



## TECHNOLOGICAL IMPROVEMENTS IN HUMAN RESOURCE

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### **Abstract**

*Technological changes have impacted every field existing. The businesses are growing and prospering with the successful implementation of these technological changes. The people of any organization are at its core of success. Hence, technologies benefiting the people of the organization in turn benefit the organization. The adoption of technology by the Human Resource Department at the same pace as the change in technology has changed the way this department works. The time and cost savings due to the implementation of technological changes has provided the HR managers with the opportunity to focus on employee retention and job satisfaction. This paper provides an excerpt on how the technological changes brought about a positive impact to the field of Human Resources and the technologies which are doing this.*

**Key Words:** *Human Capital Management, Human Resource Management Technology Landscape, Artificial Intelligence, Human Resource Analytics.*

### **Introduction**

Human Resource Management (HRM) is the term used to describe formal systems devised for the management of people within an organization. The term Human resources is used to describe both the people who work for a company or organization and the department responsible for managing resources related to employees. It is the strategic approach to the effective management of organization workers so that they help the business gain a competitive advantage. HR departments are responsible for overseeing employee benefits design, employee recruitment, training and development, performance appraisal, and rewarding (e.g., managing pay and benefit systems). HR also concerns itself with organizational change and industrial relations, that is, the balancing of organizational practices with requirements arising from collective bargaining and from governmental laws.

HR wasn't always around, but people have been working since the dawn of time. Not until the 1980s did the term „human resource management“ actually have widespread use. Early labourers, farmers, merchants, blacksmiths, indentured servants etc., did not require any middle man to direct them. The Human Resources field evolved first in 18th century in Europe. It built on a simple idea by Robert Owen and Charles Babbage during the industrial revolution. These men concluded that people were crucial to the success of an organization.

They expressed the thought that the well-being of employees led to perfect work; without healthy workers, the organization would not survive. The introduction of steam power and machines in the 1760s marked the start of the Industrial Revolution which changed the way the world thought about work. However, even amidst outstanding progress, production in the factories was not regulated.

The workers were exploited due to the lack of this regulation. Later, plenty of people noticed the plight of the workers and a couple of key schools of thought emerged and paved the way for an established HR. Frederick Taylor's scientific management principles, Elton Mayo and the Hawthorne Studies being one of them. Together with this, increased membership and regulation of labour unions, the recognition of workers' rights by the government, Civil Rights movements, improved communication and technology coupled with the globalization paved way for the development of industrial relations and personnel management. It involved countless acts of legislation, movements, advancements in psychology and technology and changes in workplace philosophy. By the time it was known as human resources, the number of laws on the worker's side meant there wasn't as much need for an advocate within the company as much as an enforcer of compliance to the legislation. Because of this, human resources entered an administrative age where the main focus of HR was on how to efficiently process employee paperwork.



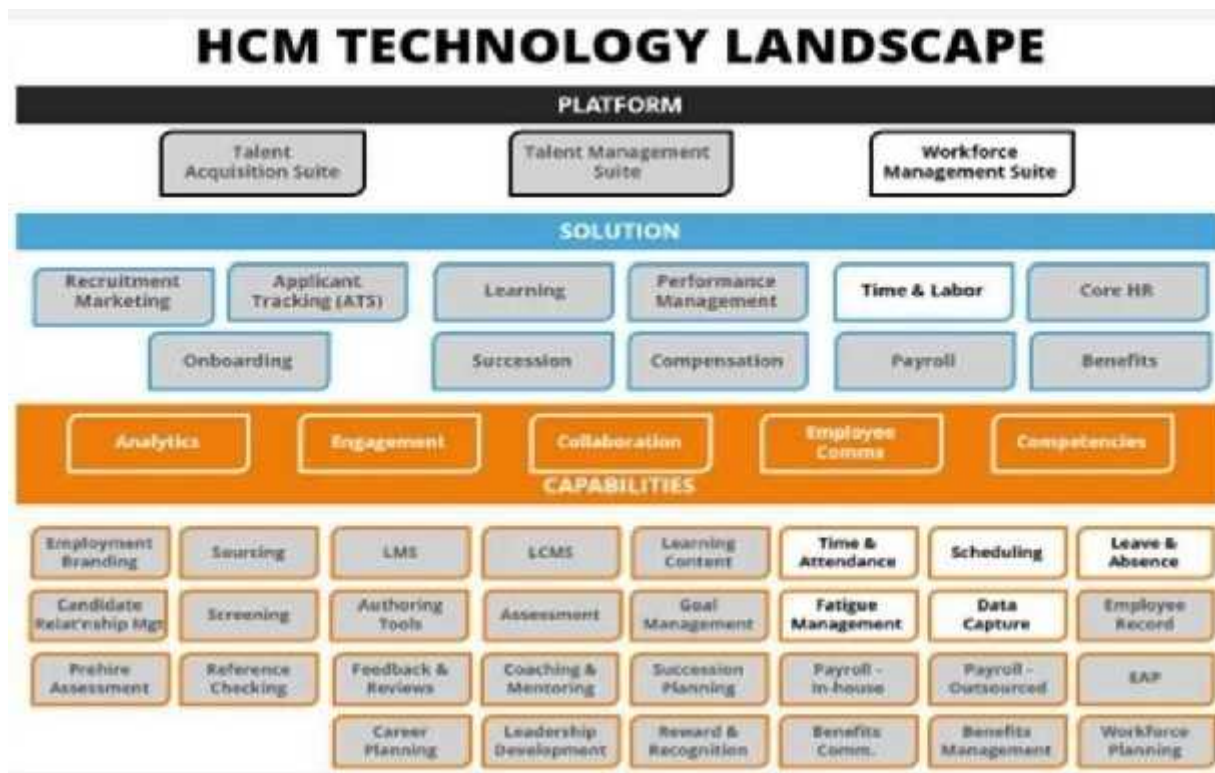
The employee paperwork not only includes the paperwork required during the on boarding of the employee but also the paperwork required during the employee’s stay at the organization and off boarding as well. During the on boarding of the employee at the organization some of the paperwork includes non-disclosure agreement, signed employment agreement, direct deposit form etc. During the employee’s stay at the organization, a number of processes require paperwork. A few to list are performance appraisals, employee information updates, leave requests etc. Also the employer is supposed to maintain employee records such as personnel files, payroll files, medical files etc. These are also in paper. When an employee resigns or is let go, there are many steps that need to be completed, including gathering access cards, IT assets, removing from subscription accounts, and organizing the final salary payment. Hence, a lot of paperwork is required for off boarding of the employees. Since paperwork consumes a lot of time and money, there is a strong need for technological intervention. Some of the technologies which have changed the landscape of Human Resource Department are listed in the following section.

### Human Resource Technology and Its Impact

The Human Resource Technology has been evolving gradually. During the 1960s-1970s, large companies began writing their own programs on internal mainframes. And during the 80s Enterprise Resource Planning (ERP) systems began gaining momentum. Client-server architectures became prevalent and gained popularity during the late 80s and mid 90s. Thus, by this time technology had a major role to play in business. During the mid 90s and early 2000s, on-premise HR software installs began gaining traction in the market. Today, SaaS (Software as a Service)/Mobile is the new norm.

There are various solutions and capabilities which offer a host of options to the HR departments of today.

The Human Capital Management or Human Resource Management Technology landscape consists of the platforms, solutions, capabilities as shown in the figure below.



Source: The HR Tech Landscape - Steve Boese, H3 HR Advors



HR Technology has taken over several rule-based HR jobs. Several online HR assistants are seen addressing day-to-day employee queries. HR tech start-ups are bringing a radical change in transforming the HR practices in the B2B space. A number of HR Tech start-ups and enterprises are coming up with new offerings, making the landscape ripe for exploration in the domain. The year 2016 alone saw over 350 deals taking place, worth about \$1.96 billion by way of funding to HR Tech start-ups.

The technology evolving has improved the time and cost efficiency of administration in Human Resources by 65%, says survey by Team Lease Services. The survey was conducted among HR managers across 400 employers in 14 prominent sectors and 13 cities of India belonging to large, medium and small businesses. According to the report, the core HR Technology adoption is over 75% in 10 out of the 14 sectors surveyed, and sub function HR Technology adoption is 75% or more in BFSI, BPO/ITeS, and E-commerce and Telecommunication sectors. The report is titled as „HR Tech: Empowering People and Enterprises“ and gives an analysis of spending on HR technology in organizations and the benefits of its adoption.

### Impact on Employers

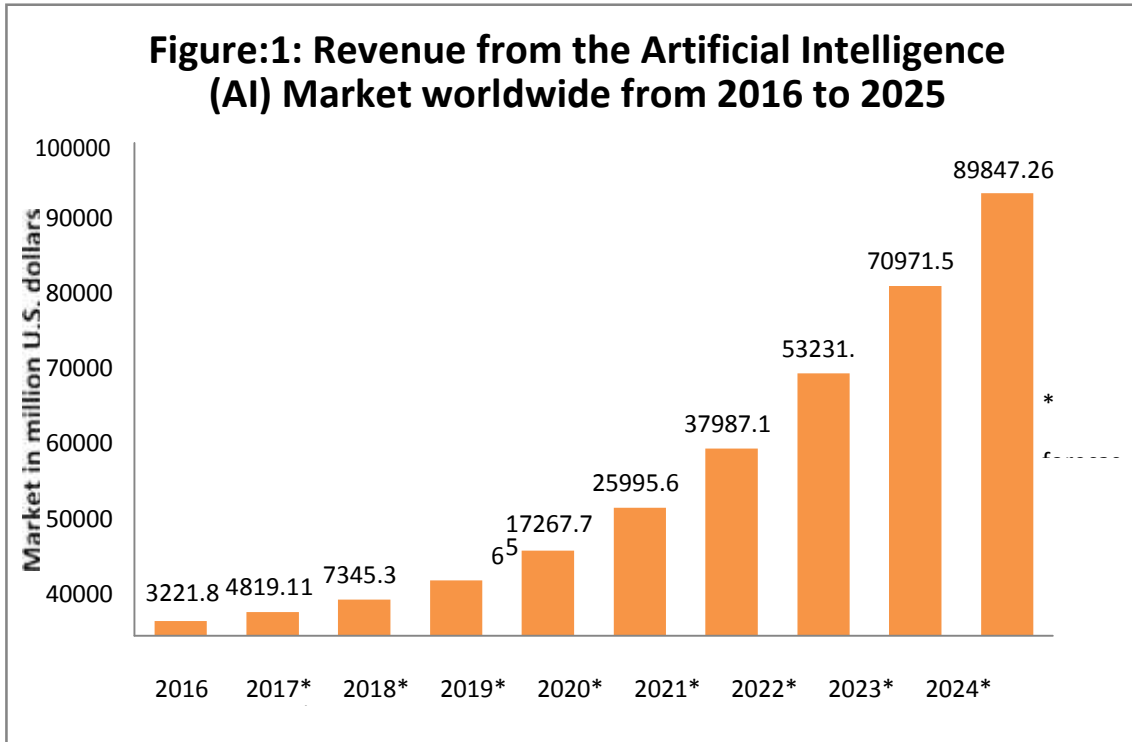
1. HR Technology has structured and automated HR processes for up to 21% improvement in administrative efficiency, up to 30% savings in time and cost, and up to 65% reduction in errors and duplication.
2. High adoption of HR Technology is seen in Automobile, BFSI, BPO/ITeS, ecommerce, FMCD/FMCG, Health and Pharmaceuticals, Hospitality, IT (Services and Products), Knowledge Process Outsourcing Retail and Telecommunication.
3. Payroll Processing and Compliance tools have reduced compliance risk by up to 50% and increased the accuracy of payroll processing by up to 55% and affected up to 80% savings in data access.
4. 47% of Indian organisations increased their spending on HR technology by 20% in 2017, with talent management (56%) and HR analytics (44%).
5. HR analytics (up to 26%) and employee productivity tools (up to 17%) will see a near doubling of investment and talent acquisition/retention (22%) and on boarding/performance management tools (10%) will see steady investment trends over 2018-2021.
6. Talent acquisition, retention and engagement tools leverage big data and continuous feedback to deliver 65% better matching and 80% faster hiring, and up to 65% improvement in talent retention.

### Impact on Employees

1. Technology at work, especially across devices, enables employees to be accessible 24x7.
2. Mobile and social technologies boost productivity by 20% to 25%.
3. HR technology is perceived to effect significant (76%), productivity (83%) and performance (75%) while the value equation is perceived to be mixed for Health and Safety and Work-Life balance. Let us see some of these technologies and their uses.

**Artificial Intelligence (AI):** Artificial intelligence is a machine’s ability to have human-like intelligence. Computers can be programmed to learn with data in order to perform a task, and improve at the task as more data pours in. Artificial intelligence is used in the fields like image recognition, object identification, detection, and classification, as well as automated geophysical feature detection. In 2018, the global AI market is expected to be worth approximately 735 billion U.S. dollars. The statistics of the figure 1 shows the revenue from AI market worldwide from 2016 to 2025.

The AI is most useful in the HR areas like – sourcing candidates, screening candidates, on boarding candidates, nurturing candidates, scheduling candidates, performance analysis, sentiment analysis, engaging candidates ,interviewing candidates (ex: video interviews), etc. The key benefits of AI are – saves time, removes human bias, delivers best candidate matches and saves money. This next generation technology help recruiters work faster by automating administrative tasks, and smarter by generating insights they wouldn’t think of alone.



Source: statista.com

Consider the case of UK-based Vodafone, which took the video interviewing to the next level by using AI-powered software to screen its videos. Here, the candidates record themselves answering standardized questions. The AI-robots (computers programmed with advanced algorithms) analyze these videos. Based on role requirements, other candidates, and top performers at Vodafone, the machines assess candidate suitability across 15,000 different dimensions, from body language and facial cuts to voice intonation and speech cadence. If candidates pass the video interview, they are then invited to in-person interviews.

**HR Analytics:** The Human Resource Management has changed gradually since its inception. It moved from being an operational discipline during the 1900s to a strategic discipline during the early 2000s. Presently, it is a more data driven discipline. Now, HR decisions are no longer based on gut feeling. The recruiters are using HR analytics to arrive at a decision using HR data. HR analytics is the systematic identification and quantification of the people drivers of business outcomes. HR analytics correlate business data and people data, which can help establish important connections later on. HR professionals use HR analytics for the following purposes – employer branding, workforce planning, culture and diversity, productivity and performance, talent development, talent acquisition, compensation and benefits. Some of the benefits of HR analytics are – Make better decisions using data, Create a business case for HR interventions, Test the effectiveness of these interventions, Move from an operational partner to a tactical or even strategic partner. Nielsen, a leading global information & measurement company, tapped its People Analytics team to understand why it was losing talent. The biggest finding was that employees with a change in job responsibilities due to promotion or lateral movement within the past two years were much less likely to leave. The leadership focused on making it easier for employees to learn about and pursue jobs internally and identifying “at-risk” high performers and proactively putting opportunities in front of them. As a result, they achieved a 5-10% increase in annual retention of their at-risk employees.

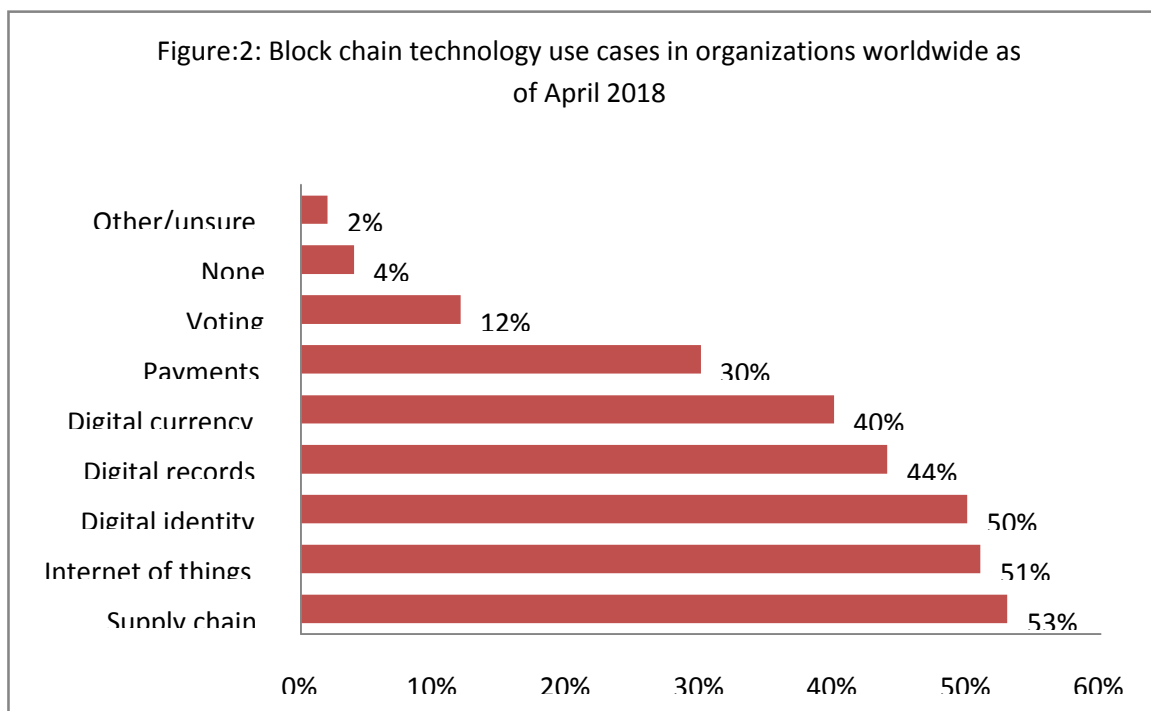
**Cloud Computing:** Cloud computing is shared pools of configurable computer system resources and higher-level services that can be rapidly provisioned with minimal management effort, often over the Internet. Third-party



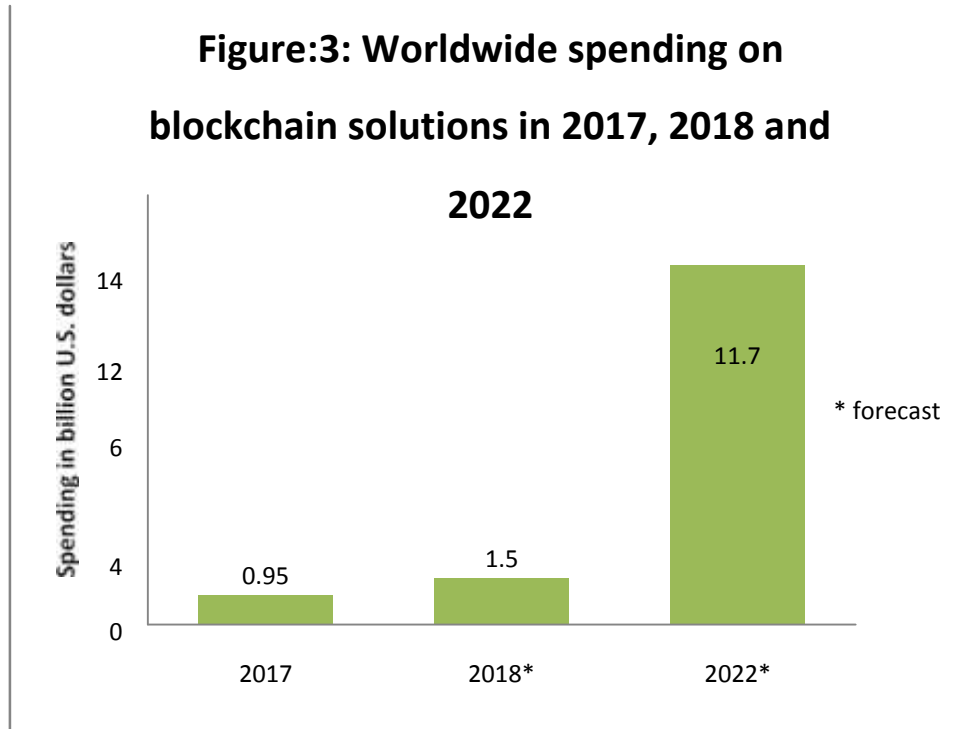
clouds enable organizations to focus on their core businesses instead of expending resources on computer infrastructure and maintenance. Advocates note that cloud computing allows companies to avoid or minimize up-front IT infrastructure costs. Organizations are looking to cloud-based HCM (Human Capital Management) systems. A cloud-based system lets HR be prescriptive and methodical in responding to what a workforce needs without barriers from time, data, technology, or resources.

Some of the examples of cloud-based systems used by the Human Resource Department are – attendance tracking software, time tracking software, expense tracking software, timesheet software etc. Some of the benefits of cloud-based systems in HCM are- increased mobility and flexibility, easy implementation, access to innovation, reduction in workload, boosting employee well-being, keeping information safe etc.

**Block chain:** A block chain is a growing list of records, called blocks, which are linked using cryptography. By design, a block chain is resistant to modification of the data. The block chain is unblocking ample of growth opportunities for businesses. Sectors like security, telecom, and insurance are already blessed by this highly disruptive digital technology and from Finance to Marketing every functional area is manifesting its potential. According to a survey conducted by Statist, about 53 percent of the respondents stated that their companies were working on a supply chain using block chain. The figure 2 presents global organizations' use cases for block chain technology as of April 2018. In 2018, the global spending on block chain solutions is expected to reach about 1.5 billion U.S. dollars. The figure 3 shows the spending on block chain solutions worldwide in 2017, 2018 and 2022. Possible usages of block chain in HR are- Verifying and assessing the education, skills and performance of potential recruits, Managing cross-border payments and employee mobility, including international expenses and tax liabilities, with the potential for organizations to create their own corporate currencies, Boosting productivity, such as by automating and reducing the burden of routine, data-heavy processes like VAT administration and payroll, Enhancing fraud prevention and cyber security in HR, including both employees and contractors. From reliable employee verification to problem identification in the workplace, block chain can make the HR simpler, easier, speedier and cost-effective. Its benefits are more palpable in activities which are data centric and time-consuming.



Source: statista.com



Source: statista.com

Some of the companies which are using the aforesaid technologies are

Blockchain		Artificial Intelligence		HR Analytics	
1.	Burger King Russia	1.	Apple	1.	Google
2.	KIK	2.	Amazon	2.	Xerox
3.	Microsoft	3.	Banzo	3.	Royal Dutch Shell
4.	Overstock	4.	Facebook	4.	Juniper Networks
5.	Mastercard	5.	Google	5.	IBM
6.	Bank of America	6.	IBM	6.	Wegmans
7.	Huawei	7.	Intel	7.	Microsoft
8.	FedEx	8.	Microsoft	8.	HP
9.	IBM	9.	Nvidia	9.	Walmart
10.	Walmart	10.	Twitter	10.	Opower

### Conclusion

The technologies currently used by the HR department are not only saving time and money but also they are leading to the generation of HR start-ups. Artificial Intelligence, along with machine learning, has drastically reduced the workload of the HR department. Not just that, it also helps in improving job satisfaction of the employees. HR Analytics has proven to help in employee retention. Apart from that, it is used in a number of critical HR functions like designing compensation and benefits. The flexibility is at its peak due to the cloud-based HR software. Block chain is being considered as a highly disruptive technology and its use in HR is expected to increase. Foreseeing the benefits it will bring, the HR managers should consider implementing the aforesaid technologies.



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