Research Article

Adoption of Human Resource Analytics in Information Technology and Information Technology Enabled Services Industry in India

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ABSTRACT:
This research paper strives to examine the acceptance of HR analytics in Indian IT and ITES organizations. The primary objective of the paper is to find out the factors of change impacting the acceptance of change on an individual level in employees with reference to adoption of Human Resource Analytics. The factors are identified and compared with level of acceptance of change in the organisation. This paper further sets many grounds for future research in the field of human resource analytics.

Keywords: HR Analytics, Self-efficacy, Social Influence, Tool Availability, Data Availability, Fear Appeals, Effort Expectancy, Performance Expectancy.

INTRODUCTION

Human resources analytics is largely a sector inside the broader field of analytics that involves the appliance of analytic processes within a HR department for the aim of rising worker performance. Once this method is actualised, businesses profit by attaining a larger ROI (return on investment). In its core, what HR analytics does is, bridge the gap between HR activities, and displaying the outcomes we receive from it. After such kind of relationship is being established, the data so gathered, and the results generated act as the basis for taking decisions in the future, and at the same time help in keeping a check on the on-going activities. Human resources are the cornerstone of the IT industry as talented individuals in these industries provide competitive advantage. The IT / ITES sector is considered by nature to be the most dynamic as it has innovative working culture methods such as virtual office and virtual migration, which due to the high rate of out-migration only apply to other sectors, lack of job satisfaction, employee mobility, flexibility and individualization are a very common

phenomenon in the industry, which is a big problem in the IT industry.

REVIEW OF LITERATURE

Angrave, Charlwood, Kirkpatrick, Lawrence, and Stuart (2016)[1] referencing a study in the Provocation Series Paper, say, without the understanding of analytical thinking, HR analytics is supposed to induce a lot of negative results for the HR professionals. With the advancement of technology and increasing usage of big data, it has become very important for businesses to adapt to newer tools which are coming up in the markets. The HR professionals are doubtful to use these advanced tools as they are not sure if people can be reduced to metrics. Existing products in the market like Oracle's Taleo talent management suite, SAP's Success Factor, offer services like bringing together existing HR-related databases into a single cloud-based data warehouse. In order for HR Analytics to survive in the long run and not just cost businesses a huge sum of money, a different approach is needed which will allow HR data to make strategic decisions and integrate in other aspects of the business. Aral, Brynjolfsson, and Wu, (2012)[2] consider three variables– performance pay, information technology, and human resource analytics practices and state that these factors complement each other in order to act as an incentive, and increase productivity.

The study thus conducted, takes in to account incentive systems of 189 firms, and summarizes that Human Capital Management software is used most in firms that have adapted performance pay, and HR Analytics practices. The study also states that these three components when intermingles serve best, unlike if paired with one another in isolation. Andersen (2017)[3] explores the stability of HR Analytics in organisations, and whether it has reached its peak point. The study shows that even when HR Analytics as an idea was introduced a while back, it still remains new to many firms. The practice of the concept is still blossoming and has not fully grown to its potential. The major factors that have affected this growth of HR Analytics are competencies, mind-set, organizations and maturity. The study says that if these factors were to be addressed and the problems overcome in the coming years, then HR Analytics could work out wonders for the field as a whole and in total could generate value. Baesens, Winne, and Sels (2017)[4] talk about factors that have to be present in order to make a company ready for business. The study discusses how a proper model has to be established, and beyond that the dynamics of the employee network have to be understood. After that, training in regards to the change has to be given to employees. In order to produce efficient results, Analytical HR models have to align with business goals. After establishing all this, a test run becomes very important for a company to flourish. Bassi (2011)[5] says Human Resource Analytics has evolved a lot over the past three decades. It states HR Analytics has reached a stage where it is a process of reporting on an array of HR metrics in an orderly manner. It helps improve the individual and organizational performance. The activities are carried out by HR employees. There exist a lot of applications for when to use HR analytics which can help get better solutions. It also predicts that a lot of ethical dilemmas with the advancement of HR analytics. It can help us to expose where effort, resource and budgets are not producing to their full capacity and while doing so will reduce workload. The main aim for the future has to be able to find the sweet spot which will help the organization in being more profitable, with a more enlightened management and development of people. Bertolucci (2013)[6] discusses the return on investment a company receives by investing in big data. Big data is a very crucial part of the functioning of HR Analytics and therefore investment in big data, ultimately means an investment towards HR Analytics software. The study reveals how companies have not been able to extract the amount of return on investment that was expected or predicted. The main reasons that were stated for the same were lack of expertise and skills amongst operators and users of big data, companies not being able to bring in the "best fit" technology for their usage, and no association to specific usage or need of that software. The study doesn't discuss any solution to such problems, but merely gives the cause of it. Chen, Chiang, and

Storey (2012)[7] talk about the evolving world of Business intelligence and analytics, and how it has become a relevant aspect for both practitioners and researchers. It talks about Business intelligence and analytics in three phases, one that was, one that is had grown into, and is still maturing into a full-grown adaptive element, and the third talks about its future implications. The current phase of Business Intelligence and analytics is very much implemented by web intelligence and web analytics. The usage and dominance of it ranges from the e-commerce field, to different industry and even the government of our nations. Costanza (2015)[8] discusses the contribution of People Analytics in the extension of reach of Human Resources. By stating the numerous uses of People Analytics, a comparison is drawn towards how these functions can turn Human Resource from a secondary to a primary function of an organisation. An elaborate process is described of how People Analytics is applicable in an organisation and how it can be carried out, with reference to eHealth Technologies employees' responses, it is deduced that employee data is used for guidance while making important company decisions. Dysart (2013)[9] discusses the influence of big data implementation on billable resources. The study discusses the use of big data in law firms in the United States, and how their use of big data is centred on two different usages. First, law firms utilise big data to compare rates with their competitors. They decide to charge their clients according to the market trends. Apart from this, they constantly keep a track of potential candidates who could be hired in the firm through big data usage. Companies on the other hand, use the same data to analyse whether they are outsourcing to the right firms, what kind of pay is prevalent in the market. Big data allows global and local firms to use benchmarking to set aside their resources and plan their budgets. Dod and Sharma (2012)[10] discuss how using advance data analytical techniques a company could gain competitive advantage. In theory this model might look like the holy grail of opportunities to gain competitive advantage, but in reality practical implementation of such knowledge to its full potential has been made possible only by a few select companies. Discoveries have to be made in the parent fields, so that business analytics can aid them along the way. Like so many other studies that follow parallelly, demand for extensive study and creation of literature in the field, is quite evident in this study. Falletta (2014)[11] says that a need for evidence-based research has developed in the market, and because of such requirements analytics of human resource has emerged as an appealing field. Influence of data usage and information processing can be evidently seen in all HR activities of organisations, but this is mostly concentrated to high performing companies. This field has to grow immensely in order to reach a developing audience. A grave issue that was highlighted was creation of loads of data which is not required.

This sort of data occupies space, and slows the system down, and therefore, a demand of reduction of such waste generation becomes highly important. Fink (2010)[12] regards the upcoming trends in Human Capital Research and Analytics. The study relates all the different departments of an organisation, and how each functions' activities have impact on the adoption of analytics. The author believes this shift to analytics to be a radical one. The areas that were believed to have significant changes are surveys conducted amongst employees, maintaining a management system which has employee data, selection and hiring process of the employee, etc. These firms also addressed that because of such adaption, significant changes towards the better are also adapted by the organisations. They informed that process such as staffing, and training have become easier, also a significant decline in the retention rate could be observed by such analytical tool being adapted in the process of HR activities. Gardener, McGranahan, and Wolf (2011)[13] explain how Human Resources Department of companies have failed to answer the questions related to growth and development in a quantitative form. But lately, all this is changing. The bridge between "people practices" and "performance" is being covered through new tools and methods of analyzing data. Additionally, the increase of HR information systems has generated a group of software and technology intermediaries which will aid HR and business executives to utilise data to find links between talent management and employee productivity. Finally, the summarisation and outsourcing of transactional HR work has compelled many leaders of the function to take a first step toward quantifying and reporting HR costs and performance. Giacumo and Breman (2016)[14] ponder on activities that could be conducted to improve performance and how data analytics could be imbied in the same. They try to discuss this in perspective of non-profit organizations, and profit organizations. They observed that very few scientific methods have been developed to blend the variables, even though every human resource activity could immensely benefit from the same. They further move on to highlight that the literature that is available for studying analytics in the workplace and its impact on professionals is highly limited. Therefore, the demand for study in this field becomes a necessity and highly urgent. Landon-Murray (2016)[15] discusses the job prospect of data scientists who enable the usage of data analytics in the organisation. The job of a data scientist is said to be one of the most appealing jobs of current times. It brings with it a sense of ethical responsibility to not manipulate the data as it is being used in many different platforms to bring out various different decisions. Apart from being ethical at their jobs, data scientists will also be able to provide information to the company so that data investments are only made where return is more and beneficial. When there is enough adaption of HR Analytics in companies, the demand for data scientists will

increase, and with it the skill sets require to perform that job will be narrowed down and demand for creativity, and ability to adapt will increase.

A study on the functional usage of HR analytics discusses the benefits of the adaption of the same. It further discusses the differences between ROI, cost-benefit analysis, and impact analysis. The paper further discusses how these elements are not sufficient enough to take strategic business decisions alone, and behavioural modelling has to be used to aid the decision-making process. This study brings out the usefulness of giving human resource activities a quantitative form, and how analysis and judging the return on investment of a firm on training, appraisal activities etc, will power strategic decision planning, and effective budget control. The study also adds that the journey for such activities has just begun. Levenson (2005).[16] Lochab, Kumar, and Tomar (2018)[17] establish a link between the performance of the organisation and HR Analytics. The paper states that the existing literature on Analytics views only two perspectives: business and data. The study of these aspects prove that bridge can be built between the above-mentioned variables, but "how" of it still needs more exploring through empirical research in various industries. For now, one can only conclude that HR Analytics has an impact on critical elements of an organisation. The study helps to establish a research gap in existing literature and makes way for future prospects of research. M2 Presswire (2015)[18] review that even though HR professionals are ready to accept various analytics software, but they are not being able to use it because of absence of such technology being provided to them. The report states that the understanding of such technology is present in professionals, but due to lack of support from organization and resources being provided by them, such employees cannot enact the usage of HR Analytics to make strategic decisions, or carry out routine and mandatory human resource department related activities. The study also revealed as to which department has the most understanding regarding application of HR Analytics, and surprisingly the operations department had the most knowledge about application. This was then related to their daily usage and dealing with similar type of quantitative data set in a different backdrop. Momin and Kushendra (2015)[19] write how human resource analytics has turned into an essential element of strategic planning in the human resource field. HR managers today, sought to decide in regards to their employee base based on the results produced by HR analytics. Each decision that relates to human resource needs be to given utmost importance. Thereby, HR analytics indeed help the HR manager to have a view at variety of perspectives and ponder over each dimension of human resources before various strategic decisions are made. Extreme and intensified global competition and continuous changes in technological field is pressuring organizations to change its basic strategy. Currently, each one of the organization' focus must be on

aligning its HR strategy with long term business goals. The practical workforce planning requirement of the current state, and demands immediate attention. The changes that are happening ever so frequently in the business world today are the cause of intense competition among companies. Thereby, in order to have a superior factor over its competitors, companies have to adopt HR analytics for obtaining accurate and real time information. Smith.Jr. (2018)[20] sets out to establish what HR professionals think about using Data Analytics for managing the talent within the organisation. The study was based on responses received from twenty participants of Human Resource field. The study mainly focuses on four factors that were considered to impact decision making by employees of the organisation. The factors were that if professionals believed that there was a profit towards using data analytics, the challenges included in using data analytics, the training required to use data analytics, and whether such support towards organizational change in motivation enough for the employees to take up Data Analytics while conducting day to day activities in their normal routine. Soundararajan and Singh (2017)[21] bring into limelight how one can use HR Analytics to their advantage and gain a competitive advantage over other performers in the same industry. The research bases its entire perspective on the point that human capital is a source of advantage to an organization and must be harnessed along the way. It further moves along to describe how effective usage of analytical software in different departments can increase productivity and at the same time boost morale of the employees. The authors dictate that if "best fit" approach is used in deciding the software for use, such investment can really be useful to the company. Spahic (2015),[22] in the study aims to bring out practiced activities in Fortune 1000 companies and other global firms. The case mainly focuses on how different data collection methods of the companies lead to different HR Analytics practices. Based on the results of the study, it is established that there is a huge impact of the activities carried out by high-performing firms in terms of HR Analytics, on the strategic business making process of the same firm. The shift from HR being a secondary wing of a company to it being a crucial part of decision making is evidently visible in his research. Sousa (2018)[23] tries to identify the kind of organizations that use analytics, and the various systems they subscribe to. It also aims to find out whether different professionals think differently about the usage of human resource analytics and concludes that there are no differences. They study concludes that HR metrics are different and regarded as a very narrow concept in comparison to HR Analytics. This kind of analytics is also future oriented, and forms the basis of strategic decisions in an organisation. The study highly talks about predictive models that would be highly critical in guiding the future decisions of the organization. Rasmussen and Ulrich (2015)[24] state that

the huge belief that HR analytics in one of the latest emerging fads is a paradox in itself. It is predicted that HR analytics in its present state will only be a failure in being of real value to companies. HR analytics has to evolve and come out of HR and integrate with existing end-to-end business analytics in order to become relevant. The major contributors in making HR analytics a management trend are lack of awareness about analytics, data fetish, academic mindset in a business setting, approaching HR analytics in a journalistic manner. In order to help HR analytics, move from a failure of a fad to a successful element of the decision-making process, there has to be a profound focus on the business challenges by asking questions about the possible challenges the business might face in the future and how HR can support the business in order to overcome these challenges. Vargas (2015)[25] deals in her study with different factors that impact adaption of HR Analytics in professionals. The study states that self-efficacy, social influence, tool availability, data availability, fear appeals, effort expectancy are factors contributing to adaption of HR Analytics. The study weighs these factors against demographic factors, and thus conclude that individuals tend to be guided by these factors when opting for change or not. However, this study also takes into consideration environmental factors such as organizational support for change, aid for change such as training, and creation of a learning environment.

RESEARCH METHODOLOGY

Statement of the Problems

The review of existing literature in this field is based more on descriptive knowledge and theoretical inputs. Alongside that, the studies conducted so far in the quantitative form determine the impact of change on institution as a whole. A deeper study reveals that few factors could impact the adaption of change on an individual level to be self-efficacy of the employees who adapt to such change; social influence being put on the employees by their peers, and superiors; whether the organisation that they are working for provide them with appropriate tools to work with; does the work environment permit access to required data; does the organisation force its employee to adapt such change; what was expected out of this adaption by the employees and does that differ from the reality of the change both in terms of effort and performance. This intrigued a curiosity as to whether these factors could apply to adoption of HR Analytics for employees as well. Hence, this research is done to study the impact of the above identified factors of change on adoption of HR Analytics by employees of an organisation.

Objectives of the Study

1. To study the impact of change factors on acceptance of HR Analytics amongst HR professionals in Indian IT and ITES industry.

2. To assess the level of acceptance of HR Analytics in Indian IT and ITES industry.

Data Collection, and Sampling Techniques

Questionnaires based as Google forms were forwarded to potential respondents. Snowball sampling was used to obtain respondents to the study. The questionnaire was forwarded to HR professionals in the Indian IT and ITES industry on all levels of management and also trainees and interns. The questionnaire aimed to collect around 350 respondents, but only fifty acceptable responses were received which indeed became a limitation of this research. Basic tool that were applicable for the study is correlation and regression analysis to find out dependency of one variable on another. In this case, the factors of change were evaluated against level of adoption to find out the results.

Hypothesis

H_01: The independent variables are mutually exclusive and do not have any significance towards each other.

H_02: Self Efficacy, Social Influence, Tool Availability, Data Availability, Fear Appeals, Effort Expectancy, Performance Expectancy does not have a linear relationship with level adoption of HR Analytics in an organisation by individuals.

Limitations

Time Constraint: The primary source of data collection being HR personnel might not have time to invest in giving interviews and filling questionnaires, and thus such a detailed study might not be possible.

Personal Reluctance: The primary data providers, i.e., the HR personnel might be reluctant in sharing personal details about themselves, and also about the company that they are working for. Therefore, to extract information and find people who willingly want to provide information might be tedious information.

ANALYSIS AND INTERPRETATION

Reliability Test

The Cronbach's alpha is measured at 0.891 which represents very high and satisfactory internal consistency reliability. It can be concluded that the measures are reliable.

Frequencies of Demographics
Age

Amongst 50 respondents, it was observed that 56% were rather young in age and fell in the category of 18-24 years old. 22% of the respondents were slightly older, and fell in the category of 31-35 years old. Six amongst the fifty candidates belonged to the 31-35 age criteria, and the rest of the five

responses were received from the age group of employees of 36-40.

Level of Education

Amongst 50 respondents, it was observed that 12% were only High School Diploma holders. 44% of the respondents were graduates with a Bachelor's Degree. Twenty-one amongst the fifty candidates had a Master's Degree, and one of them was a Doctorate holder.

Current Position

Amongst 50 respondents, it was observed that 10% were interns or trainees in a company. 30% of the respondents were generalist and dealt with variety of human resource activities and issues on a day-to-day basis. The next 30% were specialists and possessed highly developed skillset in one function and the rest of the fifteen responses were received from managers.

Functional Area

Amongst 50 respondents, it was observed that sixteen of the respondents were from the training and development department, eight came from the employee relations department, 8 other came from the management department, 10% were from talent management, 12% from talent acquisition, two were business HR partners, one was a freelance content developer, and one worked for employee experience.

Experience with Current Employer

Amongst 50 respondents, it was observed that eighteen have been working a little short of a year, twenty-five had experience varying from one to five years, the next 10% were engaged for over 6 years but short of 10, and two of the respondents were in the business for around 11-15 years now.

Experience in the Field of Human Resources

Amongst 50 respondents, it was observed that twenty-three have been working a little short of a year, sixteen had experience varying from one to five years, the next 22% were engaged for over 6 years but short of 10, but none of the respondents were in the business for around 11-15 years now.

Number of Employees in Organization

Amongst 50 respondents, it was observed that 24% had employees below100, 20% had employees between 100-200, 16% had employees between 200-500, 24% had employees between 500-1000, and 6% of them had employees above 1000, and below 2000.

Table 01: Pearson's Correlations amongst Variables.

	Self-efficacy	Social influence	Tool availability	Data availability	Fear Appeals	Effort expectancy	Performance Expectancy	Level of adoption
Self-efficacy	1							
Social influence	.678**	1						
Tool availability	.521**	.704**	1					
Data availability	.513**	.673**	.586**	1				
Fear Appeals	.401**	.346*	.323*	.461**	1			
Effort expectancy	.368**	.434**	.615**	.605**	.224	1		
Performance Expectancy	.558**	.707**	.566**	.705**	.258	.528**	1	
Level of adoption	.361**	.566**	.523**	.565**	.224	.518**	.686**	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
Source: Primary Data

Pearson's Correlation Coefficient Test

Statistical Inference:

First, the relationship between the change factors on individual impact and level of adoption of HR Analytics was compared. The table 1 Represents the coefficient of correlation between all the variables. Most of the relationships were found to be statistically significant, but with varying strength. All the relationships were found to be positive, which concludes that a change in one variable will lead a direct change in the other one. The relationships derived are also symmetrical in nature. The relationship amongst fear appeals and effort expectancy, performance expectancy; and level of adoption has significance level of more than 0.05, thereby we have to accept the null hypothesis in this particular case stating that this particular variable is mutually exclusive to some variables. Thereby, it was also established that independent variables are not mutually exclusive variables but have a significant relationship of their own. Here the null hypothesis $H_0 1$, is proved wrong, as a relationship is established between the independent variables.

Linear Regression Test

Statistical Inference:

The adjusted R square value here is 0.112. This concludes that, the predictor variable Self–Efficacy explains 11.2% of variance in Level of Adoption. The observed significance level at 0.010. The adjusted R square value here is 0.307. This concludes that, the predictor variable Social Influenceexplains 30.7% of variance in Level of Adoption. The observed significance level is less than 0.05. The adjusted R square value here is 0.258. This concludes that, the predictor variable Tool Availability explains 25.8% of variance in Level of Adoption.

Table 02: Linear Regression of Variables against Level of Adoption.

Factors of Change	Adjusted R Square	Significance
Self-Efficacy	.112	.010
Social Influence	.307	.000
Tool Availability	.258	.000
Data Availability	.306	.000
Fear Appeals	.031	.117
Effort Expectancy	.253	.000
Performance Expectancy	.460	.000

Source: Primary Data

The observed significance level is less than 0.05. The adjusted R square value here is 0.306. This concludes that, the predictor variable Data Availability explains 25.8% of variance in Level of Adoption. The observed significance level is less than 0.05. The adjusted R square value here is 0.031. This concludes that, the predictor variable Fear Appealsexplains 3.1% of variance in Level of Adoption. The observed significance level is 0.117. The adjusted R square value here is 0.253. This concludes that, the predictor variable Effort Expectancyexplains 25.3% of variance in Level of Adoption. The observed significance level is less than 0.05.

The adjusted R square value here is 0.460. This concludes that, the predictor variable Performance Expectancy explains 46.0% of variance in Level of Adoption. The observed significance level is less than 0.05. This results in rejection of the null hypothesis $H_0 2$, that there is no linear relationship between the dependent variable, Level of Adoption, and predictor variables, Self–Efficacy, Social Influence, Tool Availability, Data Availability, Effort Expectancy, Performance Expectancy. The alternate is accepted which states that there exists a linear relationship between Self–Efficacy, Social Influence, Tool

Availability, Data Availability, Effort Expectancy, Performance Expectancy and adoption of HR Analytics in organizations by individuals. Except in acceptance of the null hypothesis $H_0 2$ for Fear Appeals, because of the level of significance being more than 0.05.

CONCLUSION

Findings

Both the hypothesis that were constructed were being rejected, and their alternates being accepted.

- It was observed that when previously assumed that the independent variables are not related to each other, this assumption was proved wrong, and a relationship was established amongst them. Thereby, if change has to bring about, simultaneously factors should be hit.

- The primary objective of this study is to find out if the factors of change so considered really have an impact on the adoption tendency of individuals towards HR Analytics. It was found that six out of the seven factors that were considered do have an impact on the matter. These matters are self-efficacy of the employees, social influence of colleagues on the employees; whether tools are available to utilize, if or not data is available to feed the system, what kind of effort does the employee think he is required to out in, the kind of performance the employee thinks he is expected to deliver.

Suggestions

In order to improve the adoption of changes like implementation of HR Analytics in an organization, the company can:

- Employees could be provided with training in an organization to improve their confidence in themselves, and thereby their self-efficacy.

- Superiors by the way of their action, and also verbal persuasion encourage the level of self-efficacy between their employees.

- A work-environment that is flexible, and encourages changes will lead to a mindset of all the employees being perceptible to change.

- Proper investment to be made in infrastructure and solutions for HR Analytics.

- Instead of the "best practice" of HR Analytics, the "best fit" for one's organization should be developed.

- A proper data gathering process should be established and storage units for the same to be created. This so happens as to make data available to employees.

- Strict privacy policy regarding the data sharing will not work here. One has to share data with employees for it to work.

- Employees have to reach a mindset with verbal persuasion, or training, or incentivizing the change, that employees think that their efforts equals the reward they are getting, or if they perform nicely and to the best of their abilities, the performance is worth the effort.

Prospects of Future Research

The prospects of future research in this field are as follows:

- The study has not looked at the organizational adoption part of it. Future research can describe as to how organization adopts to change, along with employees. Multiple regression tests can be run for the same.

- The factors identified for change, are also applicable to other changes brought about in an organization. Therefore, similar research can be carried out for other changes in the organization.

- This study fails to look at the behavioral aspect of employees, there is no priority given to how the employees behave in such an environment, study can be followed up on such behavioral traits.

- This research can be duplicated in companies looking for organizational development, and they can identify their stress points and act accordingly.

- The responses of this study were limited, and the same research can be carried out in an extensive form to find out more reliable result.

CONCLUSION

The study thereby is successful in identifying the factors that pertain to adoption of HR Analytics. These factors thereby can be acted upon to increase the adoption or decrease the adoption of HR Analytics in an organization. An employee is the basis for change of an organization, and thus, in order to bring about change one has to appeal to the different factors that impact employee's behavior in a work environment.

CONFLICT OF INTEREST

The authors declare that no conflict of interest.

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