



## Technology Driven Human Resource Measurement—A Strategic Perspective

Hargovind Kakkar<sup>1</sup> and Sanjay Kaushik<sup>2</sup>

<sup>1</sup>Research Scholar, University Business School, Panjab University, Chandigarh India.

& Assistant Professor, Amity Business School, Noida Amity University, Uttar Pradesh, India.

<sup>2</sup>Professor, University Business School, Panjab University, Chandigarh, India.

(Corresponding author: Hargovind Kakkar)

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**ABSTRACT:**The digital age of human resource has paved the way to scientific measurement using sophisticated IT tools. Organizations are gradually adopting these tools to effectively measure the contribution of the Human Resource function. The discipline of workforce analytics has gained momentum through use of technology and giving HR its role in being a strategic partner. Various Human Capital Measurement and People analytics tools have come as a result of technological advancements. The paper explores the level at which the technology tools are being used for Human Resource Analytics with a perspective to realize the business strategy. The methodology involves case based approach. Data from 10 Information Technology (IT) companies operating in India are collected. Interviews from senior HR practitioners were conducted and data is presented as brief cases. The results show that use of technology in HR Measurement is on the rise and all the sample companies have started investing on data driven decision making and believe that predictive analytics help in evaluating business strategy.

**Keywords:** HRIS, Strategy, HR Analytics, HRIT, e-HRM.

### I. INTRODUCTION

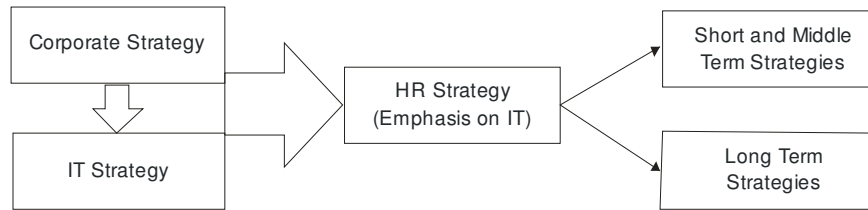
As measurements progress, Human Resource is more evidence based with more weightage to its impact to the overall business results. Human Resource as function has gained strategic importance over the last few years [1,18]. According to Pfeffer [16], "the crucial, differentiating factor in the organization, to gain competitive advantage is in its employees and how they work". According to Boudreau and Ramstad [2], Human Resource Analytics as an area helps to evaluate the efficiency and effectiveness of HR policies, practices and programmes and the impact of the HR on business results. Smith & Kelly [3] stated that organizations that can attract develop and keep the brightest human talent will have the future economic and strategic advantage. In relation to this last point, Harris *et al.*, [4], Coco [5] and Mondore *et al.*, [6] stated that HRA is valuable in establishing a quantifying connection between HR and business by establishing Return on Investment in HR function and prove the advantage to the stakeholders.

The beginning of technology in HR started with Human Resource Information System (HRIS). HRIS is an integrated platform to connect Human Resource and Information Technology [17,20]. Using software or online tools for data entry and management was the first step in HR. HRIS further got evolved as new technological developments. Presently, technology is an integral part of Human Resource function. Electronic Job Analysis, e-recruitment, use of crowdsourcing in recruitment, virtual job fairs, use of social media for recruitment, electronic job applications, web-based interview and electronic interviews, e-learning and virtual simulations, e-performance management prove that technology has gone into almost all sub functions of

HR. The main objectives for HR are to recruit, select and retain talent which creates stability and sustainability for the organization [19]. Technology has supported and made these tasks of HR incredibly efficient and effective. The data management which includes collecting, storing, tracking and updating of records has been transformed with the source of information technology. Specialized software and sophisticated database management system (DBMS) are now changing the role of an HR practitioner; these tools further are helping to evaluate the HR processes. This is giving HR its seat in the board room and with the use of Information technology; HR is now gaining its importance as a strategic partner in business. From the strategy point of view, the corporate strategy leads to frame the IT strategy which together help in forming the HR Strategy. The HR Strategy further translates into long term and short term strategies as depicted in Fig. 1 Sameni and Khoshalhan [7].

### II. BACKGROUND

Definition of HR analytics A HR practice enabled by information technology that uses descriptive, visual, and statistical analyses of data related to HR processes, human capital, organizational performance, and external economic benchmarks to establish business impact and enable data-driven decision-making [8]. Ashbaugh *et al.*, [9] Advancement in Information technology is helping overcome the challenges of HRM viz. attracting, engaging and motivating talent, meeting the requirements of strategically aligned HR function and managing the "human element" with changing technology in the future.



**Fig. 1.** The Framework of Information Technology Human Resources Plan.

HRM and technological innovation are mutually supportive and beneficial to each other. On one hand, HRM could support technological innovation to gain high performance and on the other hand technological advancement and innovation can be an enabler for HR to only focus on high end value-added activities leading to utilization of technology potential and realizing the organizational strategy [10]. The advantage of information technology in HRM is it supports in performing intermediary roles which frees the HR staff to focus on the strategic aspect of human resource management [11].

Hussain *et al.*, [12] in their research on “The use and impact of human resource information systems on human resource management professionals” investigated the use of information system in companies of various sizes and the impact of information system on HR professionals. Data was collected from 450 organizations and the results revealed that the size of organizations do not have strong influence on information system usage. The application of IT can improve the role of HR professionals as strategic partner(s); this is independent of the size. Use of Information system can provide value-additions and raise the status of the Human Resource professionals.

Gardner *et al.*, [13], researched the use of Information Technology by HR professions and the study revealed that IT helps HR professionals work more efficiently with information and it also supports in their work expectations. It can reduce the routine tasks and improve information communication and add autonomy to their role which changes their overall functioning.

Haines and Lafleur [14] studied the influence of Information technology on the effectiveness of the function of Human Resource. The study revealed that with more use of IT applications in HR the effectiveness of strategic issues on HR function went up. Ashbaugh *et al.*, [9] and Hussain *et al.*, [12]. They concluded that Information technology in HR helps HR team members in managing large volume of information at a swift pace which further leads to efficiency in information management. The study further stated that IT applications support the strategic role and the change agent role for HR in business. Aral *et al.*, [15] proved empirically that organizations with HR Analytics but without HCM software displayed no performance effects. Ashbaugh *et al.*, [9]. HRIT (Human Resource Information Technology) brings the ability for the HR practitioners to simplify their work, measure activities and provide instant feedback and optimally utilize the time.

### III. OBJECTIVE AND METHODOLOGY

The objective of the study is to explore the use of technology in measurement of human resource function.

The paper uses exploratory research design. The sampling method adopted of the study was convenience, Judgmental and snowballsampling of senior HR professionals working in the area of HR Analytics/Measurements were taken from 10 IT companies in India.

### IV. DATA ANALYSIS AND INTERPRETATION

Semi-structured interviews were conducted which lasted between 25 minutes to 40 minutes and the transcripts have been summarized into brief cases. For confidentiality reasons, the participants’ names are omitted. Companies were selected who were operating from India with a minimum employee base of 1000. Telephonic interviews were conducted and data was further summarized into brief cases.

### V. COMPANY CASES

#### A. Accenture

HR Analytics is used extensively from a very long time. The understanding of HR Analytics is that it is a tool to improvise and create better business strategy, given the growth trends of the organization. The reason for using HR Analytics is that it is effective in developing impactful strategies that are more relevant basis the facts that are readily available. The IT tools which are used are internal were not disclosed as they are confidential. A dedicated team works on tools and provides reports relevant to our business and at times the HR team creates its own reports. It is beneficial with the dynamic growth of technology and the market. The challenge comes from robust data and the requirements of business which needs different kind of analysis for leadership instantly. The same is overcome by using the older patterns and then adding incremental value at time helps but that is not a case always. HR Analytics is extremely beneficial in evaluating business strategy as now business is working in alignment with the HR and setting targets for growth that are more realistic per the market scenario.

#### B. KPIT

It is understood as the new “buzzword” in many forward-thinking, successful companies. In a nutshell, HR Analytics allows companies to use data and metrics in order to better understand their employees in the workspace, make changes where need be to better the organization. The reason for adopting HR Analytics is that it can be generally defined as a solution that collects and compiles data to understand people-related investments, trends, opportunities and outcomes. The useful of HR analytics lies in the fact that it helps in gathering, organizing and analyzing data related to HR functions like employee engagement, performance management and talent management. The tools which the organization uses are MS Excel and BI World. The

challenge comes from compiling data from different places with the worries of privacy and compliance. Managing these challenges comes from creating a team environment from the top down which is aware of HR analytics. HR analytics is useful for evaluating business strategy as decisions are more data-driven than from intuition or market standard.

#### *C. Oracle*

HR analytics is being used at Oracle for the last 16 years. It means everything to the business as it is the fuel to strategy. The reason behind using HR analytics is that people are critical for business outcome and their insights are important. 40% time of the work a manager spends is on people management. The tool used is Oracle HCM cloud. The data input is from dash boards and apps for mobile cases. As project based organizations grow the availability of HR analytics will be high. The data is organization. The challenge is the data being 'recent' as people keep moving and real time data is not available. The same is overcome by newer versions of the software. HR analytics is extremely useful in evaluating business strategy as the whole business dependent on HR. The predictability of data is an important factor to success and HR is its backbone.

#### *D. Fiserv*

For the organization it is a means to improve employee performance, to make data driven decisions and analyzing our people's problems. The reason for using HR Analytics is to streamline many internal processes, see trends in employee population and demonstrate how goals can be achieved. HRIS and MS Excel are used for conducting HR Analytics. The challenge is collecting the right kind of data and organizing it further grooming the HR team to have an analytical mindset in using the analytical tools. Trainings and workshops are used to overcome these problems. Human Resource analytics is useful in evaluating business strategy as the information is valuable information as it is based on relevant data. HR Analytics is here to stay by providing insights to drive HR and business strategy. Support from IT department is required in processing the data.

#### *E. HCL Technologies*

HR analytics brings out the unseen inferences and hence it helps in taking actions which otherwise will not be possible hence it is quite important for the organization. The reason for using Human Resource Analytics is that simple statistics were not giving desired inputs and there was a need to analyze more data and more views or cuts. The reason for using HR analytics is that large data is unorganized and HRA helps bring out multiple aspects for retaining talent. MS Excel and other internal tools are used. Data input is through ERP tools and other enterprise tools. The challenge is to discover ways to help business with low cost, motivated and result oriented workforce which is growing with the Future forecast for hiring is also made using analytics. Internal tool – SETU and MS Excel are used. Data inputs come from system pulled reports. The challenge is of availability of tools as a lot of work is done manually. In built report automation and macros helps in overcoming the challenges. HR analytics is one of the key factors as most of the human resource planning is done using data. The delta is usually derived and

growth. It is overcome by using analytical techniques and working on outliers which skew the metric and bring in the human angle based on experience and industry. HR analytics is fairly useful in evaluating the business strategy. The support comes from business and HR analytics team along with experts.

#### *F. Sify*

HR Analytics is being used for a few years and it is at an early stage. It is understood to help in predicting attrition. The future of HR is limited to counselling and analytics. The reason for using HR analytics is that the organization is getting complex with the large number of employees. HR analytics is used for predictive analytics in hiring and training, for diagnosing and prediction attrition. It is used at a very basic level and is reactive in nature. Excel is used as a tool and data inputs is through dashboards managed by independent HR personnel. The perception of availability of HR analytics is high; the only choice which needs to be made is between inside and outside. The challenge is lack of integration of various HR data sets and it stays a problem. The usefulness of HR analytics is high in evaluating business strategy particularly in the services era. People skills are the differentiator in the service sector and it is all about employees. The support comes from competitor cases which gives an idea to begin and to have the rationale for doing it.

#### *G. Times Internet*

The understanding of HR Analytics lies in managing employee sentiments and managing all employee related processes. HRA helps in processing it through tools. The reason for adopting HR analytics is due to the employee strength and without automation the experience will not as per the industry standards. It is also used to match the competition and have a better understanding of the employee. It is very important for the function but is far behind in using tools for HR analytics. Some of the tools which are used are internal to the organization along with Amber AI which is used to capture sentiment analysis for new joiners for the first 6 months. Data inputs are through Excel and Dashboards. The challenge is of technological issues and customization in the tools. HR analytics is extremely important in evaluating business strategy as data driven strategies helps us taking the right decisions. It helps to work on attrition and retention.

#### *H. Fujitsu*

It is understood as using tools get better understanding and interpreting large volumes of data available for human resource in organization. Analytics helps us in making conscious business decision in terms of hiring resources. It helps in understanding the skills of resources internally available and realizing their career development plan. HR analytics is used on a daily basis to understand the current bench and projected bench. strategies to fill or cover the deficit are built. Support from IT teams to understand and present data in a result oriented manner.

#### *I. Birlasoft*

It is understood as an area in the field of analytics that refers to applying analytic processes to the human resource department of an organization in the hope of

improving employee performance and therefore getting a better return on investment. The reason for using HR analytics is that HR experts are finding that increasing employees' feelings of belonging within the company can increase morale and productivity. Analyzing how strong that sense of belonging is, as well as what contributes to it, can help improve company culture and create a better work environment. The usefulness of HR analytics is termed as body without brain. The tool which is used is MS Excel. Data inputs are from dashboards and outputs is in graphs. The value of HR metrics is the data used to quantify the cost and the impact of talent management programs and HR processes, and measure the success of HR initiatives. Metrics add value to organizations by providing the information required to make the best decisions about their talent. The challenges are in the area of data quality, skill set and ROI process which are overcome by scrutinizing the data and correcting the issues. HR analytics is considered to be very useful in evaluating business strategy.

*J. IRIS Software*

HR Analytics is being used recently in the organization for the last two years. HR Analytics is understood as transformation of large number of data to information. It is used to simplify information into better data and use it for forecasting. The reason behind using HR Analytics is to streamline and automate the HR process, to manage big data and conduct manpower forecasting to take proactive decisions. The talent management team is responsible for doing forecasting. HR Analytics is very beneficial. It has automated a system and the new joining employees can upload their information on cloud which can be extracted as and when required. It has decreased labor and manual work. The organization has outsourced payroll and it has improved efficiency of the function. The software used are 'MS Excel' and 'Taleo' (Oracle) for HR Analytics. The data is received from various dashboards and MS Excel and MS Sharepoint. The availability of HR Analytics is high with a lot of products available in the market and the company is also working on creating its own products as per its requirements. The challenges and problems are confined to software issues and oracle handles it. HR analytics is useful in evaluating the business strategy as it is helpful in integration of big data. It is a sum total of integrity, accessibility and confidentiality of data which helps in strategy making and taking better business decisions. Support is managed by IT team through trainings.

**VII. SUMMARY OF THE CASES**

The following table (Table 1) summarizes the understanding of the HR Measurements/Analytics, Lists the IT Tools used by the sample organizations, the reasons for adopting HR analytics, the challenges which come in the way of analytics and the strategic linkage of HR Analytics. It provides a brief Table 1.

**VIII. CONCLUSION**

The IT companies in the sample all use technology in Human Resource measurement. Microsoft Excel as a software is used by almost all the companies. As eight out of ten companies named it for conducting HR analytics, Oracle uses its own HCM Cloud, Fujitsu uses its own tool SETU along with excel and Accenture uses its own internal tool which was kept confidential. IRIS Software uses 'Taleo' which is an HRIS tool owned by Oracle along with MS Excel All IT companies had a positive approach in looking at HR analytics. Usage of Artificial Intelligence has also crept in as Times Internet uses Amber – an AI tool which helps in doing sentiment analysis for new joining employees. The challenge is of technology related issues, customization, integration of data and the data being recent. All 10 companies believe that use of HR analytics supports in evaluating business strategy as data driven decisions are more accurate and it is even more useful in the services era as in the service sector HR has a major role to play as it acts as the only differentiator.

**IX. FUTURE SCOPE**

As per the information revealed by practitioners of HR analytics, it can be predicted that the use of sophisticated technological tools will increase. Organizations are looking for customization in tools to help cater to their peculiar needs. With businesses being more dynamic, the use of predictive and prescriptive analytics will be on the rise. Data driven business decisions are proving to be better in realizing business objectives. Technology is helping the HR function deal with the complexities of people especially in the area of thoughts and feelings. Sentiment analysis is helping organizations gain the right insight which is further helping increased retention and greater engagement. Technology is a catalyst in advancing towards measurements and thus making HR the vital strategic partner, more importantly in the service era.

**Table 1: Summary of use of HR Measurements by IT Companies.**

Company	Understanding	IT Tools	Reason	Challenge	Strategic Linkage
Accenture	Tool to improvise and create better business strategy.	Internal.	Effective in developing impactful strategies	Robust data and the business requirements	With HR Analytics, Business is working in alignment with HR. Targets are more realistic.
KPIT	Allows companies to use data and metrics in order to better their employees and	MS Excel and BI World	Understand people related investments, trends, opportunities and	Compilation of data from various sources. Privacy and compliance.	Decisions are more data-driven than from intuition or market standard

	make relevant changes.		outcomes.		
Oracle	Means everything to business, it is the fuel to strategy.	Oracle HCM cloud.	People are critical for business outcome and their insights are important.	Recent data as people keep moving.	Business is highly dependent on HR. Predictability of data is an important factor to success and HR
Fiserv	Improve employee performance, to make data driven decisions and analyzing peoples' problems	HRIS and Excel	Streamline many internal processes, see trends in employee population.	Collection of right kind of data and organizing it. Grooming the HR team for the analytical mindset.	Information is valuable as it is data based. Provides insights to drive HR and business strategy.
HCL Technologies	Brings out the unseen inferences and helps in taking right actions	MS Excel and other Internal	Need to analyze more data beyond simple statistics.	Discover ways to help business with low cost motivated workforce.	Fairly useful in evaluating business strategy.
Sify	Understood to support in predicting attrition.	MS Excel.	Organization getting complex with large number of employees. For predictive analytics in hiring and training.	Lack of integration of various HR data sets.	Useful in the service era. People skills are a differentiator in the service sector.
Times Internet	Managing all employee related processes and Managing sentiments.	MS Excel and Amber (AI Tool)	Employee strength. Without automation the experience will not match the industry standards.	Technological issues and customization of tools.	Data driven strategies help in taking the right decisions.
Fujitsu	Applying analytics to various human resource department processes to improve overall operations and response time.	SETU, iRecruit, Taleo and HRMS	Quick and accurate TAT.	Network Issues, High volume of data management and 100% customizable tools.	Applying analytic can improve performance, accuracy, business forecast and scope.
Birlasoft	Applying analytic processes to HR for improving employee performance and getting better ROI.	MS Excel.	Measuring employee feelings and helping improve will lead to improved company culture.	Data quality, Skill set of the professionals managing it.	Metrics add value to organization by providing the information required to make the best decisions about talent.
IRIS Software	Transformation of Data to information.	MS Excel and Taleo	Streamline and automate the HR Process, to manage big data and conduct manpower forecasting.	Software Issues.	Helpful in integration of big data. It is a sum total of integrity, accessibility and confidentiality of data which helps in strategy making and taking better business decisions

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