-suite [council]. From an operational standpoint, experts state that they are unable to successfully do workforce planning, hiring, and training. The success of HR leaders is not only measured by knowing the stock price and whether the company is doing well, but also knowing how well it can it fares in the market and also understanding the business and social climate in which it exists. They must be aware of and ready for future developments in the workplace. Only after understanding the human resource strategy and capabilities will HR leaders put in place sustainable HR programmes that benefit the business. "Executives need to grasp the concepts of how businesses work is conducted. what are the top two things that make him/her anxious? What concerns the CFO?", and the like, if HR must make a seamless if it wants to fit into the C-suite.

- **Stay Focused on People**

It doesn't mean completely ignoring people. In reality, managerial HR positions in the year 2025 will have a great deal of time to spend on employees. CHRO sees it as a signal that the role is becoming one of implementing the business plan rather than reducing the risks. Today, technology is putting HR in the position of real influence for the first time, as it empowers the use of data to run the operation. The players are also better prepared to improve their game management and team control. To help guide others at the workplace, the best human resources leaders of tomorrow might be "talent traders" and coaches, and members of the Society of the panel on the role of human resources. When the competition for talent is fierce, HR managers need to provide their staff with compelling reasons to perform. It is imperative that you make your world so people cannot picture any other alternative

- **Be Ready for the New Workforce**

The workforce will be made up of day-to-job travelers (over 60% of Millennial's are) and so-called "gig workers permanatives" who constantly move from role to role, looking for the next opportunity. In addition, the HR department would be required to re-skill any employees whose positions can be easily replaced by automation and breakthrough approaches in HR that will be needed in order to handle new automation and digitalisation. Although globalisation brings in a more diverse workforce, HR staff having employees working around the world, on various continents, it also ensures that they are still a seven or ten hour a day drive away (see. Susskind & Susskind, 2015).

- **New focus on improving the employee experience**

Fostering a positive workplace environment has long been a priority for human resources departments, but it's also a key to maintaining and attracting top talent. That's why we want HR leaders to prioritise the customer experience, too. The majority of HR departments have means such as software that measures employee engagement or satisfaction already in place, questionnaires, exit interviews, or suggestion boxes. This is standard procedure for gathering information on projects to be useful in decision making on how to better the employee experience. To look for ways to close these gaps in employee experiences, HR executives should use

technology to help employees solve problems. If the exit data shows that your workers are leaving because of lack of development opportunities, establish a training path for your workforce.

- **HR will need to find the uniquely human place in this data- and AI-driven world.**

Data analytics and AI won't go anywhere, and in-fact is becoming more integrated into daily life with each passing day (along with every other area of business). So the future for HR is not only involves using technology, but also seeking the right balance between workers and tech. Similarly, HR leaders should strive to stay current with technology and see where the talent will add the most value to the company's bottom line.

- **Get ready for the future where every HR professional will be a data scientist**

Data management is a vital first step for any human resources professional who wants to integrate AI into their organisation. There's no need to be embarrassed by your thoughts or feelings. With most of the AI-powered resources, you don't have to worry about why you first entered the market; the process was made simple: you just needed to take care of the customers. For HR leaders, the second step is to discover where their people flourish. Technology can't be substituted for human imagination, problem-solving skills, and relationships. Recruiting or developing workers who have potential in these areas makes perfect sense (Wilson, Daugherty & Morini-Bianzino, 2017).

- **Virtual Work is Here to Stay**

What we expected for 2020 was the growing popularity of flexible and worker-centric jobs, driven by the widespread adoption of telecommuting and the growth of the on-demand economy. To everyone's amazement, this conjecture proved to be correct. Many ways in which work gets done are regulated by the government or shifted to a full-time work-from-home model are adopted. For others, it's forever." Any non-office worker is allowed to work from home if they like. Additionally, Organisation made plans to allow some working-from-at-home time, with a focus on empowering workers to mould their jobs around their preferences. In addition, most of the other big tech firms, including Facebook, Shopify, and Slack have aligned themselves with the contemporary needs and priorities and accept working from home as a fact of life. It will be clear that work won't return to the way it was when the world re-opens. Recently published Gallup data indicates that 65% of staff tend to continue working from home after COVID stuck. Maybe a most

acute viewpoint in on salesforce. People in a recent May 2020 survey said they expect the pandemic to affect the way they do their jobs forever. Among those surveyed in June, working from home full time was chosen by 37%, while a split was preferred by 32% of respondents. The extent to which businesses adapt to this changing phenomenon will be of critical to the next coming years. While a surety was undertaken by IBM, and found that 85% of the respondents desired to operate from home after lifts were in place, with 58% of them wanting remote as their main form of working.

- **Data Becomes the New Currency**

Millner believes that HR's top strategic priority in the coming years is on data. As the pandemic led to remote work, employers have to rely increasingly on instruments to measure how dedicated and efficient staff are and, consequently, look to data for guidance. "Data is a new currency for the workforce," Millner said. "Any HR practitioner shouldn't fear the emergence of data as long as it maintains this human contact." In the opinion of Millner, three main areas are understood. First of all, it demonstrates how good human resources activities add value at strategic or corporate level. Secondly, HR will find ways to improve employees' experience and behaviours. Thirdly, HR will demonstrate how its different roles match similar tactics and business requests. According to a recent Mercer survey, the effect on a concrete level is crucial. More than 60 percent of managers said that the most important trend for human resources is to use talent analytics to take data-based decisions. "People's analytics won't go away and it is an important part of how all HR functions will perform over the next years," Millner concluded.

3.12. HR professionals and AI: Reflective Question before it is implemented:

One function of the application of artificial intelligence is an approximation with increase in calculation capacities, data volume or an acceleration in data rate The consequences of this change should be taken seriously by organisations in the long term. While it is important for job seekers to consider the human influence on the effects of AI, the same can be said in workplace technology: but this can be achieved in a changing workforce to increase the likelihood of successful damage and reduce damage to the candidate. AI programmes in HR practices will greatly improve the performance of employees and provide HR practitioners with additional details about their

behaviour and other useful skills. Some of the advantages of AI-powered HR software are in assessing, predicting and assisting key participants in their decisions.

- HR needs to look at these numbers - When artificial intelligence develops and more industries disrupt, more professionals are told about the implications for their work in the future. According to a survey carried out by the Pew Research Centre, 72 per cent of respondents fear that AI innovations will eliminate jobs, 25 per cent feel particularly worried. (Smith & Anderson, 2017).
- HR and the Organisation should specifically state your goals in advance so that you have something specific tasks to accomplish. There are many ways AI can be classified, but perhaps the most common is an exercise for both reducing costs and increasing value; HBR conducted research with 1,500 firms that found that corporations profit most when people and machinery work together (Wilson & Daugherty, 2018).
- What does the company need? AI is driven by company needs rather than technology (although exploring how technology can change your company). Investment in technology is aimed at improving consistency and achieving predictable answers. The innovative aim is to encourage people through creativity, flair and emotion. How do a skills mismatch problem in this country be addressed (Frangoul, 2018)?
- Understand exactly where your digital strengths and gaps lie and how you can advance, e.g. to unlock bottlenecks, handle high volumes of data or shorten data analyses time;
- Finding reliable data sets: For successful AI performance, real-time and accurate data are very critical. Something without prejudice and comprehensive. So get the right data set first and then clear the target guided output. How does company and HR look at this in real time work;
- Are people working with the organisation with Data Savvy? If yes, look at latest tech knowledge and implementation; Or else, Develop a 'data knowledge'. HR functions need these skills quickly, and if you're an HR leader, set this as Top priority; On the contrary, Research shows that artificial intelligence can do better tasks than people in specific workplaces, but cannot do better than people all tasks required for the work (Rayome, 2018).
- Is the team with learning attitude, and that too IT and AI area? Build a change and learning attitude into your HR team, because systems learn from humans and vice versa. If it is not synchronised, it does more damage than good for the entire organisation;

- While rolling out AI, clarity is needed- where Human intervention is needed and where AI is needed. Determine where human intervention is needed and where this is not counterproductive an optimal point in AI Rollout; (Wilson & Daugherty, 2018).
- How is cultural fit and person fit addressed? Thus, to ensure that results are generated and acceptable, not only in terms of efficiency but also in cultural condition, test systems under various circumstances prior to development;
- People make mistakes and machines make mistakes. What and How will be the approach to address this issue. Find out how to think more structurally about errors, systems break or issues related to data, i.e. Criminals using AI to steal your personal details; protect data more systematically and affordably, keeping people safer from terrorism or even smaller-scale identity theft.

3.13. Conclusion

The year-2020 has been an unprecedented, dramatic year of transition. A new environment will emerge as we step forward into 2021 / 2022 / 2023…. that includes a lesson learned from the pandemic and a new or renewed commitment to areas such as the experience with staff, virtual work, mind, and the like. The design and creation of teams and skills would have an enormous impact on and success of organisations. In the face of new challenges, organisations will aim to transform data in order to increase practice, value-building and alignment with the digital process. HR can also contribute to progress by leading and taking an external approach. And eventually, after so many change of life and the presence of a turbulent future, where businesses end up with the specific problems that we face today, they will describe them for better or worse. "It is an exciting time to get to know HR and if you are interested in challenges, innovations, changes and individual development, then stick around, AI has all in it. Perhaps we should leave the last word to Stephen Hawking:

'Our future is a face between the growing power of our technology and the wisdom with which we use it. Let's make sure that wisdom wins. (Hawking, 2018).

Chapter 4: Research Methodology

4.1 Introduction

Sekaran and Bougie (2010) define research as a systematic and organised effort to investigate a specific problem that needs a solution. In doing research a series of steps are designed and followed. Research involves a series of well thought-out and carefully executed activities that will enable one to know how organisational problems can be solved or at least minimised. Research thus incorporates the process of inquiry, investigation, examination and experimentation. These processes have to be carried out systemically, diligently, critically, objectively and logically.

This study has used an exploratory research design. An exploratory research design is adopted because of its effectiveness to gain an understanding through exploration of the complex research issues and its ability to extend the body of knowledge of what is known about the phenomenon under review. According to Sekaran (2003, p. 119), "an exploratory study is undertaken when not much is known about a situation at hand, or no information is available on how similar problems or research issues have been solved in the past". Preliminary literature reveals that there is no research that has been conducted on the impact AI will have on the Human Resources field within in the banking industry.

4.2 Sampling Technique and Description of Sample

"A sample is a subset of the population and it comprises of some members selected from it. By studying the sample, the researcher should be able to draw conclusions that are generalizable to the population of interest" (Sekaran & Bougie, 2010, p. 263).

There are two types of sampling designs: probability and non-probability sampling. In probability sampling, the elements in the population have some known chance or probability of being selected as sample subjects. Some techniques of probability sampling are simple random sampling, stratified random sampling, systematic sampling, area sampling, cluster sampling and double sampling (Sekaran, 2003). In non-probability sampling, the elements do not have a known or predetermined chance of being selected as participants. Examples of non-probability sampling are

convenience sampling, purposive sampling which includes judgement, quota and snowball sampling.

Target population

The target population for this study will be the Chief Executive Officer (CEO), senior management and staff within the human resources department. The reason why the above individuals were selected to form part of the sample for this study are outlined below:

- CEO: According to the Corporate Finance Institute (2021, p. 1), "is the highest-ranking individual in a company or organization. The CEO is responsible for the overall success of a business entity or other organization and for making top-level managerial decisions. They may ask for input on major decisions, but they are the ultimate authority in making final decisions". In addition to the overall success of a company, the CEO is responsible for leading and developing the long term strategies with the goal of increasing shareholder value.

- Senior Management: Staff on the Executive Committee (EXCO) as well as other senior staff were surveyed in this study as their views are beneficial due to their seniority and experience. Senior management is defined by the organisation's internal grading system and includes employees from the following different levels of management, namely, managing directors, directors and associate directors. Managers were chosen as a sample population due to their increased roles and responsibility, span of control and their ability to execute a wide range of business-`related decisions. Managers in the organisation are graded according to the company's internal grading system. The scale begins at 1, which represents the highest job level and advances until 8, which represents the most junior position(s) in the organisation. Managers that were used in this study are "Grade 4 and above".

- Staff within the Human Resources Department: The staff within the HR Department bring beneficial insights to the study due to their experience with end-to-end HR activities and are able to articulate how they foresee the impact of AI within their role. This offers a more realistic hands-on and balanced opinion. The views expressed provide a contrast on how the views of HR differ or relate to the CEO and senior management who are more strategic in nature.

Cluster sampling was used due to the concentration of managers in all the different departments. This will also indicate how the different departments view AI respectively. According to Sekaran and Bougie (2010, p. 274), "Cluster samples are samples in groups or chunks of elements that, ideally, are natural aggregates of elements in the population".

"A sample is a subset of the population and it comprises of some members selected from it. By studying the sample, the researcher should be able to draw conclusions that are generalisable to the population of interest" (Sekaran & Bougie, 2010, p. 263). Table 4.1 contains the population and sample sizes that are applicable to this study:

Table 4.1: Population and sample sizes for the study

Level	**Population**	**Sample**	**Comment**
Chief Executive Officer	1	1	Due to the small population numbers in various levels; all elements of the population was selected to form part of the sample.
Senior Management	40	40	
Human Resources	5	5	
Total	**46**	**46**	

The suitability and adequacy of the sample was also statistically assessed using the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (0.695) and the Bartlett's Test of Spherecity (399.307; p = 0.000) which respectively indicated suitability and significance. The results indicate that the normality and homoscedasticity preconditions are satisfied.

Table 4.2 describes the profile of the respondents to the research questionnaire in terms of age, gender, tenure, race and position.

Table 4.2 Description of the sample

Item	Demographic Information	Frequency	Percentage
Age	31 – 40 years	4	13.8
	41 – 50 years	20	69.0
	51 – 60 years	5	17.2
Gender	Male	19	65.5
	Female	10	34.5
Tenure	0 – 5 years	10	34.5
	6 – 10 years	10	34.5
	11 – 15 years	8	27.6
	16 years and above	1	3.4
Race	Black	2	6.9
	Indian	6	20.7
	White	16	55.2
	Foreign National	5	17.2
Position	Manager	16	55.2
	Other	13	44.8

Information from Table 4.2 shows that 69% of the respondents were between the ages of 41-50 years, another 17.2% were between the ages of 51-60 years, while 13.8% were between the ages of 31-40 years. In terms of gender, 65.5% of the respondents were males, whereas 45.5% of them were females. With respect to tenure, 34.5% of the respondents had served the organisation for 0-5 years and 6-10 years, respectively, another 27.6% of them had served the organisation for 11-15 years, while the remaining 3.4% had served the organisation for 16 years and above. In terms of race, 55.2% of the respondents were Whites, 20.7% were Indians, 17.2% were foreign nationals and 6.9% were Blacks. Concerning position, 55.2% of the respondents were managers, while 44.8% were others, including junior and senior workers.

The graphical representation below (Figures 4.1 – 4.6) illustrates the sample used in the study for each data collection method by the demographic variables: age, race, tenure, gender and position.

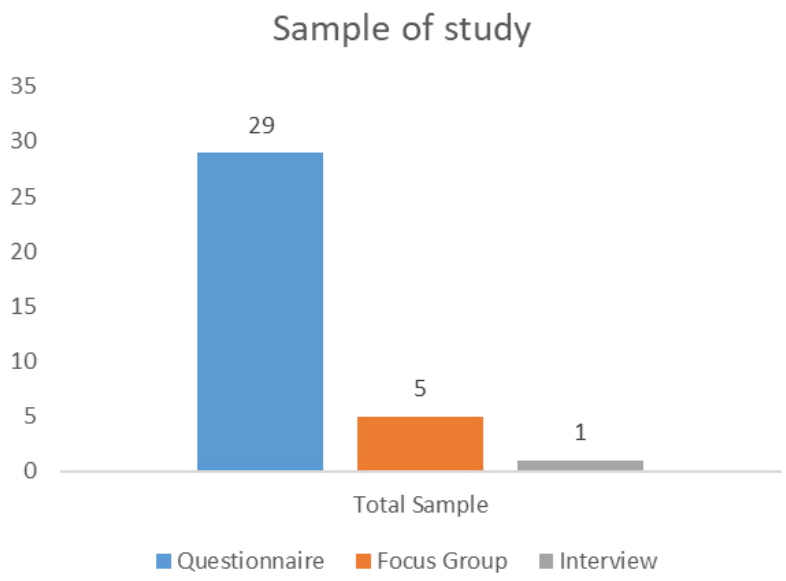

Figure 4.1 Sample of study

Compiled by Researcher

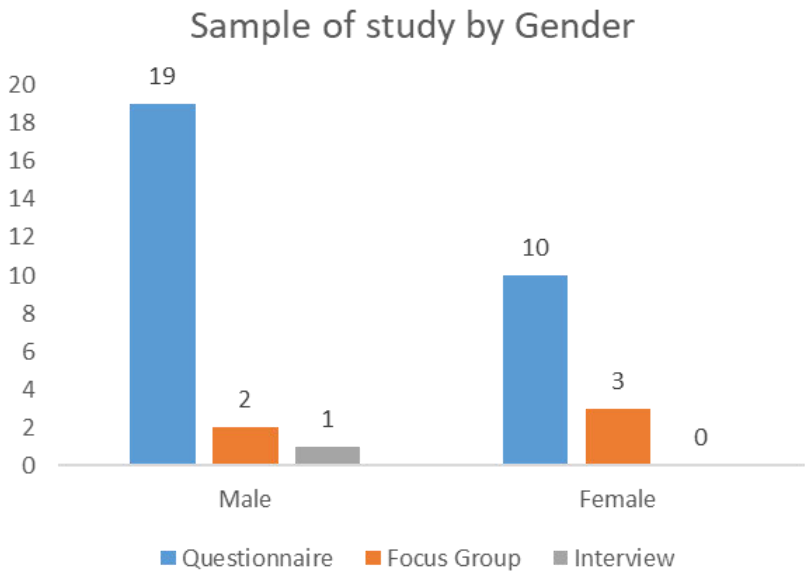

Figure 4.2 Sample of study by Gender

Compiled by Researcher

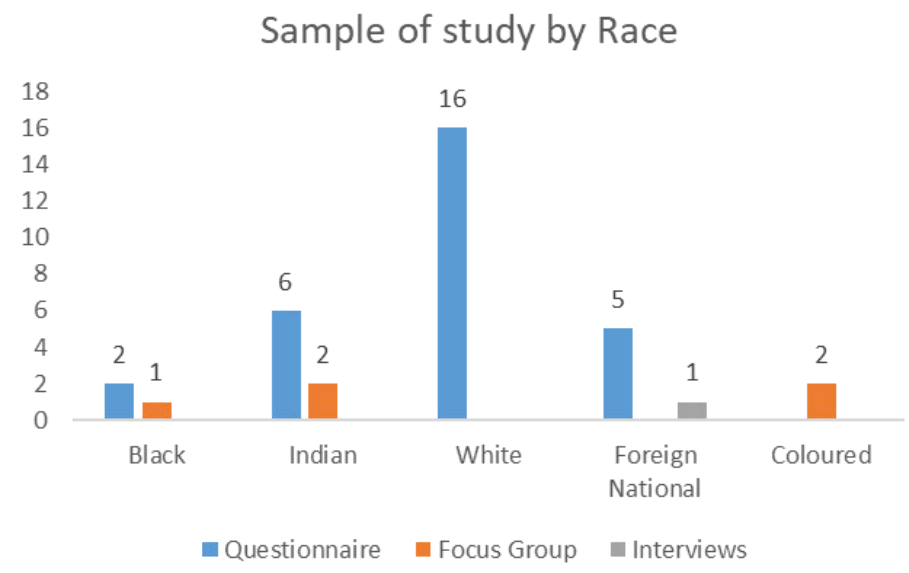

Figure 4.3 Sample of study by Race

Compiled by Researcher

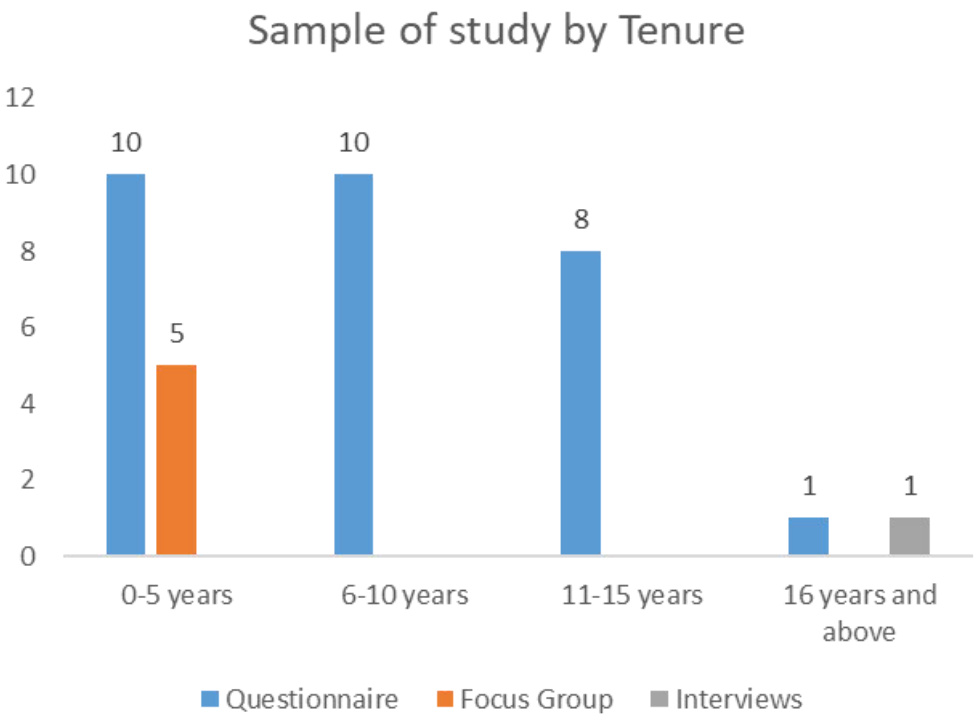

Figure 4.4 Sample of study by Tenure

Compiled by Researcher

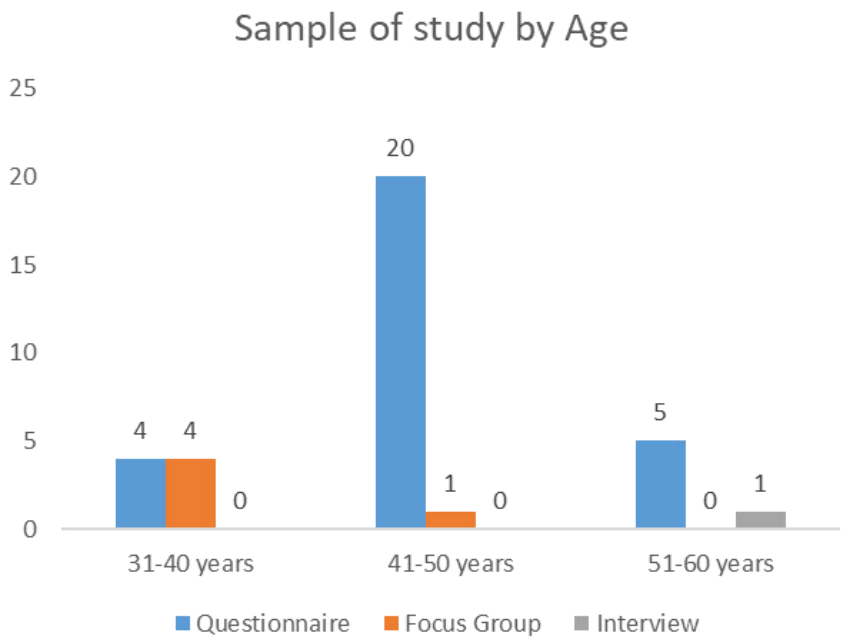

Figure 4.5 Sample of study by Age

Compiled by Researcher

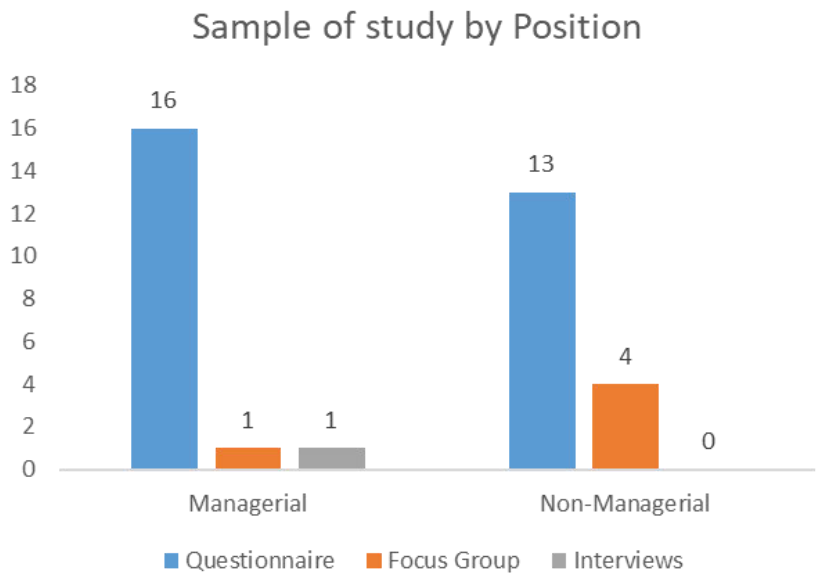

Figure 4.6 Sample of Study by Position

Compiled by Researcher

4.3 Data Collection Method

In this study, three data collection methods were selected, namely, interview, focus groups and questionnaires. Table 4.3 contains the data collection instruments that will be used in this study for each category of participants.

There exist several research strategies that one can adopt when undertaking research. According to DeFranzo (2011, p. 1), "primarily exploratory research is used to gain an understanding of underlying reasons, opinions, and motivations. It provides insights into the problem or helps to develop ideas or hypotheses for potential quantitative research". Common methods for qualitative research include focus groups, interviews and observations and can be undertaken via unstructured or semi-structured techniques.

Table 4.3: Population and Data Collection Instruments

Population	**Data Collection Instrument**
CEO	Face to face interview
Senior Management	Online questionnaire
Human Resource Department	Focus Group

Quantitative research can be defined as a structured way of collecting and analysing data collected from different sources and uses statistics to derive results. It is used to quantify attitudes, thoughts, conduct, and other variables – and generalise results from a larger sample to the population. Common methods for quantitative research include online surveys, interviews and online polls (DeFranzo, 2011).

A combination of qualitative and quantitative approaches was adopted in this study, which enabled the triangulation of results. "Triangulation is a technique to analyse results of the same study using different methods of data collection. It is used for three main purposes: to enhance validity, to create a more in-depth picture of a research problem, and to interrogate different ways of understanding a research problem" (Nightingale, 2020, p. 477).

There are two types of data collection: primary and secondary data. Primary data refers to the information obtained first hand by the researcher on the variables of interest for the specific purpose of the study. Secondary data refers to information gathered from sources that already exist. In this study, primary data will be collected for the purpose of empirical analysis directed at fulfilling the prescribed objectives of the study.

4.3.1 Description of the Questionnaire

The one data collection method chosen in this study is the completion of questionnaires. McLeod (2018, p. 1) defines a questionnaire as a "research instrument consisting of a series of questions for the purpose of gathering information from respondents". Questionnaires can be thought of as a kind of written interview". Questionnaires can provide a quick, cheap, efficient way of obtaining large amounts of information from a large sample of individuals. Biographical data used in the questionnaire will include age, gender, tenure, race, educational level, grade, business function and managerial responsibilities.

According to Sekaran (2003), the advantages of using questionnaires are:

- They can be administered personally or mailed to respondents, or distributed electronically;
- Helps a researcher collect data fairly easily;
- Information from questionnaires is easily coded;
- Benefits the scientific community if the measures are well validated and are reliable;
- Often is a catharsis for respondents.

One questionnaire comprising of two sections was used in this study which comprised of 28 questions (Annexure 4). A 1-5 point Likert scale was used in the questionnaire. Respondents were required to indicate the extent to which they agree or disagree with each statement using the Likert scale ranging from strongly disagree (1), disagree (2), neutral (3), agree (4), to strongly agree (5). The respondents were required to place a cross (X) next to the appropriate answer. The questionnaire is presented as Annexure 1.

Section A relates to the biographical data of managers and includes age, gender, tenure, race, educational level, grade, business function and managerial responsibilities. Section A was

nominally scaled with pre-coded option categories. Section B taps into manager's perceptions of the dimensions of the questionnaire. The dimensions of the questionnaires were custom designed for this study. The different dimensions are:

- Question 1 to 4 and 25 relate to determining the current status of the use of artificial intelligence in the HR departments of South African banks.
- Question 5 to 9 relate to determining the possible advantages and disadvantages of the use of artificial intelligence.
- Question 10 to 12 determines the attitudes of HR practitioners towards the use of artificial intelligence and whether they are ready to work with artificial intelligence.
- Question 13 to 15 determines how artificial intelligence will impact on the skills set or competencies required of HR practitioners of the future and what is needed to manage this change.
- Question 16 to 22 relates to determining the impact of AI on the business in terms of talent management, empowering people, emotional intelligence, organizational.
- Question 23 relates to determining where in the HR value chain artificial intelligence would be most beneficial.
- Question B24, B26 and B28 relates to determining how the HR function could be transformed by artificial intelligence in 5 – 10 years.

4.3.2 Focus Groups

The second data collection method chosen used in this study was focus groups that were conducted with the HR team (Annexure 5). Focus groups typically include a small number of participants whereby open-ended questions are used in order for respondents to convey their opinions, thoughts or feelings relating to a specific topic. The researcher will facilitate the focus groups personally for each of the dimensions of the study to provide a better understanding of the 4th industrial revolution with a view of providing a framework for the effective management thereof.

According to Binns (2021), the advantages of using focus groups are:

- Face to face interaction allows the researcher to measure reactions and not just opinions. This is done by visual cues, respondents' expressions or gestures and lastly, audial ones such as volume and tone of voice.
- Focus groups offer time saving since they facilitate a session with a number of people at once opposed to individually interviewing several respondents.
- Due to the direct, face to face nature of a focus group, it can provide more detailed insights into key questions. It allows opportunities for probing and exploring scientific comments and reactions leading to a deeper understanding of the respondents' 'pain points'.
- Focus groups offers more engaged participants as opposed to filling out long surveys as some respondents tend to switch off during these.

4.3.3 Interview

The last data collection method used in this study was a face-to-face interview (Annexure 6). Due to the seniority of the CEO and in-depth knowledge possessed, face-to-face interviews will be the most appropriate data collection method. Some of the advantages of interviews are accurate screening, capture verbal and non-verbal ques, and keeping the focus and capturing emotions and behaviours (Binns, 2021).

4.3.4. Administration of Data Collected

The questionnaire was sent to all respondents via email. Respondents will then click on the link provided in the email to complete the questionnaire. The survey tool used is Question Pro

In order to adhere to the South Africa Covid19 national regulations and protocols, the focus group will be done remotely via online meeting tool Zoom due to the number of participants involved. This will ensure respondents safety from a health perspective in participating in the research.

The face-to-face interview with the CEO was conducted in the organisations large office boardroom with strict social distancing guidelines adhered to.

4.3.5. In-House Pretesting and Pilot Testing

In-house pretesting and pilot testing was undertaken to enhance the validity of the research instrument and process. The purpose of in-house pretesting is to determine the effectiveness of one's questionnaire by determining the strengths and weaknesses with regard to question format, wording and order. In this study, in-house pretesting was undertaken by giving the study supervisor and industry experts the opportunity to review the questionnaires, focus group schedule and interview schedule to comment on the suitability of the survey and face validity of the items. In addition, pilot testing was adopted. Pilot testing can be defined as a "smaller version of a large study that is conducted to prepare for that study and are feasibility studies to ensure that the ideas or methods behind a research idea are sound, as well as to 'work out the kinks' in study protocol before launching a larger study" (Stachowiak, 2008, p. 1). In this study, a pilot test with 5 employees selected from each department was conducted for the online questionnaire using the same procedures and protocols that will be adopted for the larger study. Pilot testing was conducted on the online questionnaire due to it having the highest number of participants compared to the focus group and interview. The aim of this is to point out any potential errors in the questionnaire or data collection procedures and to assess the suitability of the instrument in terms of wording, format, construction and measurement scale.

4.4 Statistical Analysis of the Questionnaire

The psychometric properties of the questionnaire were evaluated statistically to ensure validity and reliability of the results upfront and before they are presented and conclusions are made regarding the objectives of the study. The key dimensions that form the basis of the investigation and analysis include current status of use of artificial intelligence (AI), advantages and disadvantages of the use of AI, attitudes of HR practitioners towards the use of AI, impact of AI on skills set/competencies, and impact of AI on business.

4.4.1 Validity: Factor Analysis

Validity refers to the goodness of a measure, that is, it assesses whether the instrument is measuring the right thing. In this study, validity was assessed statistically using Factor Analysis. Factor analysis is a general description for some specific computational technique, which has a purpose

of reducing many variables to a more convenient number that belong together and have overlapping measurement characteristics. Validity establishes how well a technique, instrument, or process measures a particular concept. The results of factor analysis will confirm whether or not the theorised dimensions emerge and it would reveal whether the theorised dimensions are indeed tapped by the items in the measure (Sekaran & Bougie, 2010).

Bolarinwa (2015) opines that validity measures what the measuring instrument purports to measure. Thus, validity explains how the data covers the actual area of the investigation. In this study, the principal component analysis was used to extract initial factors and an iterated principal factor analysis was performed using SPSS with an Orthogonal Varimax Rotation. In extracting the factors, only items with loadings >0.40 were considered significant (Maskey, Fei & Nguyen, 2018). Moreover, if an item loaded significantly on more than 1 factor, only that with the highest loading was considered.

A principal component analysis was used to extract initial factors and an iterated principal factor analysis was performed using SPSS with an Orthogonal Varimax Rotation. Only items with loadings >0.5 were considered to be significant. Furthermore, when items were significantly loaded on more than one factor, only that with the highest value was selected.

4.4.2 Reliability – Cronbach's Coefficient Alpha

"The reliability of a measure indicates the extent to which it is without bias and hence, ensures consistent measurement across time and across the various items in the instrument. In other words, reliability of a measure is an indication of the stability and consistency with which the instrument measures the concept and helps to assess the 'goodness' of a measure" (Sekaran & Bougie, 2010, p. 161). In this questionnaire, reliability was achieved through Cronbach's coefficient alpha. Cronbach's alpha is a reliability coefficient that indicates how well the items in a set are positively correlated to one another. Cronbach's alpha is computed in terms of the average inter-correlations among items measuring the concept. The closer Cronbach's alpha is to 1, the higher the internal consistency reliability (Sekaran, 2003).

4.4.3. Triangulation

Credibility: Triangulation and member checking will be used. Triangulation involves combining the analysis with findings from different data sources and is useful as a means to demonstrate trustworthiness in the analysis. Triangulation enhances the validity and reliability of the results of the study (Figure 4.7).

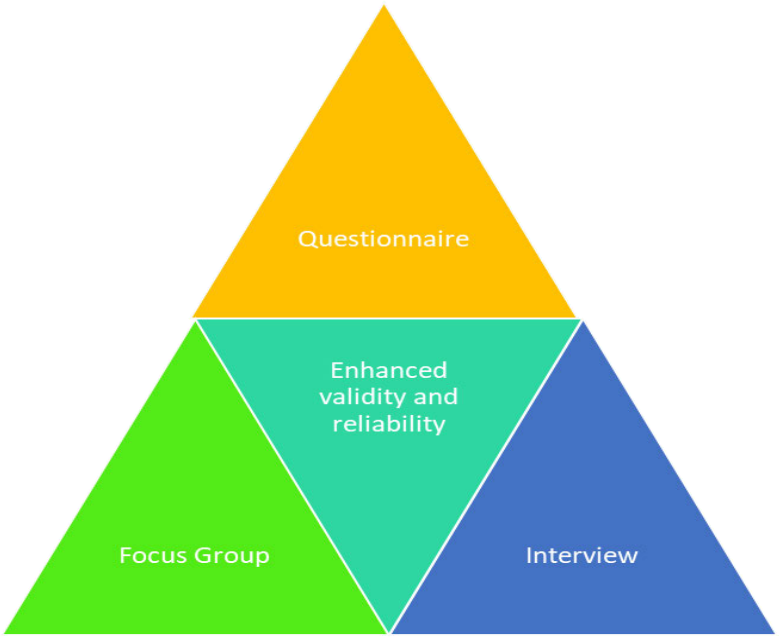

Figure 4.7 Triangulation of Results

Compiled by Researcher

As regards to member checking, the data, interpretations, and conclusions will be shared with the participants. It will allow the participants an opportunity to clarify what their intentions were, correct errors, and provide additional information if necessary.

Confirmability: The principle of confirmability is the level of sureness that the research study's conclusions are based on the respondent's words and descriptions opposed to potential researcher biases (Olivia, 2017). Confirmability exists to validate that the findings are formed by respondents more so than they are shaped by a researcher. To achieve this in this study an audit trail will be

used with a detailed process of data collection, analysis, and interpretation (Olivia, 2017). A rationale for all research decisions is provided.

Transferability: This relates to external validity, and is defined by Olivia (2017, p.1) as "established by providing readers with evidence that the research study's findings could be applicable to other contexts, situations, times, and populations". This was achieved through thick description. Transferability will be improved by the researcher in describing the context and assumptions that were essential to the research. By doing this, it becomes the responsibility of the person wishing to transfer the result to a different context on how practical the transfer is.

Dependability: Dependability is vital because it creates the study's findings as reliable and repeatable. One of the methods used to achieve this is through an external audit whereby an outside external researcher will conduct an inquiry audit on the study. The auditor will examiner various elements of the data collection and analysis processes used in the study in order to confirm the correctness and findings. All conclusions will be scrutinised to ensure findings are supported by the data collected (Olivia, 2017).

4.5 Data Analysis

Data was analysed using both descriptive and inferential statistics. Descriptive statistics provides a summary about the sample being studied without drawing any inferences based on probability theory (Kaliyadan & Kulkarni, 2019). Descriptive analysis incorporates frequencies, measures of central tendency and measures of dispersion. The BusinessDictionary (2012, p. 1) defines inferential statistics as "Mathematical methods that employ probability theory for deducing (inferring) the properties of a population from the analysis of the properties of a data sample drawn from it. It is concerned also with the precision and reliability of the inferences it helps to draw". Inferential statistics that will be used in the study include correlation, t-test and ANOVA.

As per Miles and Huberman (1994), the qualitative data will be analysed through the following three procedures/stages:

1. Data reduction. This is the process whereby the data obtained via focus groups and interview will be reduced and organised through writing summaries, content analysis, thematic analysis and discarding irrelevant data. At this stage, all irrelevant information will be discarded, but

will be kept separately in case it is required later on for the researcher to re-examine (Miles & Hubberman, 1994).

2. Data display. A good display of data is required in order to draw conclusions from a large set of data. Some methods used in this study will be in the form of tables, charts and other methods as required (Miles & Huberman, 1994).
3. Conclusion drawing/verification. The analysis of data will allow the development of conclusions regarding the study. These initial conclusions can then be verified, that is their validity examined through reference to the focus group notes and interviews (Miles & Hubberman, 1994).

Vaismoradi *et al.* (2013) defines content analysis as a "general term for a number of different strategies used to analyse text and is a systematic coding and categorizing approach used for exploring large amounts of textual information unobtrusively to determine trends and patterns of words used, their frequency, their relationships, and the structures and discourses of communication". The purpose of content analysis is to describe the features of the documents content by inspecting who says what, to whom and with what effect (Bloor & Wood, 2006). Thematic analysis is a cluster method used that can be defined as identifying, analysing, recording and examining themes or patterns within data. This approach is usually flexible as there is no specific research design associated. According to Braun & Clarke (2013), some of the steps in conducting a thematic analysis include familiarization with the data, generating initial codes, creating initial themes, reviewing the initial theme, name and define the theme and lastly, write the final report.

4.5.1 Descriptive Statistics

Descriptive statistics are statistics that describe the phenomena of interest. It involves the transformation of raw data into a form that would provide information to describe a set of factors in a situation. This is done through ordering and manipulation of raw data collected. The goal of descriptive statistics is to understand two characteristics of the relationship: its type and its strength (Sekaran & Bougie, 2010).

Descriptive statistics refer to the collection of methods for classifying and summarizing numerical data. The objective of descriptive statistics is to provide summary measures of the data contained

in all the elements for a sample. Descriptive analysis incorporates frequencies, measures of central tendency and measures of dispersion.

4.5.1.1 Frequencies and Percentages

According to Investopedia (2012, p. 1), frequencies are "A representation, either in a graphical or tabular format, which displays the number of observations within a given interval. The intervals must be mutually exclusive and exhaustive. Frequency distributions are usually used within a statistical context. A percentage is a figure or expressed on the basis of a rate or proportion per hundred (Dictonery.com, 2012).

Frequencies and percentages was used for each dimension in the questionnaire to better understand the 4th industrial revolution with a view of providing a framework for effective management and to describe the composition of the sample in terms of each biographical variables and their categories.

4.5.1.2 Measures of Central Tendency

There are three measures of central tendency, that is, the mean, median, and mode.

- The mean (or average) is a "measure of central tendency that offers a general picture of the data without unnecessarily inundating one with each of the observations in a data set" (Sekaran & Bougie 2010, p. 516). The mean or average is the sum of the observed values in the distribution divided by the total number of observations.
- The median is the central item in a group of observations when they are arrayed in either ascending or descending order.
- The Mode is the most frequently occurring phenomenon (Sekaran & Bougie, 2010).

Measures of central tendency was used for each of the dimensions of the study to provide a better understanding of the 4th industrial revolution with a view of providing a framework for effective management thereof.

4.5.1.3 Measures of Dispersion

Apart from knowing the measures of central tendency, one would also like to know about the variability that exists in a set of observations. The measures of dispersion include the range, variance and standard deviation.

- The range refers to the extreme values in a set of observations (Sekaran & Bougie, 2010).
- According to Bhandari (2020), the variance is a measure of variability is calculated by taking the average of squared deviations from the mean. This illustrates the degree of spread in the data set - the larger the spread of data; the larger the variance is in relation to the mean.
- The standard deviation offers an index of the spread of a distribution and is simply the square root of the variance.

Measures of central tendency and dispersion were used for each of the dimensions of the study to provide a better understanding of the 4th industrial revolution with a view of providing a framework for effective management thereof.

4.5.2 Inferential Statistics

The BusinessDictionary (2012, p. 1) defines inferential statistics as "Mathematical methods that employ probability theory for deducing (inferring) the properties of a population from the analysis of the properties of a data sample drawn from it. It is concerned also with the precision and reliability of the inferences it helps to draw".

4.5.2.1 Correlation

Correlation determines the relationship between any two variables among variables tapped in the study. A Pearson correlation matrix will prove this by indicating the direction, strength and significance of the bivariate relationships of all the variables in the study. Correlation tests whether there is a significant relationship between two variables and will indicate the nature, strength, and direction of the relationship using Pearson Product moment correlation coefficient. The correlation coefficient allows the researcher to quantify the strength of the relationship between two variables. The correlation is derived by assessing the variations in one variable as another variable also varies (Sekaran & Bougie, 2010).

In this study, Pearson product moment correlation coefficient was used to determine whether there are significant inter-correlations amongst the dimensions of the study to provide a better understanding of the 4th industrial revolution with a view of providing a framework for effective management thereof.

4.5.2.2 T-test

The t-test is done to see if there are any significant mean differences between two groups on a variable of interest. The t-test can also be used to examine the differences in the same group before and after a treatment. It indicates whether two groups comprising of nominal variables, are significantly different from each other with regard to a particular variable (Sekaran & Bougie, 2010).

In this study, the T-test was used to assess whether Male or Female managers differ significantly in their views of each of dimensions of the study to provide a better understanding of the 4th industrial revolution with a view of providing a framework for effective management thereof.

4.5.2.3 ANOVA

"Whereas the t-test indicates whether or not there is a significant mean difference in a dependent variable between two groups, an analysis of variance ANOVA helps to examine the significant mean differences among more than two groups on an interval or ratio-scale dependent variable. The results of ANOVA show whether or not the means of the various groups are significantly different from one another, as indicated by the F-statistic" (Sekaran & Bougie, 2010, p. 347).

In this study, ANOVA was used to access whether managers varying in biographical profiles (age, length of service, race, educational level and department) significantly differ in their views of each of the dimensions of the study to provide a better understanding of the 4th industrial revolution with a view of providing a framework for effective management thereof.

4.7 Conclusion

This chapter explored the research methodology and statistical methods used to analyse the data obtained from the questionnaire, focus groups and interviews. It was discussed that a questionnaire was used to collect data and this was done electronically via e-mail whilst the focus groups and interviews were conducted face to face. This study makes use of both descriptive and inferential

statistics to analyse results derived from the survey. In terms of the psychometric properties of the questionnaire, validity will be assessed using factor analysis and reliability will be determined using Cronbach's Coefficient Alpha. This chapter therefore presents the research methodology that this study embarked on.

Chapter Five: Data Presentation and Analysis

5.1 Introduction

The previous chapter described the research methodology adopted to address the research objectives. This chapter deals with data presentation and analysis of both quantitative and qualitative result**s**. Concerning the quantitative study, 40 questionnaires were sent to the respondents. However, only 29 of them, representing 72.5% (active response rate), have completed and returned the questionnaire. Therefore, the presentation and analysis of the data were based on the number of completed questionnaires. The data was then coded and exported into the Statistical Packages for the Social Sciences (version 27.0) for analysis. The study employed both descriptive (frequency, mean, standard deviation, minimum, maximum) and inferential statistics (correlations, analysis of variance-ANOVA, Post Hoc Scheffe's test, and sample t-test) and in order to give credence to the results of the study the psychometric properties (validity, reliability) of the questionnaire were first statistically assessed using Factor Analysis and Cronbach's Coefficient Alpha respectively. With regard to the qualitative approach of the study, focus group and online interviews were conducted among the participants such as the HR team, and CEO. Content analysis was used to analyse the qualitative data.

Concerning the anticipated dimensions of the study, 5 factors with latent roots greater than unity were extracted from the factor loading matrix (Table 5.1).

Table 5.1 Validity of the questionnaire: Factor analysis

Items	Component				
	1	2	3	4	5
B1	.101	.829	.074	.095	.208
B2	.009	.537	-.471	.508	.135
B3	.102	.156	.247	.056	-.345
B4	.094	.207	-.247	.391	-.652
B5	.659	.186	.057	.217	.330
B6	.608	-.011	.192	.271	.270
B7	-.363	-.184	.616	.427	-.173
B8	.588	-.101	-.313	.558	.155
B9	.796	-.090	-.317	-.052	.071
B10	.211	.404	.291	-.101	.810
B11	-.195	.663	.192	.070	.058
B12	.626	.112	-.242	-.098	-.287
B13	.791	.106	-.142	-.138	-.328
B14	.109	.328	.672	-.032	.003
B15	.803	-.187	.868	-.039	-.235
B16	.809	-.102	.207	-.355	-.057
B17	-.550	-.407	.360	.035	.121
B18	.200	-.524	.015	.658	.220
B19	.151	-.070	-.126	-.045	.670
B20	.697	-.294	.008	.390	.204
B21	.686	.039	.495	-.178	-.091
B22	.755	-.025	.416	-.080	-.075
Eigenvalue	6.25	2.44	2.22	2.05	1.76
% of Variance	28.40	11.10	10.13	9.30	8.01
Extraction Method: Principal Component Analysis.					
a. 5 components extracted.					

As reflected in Table 5.1, 11 items loaded significantly on Factor 1 and account for 28.4 % of the total variance. Of the total, 4 items relate to the advantages and disadvantages of the use of AI, 1 item relates to the attitudes of HR practitioners towards the use of AI, 2 items relate to the impact of AI on the skills set or competencies required, whereas the remaining 4 items relate to the impact of AI on business. Although 4 items relate to the advantages and disadvantages of the use of AI and impact of AI on the business, respectively, the impact of AI on the business had the higher average score value. Therefore, Factor 1 could be labelled as impact of AI on the business.

Furthermore, 4 items loaded on Factor 2 and account for 11.1 % of the total variance. Of the total items, 2 items relate to the current status of the use of AI, while the other 2 items relate to attitudes of HR practitioners towards the use of AI. The current status of the use of AI had the higher average score value; hence, Factor 2 could be labelled as current status of the use of AI.

Moreover, 5 items loaded significantly on Factor 3 and account for 10.13% of the total variance. Out of the 5 items, 1 item relates to advantages and disadvantages of the use of artificial intelligence, 2 relate to the impact of AI on the skills set or competencies, while 2 items also relate to impact of AI on the business. Since the impact of AI on the skills set or competencies had the highest value, Factor 3 may be labelled as impact of AI on the skills set or competencies.

In addition, 4 items loaded on Factor 4 and account for 9.3% of the total variance. Of the total, 1 item relates to current status of the use of AI, 2 items relate to advantages and disadvantages of the use of AI, while 1 items relate to the impact of AI on business. Since the advantages and disadvantages of the use of AI had the higher loading, Factor 4 may be labelled as advantages and disadvantages of the use of AI.

Lastly, 2 items loaded significantly on Factor 5 and account for 8.01% of the total variance. Of the total 1 item relates to attitudes of HR practitioners towards the use of AI, whereas 1 item relates to impact of AI on business. Although 1 item relates to attitudes of HR practitioners towards the use of AI and impact of AI on business, respectively, attitudes of HR practitioners towards the use of AI had the highest loading score. Hence, Factor 5 may be names as attitudes of HR practitioners towards the use of AI.

From the factor analyses, it is evident that the 5 dimensions as purported to be measured by the questionnaire, have in fact surfaced as the 5 factors of the study. Hence, it is evident that the measuring instrument validly measures the study dimensions.

5.2 Reliability

The reliability of the questionnaire was assessed using Cronbach's Coefficient Alpha. Cronbach's alpha is a reliability coefficient that indicates how well the items in a set are positively correlated to one another. The closer Cronbach's alpha is to 1, the higher the internal consistency reliability (Sekaran, 2003). According to the rule of thumb, Cronbach's alpha score of 0.70 and above is considered acceptable, good, very good and excellent. Table 5.2 shows the results of Cronbach's alpha.

Table 5.2

Reliability of the measuring instrument: Cronbach's coefficient alpha

Constructs	**No. of Items**	**Cronbach's alpha (*a*)**
Current status of use of AI	3	0.70
Advantages and disadvantages of the use of AI	3	0.71
HR practitioners towards the use of AI	2	0.78
Impact of AI on skills set/competencies	1	0.79
Impact of AI on business	5	0.76

Information in Table 5.2 suggests that the items measuring impact of AI on skills set/competencies (a = 0.79), HR practitioners towards the use of AI (a = 0.78), and impact of AI on business (a = 0.76), advantages and disadvantages of the use of AI (a = 0.71), and current status of use of AI (a = 0.70) had acceptable levels of inter-item consistency. Statistically, the Cronbach's coefficient alpha results demonstrated acceptable-to-very good reliabilities for all the dimensions measured in this study.

5.3 Descriptive Statistics

To assess the respondents' perceptions on each of the items that measure the various constructs (current status of use of AI, advantages, and disadvantages of the use of AI, HR practitioners towards the use of AI, the impact of AI on skills set/competencies and impact of AI on business), descriptive statistics were employed (Table 5.3). The respondents were required to evaluate each of the items on a scale of 1 to 5.

Table 5.3

Descriptive statistics

Dimension	**Mean**	**95 % Confidence Interval**		**Std. Dev.**	**Min.**	**Max.**
		Lower Bound	**Upper Bound**			
Current status of use of AI	3.24	3.00	3.48	0.61795	1.00	5.00
Advantages and disadvantages of the use of AI	4.12	3.97	4.27	0.38620	1.00	5.00
Attitudes of HR practitioners towards AI	3.54	3.36	3.67	0.46560	1.00	5.00
Impact of AI on skills set/competencies	3.96	3.74	4.18	0.56174	1.00	5.00
Impact of AI on business	3.75	3.60	3.70	0.39032	1.00	5.00

Table 5.3 demonstrates that respondents view the key dimensions of the study differently, which in descending level of mean score values are:

- Advantages and disadvantages of the use of AI (mean = 4.12)
- Impact of AI on skills set/competencies (mean = 3.96)
- Impact of AI on business (mean = 3.75)
- Attitudes of HR practitioners towards AI (mean = 3.54)
- Current status of use of AI (mean = 3.24)

Against a maximum attainable score of 5, it can be argued that the respondents display high levels of beliefs of the advantages and disadvantages of the use of AI and of the impact of AI on skills set/competencies, Evidently, there is room for improvement with regards to the impact of AI on business, the attitudes of HR practitioners towards AI and current status of use of AI.

The mean score values of the key dimensions measured in the study are depicted graphically in Figure 5.1.

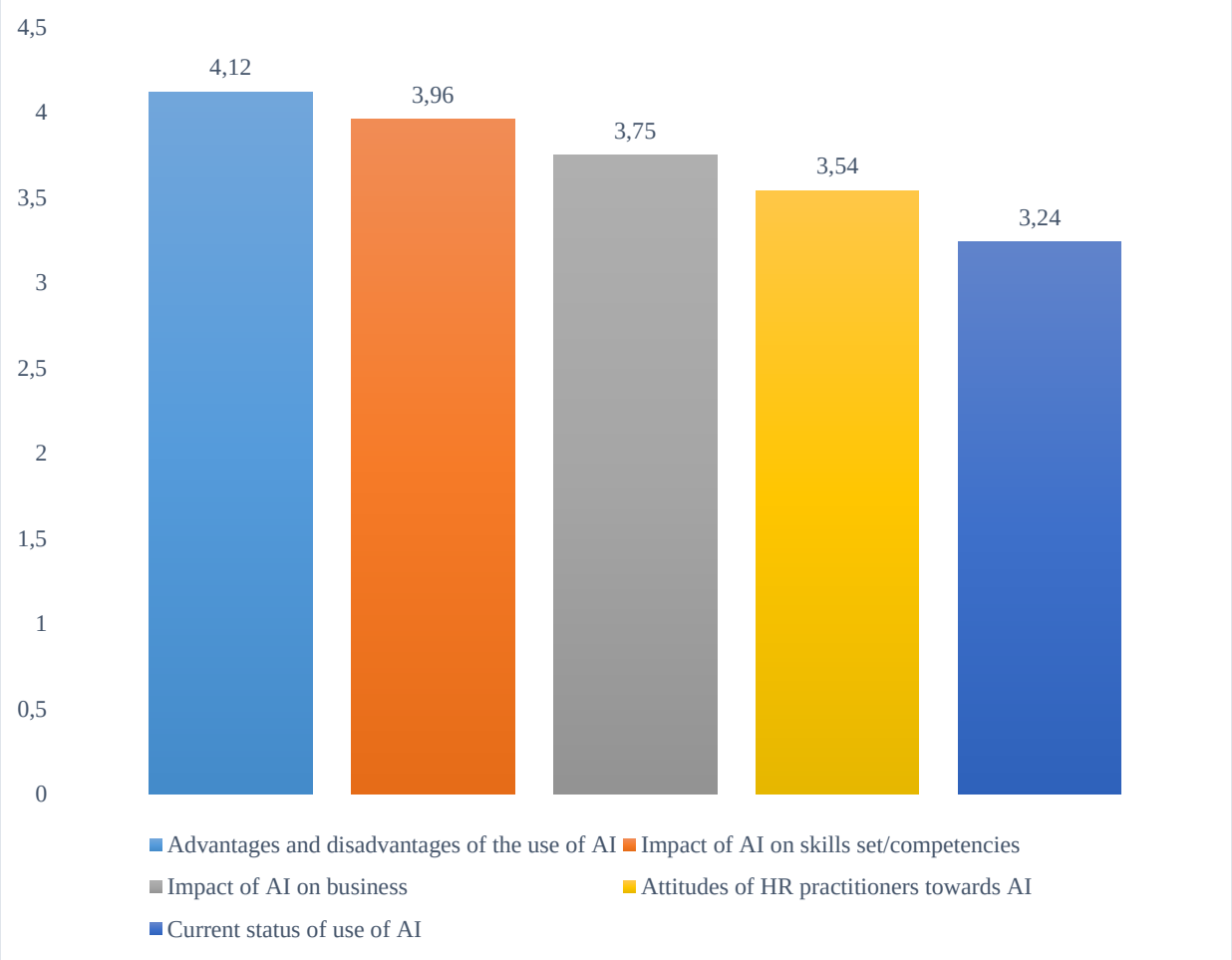

Figure 5.1

Key dimensions of the study

The implications of the results, as shown in Table 5.3 and Figure 5.1 suggested that the advantages and disadvantages of the use of AI had the highest mean score, whereas the current status of the

use of AI had the lowest. Against a maximum attainable score of 5 on a 1 to 5 point Likert scale, it is evident that the effect of these dimensions on the AI ranges from low to high moderate, thereby reflecting room for improvement in all of the dimensions, though in varying degrees. To determine where the improvement lies in each dimension, frequency analyses were further employed. The results are presented as follows:

With regards to the current status of use of AI, the results indicated that the majority of the participants 86.2% were convinced that the organisation had adopted AI tools (86.2%), that the banking industry as a whole utilised AI (79.3), that the country had utilised AI to its full capabilities (625). However, 42.4% of the respondents disagreed that they were aware of the availability of different AI tools.

In terms of the advantages and disagrees of the use of AI, the majority of the participants were convinced that that the cost of implementing various AI initiatives brought about tangible benefits to justify it (93.1%), that they were open to interacting with AI tools as opposed to human beings (72.4%) respondents agreed. And that a potential disadvantage of the implementation of AI could be unemployment (75.9%). Also, the results revealed that 96.6% of the respondents agreed that the advantage in utilising AI was that the organisation kept up to date with global trends such as big data. Lastly, it was found that 96.6% of the respondents agreed that the implementation of AI for mundane and repetitive tasks added value in increasing accuracy leading to faster decision making and better use of time.

In relation to the attitude of HR practitioners towards the use of AI, 44.8% of the respondents believed that HR professionals had the right skill set to adopt AI. Also, 51.7% of the respondents indicated that the organisation was ready to work hand in hand with AI. Furthermore, 89.7% of the respondents said that AI should be considered as an opportunity rather than a threat.

In terms of the impact of AI on skills set/competencies, 82.7% of the respondents agreed that AI can assist in making HR more strategic. It was found that 82.8% of the respondents pointed out that the organisational culture was conducive for using technology. Besides, 86.2% of the respondents expressed that a key competence of a HR practitioner of the future will be an ability to find solutions by utilisation and implementation of AI.

When it comes to the impact of AI on business, it was discovered that 72.4% of the respondents believed that AI tools could add value to the current business function in terms of their HR requirements. Furthermore, the results suggested that 48.3% of the respondents do not believe that the utilisation AI removed the "human" and emotional element from HR. Also, the results demonstrated that 65.5% of the respondents said that their jobs in the current state could be negatively impacted by adopting AI such as being made redundant. Furthermore, 82.8% of the respondents suggested that the organisations values have supported the adoption of AI. Besides, 86.2% of the respondents said that they felt more empowered in decision-making with the support of AI. The results showed that 93.1% of the respondents said that AI assisted in simplifying processes within the organisation making it more efficient. The results revealed that 79.3% of the respondents agreed that having AI tools available assisted them better in planning from a talent management perspective.

In relation to the areas of HR adoption of AI, the results showed that 48.3% of the respondents indicated that adoption of AI will be beneficial to talent attraction (recruitment & on boarding).

In terms of the industry that will be the leaders in pioneering the way for AI, the results showed that 20.7% of the respondents said that the Financial Services industry will be the leader in pioneering the way for AI, 55.2% of them indicated that the Information Technology industry will be the leader in pioneering the way for AI, and 24.1% of the respondents suggested that the Telecoms industry will be the leader in pioneering the way for AI.

Concerning the current AI tools used in everyday life, 55.2% of the respondents said that they used Virtual Personal Assistants (example: Bixby, Siri, Google Now) in their everyday life, Moreover, 44.8% of the respondents indicated they used communication devices with AI software such as face recognition. In addition, 55.2% of the respondents agreed that the used Smart Home Devices. Furthermore, all the respondents (100%) indicated that they do not shop online.

About the time frame South Africa and the organisation adopt AI, 37.9% of the respondents indicated that the time frame South Africa and the organisation used to adopt AI was 10 years, 6.9% of them said that the time frame was 15 and 20 years, respectively, and 48.3% of them said that the time frame was 5 years.

In terms of the time frame global organisation use to adopt AI, 89.7% of the respondents said that the frame taken by the global organisation to adopt AI was 5 years, whereas 10.3% of them indicated that the taken by the global organisation to adopt AI was 10 years. From the comparative analysis, it can be argued that while South African organisations spent long years to adopt to AI, their counterpart spent fewer years to adopt to AI.

With respect to the impact of the pandemic on experience with HR, the results revealed that 55.2% of the respondents suggested that the pandemic had no impact on their experience with HR, whereas 44.8% of the respondents said that they preferred face-to-face HR support.

5.4 Inferential Statistics

To draw valid conclusions based on the hypotheses, inferential statistics such as analysis of variance-ANOVA, Post Hoc Scheffe's test, and sample t-test, Pearson's correlation and regression analysis were computed.

5.4.1 Pearson's Product Moment Correlation

Pearson's product moment correlation was used to determine the relationship between the dependent and independent variables in the study. The Pearson's product moment correlation is a statistical tool that tests whether there is a significant relationship between two variables and indicates the nature, strength, and direction of the relationship. The analysis is based on the working hypotheses.

Hypothesis 1

There exist significant inter-correlations amongst the sub-dimensions of AI (Table 5.4).

Table 5.4

Pearson's moment correlation: Intercorrelations amongst the sub-dimensions of Artificial Intelligence

Variables	r/ p	Current status of use of AI	Advantages and Disadvantages of the use of AI	HR practitioners attitude towards the use of AI	Impact of AI on skills set/competencies	Impact of AI on business
Current status of use of AI	R **p**	1				
Advantages and Disadvantages of the use of AI	R **P**	0.149 0.440	1			
HR practitioners attitude towards the use of AI	R **P**	0.254 0.185	0.178 0.355	1		
Impact of AI on skills set/competencies	R **P**	0.090 0.642	0.518** 0.004	0.357 0.057	1	
Impact of AI on business	R **p**	-0.149 .0450	0.611** 0.001	0.001 0.995	0.619** 0.000	1

**** p<0.01**

Table 5.5 indicates that there is a significant relationship between the advantages and disadvantages of the use of AI and the impact of AI on skills set/competencies and the impact of AI on business respectively at the 1% level of significance. Furthermore, there is a significant and direct relationship between the impact of AI on skills/competencies and the impact of AI on business at the 1% level of significance. The implication is that for every unit of increase as a result of the impact of AI on skills set/competencies, there will be an equivalent increase of AI on the impact of business. No other significant relationships were noted. Hypothesis 1 may therefore only be partially accepted. The strength of these significant relationship is at least at the moderate level and all relationships are direct.

5.4.2 Impact of biographical variables

To determine the impact of the biographical data (age, tenure, and race) on the dimensions (current status of use of AI, advantages and disadvantages of the use of AI, HR practitioner's attitude towards the use of AI, impact of AI on skills set/competencies and impact of AI on business) the sample t-test and ANOVA were computed.

Hypothesis 2

There is a significant difference in the perception of respondents varying in gender regarding the sub-dimensions of AI respectively (Table 5.5).

Table 5.5

Sample t-test: All dimensions and Gender

All dimension	**T**	**Df**	**p**
Current status of use of AI	12.481	28	**0.000***
Advantages and Disadvantages of the use of AI	26.901	28	**0.000***
HR practitioners attitude towards the use of AI	15.261	28	**0.000***
Impact of AI on skills set/competencies	20.672	28	**0.000***
Impact of AI on business	21.011	27	**0.000***

*** p < 0.01**

Table 5.5 indicates that there were significant differences in the perceptions of the employees varying in gender regarding current status of use of AI, advantages and disadvantages of the use

of AI, HR practitioner's attitude towards the use of AI, impact of AI on skills set/competencies and impact of AI on business respectively at the 1% level of significance. Therefore, males and females hold differing views on all the dimensions of the study. To assess exactly where the differences in the perceptions of males and females on all the dimensions of the study lie, mean differences was assessed (Table 5.6).

Table 5.6

Post Hoc Scheffe's Test: All dimensions and gender

Dimension	**Categories of Gender**	**N**	**Mean**
Current status of use of AI	Male	19	3.32
	Female	10	3.18
Advantages and disadvantages of the use of AI	Male	19	4.07
	Female	10	4.22
HR practitioners attitude towards the use of AI	Male	19	3.67
	Female	10	3.33
Impact of AI on skills set/competencies	Male	19	3.91
	Female	10	4.07
Impact of AI on business	Male	19	3.55
	Female	10	3.73

As shown in Table 5.6, males have demonstrated higher confidence the current status of the use of AI and HR practitioner's attitude towards the use of AI, whereas females have displayed less confidence in this regard. By contrast, females have exhibited higher level of satisfaction towards advantages and disadvantages of the use of AI, the impact of AI on skills set/competencies and the impact of AI on business, than male counterparts.

Hypothesis 2

There is a significant difference in the perception of respondents varying in biographical profiles (age, tenure and race) regarding the sub-dimensions of AI respectively (Table 5.7).

Table 5.7

ANOVA: Biographical profiles (age, tenure and race) and key dimensions of the study

Dimensions	Age		Tenure		Race	
	F	**p**	**F**	**P**	**F**	**P**
Current status of use of AI	0.640	0.535	0.327	0.806	0.497	0.687
Advantages and disadvantages of AI	1.240	0.306	0.781	0.515	1.072	0.379
Attitudes of HR practitioners towards AI	1.240	0.306	0.781	0.515	1.072	0.379
Impact of AI on skills set/competencies	0.024	0.977	0.813	0.499	0.760	0.527
Impact of AI on business	0.678	0.517	0.482	0.698	2.715	0.067

As shown in Table 5.7, there was no significant difference in employees' perceptions, varying in age, tenure, and race, respectively, regarding the current status of the use of AI, advantages and disadvantages of AI, aattitudes of HR practitioners towards AI, the impact of AI on skills set/competencies and the impact of AI on business respectively. Hence Hypothesis 2 can be accepted.

Hypothesis 3

The sub-dimensions significantly account for the variance in determining the impact of AI on HR in the 4th Industrial Revolution (Table 5.8).

Table 5.8

Multiple regression: Impact of AI on HR in the 4th Industrial Revolution

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.973	0.947	0.935	0.9535

ANOVA

Model		Sum of Squares	Df	Mean Square	F	P
1	Regression	3.598	5	0.720	79.141	0.000[b]
	Residual	0.200	22	0.009		
	Total	3.798	27			

Model		Unstandardised Coefficients		Standardised Coefficients	T	P
		B	Std. Error	Beta		
1	(Constant)	-0.481	0.248		-1.943	**0.065**
	Current status of AI	-0.016	0.032	-0.027	-0.498	**0.624**
	Advantages and disadvantages of AI	0.800	0.065	0.824	12.389	**0.000***
	HR practitioner's attitude towards the use of AI	0.281	0.044	0.349	6.410	**0.000***
	Impact of AI on skills set/competencies	-0.038	0.045	-0.058	-0.852	0.404
	Impact of AI on business	.100	0.067	0.110	1.498	0.148

As shown in Table 5.8, current status of AI, advantages and disadvantages of AI, HR practitioners attitude towards the use of AI, impact of AI on skills set/competencies and impact of AI on business account for 93.5% of the variance (Adjusted R square) in the impact of AI on HR in the 4th Industrial Revolution. Hence, hypothesis 3 may be accepted at the 1% level of significance. The rest of the 6.5 % of the variance may be attributed to the factors that lie outside the scope of the study. Evidence from Table 5.8 suggests that only the dimensions such as advantages and disadvantages of AI and HR practitioner's attitude towards the use of AI, impact on HR function will be significantly transformed by AI in varying degrees. The results of the Beta loadings show that the advantages and disadvantages of AI (Beta = 0.824) has a greater and significant impact on HR functions than HR practitioner's attitude towards the use of AI (Beta = 0.349). In fact, the advantages and disadvantages of AI will be transformed to a greater extent by AI than HR practitioner's attitude to the use of AI. The results reflect that every unit of change in the use of AI, has the potential to bring about advantages and positive change and transformation by 82.4% and a change of 34.9% in the use of AI.

5.5 Qualitative Results

This section presents the results of the qualitative data obtained from the interviews and focus group discussion. As mentioned, 6 participants (HR team, and CEO) took part in the focus group (5) and online interview (1). The content analysis was used to analyse the qualitative data. The qualitative results are presented in the form of narratives under the key themes of the study

5.6 Results of the focus group

The findings from the focus group are represented as per the research objectives.

5.6.1 Objective 1: Use of artificial intelligence within the HR department

When asked on the use of artificial intelligence within the HR department, respondents agreed that there were a number of tools used, especially in HR Operations and provided examples of tools that they were being utilised, namely:

- HR Case Management with logging queries. The aim of this tool is to evolve in the future by using the data it collects to implement robotics to read and respond to queries based on historic data gathered.
- Recruitment. There are various tools used by other countries within the organisation that remove the mundane screening tasks. This aids the culture fit assessment, social media checks and flags any employment relations issues during the screening process.

- Learning. The organisation is focused on “Future Skills” which is a programme launched at upskilling staff on the skills required for the future such as technology, AI, robotics, etc. Linked to this is also the “Degreed” platform which uses algorism to customise an employee’s development plan depending on variables such as role type and years to achieve and so on. There has also been a lot of development converting class based learning into e-learnings due to Covid which was executed very efficiently.
- Chatbots are used by the Group but not available in South Africa as yet.

Moreover, the respondents indicated that they did not face any challenges working with the AI tools available noting that most of the tools are not available in South Africa as yet as the organisation will deploy these in stages to countries around the globe. However, future looking, there was a concern about location of where information is stored from participants and who can access this from a data integrity perspective. The other obstacle noted was changing mind-sets of the users in order to utilise new tools.

It was discussed that a cost-benefit analysis was completed on a global basis to understand the return on investment that AI can bring to the organisation. There was a view that for smaller countries within the organisation, such as South Africa, it would be a harder value proposition but this standpoint was subsequently changed and the initial huge investment was refined and easier to rollout to smaller countries.

5.6.2 Objective 2: Advantages and disadvantages of AI

The respondents indicated that the biggest advantage of the use of AI was removing the mundane work and adding value. This can be done at high speeds with a push of a button and immediate responses obtained. The fact that AI builds uses algorisms to build an “intelligence” from task to task was also another factor noted as this continuous evolution is extremely beneficial compared to the amount of time individuals would have to take to learn the same content on a day to day basis.

The disadvantages noted were mainly the redundancies that would exist especially in light of South Africa’s high unemployment rate. The other concern noted was the accuracy and assumptions AI tools make in a process as current behaviour does not always equal future behaviour.

5.6.3 Objective 3: HR practitioner's attitudes towards working with AI

When respondents were questioned about their attitudes towards working with AI, consistent and definitive responses were absent. They view this as a threat and opportunity in that it is an opportunity to streamline mundane tasks and increasing focus on strategic ones. However, at the same time with taking cognizance of the risk of offshoring and reducing local headcount emerges, respondents felt there were still space to become more creative and evolve by using AI hand in hand with the human element to filter back to the business to aid better decision making.

They also provided a caveat to responses stating that it would depend on the strategic objectives of the organisation and size and what role HR plays in the company (agile). The smaller organisations/HR departments; the higher more threating this becomes. This is mainly due to global companies having shared services centres that could offshore activities to in order to achieve economies of scale. Overall, there was a consensus that people embrace the change and use it as an opportunity to advance how we do things.

5.6.4 Objective 4: HR functions will be transformed by AI

The majority of respondents indicated that AI would be most beneficial in recruitment – especially the initial screening and onboarding. Secondly, HR Operations was cited whereby there is a large volume of admin and static data that would benefit from AI and technological innovation. Thirdly, talent management was mentioned as an area that would be adventurous for AI and involves mapping out the organisation and providing a head map of skills. Lastly, the area of wellness whereby one could use past and future behavior patterns to identify people risk associated with this. In summary, the participants indicated all areas within HR that use data driven points could potentially benefit from AI.

5.6.5 Objective 5: Impact of AI on business

Interestingly, respondents indicated that they wish to see more "human" in Human Resources as there was too much of automation. The advisory component has been left behind. This is particularly important in employment relations such as CCMA cases.

Another concern raised was if people had the capabilities in use advanced technology once fully deployed as this could pose as a gap. The team shared their view that HR Operations would evolve to a completely robotic model in the future.

5.6.6 Objective 6: Impact of AI on skills set/competencies

When asked on the skill set or competencies required, participants indicated that this is dependent on what role HR plays today in an organisation which could differ across organisations depending on the sector and size.

Some of the skills noted were:

- Psychology, design thinking, programme management, data analytics. This involves looks for patterns in data and making decisions based on these.
- Training of managers in HR activities so there is a less dependency on HR.
- Engineers – set up AI and 10 years to train those requiring to utilize this.
- Covid impact has taught us to be more savvy, agile and preparing us for the industrial revolution.
- Data analytics

5.6.7 Objective 7: Cultural orientation required around change in the adoption of AI

When questioning respondents on the cultural orientation required around change in the adoption of AI, they indicated the following:

- Having an inquisitive mind – optimistic for change
- Assisting the business in changing mind-sets on the direction towards AI.
- Covid has accelerated and broaden the scope of technology and organisations are more amiable to embrace technology as a result. This provided a massive culture shift with a lot of new tools created and accepted due to Covid.
- Examining what our clients need and also what their clients need will determine the pace of acceptance. For example, if a client requires something, the organisation is expected to respond accordingly.
- A lot of work from Financial Sector Conduct Authority (FSCA) on creating hybrid working environments and how to drive a culture towards this.

5.7 Findings of the interview

The face to face interview took place with the Chief Executive Office at the organisation at the time of the study. The findings from the interview are also presented in accordance with the stated research objectives.

5.7.1 Current status of use of AI

Regarding the current use of AI within the banking sector in South Africa, the respondent believed that there are positive movements in this space within the banking sector but most multinational companies utilise shared service centres to deploy to ensure scale and consistency.

5.7.2 Advantages and disadvantages of the use of AI

To determine the advantages and disadvantages of the use of AI, the participant indicated that it all comes down to the cost as the major factor. The participant agreed with the themes identified in the focus group that AI will allow for more productivity for the staff that remain behind post potential job losses as a result of automation and streamlining.

5.7.3 HR function will be transformed by AI

The participant indicated that the areas within the HR value chain that AI will be most beneficial will be:

- Focus on Group (deliverables determined by the company's headquarters) activities such as engagement surveys.
- Looking at more strategic activities
- Pay and Reward
- Removing recruitment agencies and identifying what exactly we need in the recruitment process to ensure that the right people are hired for the right roles.
- Tools to be an efficient HR Business Partner
- Intelligence hub for the market – trends and developments on staff.

In determining how the HR function could be transformed by AI in 5-10 years, the participant indicated that this is currently underway. A key example provided was the organisations Customer Due Diligence/Know Your Customer processes automation to Group Service Centres which was a gradual but successful change. This proved that it is possible to do more with less people.

5.7.4 Impact of AI on skills set/competencies

In determining the skills and competencies of HR practitioners of the future, the respondent indicated that HR needs to understand the business they operate in in greater detail. Professionalising HR is mission critical. The respondent was of the view that HR practitioners have been in an industry and profession with themselves in the past and the partnership with business is critical and a wonderful experience if this is mastered, if not, can be a disaster. One

suggestion that came up was for HR practitioners to fully understand how people are measured in performance reviews in order to add value and provide meaningful support.

AI can definitely provide assistance with generic administrative tasks such as letters of employment, capturing biographical information and so on. The role of HR should be to spend more time with people and on talent retention and development. The focus has shifted to organisations exiting people that does not fit into the company efficiency and effectively in order to build a pool of talent to manage.

5.7.5 Comparative analysis

When discussed with the CEO on different countries and businesses and how South Africa is positioned, he indicated that South Africa is not well placed at all in his opinion. There is a distinct difference between a solution driven country verses an adaptive approach. He believes that the financial system is very much based on the apartheid model. The respondent felt that the ethos of a bank is also an important factor to consider in context to the high cost of implementing technology into the banking system. He believes that we need to break the "cartel banking system" although introducing new competition is very difficult due to the type of industry and regulations that govern this.

Compared to the Middle East, he indicated that they are more well placed as the region objective is to reduce migrant labour and offer fuller employment for the population and embracing technology can bridge this gap. This is largely as a result of their economy and sophistication thereof. Examples of this can be seen in Switzerland for example (one of the highest cost countries in the world) but there is no technology in the Banking industry and they offer very basic/vanilla/manual banking. Compared to a country like Japan whereby there is an aging population, more technology and older workforce is more productive. In conclusion, he stated that each market is slightly different and has unique characteristics.

Figure 5.2 summarises the key findings that emerged from the study.

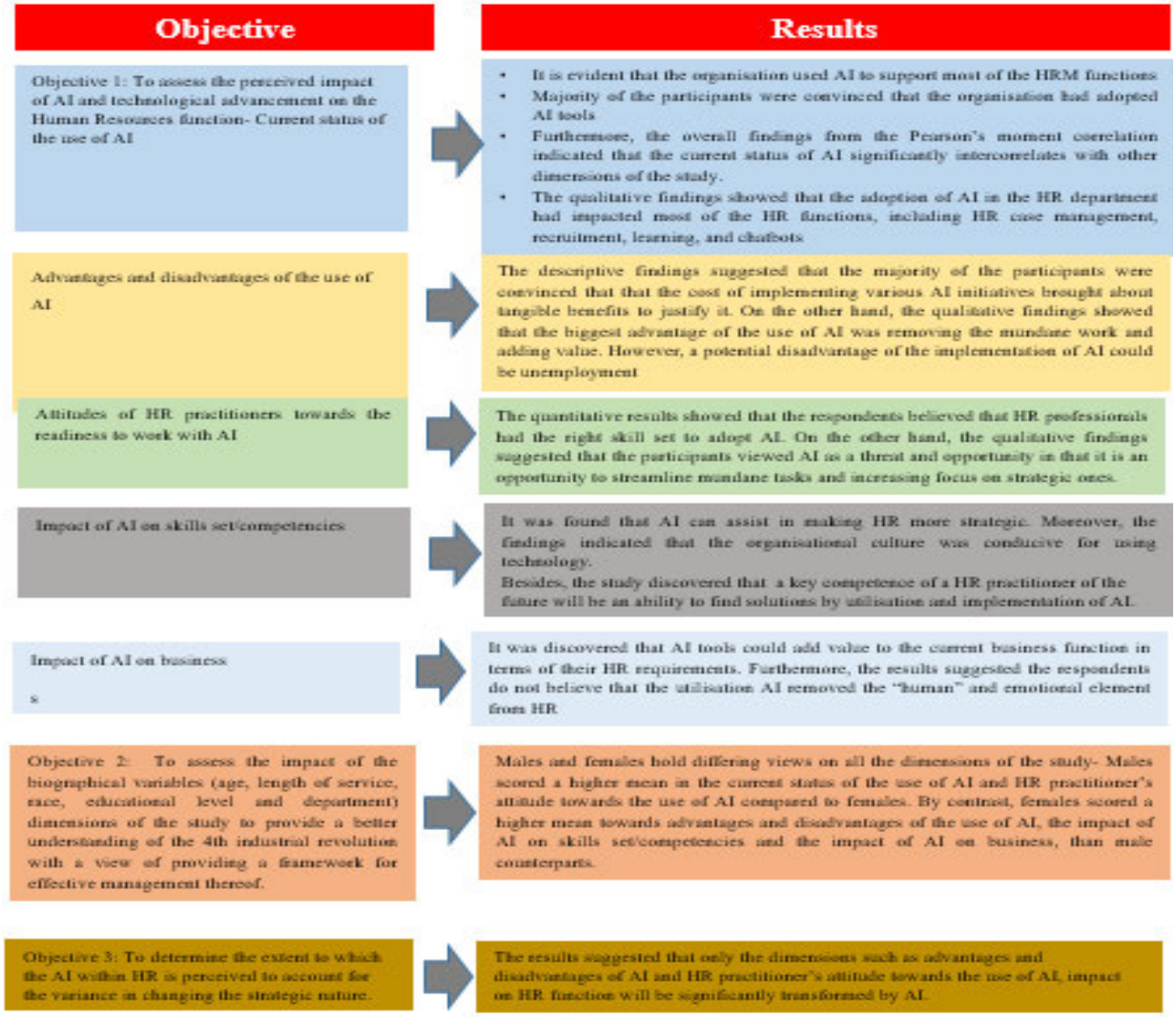

Figure 5.2 Summary of Results from the Study

Compiled by Researcher

5.8 Conclusion

The results from the data collection process were presented using tabular and graphical representations. The following findings were observed:

- There is a significant relationship between the advantages and disadvantages of the use of AI and the impact of AI on skills set/competencies and the impact of AI on business respectively at the 1% level of significance.

- Males have demonstrated higher confidence the current status of the use of AI and HR practitioner's attitude towards the use of AI, whereas females have displayed less satisfaction.
- By contrast, females have exhibited higher level of satisfaction towards advantages and disadvantages of the use of AI, the impact of AI on skills set/competencies and the impact of AI on business, than male counterparts.
- Only the dimensions such as advantages and disadvantages of AI and HR practitioner's attitude towards the use of AI, impact on HR function will be significantly transformed by AI in varying degrees.
- Participants did not face any challenges working with the AI tools available.
- The biggest advantage of the use of AI was removing the mundane work and adding value.
- AI would be most beneficial in recruitment – especially the initial screening and onboarding.
- The participants wished to see more "human" in Human Resources as there was too much of automation.
- AI provided assistance with generic administrative tasks such as letters of employment, capturing biographical information and so on.

However, these results are insignificant unless they are compared and contrasted with the findings of other scholarly researchers. Hence, the following chapter compares and contrasts the results of the study with previous empirical findings.

Chapter Six: Discussion of the Results

6.1 Introduction

The previous chapter presented and analysed the quantitative and qualitative results that were obtained from the study. The essence of this chapter is to discuss the results that were obtained from the study. The discussion is undertaken by interpreting the findings in the context of the study and then integrating the findings from existing literature. The discussion of the results is done as per the stated research objectives, including:

- To assess the perceived impact of AI and technological advancement on the Human Resources function (current status of AI, transformation of HR in a decade as a result of AI; advantages and disadvantages of AI; attitudes of HR practitioners towards the readiness to work with AI and the competencies required in the future; the most beneficial place for AI in the value chain, and lastly the impact of AI on the business).
- To assess the impact of the biographical variables (age, length of service, race, educational level and department) on the dimensions of the study to provide a better understanding of the 4th industrial revolution with a view of providing a framework for effective management thereof.
- To determine the extent to which the AI within HR is perceived to account for the variance in changing the strategic nature.

6.2 Impact of AI and technological advancement on the human resources function

Objective one assessed the perceived impact of AI and technological advancement on the HR function (current status of AI, transformation of HR in a decade as a result of AI; advantages and disadvantages of AI; the most beneficial place for AI in the value chain, and lastly the impact of AI on the business). Apart from the objective, two set of hypotheses were formulated and tested. The objectives and hypotheses were tested using quantitative research and supported by analyzing the data obtained using qualitative research. The findings are discussed as follows.

6.2.1 Current status of AI

The findings reflect that against a maximum attainable score of 5 on a 1 to 5 point Likert scale, it is evident that the organisation used AI to support most of the HRM functions. Thus, the results indicated that the majority of the participants were convinced that the organisation had adopted AI tools. Furthermore, the results show that the current status of AI significantly

intercorrelates with other dimensions of the study. The implication of the result is that a change or improvement in the current status of AI is more likely to have a rippling effect and bring about improvements in the other dimensions as well as overall improvements. Likewise, the qualitative findings showed that the adoption of AI in the HR department had impacted most of the HR functions, including HR case management, recruitment, learning, and chatbots. Both the quantitative and qualitative findings are consistent with previous studies. For instance, Forbes (cited in McKinsey, 2017), states that 85% of businesses plan to use AI in by 2020, and McKinsey's Global Survey on the subject found a 25% annual growth in AI use in normal business processes, with several companies reporting cost savings and revenue increases. According to Fortune Business Insights, the global HR technology market is projected to grow from $24,04bn in 2021 to $35,68bn in 2028 with companies citing to prioritize investments in AI to optimize business processes and reduce costs (Maskey, 2022).

These findings on AI show the importance and need for the adoption of AI in business, and more so in the HR function. AI is now a primary tool in workplaces, which more and more companies rely on it to advance their success and overall well-being. HRM is about coping with people's personalities, attitudes and behaviours. It is a main focus on recruiting, selecting, preparing, and developing (Comin & Hobijn, 2010). From the standpoint of management literature, AI-powered approaches can be used in activities such as contracting, hiring, recruiting, training, and intake. AI eliminates wastage in recruitment by the depth of our talent pool.

6.2.2 Advantages and disadvantages of the use of AI

Concerning the quantitative study, the descriptive findings suggested that the majority of the participants were convinced that that the cost of implementing various AI initiatives brought about tangible benefits to justify it. The respondents argued that they were opened to interacting with AI tools as opposed to human beings. However, a potential disadvantage of the implementation of AI could be unemployment. Despite this, the results revealed that the advantage in utilising AI was that the organisation kept up to date with global trends such as big data. Moreover, it has been found that the implementation of AI for mundane and repetitive tasks added value in increasing accuracy leading to faster decision making and better use of time. The results of the Pearson’s correlations also suggested a significant relationship between the advantages and disadvantages of the use of AI, and the impact of AI on skills set/competencies and on business, respectively. Besides, the results of the multiple regression indicated that there is a significant positive impact between the advantages and disadvantages

of the use of AI as well as other dimensions of the study. The results of the Beta loadings show that the advantages and disadvantages of AI has a greater and significant impact on HR functions than HR practitioners' attitude towards the use of AI. This means that, the advantages and disadvantages of AI will be transformed to a greater extent by AI than HR practitioner's attitude to the use of AI.

On the other hand, the qualitative findings showed that the biggest advantage of the use of AI was removing the mundane work and adding value. However, the disadvantages associated with the use of AI were mainly the redundancies that would exist especially in light of South Africa's high unemployment rate. Moreover, other concerns raised were the accuracy and assumptions AI tools make in a process as current behaviour does not always equal future behaviour. The findings from the study agreed with most previous scholarly research, which states that AI helps to address the issue of showing applicants to dissimulate as well as setting interviews with them by removing the growing need for written resumes by ensuring the two-way communication between employers and candidates is possible through one chat conversation (Maskey, 2022). Evidence suggests that AI technology, for instance, can streamline application processes by developing more user-friendly formats that a job applicant can complete to reduce the number of applications that have been discontinued (Schwartz et al, 2014).

Findings showed that while AI has streamlined recruitment of the Department of HR, it allows for easier and more realistic implementation for the applicant as well. For example, at Unilever the time necessary to hire was reduced by 75% (Heric, 2018). AI advocates argue that systems can improve choice by recognising characters that supplement the high performance of current workers by techniques such as speech analysis and micro-expression reading (Buranyi, 2018). One study discovers that AI can help professionals make quick everyday decisions (Guenole, & Feinzig, 2017). AL-led systems can play a role in monitoring and evaluating the moods of employees before and after customer calls for example. After that, the department of Human Resources decides whether or not the person needs a break. Hence, AI can also identify anxiety on the basis of a person's behaviour and expression. It helps employers decide whether to investigate and correct the problem before it harms employees and the business. A major benefit from the use of AI is the consistent performance of routine activities (Brynjolfsson, & Mitchell, 2017). It has been argued that AI offers an opportunity for HR to make an impact, whether on pay management or training, talent management and growth generally, and many HR leaders have argued (Wood, 2017; Brynjolfsson, & Mitchell, 2017).

6.2.3 Attitudes of HR practitioners towards the readiness to work with AI

In addition, the study investigated the attitude of HR practitioners towards the readiness to work with AI. The quantitative results showed that the respondents believed that HR professionals had the right skill sets to adopt AI. Also, it was found that the organisation was ready to work hand in hand with AI. Furthermore, the results revealed that AI should be considered as an opportunity rather than a threat. On the other hand, the qualitative findings suggested that the participants viewed AI as a threat and opportunity in that it is an opportunity to streamline mundane tasks and increasing focus on strategic ones. In addition, the findings suggested that the participants felt there were still space to become more creative and evolve by using AI hand in hand with the human element to filter back to the business to aid better decision making. Besides, the findings showed that the smaller organisations/HR departments, the more threating this becomes. Overall, there was consensus that people embrace the change and use AI as an opportunity to advance how we do things.

6.2.4 Impact of AI on skills set/competencies

It was found that AI can assist in making HR more strategic. Moreover, the findings indicated that the organisational culture was conducive for using technology. Besides, the study discovered that a key competence of a HR practitioner of the future will be an ability to find solutions by utilisation and implementation of AI. Furthermore, the results of the Pearson's moment correlation suggested a significant and direct relationship between the impact of AI on skills/competencies and the impact of AI on business. The implication is that for every unit of increase as a result of the impact of AI on skills set/competencies, there will be an equivalent increase of AI on the impact of business. The qualitative findings showed that the use of AI impacted the skills set and competencies of employees. Some of the skills noted were:

- Psychology, design thinking, programme management, data analytics. This involves looking for patterns in data and making decisions based on these.
- Training of managers in HR activities so there is a less dependency on HR.
- Engineers – set up AI and 10 years to train those requiring to utilize this.
- Covid impact has taught us to be more savvy, agile and preparing us for the industrial revolution.
- Data analytics

Extant literature suggests that AI manages the gap between the skills required for the job and the capacities available to its applicants, whether on a team or at an enterprise level. AI automates the process and enhances knowledge to promote better decision-making. AI has an enormous benefit in monitoring the entire workforce at once. It is thus possible to automatically analyse skills and develop areas, and to instantly evaluate the performance of the existing employees. AI can educate staff on the skills the organisation desires or reinforces, and can provide additional training if needed instead of hiring specialised skills. To strengthen their leadership skills, for example, developing or coaching HR managers themselves could help HR managers build an atmosphere that can encourage their team members' lives (Graetz & Michaels, 2017). The AI technology can analyse the existing pool of applicants and identify those that are suitable for new roles as they open through the maintenance of a database of previous applicants. HR professionals are able to use this technology to identify skilled employees more quickly and easier than ever before than to spend time and resources looking for new talent. Once recruitment managers have found their position to be the best suited, the embarkation process begins. AI's technology instead allows new hires, through chatbots and remote support applications, to utilise human resources support every day, in any location. This change not only allows employees to proceed at their own pace through the on-boarding process but also reduces the administrative burden and leads to faster integration.

The appropriate talent is determined by AI in respect of succession planning for any position in or around the department. Through computer education ability, AI unlocks individual growth opportunities and points of interaction between its strategic vision and opportunities and its employees' best strengths and capabilities without distorting specific candidates in the field of potential management roles. Furthermore, artificial information technology suggests an ideal approach to learning by using intelligent algorithms more efficiently and easily. In conjunction with e-learning sites, businesses can also use AI to support employees' skills development. It will develop for each employee a customised training programme based on their credentials and organisational requirements. E-learning resources may be used by employees to gain new ability, and improve existing skills. Finding the career path of an individual based on their training schedule, an AI system can be combined with an algorithm.

According to numerous studies completed by Deloitte, Harvard Business Schools, Gullup and Financial Times; it is predicted that millennials will make up 75% of the of the global workforce by 2025 (Teamstage, 2022). This generation of employees are quite technology savvy and have a reasonable expectation for this in their development via AI tools.

AI can choose from pre-programmed algorithms and effective computational technology in real time. Businesses would have enhanced employee and candidate experience by using an AI department of human resources. Andrew Ng, a Chinese-US machine learning and artificial intelligence specialist, said "Deep learning will revolutionise every industry. McKinsey's machine learning forecast supports his claim that the effect of AI on the global economy will be $13 trillion by 2030. The effect will also be of AI on departments of human resources. Human resource professionals realise that it is important to optimise the interaction of the human mind with machine learning to create an intuitive working environment and smooth workflow. AI will decide with pre-programmed algorithms and powerful computing technologies in real time. Enterprises will have better knowledge for their candidates and employees in their departments of human resources by combining the human element and artificial understanding. Furthermore, AI can allow businesses to better understand their target market and encourage sales campaigns guided by performance (Acemoglu & Autor, 2011).

6.2.5 Impact of AI on business

It was discovered that AI tools could add value to the current business function in terms of their HR requirements. Furthermore, the results suggested the respondents do not believe that the utilisation of AI removed the “human” and emotional element from HR. Also, the results suggested the respondents’ jobs in the current state could be negatively impacted by adopting AI such as being made redundant. In addition, it was found that the organisation’s values have supported the adoption of AI. Besides, the results showed that the respondents felt more empowered in decision-making with the support of AI. The results showed that AI assisted in simplifying processes within the organisation making it more efficient. Finally, it was found that having AI tools available assisted the organisation better in planning from a talent management perspective.

One study discovers that AI can help professionals make quick everyday decisions (Guenole, & Feinzig, 2017). AL-led systems can play a role in monitoring and evaluating the moods of employees before and after customer calls for example. After that, the department of Human Resources decides whether or not the person needs a break. Hence, AI can also identify anxiety on the basis of a person's behaviour and expression. It helps employers decide whether to investigate and correct the problem before it harms employees and the business. A major benefit from the use of AI is the consistent performance of routine activities (Brynjolfsson, & Mitchell, 2017). It has been argued that AI offers an opportunity for HR to make an impact,

whether on pay management or training, talent management and growth generally, and many HR leaders have argued (Wood, 2017; Brynjolfsson, & Mitchell, 2017).

Interestingly, the qualitative findings also supported the quantitative results. It was found that respondents wished to see more "human" in Human Resources as there was too much of automation. The advisory component has been left behind. This is particularly important in employment relations such as CCMA cases. Another concern raised was if people had the capabilities to use advanced technology once fully deployed as this could pose as a gap. These findings are also supported by existing studies

When it comes to selling or running different business operations, AI assists companies in saving money and time. Any company that relies on the internet to service customers can benefit from AI technology. The philosophy of digital marketing is based primarily on artificial technologies, but it can also have several operational benefits. The arts and entertainment industry, education, information and communication technology, healthcare, financial services, and gaming are among major industries that benefit from AI. In addition, AI can assist in data processing in tasks human beings need to perform to analyse data. Lastly, AI can assist in helping human resources workflows improved using AI-powered workflows to simplify and increase their performance. As AI plays an important role in reducing costs and improving profitability, it can also help companies cut their costs. Automation does not only divide people by eliminating repeaters; it frees up their time; it increases their capacity to operate on more demanding and varied tasks and also allows them a way to spend more time on what they would want. This allows companies to monitor processes round-the-clock, estimate potential repair and maintenance requirements, reduce production delays, minimise delays in the process. AI offers significant cost and rental value. AI offers a technical approach to the systemic problems faced in emerging markets by governments, businesses and the poorest members of society. Integrating data from various sources for example blogs, social networks and conventional channels will help businesses to improve data processing systems, formulate sound corporate strategies, reduce corporate barriers, develop new business models and stimulate economic development (Arora & Rahman, 2017).

It is suggested that development businesses will take advantage of advanced AI technologies to improve the autonomous distribution of products and services, automatically produce products and build mobile service and credit AI applications (Strusani & Houngbonon, 2019).

AI-based technology will broaden markets and build opportunities by improving efficiency, process automation, financial solutions and government services. Public and private sectors in emerging markets should leverage AI to identify new solutions for poverty and inequality reduction and work together to improve economic mobility and development (Andrews et al., 2019).

6.3 Objective two: Impact of the biographical variables on dimensions of the study

Objective two assessed the impact of the biographical variables (age, length of service, race, educational level and department) on the dimensions of the study to provide a better understanding of the 4th industrial revolution with a view of providing a framework for effective management thereof. To achieve this objective, two sets of hypotheses were formulated and tested, namely: H_2-there is a significant difference in the perception of respondents varying in biographical profiles (age, gender, race, educational category, length of service and cluster) regarding the sub-dimensions of AI. This hypothesis was tested and achieved only through the quantitative phase of the research using ANOVA and sample t-test.

The results of the ANOVA suggested that there was no significant difference in employees' perceptions, varying by age, tenure, and race, respectively, regarding the current status of the use of AI. Furthermore, evidence showed that there was no significant difference in employees' perceptions, varying by age, tenure, and race, respectively, regarding the advantages and disadvantages of the use of AI. Besides, the results revealed that there was no significant difference in employees' perceptions, varying by age, tenure, and race, respectively, regarding attitudes of HR practitioners towards AI.

The result further suggested no significant difference in employees' perceptions, varying by age, tenure, and race, respectively, regarding the impact of AI on skills set/competencies. It was found that no significant difference existed in the employees' perceptions, varying by age and tenure, respectively, regarding impact of AI on business. However, a significant difference existed in the employees' perceptions, varying by race. The implications of the study were that the respondents had varied perceptions regarding the adoption of AI. The implications of this finding is that organisations can consider more effective communication and orientation of AI to all employees to ensure consistent experiences across all biographical levels in the organization.

In terms of the t-test, the results indicated that there was significant difference in the perceptions of male and female employees regarding current status of use of AI, advantages and

disadvantages of the use of AI, HR practitioners' attitude towards the use of AI, impact of AI on skills set/competencies and impact of AI on business respectively.

6.4 Objective three: Extent to which the AI within HR is perceived to account for the variance in changing the strategic nature

Objective three ascertain the extent to which the AI within HR is perceived to account for the variance in changing the strategic nature. To achieve this, a hypothesis was formulated and tested, namely: H_3-the sub-dimensions significantly account for the variance in determining the impact of AI on HR in the 4th Industrial Revolution. The overall findings suggested that AI within the HR accounted for the variance in changing the strategic nature of the organisation. For instance, 72.4% of the respondents said that AI tools could add value to the current business function in terms of their HR requirements. Moreover, the results showed that the majority of the respondents said that AI assisted in simplifying processes within the organisation making it more efficient. It has also been found that the respondents agreed that having AI tools available assisted them better in planning from a talent management perspective.

This is partially relevant with regards to multi-generational workforces with millennials predicted to comprising of 75% of the global workforce in the next 3 years. This agile workforce demands technological innovation to keep them engaged leading to retention and job satisfaction.

6.5 Summary of the Findings

Figure 6.1 contains the summary of the key findings and discussion relating to the dimensions of 4IR that were studied.

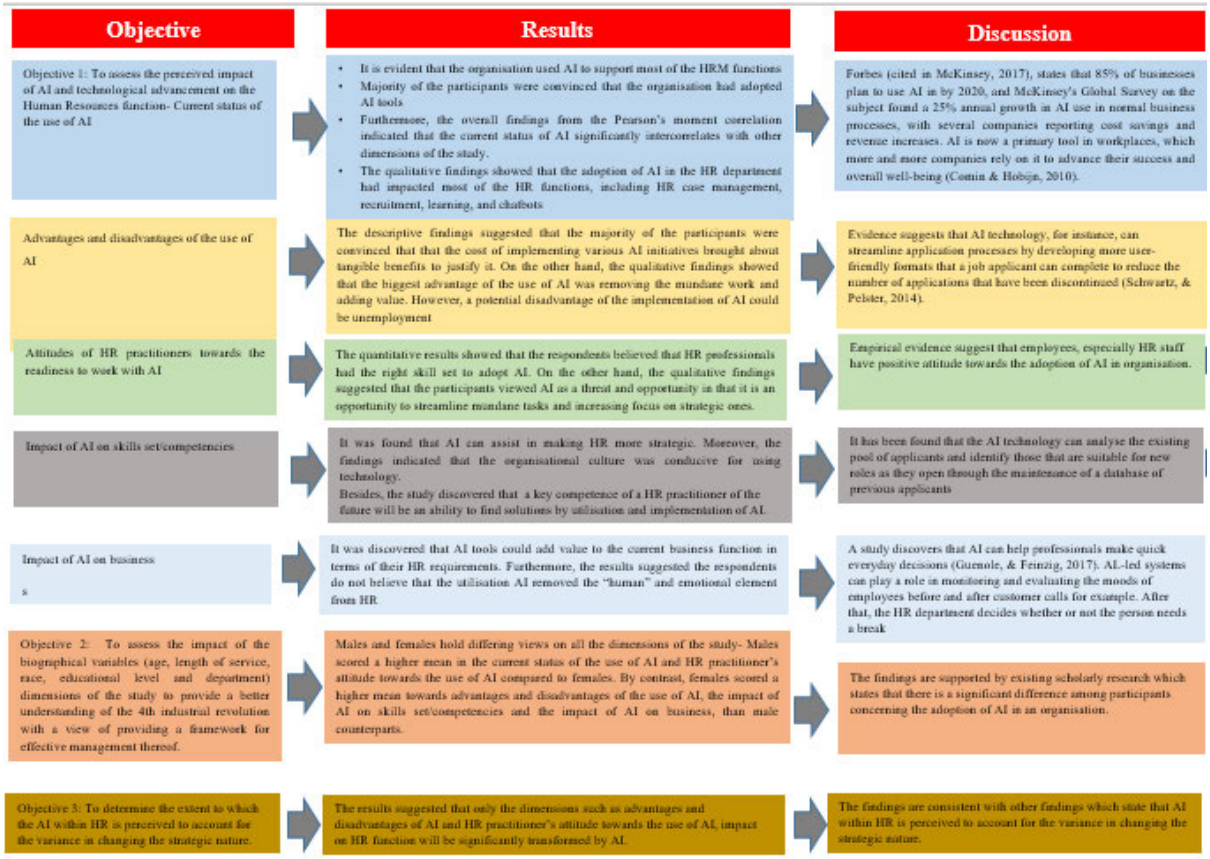

Figure 6.1 Summary of key findings and discussion

Compiled by Researcher

6.6 Conclusion

The chapter discussed the qualitative and quantitative results that emerged from the study, while comparing and contrasting the findings with existing scholarly research. The descriptive statistics suggested that the dimensions of the study (current status of AI, transformation of HR in a decade as a result of AI; advantages and disadvantages of AI; attitudes of HR practitioners towards the readiness to work with AI and the competencies required in the future; the most beneficial place for AI in the value chain, and lastly the impact of AI on the business had very high mean scores, exceeding threshold. This suggested that AI had positively impacted most of the HR functions in the organisation. In addition, the qualitative findings revealed that the organisation has adopted several tools to perform its functions, especially in HR operations, including HR case management with logging queries, recruitment, learning and chatbots. The

qualitative findings further suggested that the employees in the organisation do not face any challenges working with the AI tools. Moreover, the qualitative finding indicated that the biggest advantage of the use of AI was to remove the mundane work and added value. However, the limitations associated with the adoption of AI were mainly the redundancies that would exist especially in light of South Africa's high unemployment rate. Also, the qualitative findings identified mixed reactions among the participants concerning their attitudes to working with AI. While others view this as a threat and opportunity in that it is an opportunity to streamline mundane tasks and increasing focus on strategic ones but at the same time, the risk of offshoring, reducing local headcount emerges, others on the other hand, felt there were still space to become more creative and evolve by using AI hand in hand with human element to filter back to the business to aid better decision making. It has also fund that indicated that AI would be most beneficial in recruitment – especially the initial screening and onboarding. AI does not seek to take the 'human' out of HR but rather further enhance the service offering that HR can offer the organization through the numerous advantages noted.

Chapter Seven: Recommendations and Conclusion

7.1 Introduction

The previous chapter discussed the quantitative and qualitative findings obtained from the study. Moreover, this chapter deals with the conclusion and recommendations of the study. The conclusion and recommendations are presented based on the research findings as per the research objectives of the study.

7.2 Recommendations of the study

From the findings, recommendations are presented to facilitate the transitioning of HR to the 4IR environment and mind-set the following recommendations are made.

7.2.1 Recommendation 1: Full utilisation of artificial intelligence

From the study, the majority of the respondents denied that the country had utilised AI to its full capabilities. Based on the findings, the study recommends that the government ensure AI utilisation to its full capabilities. Evidence suggests that AI can increase productivity and gross domestic product. However, strategic investment in different forms of AI technology is required to increase productivity and gross domestic product. From this perspective, it can be assumed that an increase in labour productivity will increase the gross domestic product as the government seeks to augment the country's labour force's productivity with AI technologies and automate some tasks and roles. Besides, it is believed that AI can transform all sectors of an economy, including education, healthcare, finance, mobility, and energy. From the findings, the government must ensure the utilisation of AI to its full capabilities. For this to happen, the government must invest in AI infrastructure projects and should consider introducing legislation to govern AI, similar to that of the Skills Development Act. In this way, government can ensure that all companies are taking the appropriate steps to introduce AI and that the workforce is adequately equipped for this change. This in turn will bring out tangible benefits to the government in terms of boosting the GDP across all sectors.

- Investing in, and promotion of, research and development

Most of AI research is currently driven by the private sector and academia. Governments are encouraged to invest more in AI research in partnership with the private sector in areas of strategic national interest or direct efforts for the public good (Bhunia, 2017). They can set

ambitious but achievable goals, encourage and incentivise investments in the sector. Also, smaller companies might not be in a position to invest into AI research because they would have to wait too long to draw returns. But some of the best, innovative ideas might come from there. Public platforms can also facilitate the participation of SMMEs (Bhunia, 2017).

- Building and driving partnerships

Governments are in the best position to build the requisite coalitions, bringing together industry and academia and direct applications in the right direction. International collaboration is also essential to reach the full potential of AI, for which governments have to start taking initiative.

- Creating a policy, legal, and regulatory environment that achieves the right balance

Drafting regulation is a tricky issue, as it must not stifle innovation, when a technology is still evolving and is yet to achieve widespread adoption but it must also avoid negative impact on society. Effective regulation would require staff knowledgeable about the existing regulatory framework and regulatory practices generally, and technical experts with knowledge of AI. Necessary technical talent must be recruited or identified in existing agency staff, and they must be involved in regulatory policy discussions.

- Ensuring education and training for jobs of the future

Governments have to invest heavily in high quality education and lay stress on STEM areas (Science, technology, engineering and mathematics) and familiarity with computers and computer science. This process should ideally start from an early age in primary schools and thereafter universities. The Principles for Responsible Management Education (PRME) is a United Nations-supported initiative founded in 2007. As a platform to raise the profile of sustainability in schools around the world, PRME equips today's business students with the understanding and ability to deliver change tomorrow.

Working through Six Principles, PRME engages business and management schools to ensure they provide future leaders with the skills needed to balance economic and sustainability goals, while drawing attention to the Sustainable Development Goals (SDGs) and aligning academic (UNPRME.org, 2022).

The six principles focus on the (1) purpose of creating sustainable value and an inclusive, sustainable global economy, (2) values of responsibility, as illustrated by initiatives like the

UN Global Compact's ten principles around human rights, labour rights, ecological sustainability, and anti-corruption, (3) method of creating pedagogies and education approaches that develop effective and responsible leaders, (4) research that advances understanding about the impacts of companies in creating sustainable social, environmental, and economic value, (5) partnership that fosters interactions between managers and academics to explore challenges in meeting environmental and social responsibilities, and (6) dialogue that facilitates debate among representatives of the multiple sectors that constitute society around key social and sustainability issues (Waddock et al, 2011).

"The pace is accelerating. And governments need to figure out how to deal with it. If they do it right, harnessing the opportunities and mitigating the threats, then AI could help us overcome many of the world's biggest challenges and improve people's lives. Using technology to save the world might have become a utopian cliché. But AI with its vast range of potential applications could be truly transformative, if used and regulated with thoughtful foresight" (Bhunia, 2017:1).

Since October, the White House has released three papers providing in-depth analysis of the implications of AI, the outline of a government strategy and its potential impact on economy and how to deal with it. In October, a committee of MPs in the UK, the Commons science and technology committee called upon the government to establish a commission on artificial intelligence to provide global leadership on the social, legal and ethical implications of AI.

Figure 7.1 illustrates the rate of AI adoption during Covid-19. One can observe the rapid pace that AI is being adopted substantially increasing during the pandemic across all industries.

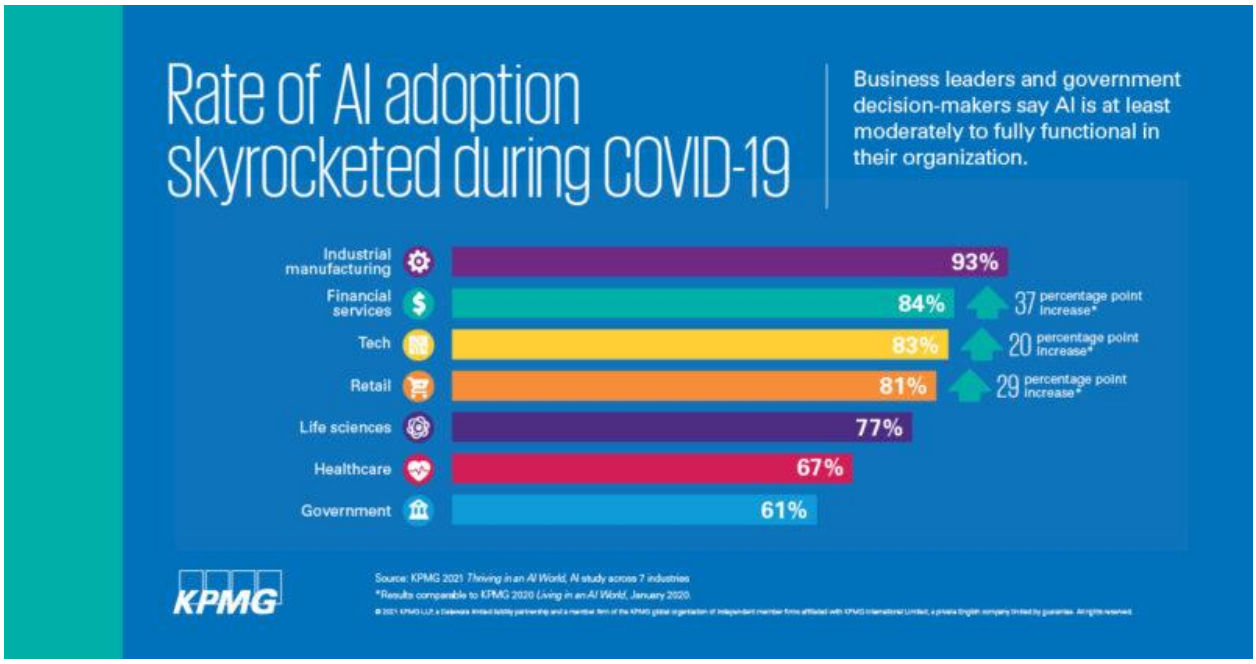

Figure 7.1 Rate of AI Adoption during Covid-19

Source: KPMG (2021). Thriving in a AI World across 7 industries. Available online: https://research.aimultiple.com/ai-government/

7.2.2 Recommendation 2: Educational campaign and creation of awareness about different AI tools

Based on the findings, most of the respondents in the organisation were unaware of the availability of different AI tools. Therefore, to make the employees aware of the availability of different AI tools, the organisation must educate and create more awareness of the type of AI tools available and adopted. AI belongs to a family of technologies, including but not limited to computer vision, natural language, virtual assistants, robotic process automation, and advanced machine learning. It is suggested that the employees be made aware of the type of AI tools adopted by the organisation. This can be done via the following methods:

- educational campaign and awareness which can take the form of workshops, seminars, conferences, and training programmes.
- Moreover, to create awareness of AI tools, the organisation must involve employees in the decision-making process related to AI. Change Champions should be used for staff to use as a platform to voice their suggestions of what tools will be useful to them and explain the

benefits thereof. In this way, the organisation is obtaining buy in from the users and will have a greater success rate in deploying AI in the organization.

- Simple and illustrative user guides should be made available to staff outlining the steps of how to use various AI tools.
- Lastly, the organisation can look at creating "AI Champions" locally that act as SMEs who will hand-hold staff through the process and serve as a guide. In this way, staff will not be overwhelmed by technology advancement and have a reference point should they require assistance.

7.2.3 Recommendation 3: Job security

The results indicated that one potential disadvantage of the adoption of AI could be unemployment. It is believed that the adoption of AI in an organisation affects employment in two ways: by displacing employees from performing previous tasks and increasing the demand for labour in industries or jobs that require AI. In addition, extant literature suggests that white- and blue-collar employees will be replaced by robots and digital agents. Scientists predict that new jobs will be created by robots and automation, and AI. This will be more likely to reduce the number of staff required across all industries. From this perspective, it is suggested that the organisation should provide job security for all employees, especially those likely to be affected negatively by the introduction and adoption of AI. Job security represents the assurance that a worker can keep his/her job in the foreseeable future with minimal influences from outside factors. This can be achieved by:

- Employers and business owners need to develop and communicate a clear job security policy to assure employees of the safety of their jobs in light of AI.
- Employee wellness campaigns can be an initiative that organisations can use to promote employee retention, increase staff morale and productivity.
- Senior management can consider making AI a priority on the boardroom agenda to evidence oversight and reassurance to staff on the strategic importance and implementation thereof.

7.2.4 Recommendation 4: Attract, develop and retain employees with the right skills

These days, most organisations are more concerned about attracting, developing, and retaining employees with the right skills to compete in the competitive market. It is believed that most organisations are looking for skilled workers who have tradable skills. From the perspective of the intellectual capital theory, successful organisations attract, grow and maintain the best

individuals to drive a global organisation. Therefore, the task for companies is to ensure that these talented individuals are identified, assimilated, produced, rewarded, and maintained. Unfortunately, this study found that HR professionals do not have enough skill set to adopt AI.

- Against this background, the study recommends that to ensure the successful adoption and full utilisation of AI, the organisation should ensure that the right people with the skills are identified, attracted, developed, and maintained.
- The organisation may adopt HR practices such as job analysis, employer branding, recruitment and selection, and competitive remuneration packages to attract the best talent.
- HR strategies such as training and development, coaching and mentoring, succession planning, and career planning and development may be adopted to develop employees' skills. On the other hand, the organisation may adopt HR practices such as employee assistance programmes, employer-employee relationships, work-life balance, and salary administration to retain skilled employees.
- Organisations should also adopt a robust recruitment process in order to attract the right skill set required for the Forth Industrial Revolution. This should be in the form of highly analytical or IT-skills, multiple-skilled individuals who have specialized in a number of different areas. Job descriptions needs to clearly define what skills the organisations require in order to keep up with the pace of technological advancement.

7.2.5 Recommendation 5: Employee training and development

The study found that most employees' jobs in the current state could be negatively impacted by adopting AI, such as being made redundant. Moreover, extant literature shows that AI will result in unemployment in the upcoming years as other types of new technology did in the previous revolutions referenced in Chapter 2. In contemporary times, one technology causing specific anxiety regarding job displacement is AI. Thus, AI automation technology has the potential to disrupt labour markets significantly. Besides, AI requires new ways of thinking, which means creativity is an essential skill for HR professionals.

- It is suggested that critical thinking skills allow HR professionals to develop innovative ideas and solve complex problems using logic and reasoning.
- Apart from critical thinking skills, AI requires technical skills (programming skills, linear algebra, probability, statistics, algorithms, and frameworks) and non-technical skills (communication and problem-solving skills). From the discussion above, it is safe to argue that to pursue AI as a career, and there are a varied number of skills that one needs to

master, all of which require a great deal of training. Based on these findings, the study recommends that the organisation should provide more training and development opportunities for employees to acquire new skills, experience, and knowledge needed.

7.2.6 Recommendation 6: Appointment of skilled and competent HR practitioners

The adoption and investment in AI require skilled and competent managers, including HR practitioners. However, the study found that the organisation does not have enough HR professionals with the right skillset to adopt AI. For this reason, the study recommends the appointment or recruitment of skilled and competent HR practitioners to assist in the adoption of AI. HRM function is becoming increasingly important and strategic due to the evolution of technologies such as AI that require HRM practitioners to be more comprehensive, structured, measurable, and standardised. It can be argued that the adoption of AI in an organisation requires HR practitioners who understand technology to help create better organisational identity while emerging out of the company and improve social relations within the company. Moreover, the adoption of AI requires HR practitioners to create the internal capacity of the organisation to change to reflect the rhythm of external changes. In addition, the integration of AI into HR functions requires HR practitioners who can effectively integrate HR practices' innovative solutions into the business problems. From these perspectives, the organisation needs to ensure that only HR practitioners with the technical skills are appointed to assist in implementing AI at all levels within the organisation.

7.3 Conclusion of the study

Objective one assessed the perceived impact of AI and technological advancement on the Human Resources function (current status of AI, the transformation of HR in a decade as a result of AI; advantages and disadvantages of AI; attitudes of HR practitioners towards the readiness to work with AI and the competencies required in the future; the most beneficial place for AI in the value chain, and lastly the impact of AI on the business). This objective was investigated and achieved through qualitative and quantitative research methods. The findings are summarized below.

7.3.1 Objective 1(a): Current status of the use of AI

The findings of the study indicated that the organization has adopted AI tools to support the HRM function. It was also found that the current status of AI is more likely to have a rippling effect and bring about improvements in the other dimensions as well as overall improvements. Both the quantitative and qualitative findings are consistent with previous studies. Based on

the above, one can conclude that 'humans' are working alongside AI and that their roles were still required and not negatively impacted due to the deployment of AI.

7.3.2 Objective 1(b): Advantages and disadvantages of the use of AI

Based on the above, one can conclude that the advantages (such as automation of mundane tasks, big data) far outweigh the disadvantages (namely cost and unemployment) hence the 'human' is still required within HR in the Fourth Industrial Revolution in order to strike a balance between organizational goals and social responsibility.

7.3.3 Objective 1 (c): Attitudes of HR practitioners towards the readiness to work with AI

The quantitative results showed that the respondents believed that HR professionals had the right skill set to adopt AI. Also, it was found that the organisation was ready to work hand in hand with AI. Overall, there was a consensus that people embrace the change and use AI as an opportunity to advance how we do things. The above evidences the vast opportunity that still exists in the AI space for 'humans' to further evolve and embed this within organizations. In order to achieve this, one will require human capital.

7.3.4 Objective 1 (d): Impact of AI on skills set/competencies

It was found that AI can assist in making HR more strategic. Moreover, the findings indicated that the organisational culture was conducive for using technology. Besides, the study discovered that a key competence of a HR practitioner of the future will be an ability to find solutions by utilisation and implementation of AI.

7.3.5 Objective 1(e): Impact of AI on business

It was discovered that AI tools could add value to the current business function in terms of their HR requirements. Furthermore, the results suggested the respondents do not believe that the utilisation AI removed the "human" and emotional element from HR.

Interestingly, the qualitative findings also agreed with the quantitative results. It was found that respondents wished to see more "people" in Human Resources as there was too much of automation. The advisory component has been left behind.

7.3.6 Objective 2: Objective two: Impact of the biographical variables on dimensions of the study

Objective two assessed impact of the biographical variables (age, length of service, race, educational level and department) on dimensions of the study to provide a better understanding of the 4th industrial revolution with a view of providing a framework for effective management thereof. The results of the ANOVA suggested that there was no significant difference in employees' perceptions, varying by age, tenure, and race, respectively, regarding all the variables in the study.

However, a significant difference existed in the employees' perceptions, varying by race. In terms of the t-test, the results indicated that there was significant difference in the perceptions of male and female employees regarding current status of use of AI, advantages and disadvantages of the use of AI, HR practitioner's attitude towards the use of AI, impact of AI on skills set/competencies and impact of AI on business respectively.

7.3.7 Objective 3: Objective three: Extent to which the AI within HR is perceived to account for the variance in changing the strategic nature

The overall findings suggested that AI within the HR accounted for the variance in changing the strategic nature of the organization. For instance, majority of the respondents said that AI tools could add value to the current business function in terms of their HR requirements. Moreover, the results showed that majority of the respondents said that AI assisted in simplifying processes within the organisation making it more efficient.

7.4 Recommendations for future research

This study also focused on AI in a HR context and not in an overall organisational context. Future research can focus on if AI has benefits in other functions of organisations and how when integrated can create an eco-system whereby all systems connect to each other via AI and further streamlining and efficiencies are achieved.

7.5 Summary of key findings, discussion and recommendations

Figure 7.2 summarises the key findings, discussion and recommendations of the study

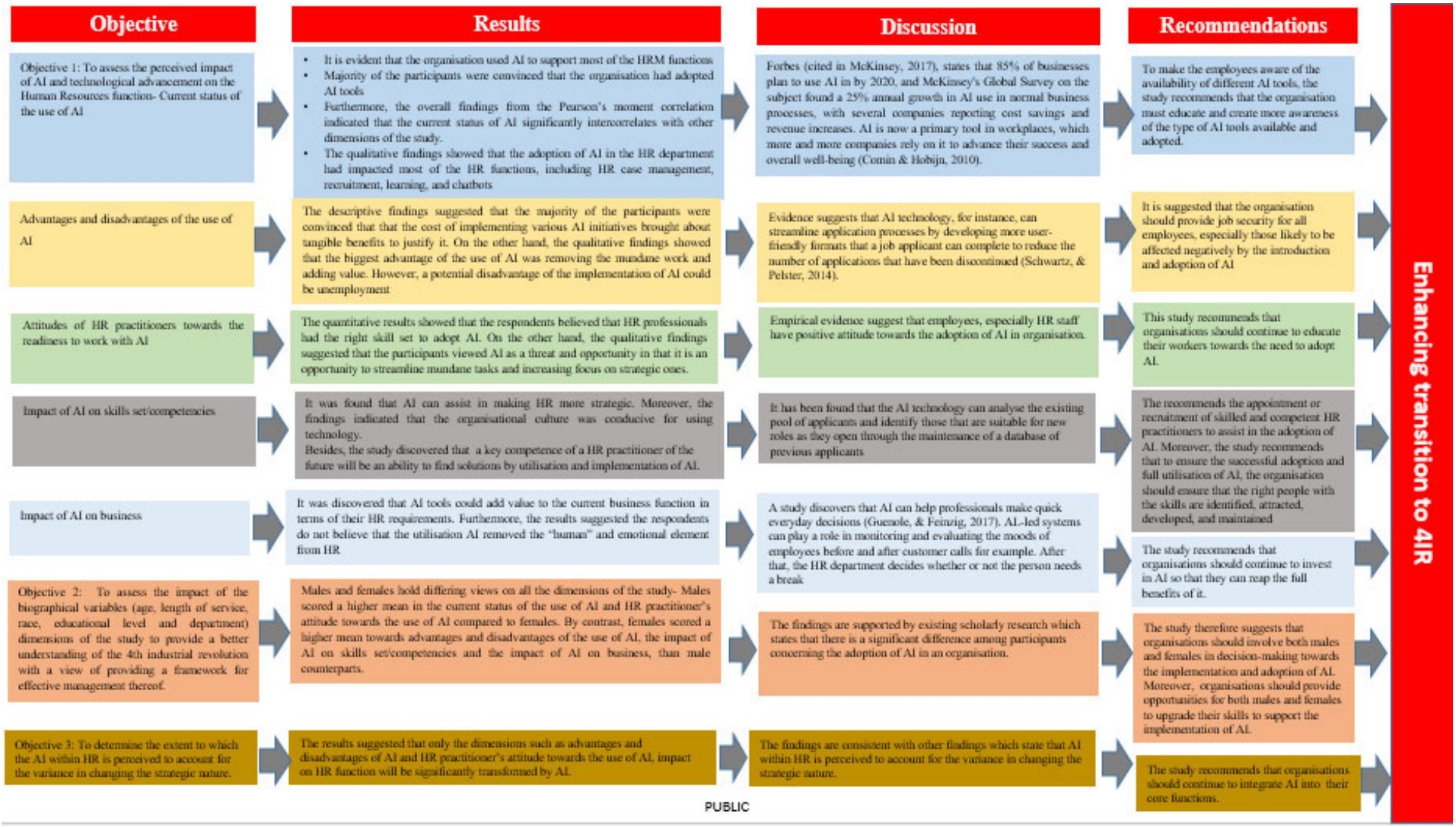

Figure 7.2 Summary of key findings, discussion and recommendations

Compiled by Researcher

7.8 Conclusion

The chapter drew the conclusion and recommendations of the study. The quantitative results reflected that the various constructs such as the current status of AI, advantages and disadvantages of the use of AI, HR function will be transformed by AI, the impact of AI on skills set/competencies, the impact of AI on business and attitudes of HR practitioners towards AI had very high mean scores, exceeding the threshold. The results of the Pearson's moment correlation suggested no relationship between the current status of use of AI and the advantages and disadvantages of the use of AI. Furthermore, the results indicated no relationship between the advantages and disadvantages of using AI and HR practitioners' attitudes towards the use of AI. In addition, no significant relationship existed between HR practitioners' attitude towards the use of AI and HR function will be transformed by AI. However, there was a moderate significant relationship between HR function will be transformed by AI and the impact of AI on skills set/competencies. Also, a strong positive relationship existed between the impact of AI on skills set/competencies and the impact of AI on business.

The qualitative findings also confirmed that the adoption of AI in the HR department had impacted most of the HR functions, including HR case management, recruitment, learning, and chatbots. Moreover, it was found that the employees did not face any challenges working with the AI tools available. Additionally, the findings revealed that the most significant advantage of using AI was removing the mundane work and adding value. However, the disadvantages identified were mainly the redundancies that would exist, especially in light of South Africa's high unemployment rate. Also, the qualitative findings suggested that when it comes to the attitude of the HR practitioners towards the use of AI, the participants felt there was still space to become more creative and evolve by using AI hand in hand with the human element to filter back to the business to aid better decision making. Overall, there was a consensus that people embrace the change and use it as an opportunity to advance how things are done in the organisation. The results of the ANOVA suggested that there was no significant difference in employees' perceptions, varying by age, tenure, and race, respectively, regarding the current status of the use of AI, the advantages and disadvantages of the use of AI, attitudes of HR practitioners towards AI, HR function will be transformed by AI. the impact of AI on skills set/competencies and impact of AI on business. The results of the t-test indicated that there was a significant difference in the perceptions of male and female employees regarding the current status of use of AI, advantages and disadvantages of the use of AI, HR practitioner's attitude towards the use of AI, AI will transform HR function, the impact of AI on skills

set/competencies and impact of AI on business respectively at the 1% level of significance. The study further found that AI tools could add value to the current business function regarding their HR requirements. Based on the findings, the following recommendations were made: full utilisation of AI, educational campaign and creation of awareness about different AI tools, provision of job security, attraction, development and retention of employees with the right skills, employee training and development and appointment of HR practitioners with the right skills and competencies.

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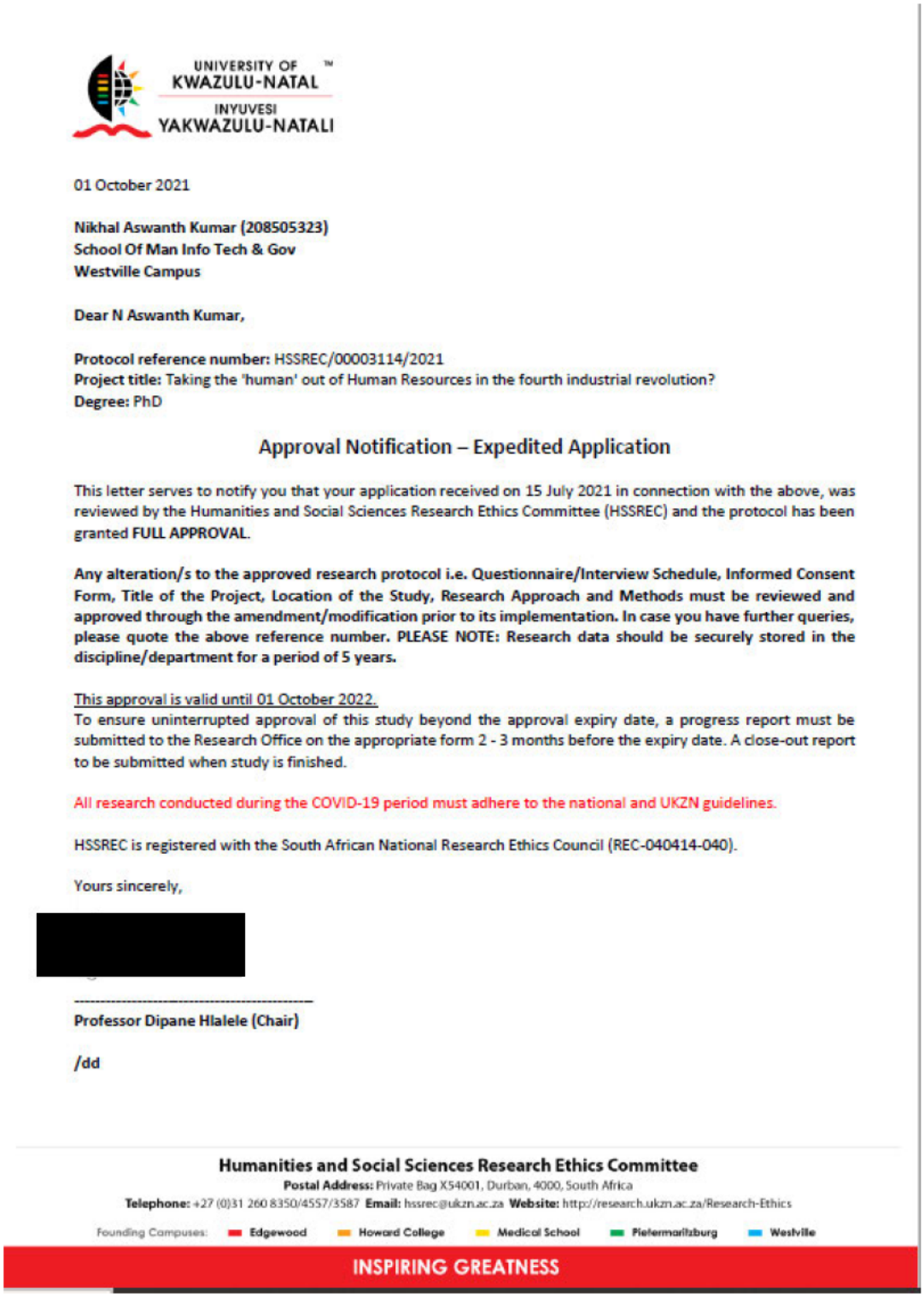
Annexures

Annexure 1: Ethical Clearance



UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

01 October 2021

Nikhal Aswanth Kumar (208505323)
School Of Man Info Tech & Gov
Westville Campus

Dear N Aswanth Kumar,

Protocol reference number: HSSREC/00003114/2021
Project title: Taking the 'human' out of Human Resources in the fourth industrial revolution?
Degree: PhD

Approval Notification – Expedited Application

This letter serves to notify you that your application received on 15 July 2021 in connection with the above, was reviewed by the Humanities and Social Sciences Research Ethics Committee (HSSREC) and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

This approval is valid until 01 October 2022.
To ensure uninterrupted approval of this study beyond the approval expiry date, a progress report must be submitted to the Research Office on the appropriate form 2 - 3 months before the expiry date. A close-out report to be submitted when study is finished.

All research conducted during the COVID-19 period must adhere to the national and UKZN guidelines.

HSSREC is registered with the South African National Research Ethics Council (REC-040414-040).

Yours sincerely,

[redacted]

Professor Dipane Hlalele (Chair)

/dd

Humanities and Social Sciences Research Ethics Committee
Postal Address: Private Bag X54001, Durban, 4000, South Africa
Telephone: +27 (0)31 260 8350/4557/3587 **Email:** hssrec@ukzn.ac.za **Website:** http://research.ukzn.ac.za/Research-Ethics
Founding Campuses: Edgewood Howard College Medical School Pietermaritzburg Westville

INSPIRING GREATNESS

Annexure 2: Gatekeeper's Approval

University of Kwa-Zulu Natal
College of Law and Management Studies
School of Management, Information Technology and Governance
Research Office
Kwa-Zulu Natal
Westville
3630

1 July 2021

To Whom It May Concern,

Please be informed that we have considered a request by Nikhal A. Kumar (Student number 208505323) to use HSBC Bank plc - Johannesburg Branch as a research study site for purposes of a Doctorate research titled: "Taking the 'human' out from Human Resources in the fourth industrial revolution?".

We wish to hereby inform you of the acceptance of the request, with the following conditions:

1. The company name will be kept anonymous throughout the study and;
2. The individuals' names participating in the study should be kept confidential.

Yours sincerely

[redacted]
Chief Compliance Officer

Annexure 3: Informed Consent

UNIVERSITY OF KWAZULU-NATAL

School of Management: Human Resources

Dear Respondent,

Doctorate Research Project

Researcher: Nikhal Aswanth Kumar (0729898376)

Supervisor: Prof S. Brijball Parumasur (031-2607176)

I, Nikhal A. Kumar, am a Doctorate student in the School of Management, IT & Governance at the University of KwaZulu-Natal. You are invited to participate in a research project entitled 'Taking the 'human' out from Human Resources (HR) in the fourth industrial revolution?'.

The aim of this study is to analyse perceptions of Acritical Intelligence to the Human Resources field to provide a better understanding of the 4th industrial revolution with a view of providing a framework for effective management thereof. Through your participation I hope to gain insight into these key aspects.

The results of the survey will contribute positively to create literature regarding the impact that AI and technology will have on HR in the fourth industrial revolution. Your participation in this project is voluntary. You may refuse to participate or withdraw from the project at any time with no negative consequence. There will be no monetary gain from participating in this research project. Confidentiality and anonymity of records identifying you as a participant will be maintained by the School of Management, IT and Governance of UKZN.

If you have any questions or concerns about participating in this study, please contact me or my supervisor at the numbers listed above. It should take you about 10 minutes to complete the questionnaire. I hope you will take the time to complete the questionnaire.

Yours Sincerely,

Nikhal A. Kumar

Investigator's signature_____ Date_____

UNIVERSITY OF KWAZULU-NATAL

School of Management, IT & Governance

Doctorate Research Project

Researcher: Nikhal Aswanth Kumar (0729898376)

Supervisor: Prof S. Brijball Parumasur (031-2607176)

CONSENT

I_____(full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project. I understand that I am at liberty to withdraw from the project at any time, should I so desire.

_____ _____

Signature of Participant Date

This page is to be retained by researcher

Annexure 4: Questionnaire

For each of the following, mark a cross (X) in the box of the category that best describes you.

1. Age

21 – 30 years		1
31 – 40 years		2
41 – 50 years		3
51 – 60 years		4
Over 60 years		5

2. Gender

Male		1
Female		2

3. Length of Service

0 – 5 years		1
6 – 10 years		2
11 – 15 years		3
16 years and above		4

4. Race

Black		1
Indian		2
White		3

Coloured		4
Foreign National		5

5. Are you a line manager?

Yes		1
No		2

By marking a cross (X) in the appropriate box, indicate the extent to which you agree or disagree with each of the statements using the scale below:

Strongly Disagree(SD)	**Disagree(D)**	**Neither agree nor disagree(NA/ND)**	**Agree(A)**	**Strongly Agree(SA)**
1	2	3	4	5

No.	Statement	1 SD	2 D	3 NA/ ND	4 A	5 SA
1.	The organisation is currently adopting AI tools.					
2.	I believe that the banking industry as a whole is utilizing AI.					
3.	The country is utilizing AI to its full capabilities.					
4.	I am aware of the different AI tools available.					
5.	I am open to interacting with AI tools opposed to human beings.					
6.	The cost in implementing various AI initiatives will bring about tangible benefits in order to justify it.					
7.	A potential disadvantage of the implementation of AI could be unemployment.					
8.	An advantage in utilizing AI will be that the organisation is keeping up to date with global trends such as big data.					

9.	The implementation of AI for mundane and repetitive tasks would add value in increasing accuracy leading to faster decision making.					
10.	In my opinion, HR professionals have the right skill set to adopt AI.					
11.	Our organisation is ready to work hand in hand with AI.					
12.	AI should be considered as an opportunity rather than a treat.					
13.	AI can assist in making HR more strategic.					
14.	The organisational culture is conducive for using technology.					
15.	A key competence of a HR practitioner of the future will be an ability to find solutions by utilization and implementation of AI.					
16.	AI tools could add value to my current business function in terms of my HR requirements.					
17.	Utilizing AI will remove the "human" and emotional element from HR.					
18.	My job in its current state could be negatively impacted by adopting AI such as being made redundant.					
19.	The organisations values supports the adoption of AI					
20.	I will feel more empowered in decision making with the support of AI.					
21.	AI will assist in simplifying processes within the organisation making it more efficient.					
22.	Having AI tools available can assist me better in planning from a talent management perspective.					

23. In which areas of HR do you feel the adoption of AI will be most beneficial?

Choose one or more that could apply:

Talent Attraction (Recruitment & On boarding)		1
Performance Management		2

Employee Relations (Disciplinary)		3
Talent Development (Training & Development)		4
HR Administration (Payroll)		5
Employee Wellness		6
All of the above		7

24. Which industry do you think will be the leaders in pioneering the way for AI?

Financial Services (example: Banking/Financial Institutions)		1
Information Technology (example: Google/Microsoft)		2
Telecoms (example: Apple, Samsung)		3

25. What current AI tools do you use in your everyday life?

Virtual Personal Assistants (example: Bixby, Siri, Google Now)		1
Communication devices with AI software such as face recognition		2
Smart Home Devices		3
Online Shopping		4
Other: Open Field		5

26. What time frame do you think South Africa and the organisation will adopt AI?

5 years		1
10 years		2
15 years		3
20 years		4

27. What time frame do you think the global organisation will adopt AI?

5 years		1
10 years		2
15 years		3
20 years		4

28. How has the pandemic impacted your overall experience with HR?

No impact – Business as Usual and remote support worked well.		1
I preferred face to face HR support		2

Annexure 5: Focus Group Schedule

- To determine the current status of the use of artificial intelligence in the HR departments of South African banks.
    - What AI tools are you currently using?
    - If so, what are the obstacles you have faced in implementing AI?
    - Are you presently maximizing the use of AI?
    - Have you done any cost-benefit analyses? Elaborate. What is the return on investment?
- To determine the possible advantages and disadvantages of the use of artificial intelligence.
    - What have been the benefits or advantages of using AI?
    - What have been the down side to using AI?
- To determine the attitudes of HR practitioners towards the use of artificial intelligence and whether they are ready to work with artificial intelligence.
    - What is the attitude of HR staff towards AI? Are they threatened by it or do they embrace it?
    - How do we change the perception of AI been perceived at as an opportunity rather than a threat?
- To determine where in the HR value chain artificial intelligence would be most beneficial.
    - To what extent do you think AI will take over certain activities within the HR function?
    - Where do you think that AI would be most beneficial in the HR value chain?
    - How will the HR value chain be changed?
- To determine how the HR function could be transformed by artificial intelligence in 5 - 10.
    - What would the new industrial landscape look like?
    - What do you foresee the HR environment looking in 5-10 years?
    - Which industries will most likely to be the leader in integrating AI into their organisations (Google, Apple etc.) compared to financial services?
- To determine how artificial intelligence will impact on the skills set or competencies required of HR practitioners of the future and what is needed to manage this change.
    - What will HR practitioners be required to do? What will their new role be?
    - What skills will the future HR professionals require in order to adapt and adopt to this change?

- To determine the impact of AI on the business in terms of talent management, empowering people, emotional intelligence, organizational practices, and creating a conducive environment for the nurturing of organizational values of creativity and empathy.
    - How can AI enable HR professionals to be more strategic, reliable and credible?
    - Which part of the employee life cycle could this be the most beneficial to alleviate time wasted by a HR professional on mundane tasks such as HR statistics, scheduling of interviews, computing payroll, determining learning and development needs?
    - In adopting artificial intelligence for HR, what is the current cultural orientation around change?
    - Right workforce composition and skill sets? To what extent will jobs change to what they currently are? On what level of management (junior, mid-level or senior) will the most change take place? Will there be a change on operational jobs verse strategic?

Annexure 6: Interview Schedule

- To determine the current status of the use of artificial intelligence in the HR departments of South African banks.
    - Value-add business models. How business can shape this future? Are we using AI to make operations more efficient and cost effective rather than pursuing new business models? To what extent are the organisations digitally enabled (having machines, robots and systems feeding data to the cloud)?
- To determine the possible advantages and disadvantages of the use of artificial intelligence.
    - How are global companies planning to manage the risk associated with adopting AI?
    - Do you think there will be any Impact of adoption of AI on local and global unemployment?
- To determine the attitudes of HR practitioners towards the use of artificial intelligence and whether they are ready to work with artificial intelligence.
    - Is the world ready for HR to work hand in hand with AI?
    - What level of communications are taking place on how and why the organisation is digitally transforming HR?
- To determine where in the HR value chain artificial intelligence would be most beneficial.
    - HR has evolved over the last decade to earn a seat at the table and viewed as a significant stakeholder to enable the strategic objectives of the organisation. Do you feel AI seeks to undo this and which parts of HR would you expect to see the most change as a result of this?
- To determine how the HR function could be transformed by artificial intelligence in 5 - 10.
    - What do you think is a realistic timeline of when we can expect adoption of AI in the workplace?
- To determine how artificial intelligence will impact on the skills set or competencies required of HR practitioners of the future and what is needed to manage this change.

- What key competencies or skills do you require from the HR team or the HR executive of the organisation?
- Do you feel that HR globally has the right skill set and competencies in order to implement AI?

- To determine the impact of AI on the business in terms of talent management, empowering people, emotional intelligence, organizational practices, and creating a conducive environment for the nurturing of organizational values of creativity and empathy.
  - Can AI enable HR professionals to be more strategic, reliable and credible? How?
  - In adopting artificial intelligence for HR, what is the current cultural orientation around change?
  - Right workforce composition and skill sets? To what extent will jobs change to what they currently are? On what level of management (junior, mid-level or senior) will the most change take place. Will there be a change on operational jobs verse strategic?
  - What change management will be required in order to initiate this transition?
  - Given that you have worked in different countries and businesses; how do you think South Africa is positioned in comparison to other regions?