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Abstract

This paper aims at understanding the extent of utilisation of Big Data Analytics in the Human Resource (HR) function, primarily in India. It also aims to understand the impact it has had on organisations that utilise it and hence to understand the perception professionals in HR hold on it. This will give us an insight into its practicality and applicability in the future. Existing literature on the topic indicates a slow but progressive utilisation of HR Analytics in different spheres of the business world. This finding must be corroborated to ensure correctness and to help with further progress. Consequentially, this study was carried out and the assumptions taken were measured against data from the real world. The paper discusses the premises, the research conducted and the outcomes in detail.

Key Words: *Big Data, Data Analytics, Human Resources*

1. Introduction

The steam engine marked the First Industrial Revolution. Electricity, gas and oil as sources of energy marked the Second Industrial Revolution. Telecommunications, electronics and computers marked the Third Industrial Revolution. The Fourth Industrial Revolution has been marked by data. Data is everywhere and whichever company or organization can work with data the best will find success. In Human Resource Management as well, this change is becoming more and more apparent. Human Resource Management (HRM) has historically been an emotion-driven, human judgment-driven function. However in today's world everything can be quantified and hence analytics finds itself in high demand everywhere. For this reason, I intend on finding out the extent to which professionals in the HR industry find analytics useful. Not every company has adopted analytics and hence a comparison between output levels of companies is possible. That comparison can then be mapped onto the use of analytics or the lack of it.

Google's Project Oxygen is the epitome of the successful adoption of people analytics into everyday work life. It proved that managers were indeed a necessary part of the organization – which settled an age-old opinion-based argument. Walmart, Royal Dutch Shell and Microsoft are other noteworthy examples of top companies that have utilized HR Analytics to enhance operations and eventually output.

It is important to understand the extent to which Analytics is being used in HR departments in various companies because it is only then that we can understand the impact the data revolution has had on HR practices. This forms the need of the study – to assess the impact of Big Data in the field of HR. It has been more than 5 years since Big Data took the world by storm and hence it is the appropriate time to assess the impact it has had in the essentially “human” processes involved in the Human Resource function.

2. Background of the Study

2.1 Need of the Study

The HR function has primarily has been a ‘human ’function in that in the past most or all of the decisions have been taken based on human gut feeling. With Big Data Analytics taking the world by storm over the past decade, it is important to understand how it has impacted the HR function. It is also important to understand why some companies have adopted HR Analytics and why some have not. Is HR Analytics really useful? Can it replace traditional HR decision making? Will it in the future? These are the questions which have to be answered and this is why this study is required.

2.2 Objectives of the Study

The objectives of the study are as follows:

1. To find out the extent of utilization of HR Analytics
2. To find out the perception of HR Analytics among HR professionals
3. To find out the impact HR Analytics has had on companies that utilize it

2.3 Scope of the Study

The study is among present and past HR professionals based in India. It includes professionals working in companies both utilizing HR Analytics and not utilizing HR Analytics. A sample size of 20 was selected considering lack of access to professionals in the HR world and the fact that not many companies utilize HR Analytics. Responses from 20 people who have solid experience in the HR field paint a good enough picture to substantiate the research.

2.4 Limitations of the Study

The study is limited by the fact that bias could come into play. Older professionals could feel their methods are being questioned and doubted and hence they could be opposed to the idea of a new method of doing what they have been doing for a long time. Respondent bias in the form of similarity effect (respondents filling the same value for different questions) is a possibility that has to be considered. However, this bias can be discarded as the 20 respondents are all HR professionals and they can be given the benefit of the doubt.

One other limitation that could be considered is a lack of respondents. This study needs to be much more inclusive and must have a broader respondent base to truly help in understanding of the extent of utilisation and the perception it carries.

3. Review of Literature

R. Navaneetha Krishnan and Anbalagan Ajaganandham (2015) state that KSRTC did not utilise HR analytics and as a result employees gave below average ratings to the HR practices followed (59). Employers, or people in positions of management, gave higher ratings to the HR practices (73). These scores were calculated based on factors such as leaves given, salaries and wages, bonuses, incentives and raises offered and training and development facilities offered, and more. There was a lack of analytics services for the HR department and hence the numbers awarded were average. Although the HR practices were fairly well received among employees and they had no major complaints, the overall average score awarded comes to only 61. The only suggestion to improve the scores is to implement analytics into the everyday HR practices followed. Alina Daniela (2017) states that organisations need to change their structure to include digitisation of HR processes, new attempts at upskilling in the fields of people analytics and modernised methods of communication. Recruitment, selection and talent development take on a whole new meaning in the digital age and in the age of data. Creating enough value at the workplace for Gen Y and, of late, Gen Z employees is of paramount importance. This can be achieved in an easier manner via the use of Big Data and people analytics. There also exists a gap between the employer's requirements and the employees' capabilities. The Gen Y workforce is technically and professionally equipped but lacks creative problem solving capabilities. This provides huge opportunity for other candidates to fill in the gap. Dr. Indranil Bose and Dani Jose (2017) state that HR analytics is in the stage of continuum – that big data is equal to the telescope and the microscope in terms of innovation. HR analytics enables companies to compete in fiercely competitive markets. It was also an observation that along with providing information about the contribution of each identified factor in the organization, HR analytics would help steer the company in a particular direction by identifying training needs and which factors had to be given special attention. In addition, it was observed that top performing companies utilised data analytics in their people practices 5 times more than average performing companies. Dr. Abdul Quddus Mohammed (2019) states that analytics based intervention could open up new possibilities in the field of people management or human resource management. Not only does analytics help identify the weaknesses and opportunities present in the personnel, but it can also help in the predictive decision making process. It can hence help the company visualise and execute a strategy. This can also be helpful in reacting aptly to adverse or favourable situations. The author further states that there is still a lack of practical-based literature, analytics in people management being only a developing trend, albeit one which should be implemented by every company. It is thus

slightly early to assess the situation involving HR analytics with precision. WYM Momin and Kushendra Mishra (2015) state that strategic workforce planning is the need of the hour due to intensified competition – both in terms of business and in terms of labour resources available. Employees are not unwilling to change jobs to suit their convenience and hence HR analytics must be utilised to yield real time information which is accurate. This information must include estimated (accurate, if possible) quantified data regarding employee engagement and employee satisfaction. Hiring and firing practices can be decided consequently. Workforce management is priority in output management. Analysing different HR metrics to create HR strategies is the only way forward. Dr. Indranil Bose (2019) who has written extensively on the implementation of workforce analytics into everyday HR practices states that experimental evidence is required to substantiate the inclusion of technology based approaches into the essentially “human” practice of human resource management. To improve effectiveness levels of personnel and levels of growth utilising analytics in the domain of human resources is an unexplored, experiment based approach. Data such as demographic data, data regarding output levels at the workplace, data regarding intra-organisation relationships (boss-subordinate, between colleagues, possible romantic relationships) and more empirical data is required to achieve a conclusive answer. He further states that the development of analytics tools brings in the possibility of quantifying all data and hence of using that data in predictive analytics. Gupta et. al. (2018) state that despite the practice of HR being very intuition and emotion based, data must be collected, processed and analysed to arrive at meaningful, real time and practical decisions. The authors make a strong point that managers and people in positions of power consider HR to be a very unnecessary and general function. However, this image could not be more wrong. Modern HR is data-driven as is everything else that has emerged during the Fourth Industrial Revolution. As a result, HR becomes an essential function in any modern day organisation. The existing managers need to become more aware about the utilisation of data analytics into the process of people management. Big data is the key to unlocking the potential of every employee, and if not, to find out who to fire. Kolawole Sunday Ajibola et. al. (2019) state that employee tenure has a moderating influence on the aspects of performance appraisal, performance appraisal feedback and employee engagement. However, the authors state that HR metrics must be given more importance in the organisation and that overall employee well-being can be improved several times over by the simple implementation of HR analytics. It is difficult to provide suggestions to the organisation being studied because the data collection is inadequate. Without enough data to back any decision it would be hazardous to suggest a course of action. It is hence concluded that despite the fact that advice could be given to improve the situation, the implementation of HR analytics both in terms of collecting data and analysing it would be of incredible help to the team. Kamel Barbar et. al. (2019) state that SMEs need to start implementing HR analytics into their everyday practices. The

workforce should be modified to include more tech-savvy and software-enabled employees. Employees must be capable of handling software - it is the new normal. HR analytics will not only improve quality of output produced, but it will also reduce turnover rates. It will also go a long way in identifying existing skill gaps and knowledge gaps. This will help the company identify which aspects of the employee's performance need training. This can help the company channelize its efforts and its resources appropriately. It has been suggested that all training and people competency assessments should be done only with the aid of data analytics. Dag Øivind Madsen and Kåre Slåtten (2017) state that although HR Analytics has seen much appreciation in its application, it has not been scrutinised much by academicians. As a result, there is no conclusive evidence pointing towards either the utility or futility of the practice of analytics in people management. Multinational companies which can well afford the 'luxury' of analysing HR metrics and processes are the only ones implementing analytics. The smaller and more medium sized companies are yet to follow suit. Despite it being a 'luxury' now, it is soon to become the norm in any people management team. Priyanka Singh, Rajesh Kumar Upadhyay & Dr. Monika Srivastava (2017) state that Human Resource Analytics has become the new trend in any management unit. It assists the management not only in improving existing processes but also in streamlining the decision making process for compensation management, organisational design, fund allocation for various HR functions, talent management among others. Although this study focuses mainly on the application of HR Analytics in Higher Education Institutions, the core concepts are well applicable to any organisation with people to manage. Manuela Nocker and Vania Sena (2019) state that Big Data has seen a tremendous rise in the past decade due to mainly two reasons – cost of storage of data reducing drastically and cost of generating huge volumes of data coming down drastically. It is further noted that analytics in people management can help value creation through HR processes. It will help align the two very well. The authors note three important factors that decide whether the use of analytics in HR will actually be beneficial to an organisation – the technical knowledge to implement analytics properly, ease of access to large quantities of data and the intelligence to analyse the results and convert the results into value addition.

4. Research Methodology

Frequency tables, correlation analysis and regression analysis were used in this research study to analyse the data collected. A sample size of 20 respondents was considered. Although this might seem like a very small number all the respondents were actual professionals working in the HR function in various organisations across India, and 2 respondents worked in organisations based out of other countries such as Canada and the United States. This, combined with a lack of access to such professionals, justifies the sample size. Furthermore, considering the responses received, the

outcomes of the research can indeed be generalised as it reflects the situation in the HR world really well.

4.1 Hypotheses

H0: HR Analytics is used extensively in companies.

H1: HR professionals are in favour of utilizing HR analytics.

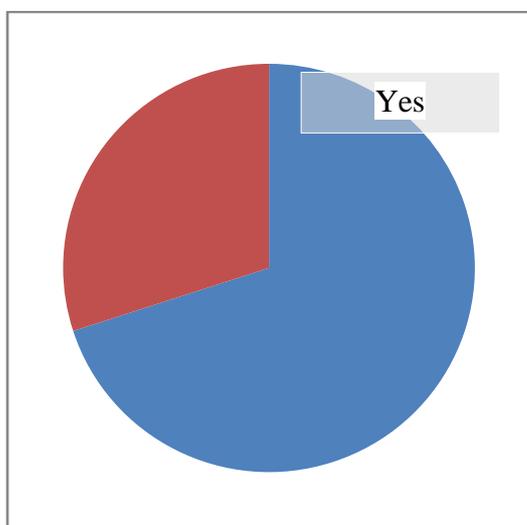
H2: HR Analytics has had a positive impact on HR practices.

H3: HR Analytics has made professionals 'job easier.

5. Analysis & Interpretation

5.1. General Descriptives

1. 100% of the participants belonged to the 30-60 age bracket.
2. Does your organization utilize HR analytics?



70% of respondents indicated that their organization did not utilize HR Analytics, which was an underwhelming response. The expectations of the researcher were much higher given that HR Analytics is not a very new concept. However, this statistic does not undermine the basic intent of this research paper, which is to understand the perception of HR Analytics among HR professionals. Taking into account the fact that the sample size is but 20, this statistic of 70-30 can be generalized to organizations in India. It would be fair that 70% of organizations do not implement HR Analytics as yet. This indicates great potential for the HR profession in the future. 83% of respondents whose organisations utilised HR Analytics stated that the implementation of the technology had improved the organisation as a whole. 17% indicated that it had made no change, but stated that the implementation was improper initially in their respective organisations. This is an outlier case and indicates the need for technical know-how and the need to implement the technology properly. It could prove to be futile otherwise.

5.2 Frequency Tables:

1. Frequency Table for respondents' regions

Table 1

Which city is your organisation based out of?

		Freque ncy	Perce nt	Valid Percent	Cumulati ve Percent
Va lid	Canada	1	5.0	5.0	5.0
	Central India	1	5.0	5.0	10.0
	India – West	3	15.0	15.0	25.0
	North India	4	20.0	20.0	45.0
	South India	10	50.0	50.0	95.0
	USA	1	5.0	5.0	100.0
	Total	20	100.0	100.0	

2. Why does your organisation not utilise HR Analytics considering it is a widely recognised and used tool today?

Table 2

Frequency Table of reasons for not utilising HR Analytics

		Freque ncy	Perce nt	Valid Percent	Cumulativ e Percent
Va lid		6	30.0	30.0	30.0
	Belief in traditional HR practices	1	5.0	5.0	35.0

Lack of resources	2	10.0	10.0	45.0
Lack of resources, Need is not felt	1	5.0	5.0	50.0
Lack of technical know-how	2	10.0	10.0	60.0
Lack of technical know-how, Belief in traditional HR practices	1	5.0	5.0	65.0
Lack of technical know-how, Need is not felt	1	5.0	5.0	70.0
Need is not felt	5	25.0	25.0	95.0
We are manageable size when we grow we will implement the analytics	1	5.0	5.0	100.0
Total	20	100.0	100.0	

As is visible from the frequency table, the reasons for organisations to not use HR Analytics are varied. 30% of respondents even indicated the need was not felt, indicating an unwillingness to implement Analytics into HR even now, which is surprising at the least. Others indicated lack of technical skills or resources as the reason, which is understandable as HR Analytics is still considered a luxury.

In fact, in response to a subsequent question, “Given the opportunity, would you implement HR Analytics into the daily workings of the organisation?” 57% of respondents indicated ‘No’.

3. Correlations:

1. Correlation between size of organization and the use of HR Analytics -

Correlations

		Does your organisation utilise HR Analytics?	What is the strength of your organisation?
Does your organisation utilise HR Analytics?	Pearson Correlation	1	.564**
	Sig. (2-tailed)		.010

	N	20	20
What is the strength of your organisation?	Pearson Correlation	.564**	1
	Sig. (2-tailed)	.010	
	N	20	20

** . Correlation is significant at the 0.01 level (2-tailed).

A value of .564 for correlation indicates moderate positive correlation which means there is a slight correlation but the dependent variable is not influenced by the independent variable. Thus, size of the organisation does not influence the use of HR Analytics in organisations much. However, it is a factor which is considered.

2. Correlation between employee perception, employer perception and employee performance ratings (since implementation of HR Analytics into the daily workings of the respective organisations of the respondent)

Correlations

		As an employer and as an HR professional, how easier do you think HR Analytics has made your job?	As an employee of the organisation, how much positive change have you seen in the HR practices since the implementation of HR Analytics?	Since the implementation of HR Analytics, how have employee performance ratings changed?
As an employer and as an HR professional, how easier do you think HR Analytics has made your job?	Pearson Correlation Sig. (2-tailed) N	1 6	-.200 .704 6	.200 .704 6
As an employee of the organisation, how much positive change have you seen in the HR practices since the implementation of HR Analytics?	Pearson Correlation Sig. (2-tailed) N	-.200 .704 6	1 .704 6	.200 .704 6
Since the implementation of	Pearson Correlation	.200	.200	1

HR Analytics, how have employee performance ratings changed?	Sig. (2-tailed) N	.704 6	.704 6	6
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The correlations stand at a positive value of 0.200 and have a significance value of .704 which is high. This indicates less significance and proves that the three enjoy a low positive correlation. Thus, employee and employer perceptions of HR Analytics have not influenced employee performance ratings much, though they continue to be high.

5.4 Regression Model - of duration of utilisation of HR Analytics and employee performance ratings –

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.200 ^a	.040	-.200	.4472

a. Predictors: (Constant), For how long has HR Analytics been a part of your organisation?

An R² of 0.04 indicates that the variation in the values cannot be explained but that does not discredit the correlation. An explanation can be arrived at provided more time and a larger respondent base. This ultimately indicates that there is a significant change in the employee performance ratings for the better, but the causality cannot solely be credited to the implementation of HR Analytics. Other factors are at play here too, which are not considered in this research.

6. Conclusion

The hypotheses on the basis of which the study was carried out have been checked.

The first hypothesis (H0) which states that HR Analytics is widely used has been disproved – only 30% of respondents indicated that their organizations utilized Analytics.

The second hypothesis (H1) has been disproved too. This has been arrived at by a combination of the lack of utilization and the fact that 57% of respondents indicated a lack of inclination to implement analytics into HR, given the opportunity. 30% even indicated that the need for HR Analytics was simply not felt.

H2 has been proven true. 100% of the respondents whose organizations utilize HR Analytics indicated that the organization as a whole had improved and that both for employees and employers the HR practices had improved since implementation of Analytics. This analysis can be extended to prove H3 true as well. Jobs of professionals in the HR function have indeed been changed for the better.

It can hence be concluded that although there is a resistance to the concept of HR Analytics, it does help and improve organizational practices. HR professionals who already utilize it are in favour of it while others are not. This presents great potential for Analytics in HR. Once this resistance is overcome and HR Analytics becomes a must, as it will, professionals with the know-how and the willingness to implement it will become very successful and can change the entire outlook of an organisation.

To sum it up, HR Analytics is not very widely utilised. HR professionals have a positive disposition towards it but only if they already utilise it. Otherwise there is resistance towards the concept. It has, however, had a positive impact on organisations that do use it, which is the catalyst to more expansive utilisation in the future.

Suggestions and Recommendations

The obvious suggestion to future studies in the same area would be to include a much larger sample size. The researcher in this case was bound by lack of access to professionals in the HR function. Perhaps a more well connected person could carry out the same research and arrive at more conclusive evidence.

Another researcher who is better versed with analysis tools could implement better tools to properly dissect the data and find out the cause behind a specific occurrence or so.

Further the research could be expanded to include multiple global regions. This study is limited to Indian companies although two respondents from foreign countries did reply. To understand the scope and the future of HR Analytics properly a broader and more inclusive population will have to be considered.

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