ORACLE

City HR Association

AI, AUTOMATION AND IMPACT ON HR

BY ANDY CAMPBELL, HCM STRATEGY DIRECTOR, ORACLE

HR METRICS PEOPLE ANALYTICS LATEST TECHNOLOGIES BENCHMARKING

Alignment to Business Strategy Effective Use of Data Data Protection Governance

Culture Regulation Diversity and Inclusion Valuing Talent

FinTech Outsourcing and Off-shoring Evidence-Based Decision Making

Predictive Analytics Mergers and Acquisitions Unstructured Data Standards

BIG DATA VISUALISATION TOOLS ARTIFICIAL INTELLIGENCE ROBOTICS

Extracted from the City HR Publication '*Measuring Up: Advanced People Analytics for City Employers*'. Available from the City HR website: www.cityhr.co.uk/resources/library/AI,Automation,Technology/Technology:MeasuringUpAdvancedPeopleAnalyticsforCityEmployers-June 2017

CHAPTER SIXTEEN: THE ROLE, POTENTIAL AND IMPLICATIONS OF ADVANCED TECHNOLOGY

This chapter explores the advances seen in HR Technology, and the implications for the world of HR analytics. From advanced tools such as Cloud based systems to the impact of Robotics and Artificial Intelligence, the implications for HR will be dramatic.

Over the past few years there have been considerable advances in technology which in turn have profoundly affected the world of work. Adoption of technology has impacted employees, the HR function and the entire enterprise which in turn has resulted in both great opportunities, but also some concerns. The scope and capability of analytical tools has continued to evolve and this has influenced how we use information throughout the organisation including the HR function. Whilst it is not possible to predict with accuracy what the implications are for every organisation or even different industry sectors, it is possible to consider the capabilities of these recent advances and the trends that are being observed. The role of this chapter is to explore some of these technological advances and what the implications might be for the world of HR analytics.

1. Advanced analytical tools

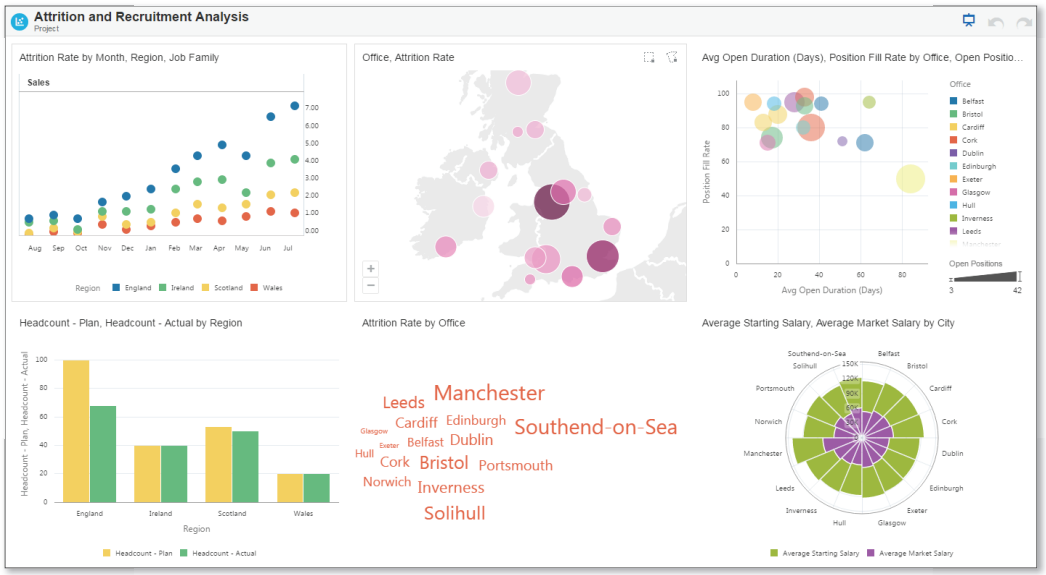
There are a broad range of analytical tools that have recently become available for organisations to exploit. However, it goes without saying that they are not all relevant for every organisation. Circumstances and priorities vary by industry and frankly some organisations are more mature in their development of systems and processes than others. It is important to recognise that, regardless of the organisation, the successful deployment of advanced analytical tools needs a strong foundation. The fundamentals need to be in place; clarity of data sources, a reasonable quality of data and the right skills to extract and interpret the data. We need to get the basics right. If HR is looking for support around the boardroom table for investment to deploy a new employee engagement strategy, this will not be taken seriously if there is disagreement over such basic information as how many people are employed in the business. However, once the organisation has matured, the foundations are in place and certain prerequisites have been met then the opportunity to adopt more advanced capabilities offers many options.

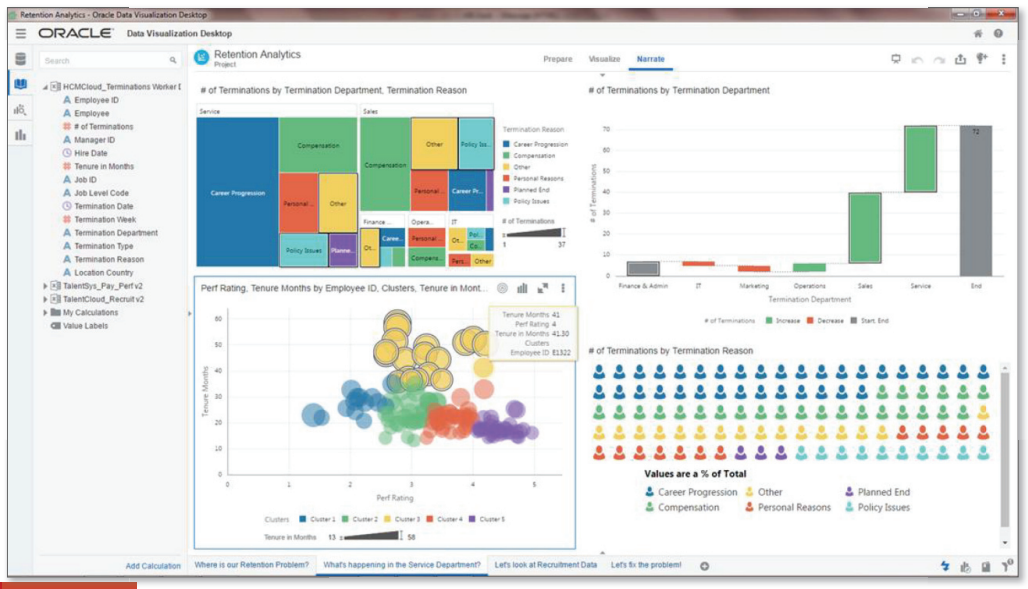
i Modern HR applications, typically delivered through the **Cloud**, are qualitatively different from their on-premise predecessors. They offer a user experience that is simple and engaging, the ability to access information through mobile devices and other 'tools of choice' and the opportunity to readily share information and collaborate with others. Management reporting is typically part of these systems, usually delivered through intuitive dashboards tailored to the role of the individual. They offer extensive operational reporting capabilities including a broad range of graphical formats, colour coding and drill down to subsequent levels of detail. In addition, exception based reporting is provided through alerts and notifications typically delivered through email and / or using mobile technology. Finally, advanced cloud applications deliver operational reporting embedded within business processes rather than through some separate management reporting system. This ensures that managers get the information that they need to make decisions, when they need it, as part of their normal way of working.

ii Much has been written in the last few years about **Big Data** and the ability to capture and interrogate vast amounts of information using data mining tools to uncover juicy nuggets of information. The typical use cases within the HR domain are the ability to capture lots of information pertaining to the recruitment cycle and combine it with performance data, sourcing data and other operational information. This enables analysis to be made to ascertain the best performers over the long term and develop new recruitment strategies that reflect the best sources / approaches for these candidates. Whilst there are obvious benefits to be made from such investigations the term 'Big' data is perhaps something of a misnomer. The data sets involved in the analysis of people data within an organisation are usually quite small when compared with the enormous amounts of transactional customer data that, say a large retail organisation might have access to. That said, the movement away from the more traditional and tactical operational reporting towards more strategic 'hypothesis based analysis' is potentially significant. It marks an increased focus on initiatives that can change the organisation, rather than merely reporting what has historically happened.

iii As reporting and analytical tools have become easier to use, so there has been an increasing focus on the way in which the data is being consumed by end users. **Visualisation tools** are now making it much easier for end users to access, interpret and understand the data that they are being presented with and their ability to interrogate it further. Historically the most important part of the analytics function was to make sure that the right data was presented in order for analysis to take place. The focus was on the content not on the representation and data was often reflected in a 'flat format'. However this approach was not very user centric and hence not conducive to easy interpretation. New visualisation tools enable data to be extracted and represented in a variety of new and much more engaging, almost pictorial ways.

These extend way beyond pie charts and histograms to include approaches such as scatter diagrams, bubble charts and heat maps. In addition, techniques are supported such as such as 'slice and dice analysis', manipulative modelling and what if scenario planning. This provides the opportunity to represent information in an easy to manage form, with a sense of narrative, almost as though the data is taking the user through a journey of analysis. This 'story telling' approach is still currently somewhat limited in its usage, but it is none the less extremely powerful when delivered well.





iv. In many regards the use of analytical tools within the HR function is way behind that in other parts of the enterprise such as Sales and Marketing. One example of this is the area of **Unstructured data**. Like customer data, much of the information that we hold on our employees comes from a variety of different sources, both internal and external to the organisation, and usually in a plethora of different formats. Some data such as salary, bonuses, deductions etc. will be held as financial data, usually in a core HR or payroll system. Some data such as job codes, roles, appraisal results and pay grades will typically be in a structured / codified manner often in an HR or talent management system. However there will also be other pieces of data which may be held in a more unstructured, less formal format, including textual information, email conversations or even video. To give an example, if we consider a piece of information such as an employee satisfaction survey, most of the

answers will be in the form of a 'score between 1 and 10' ranking or something similar. However some of the richest information in such a survey will be the textual information held in the 'Tell us why' or 'Comments' field. Historically information in these formats has been difficult to analyse using existing approaches however this is changing. It is now possible to use techniques such as natural language processing to analyse the data and then represent it in the form of word clouds and sentiment analysis. This is similar to the way in which we interpret customer information from sources such as external Twitter feeds in order to really understand what people feel about our organisation. This has the potential to be extremely powerful in helping us understand more about our employees and what we can do to make them more effective and engaged. For example, if we consider people who leave our organisations, we might capture their reasons for leaving at an exit interview and then codify their response as, say, 'Reason 5 – left for more pay'. However, if we had access to all of their previous performance management information, personal aspirations, appraisal comments, peer feedback, customer feedback, survey comments, grievance comments, even their email data, then we would have a much clearer view of them as an individual and why they did decide to leave. Perhaps more importantly, we might have been able to see these indications in advance and then we would be able to intervene to address any issues before it is too late. Many organisations would see this as a step too far.

In summary therefore, there are a broad variety of advanced analytical tools that can help us understand more about our workforce. Many of these tools will already be in use in different parts of the organisation and there will probably be the required skills in place to use them well. We need to learn from their experiences and consider what changes need to be made within the HR function in terms of new ways of working, new skills, new roles and potentially new operating models. For example, do we establish or join an existing reporting 'centre of excellence'. As organisations mature, there is a move away from transactional reporting towards a more focussed approach on hypothesis based analysis that can drive strategic value throughout the function. We need to ensure that we have the right systems and structures in place to exploit this potential because the business impact could be considerable.

2. Automation and robotics

It has not been possible to open an HR publication in the past two years without some reference to the potential impact of robotics on the workforce. One hears stories of the myriad of jobs that will be lost due to the 'rise of the robots' and it is easy to see the concern. The big dilemma concerns who will be impacted, how severely and how many new jobs will be created to replace those that have gone? Whilst these scare stories do make for good reading and interesting conversations at industry conferences the technology industry can be prone to hyperbole and has a reputation for exaggerating the impacts, both positive and negative of 'this year's big thing'. However, the reality is that automation and robotics are here to stay and sure to have a considerable impact upon the workplace and the workforce of the future.

That said, automation, in its simpler forms, has been in place in some organisations for many years, often under the guise of 'workflow'. Automated software that is able to accept, interpret and act upon messages in now quite common, especially in customer facing scenarios. These technologies are now being increasingly adopted by the HR function that is looking to drive efficiency and standardise processes in order to ensure improved compliance and reduced costs. The increasing adoption of Cloud applications is driving this trend, since it places a focus on delivering standardised 'out of the box' processes across the enterprise. This rise in automation has also been facilitated by three key technology developments:

i **Self service applications** – processing is now being carried out by individuals themselves rather than being reliant on 'processing departments'. Customers now expect to place orders, receive services and support directly through using their own computers. The same is increasingly true of transactions within the organisation as well.

ii **Mobile devices** – the pervasive nature of smart phones etc has in large part driven the change in behaviour and expectations of both customers and employees.

iii **Robot process automation (RPA) tools** – these are similar to many other automation tools but can be deployed without the need for coding and hence can be easily managed by end users. This provides much greater flexibility and business processes can be modified much more rapidly.

In addition to technological developments there are a number of common business initiatives that are seen as being complementary to automation. The deployment of shared services as an effective operating model is now seen as quite standard. At the heart of such an operation is a drive towards standard 'lean' processes that can be readily delivered by automation. These are often supported by helpdesk systems that provide knowledge management and case handling capabilities that enable responses to customers to be effectively mined and their delivery automated. Common processes and requests can thereby be provided rapidly and at the lowest practicable cost.

The first generation of industrial automation tended to look at primarily 'blue collar' activities such as manufacturing. The focus is now on more administrative roles, typically office based. The accepted mantra is that by automating these activities, 'taking the robot out of the human', we are releasing people to work on more interesting and demanding activities, augmenting existing roles rather than replacing them. The jury is still out as to whether this is viable at a macro economic level.

In addition to the process management tools that are already in place in many organisations there are some more new technologies that could dramatically impact our organisations in coming years. A few of them are described below.

i **Chatbots** – software machines that are able to receive and process information received through conversation for example via text messaging services. In one possible scenario, an employee could ask for their outstanding annual leave balance by sending an sms message to an HR chatbot. The chatbot accesses the core HR system, receives and processes the data before sending a reply text to the employee who then reads the text and then schedules a days leave using the same device.

ii **Wearable devices** – a collective term for a broad variety of devices with an extensive range of applications that typically rely upon biodata. The most common examples are 'Fitbits', smart watches and other forms of personal data recording devices. These can capture and share personal data and be used to support well being initiatives and improve health. They can be used to monitor factors such as activity, stress, mood, sleep patterns etc. and suggest appropriate changes. They embody the concept of the 'qualified self'. Another example of note is sensors in the helmets of crane drivers that are capable of monitoring levels of alertness, primarily as a safety issue.

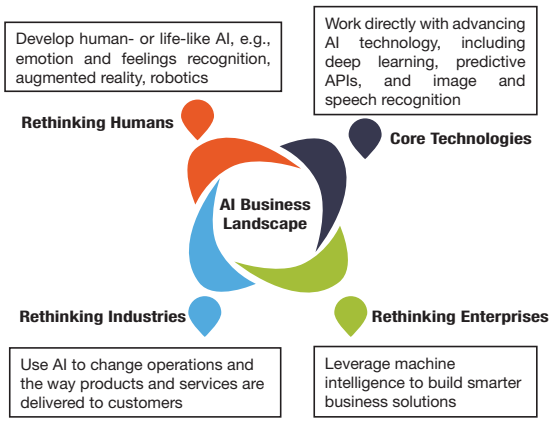
iii **Location based services** – driverless cars are not currently a common sight on the roads in the UK, but it cannot be that long before they make an entrance. At a smaller level we already see location based services being deployed in automated warehouses to monitor personal activity and suggest next movements for warehouse operatives. When location based services are combined with wearable devices the potential for new services and ways of working are considerable.

As levels of automation increase the amounts of data that are produced and captured is likely to rise exponentially. If this information can be effectively harnessed it is likely to give rise to many new opportunities to change both existing and to develop new business models. It does offer the potential to dramatically alter the shape of the workforce required to successfully run such an enterprise. We need to be aware of such considerations when developing our workforce plans.

3. Artificial intelligence and machine learning

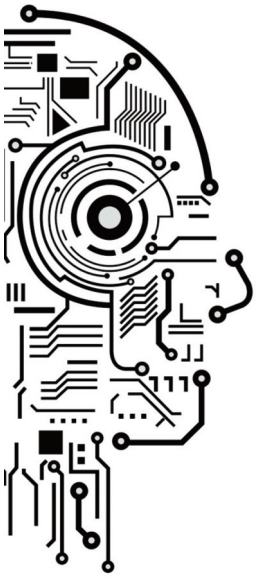
If one were to believe the press then Artificial Intelligence (AI) is a new and exciting phenomenon, whereas in reality it has been in place for many decades. The concept of AI is that it enables computers / machines / systems to think and act like humans and operate rationally to undertake certain activities. It first appeared in the 1950's but then largely stagnated due to expectations that were never realised. However, this new wave of AI is different, largely brought about by three factors; the decreasing cost of computing power, the trend towards Big Data / cloud computing and finally more advanced algorithms, e.g., deep learning. Investment in AI has tripled from ~$700m in 2013 to ~$2.4bn in 2016.

In essence, AI has been used to change the business landscape by being programmed to carry out processes based on human rationale and behaviours and thereby mimicking thought processes rather than relying on user input. According to joint research by Oracle and the London School of Economics (2017)[1] there are four areas in which it can be deployed and these are illustrated below, with some examples of how this might be applied.



Source: AI Business Landscape

AI typically takes one of three forms. First, it can be embedded in a product or service to provide end-customer benefits, e.g., Netflix uses machine learning to predict which movies a customer will like. Second, it can be embedded within an organisation's workflow in order to automate or improve operations, e.g., Uber's driverless cars and trucks can reduce risks to human drivers and cut costs. Lastly, it can be used to uncover insights that can inform operational and strategic decisions across an organisation, e.g., Facebook uses neural networks to gather information and insightfully categorize users for targeted advertising purposes. Detailed below are a few examples of how AI is already starting to have an impact in a variety of different industries.



AI in Finance & Banking: reducing headcount while remodelling the workforce. AI is infiltrating many roles across the financial services industry, both replacing the human workforce in the finance sector and enhancing their capabilities. In addition, many of the functions that take place in these industries are being targeted by technology start-ups and smaller disrupting companies. Many of these Finance Technology (Fintech) companies are based upon the use of AI and have been heavily targeted by investment and as a result have achieved significant growth in the past decade. Typical uses of AI include artificial assistants / bots, credit scoring, fraud detection and quantitative trading. The impacts of AI on the sector are likely to be quite profound. Recent estimates suggest that heavy job losses: 1.7 million or about 30% of current headcount would be cut by US and European banks by 2025 due to substitutions by technology. This is compounded by another trend, the growth of mobile and online banking which has led to a reduction in branches and headcounts as the transaction based function in the branches changes to become more advisory and consultative. Branches and associated staff make up 65% of the total retail cost base and hence are a prime target for automation. On the other hand, investment banks are remodelling their workforce. The recent trend is to look and react more like tech companies rather than traditional banks and this is reflected in their current skills mix.

AI in Retail: Minimising monotonous tasks and redefining customer experiences. Most major retailers have already started to deploy AI technologies in a number of areas. Examples include real time product targeting, location based marketing, real time pricing and incentives, conversational commerce, in store visual monitoring and predictive merchandising. The prime focus is often with customer experience and interaction, but some businesses are extending the usage of AI into the supply chain. In supply and marketing, repetitive tasks can be minimised, as machine learning is used to acquire and analyse information at every level of the supply chain. This can be complemented by product data provided through RFID (radio-frequency identification) tags and the 'Internet of Things'. AI technology has also been used to interact with customers and offer product recommendations, so as to deliver and enhance personalised customer experience. As a consequence of these changes the responsibilities of retail sales associates are likely to change as they become more responsible for creating an amazing customer experience that aligns with the brand's values. It may also mean that the workforce requirements across the organisation are likely to change to reflect this new norm.

AI in Healthcare: assisting professionals to increase the quality of medical treatment. The use of AI in healthcare is in marked contrast to other industries such as financial services and retail. It is primarily there to assist doctors and allied health professionals in providing quality healthcare at lower costs instead of pure job replacement. It comes mainly in the form of software capable of analyzing unstructured medical data to help clinicians in their health assessments as well as by assisting the drug discovery process in less time than previously needed. Further uses include healthcare research, medical imaging, virtual assistants, wearable technology, lifestyle management and hospital management. As in other industries the demands of the workforce are likely to change to reflect newly required skills. In addition, the rise of technology assisted healthcare will need to overcome certain barriers including ethical and legal concerns (i.e. the use and sharing of medical data) and professional barriers (i.e. reluctance from medical positions to embrace technology).

AI in Logistics: increasing efficiency through low-skilled employment replacement. Logistics is becoming an increasingly important industry in the United Kingdom and on a global scale. The UK market alone is around £60 billion, and around 150,000 VAT registered companies rely on road transport in order to operate effectively. The logistics industry has responded to increasing demands for efficiency, adaptability and scale through the use of various advanced technologies such as smart glasses / augmented reality (AR), optical character recognition, driverless forklifts and shuttles, self learning systems and digital identifiers / sensors. They have also begun experimenting with driverless vehicles on the road, as well as drones for batch size one and on-demand deliveries. Finally, there has been heavy integration of AI with other technologies. The

Internet of Things (IoT) has allowed many companies to remain connected to their vehicles and allow their AI systems to monitor every detail, including temperature, tyre pressure, optimal routes, and weather. Current AI technologies in logistics have replaced many-low skilled jobs but at the same time these innovations are enhancing worker capabilities and creating jobs that require new creative skills. Although AI technologies will replace specific tasks, this in turn will create new activities that will require soft knowledge and intelligent "know-how" in order to operate in an increasingly globalized and connected world.

If the impact of AI on organisations and their business models is likely to be profound, the impact upon us as individuals is likely to be more subtle. Machine learning and complex algorithms will be able to provide us with development paths and learning interventions that are more closely aligned to our personal needs. Opportunities exist to expand the use of internal mobility within organisations to benefit both the individual and the enterprise. Behavioural modelling and coaching initiatives will be able to support executive development programmes and drive culture change initiatives. By analysing an employee's digital footprint, what they do and when, we will be able to accurately predict flight risk or indicate an individual's propensity to disengagement. And we will be able to do this using data that is external as well as internal to the organisation. The more that we use technology, the greater the amount of data that will be generated. In turn, that data can be used to inform more effective decision making throughout the organisation.

5. The implications for HR

There is a great quote from Bill Gates that perhaps best describes our relationship with the adoption and exploitation of technology.

> *"People overestimate what they can do in one year and underestimate what they can do in ten years."*

Summary

Technology is here to stay, but there are a number of things for those working in HR to consider regarding it's impact on our organisations and people.

1. *However dramatic the impact of technology might be, the workforce of the future is likely to be different, requiring new skills and organisational structures. Workforce planning will become an increasingly important and complex activity. To achieve this successfully HR needs to fully understand what technology might be capable of delivering and how that can be applied to their organisation.*

2. *Issues such as Big Data and the move towards more strategic reporting capabilities should result in more proactive engagement between the HR business partners and the business units that they support. Business relationships are likely to change.*

3. *The legal and ethical frameworks within which businesses operate are in a period of flux. Just because it is possible to do things does not mean that they are the right things to do. The HR function is best positioned to understand these considerations and to ensure that the right things are done. When personal data is being captured in increasing levels of details of from a greater number of sources, how that data about employees is used is a matter of trust. HR has to assume the role as custodians of the organisations moral compass.*

4. *The power of technology is increasing at an alarming rate, but this has the potential to be a double edged sword. For example, on the one hand some AI algorithms used in medical diagnosis have been proven to be more successful in actually diagnosing patients than the doctors who initially constructed the algorithms. On the other hand, chatbots have been 'groomed' by users to use racist language and recruitment strategies have been designed that replicate the unconscious bias of the humans that designed them! Whilst technology can undoubtedly offer great advances and deliver substantial benefits to organisations we need to be alert.*

Appendix 1 contains a Consolidated Metrics Chart for chapters where a summary would prove useful. This is not applicable for the information in this chapter.

References

1 Oracle / London School of Economics – white paper on Artificial Intelligence, Robotics and the future of HR and Learning 2017