HR ANALYTICS' LITRATURE ANALYSIS FROM 2002-2019

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Abstract **- This research gathers, integrate and study articles on HR Analytics published from 2002 to 2019 to provide strategic review and highlights the problem of the semantic gap that is key concern of content-based usage of interchangeable words. The most of the articles are comprised to research papers, industrial project reports, and articles from leading journals / magazines of human resource management, information and management, industrial management and data systems. The purpose of this study is to identify the research gaps in HR Analytics. In semantic it was found that the authors are using terms HR Analytics, Human Capital Analytics, Talent Analytics, People Analytics, Workforce Analytics, and Performance Analytics interchangeably. The trend of research exhibits and researchers ascertain that in the later years, the need of analytics for stable operations among HR. The research expresses the marginalized view from the existing pool of HR Analytics. This study provides insight for the researchers to overcome these gaps through qualitative or quantitative research in future.**
Keywords: HR Analytics, People Analytics, Talent Analytics, Workforce Analytics, Human Capital Analytics, Semantic review.

INTRODUCTION

Advancement in technology has a 360 degree swift in the industrial or service segment, together with inclination to adopt new and better has made working group more efficient. HR managing talent war shift to seeking insights from the data driven world. Analytics upholding the eyes and interest of many, made it both 'a product and a procedure' [1] supporting more on data visualization and data analysis for better decision making to HR [2]. Analytics is turning to a 'product' as it permits the organization to anticipate the changing trends and 'procedure' as it requires a series of steps for accurate implementation [3].

The demanding situation for analytics for any organization be it a big giant to small organization, public unit to private enterprise, develops a constant enforcement on HR to adapt and adopt analytics for right sizing the organization, serve the customers better and lead a market. Google, PwC, Shell, TCS, IBM, Deloitte, KPMG, Oracle, Accenture are few organizations which lead by an example along with some medium sized organization who has also noted the success after effective use of analytics [4]. When one experience good, loss is supported i.e. there are few organizations who experienced lower ROI due to ineffective implementation, but this stand most for small units or organizations with traditional working systems [5].

The motivation for studying the strategic approach of literature is, firstly the growing zone of HR Analytics, which necessitates a review intending to identify the knowledge gaps and help researchers to dig into the dearth, explore and validate the studies. Secondly, advance researchers with the methods used by researchers to which segments of HR practices and thus tap in the unexplored areas [6]. This study is an attempt to analyze HR Analytics literature strategically, identify the semantic gap and explains and explores the scope for future research.

The study was initiated by gathering the research conducted on HR Analytics, People Analytics, Talent Analytics, Workforce Analytics and Human Capital Analytics. Afterwards the research work or articles were segmented on the semantics, pool of research, research method or research strategy and industry or region of study. Pool of research focused on journals supporting HR Analytics or related work from 2002 to 2019, these journals are mostly journals on human resource management, organization effectiveness, information and management and industrial management and data systems and journals of repute if not directly supporting the area but fall in their scope. The article also includes the reports or study by researching organizations like KPMG, Deloitte, Gartner and IBM which was not the part of any journal. In case of human resource journals, top ranked journals are listed along with journals supporting research on HR Analytics. The decision

on journals was made after considering rankings [7], [8] and [9].

RESEARCH OBJECTIVES:

1. To perform strategic review of HR Analytics
2. To identify research gaps.

STRATEGIC REVIEW:

The study explores into the number and distribution of HR Analytics articles published in the journals of repute, addressing the research in which domain it is been exhibited i.e. debates about HR analytics, benefits derived, success stories, impact or discussing the segments of HR where analytics could be applied, problems in adoption, research methodologies adopted by various researchers and viewpoint. The analysis helps in identifying the gaps of the research which will support in the advancement of HR Analytics study [10] and [1].

Table 1: Top Journals of Human Resource Management

SJR	JOURNAL
12.701	Academy of Management Annals
12.363	Journal of Human Resources
7.363	International Organization
7.039	Annual Review of Organizational Psychology and Organizational Behavior
6.826	Personnel Psychology
6.545	Organization Science
4.241	Research in Organization Behavior
3.880	Journal of Organization Behavior
2.742	Organization Behavior and Human Decision Processes
2.724	Organization Psychology Review

Table 2: Top Journals of Information System and Management

SJR	JOURNAL
4.212	MIS Quarterly
3.476	Information System Research
2.388	Journal of Management Information System
2.205	European Journal of Operation Research
1.727	Information and Management
1.566	Journal of Industrial Information Integration
1.536	Decision Support Systems
1.432	Journal of Strategic Information System
0.940	Journal of Engineering and Technology Management
0.925	IEEE Transactions on Big Data

In the tables- 1 and 2, deliberate search with the related topic was not made; rather we placed all the journals leading in the area. We wanted to have general approach. In the section of analysis and results, we have studied articles from the perspective of year of publication, author and journal. While studying the topic in particular from the database we referred to the research articles, reports and viewpoints. Editorial, software promotion reports and books reviews are not included in the study. There were some papers which in different languages like Japanese, Chinese, French and German which we were unable to get the translations in English language and thus excluded on semantic barrier.

SEGMENTATION AS PER RESEARCH METHOD OR STRATEGY:

Identified pool of research articles were examined on their method of study or strategy being adopted. This is section of research basically deals with the subjective nature of classification of research method and therefore content analysis [11], [12], which is a technique of systematic research of objectives and assess the actual content of all forms [11], [12], [13], [14], [15], [16] was adopted to categorize the research methods which was extended as generalized research strategies [17], [18], [19].

We distributed the research method or strategy as: Literature Review, Case Study, Design theoretical framework, Sample Survey - Qualitative, Primary field study – Percentage and Graphs, Primary Field Study – Statistical tool, Secondary field study and Viewpoint. Research strategy is the research design each author adopted while executing the study. We performed pilot study on unused articles, to safeguard from the threat of reliability [12], discussed the outcomes and reformulate the explanation. Table 4 describes the basis of categorization as per the content explained by the authors in their study. Further the data is assessed as per its availability in the extracted pool of database on the basis of degree of closeness of measurement [1], which explains the degree of precision the articles holds with the research strategy and frequency of occurrence from 2002 – June 2019.

Table 4: Description of Research Strategy with its degree of closeness of measurement and frequency of occurrence in the database from 2002 – 2019

| RESEARCH METHOD	DESCRIPTION	DEGREE OF CLOSENESS OF MEASUREMENT	FREQUENCY OF OCCURRENCE
Literature Review	Method encapsulates the literature in an area in order to gestate or support model building	Low	Low
Case Study	It studies the real organization scenario and how they deal with the subject of study	High	High
Design Framework	Theoretical approach supporting model building	Low	Low
Sample Survey - Qualitative	Qualitative survey to understand the relevance of the field or application	Very High	High
Primary Field Study – Percentage and Graphs	Primary survey showing analysis in forms of graphs and percentages	Moderate	Low
Primary Field Study – Statistical Tools	Primary survey supporting statistical analysis	Very Low	Very Low
Secondary Field Study	Involves study based on secondary data i.e. data collected by other person, organization or agency	Very Low	Very Low
Viewpoint	Individual approach to the subject after experiencing in real life or studying in depth to encourage or create awareness about do's and don'ts.	Very High	Very High

SEGMENTATION ON TYPE OF INDUSTRY AND ITS LOCATION OF STUDY:

This section digs more into the research methodology adopted by the researcher and states the basis of conclusion one draws. Here we tried to identify the industry of study or region where study was made by various researchers with the objective to approach. Before we initiate, we conducted a good brainstorming session and discuss about the articles to include as per the current state of HR Analytics research. Once we have formulated the categories of explanation, we placed each article of HR Analytics or related work in one of the categories to elaborate classification process and thus tabulate agreements, viewpoint and disagreements for the industry or region of study.

ANALYSIS AND RESULT: FROM THE POOL OF DATABASE:

To execute the study, we collected 143 articles from journals of repute, reports of research organizations and articles from magazines. We analyzed the articles and segmented based on year of publication. Table 5 shows the number of publications from 2002 – June 2019 from our collected dataset. We can see that HR Analytics or related work is gaining importance with every year and thus can generally see an upward trend in the research or study. Figure 1 shows the number publication from journals, magazines, working paper, white paper, conference proceedings and report which we considered for studying from the database.

Figure 1: Publication of articles as per journal, article of magazine, white paper, working paper, conference proceeding and reports.

NO. OF PUBLICATION
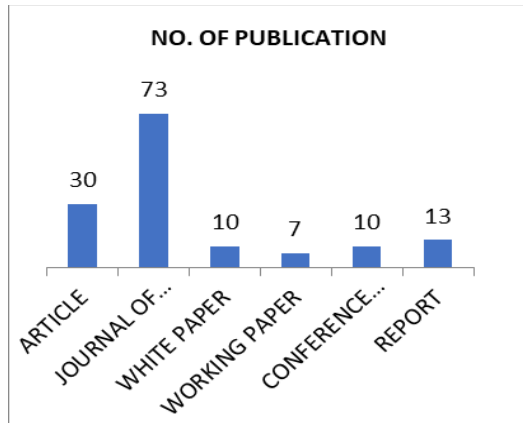
FROM THE RESEARCH METHOD OR RESEARCH STRATEGY: We have segmented research strategy or research method in eight categories, i.e. Literature Review, Case Study, Design Framework, Sample Survey – Qualitative, Primary Study – Percentage and Graphs, Primary Study – Statistical tools, Secondary Field Study and Viewpoint, our analysis and results are shown in Table 7.

The analysis from 2002 – June 2019 shows that Case Study, Sample Survey – Qualitative, Primary study with percentage and graphs ad viewpoint based on study has increased over the span of time. The researchers were able to show and represent the study of analytics in HR by exploring more in the real life scenario and exercising ontology related study of semantics to deploy more understanding between the similar terms used by researchers.

While analyzing the article it was observed that the relatively distinct researches emerged focusing on technology and adaption among HR. The application of HR Analytics was based on the data, predictive tools and mining efficiency, making exploratory study suitable and still much more ways these studies could be validated.

Table 6: Number of publication by journals of repute from 2002 - June 2019

NAME OF JOURNALS	NO.OF ARTICLES
Decision support systems	2
Human resource management review	6
Journal of organizational effectiveness: people and performance	6
Harvard business review	4
The international journal of human resource management	5
People and strategy	6
Journal of nursing administration	2
Human resource management international digest	9
Industrial management & data systems	4
Equality, diversity and inclusion	
Strategy & leadership	8
Management research review	2
International journal of logistics management	2
Journal of business strategy	
International journal of information management,	6
European journal of operational research journal	2
Social science agriculture	
Journal of business research	2
International journal of scientific & technology research	3
MIS quarterly	2
Indian journal of public health research & development,	2

Table 7: Analysis of articles as per the categories defined in research strategy

RESEARCH STRATEGY	2002 - 04	2005 07	2008 -10	2011 -13	2014 -16	2017 -19	Total
Literature Review	1	1	1	2	3	1	**9**
Case Study		1	4	5	6	5	**21**
Design Framework		2		1	3	1	**7**
Sample Survey - Qualitative	1		1	12	13	10	**37**
Primary Study- Percentage and Graph				5	6	10	**21**
Primary Study - Statistical Tools				1	3	4	**8**
Secondary Field Study				2		3	**5**
Viewpoint		1	2	11	7	14	**35**
Total	**2**	**5**	**8**	**39**	**41**	**48**	**143**

Table 8: Analysis of articles as per region, industry and size of the organization been studied by the researchers of the articles from the pool

Industry	Region	Size of the org.	No. of Publication
IT and IT enabled service	US, Europe	Large	6
Consulting	Saudi Arabia	Large	1
Telecom	US	Large	2
Bank	Europe	Large	1
Manufacturing	Netherland, Australia	Large	3
Non Government Organization	US	-	1

The research in these industries or region focuses on different aspects of analytics, as almost 48% of articles focused on the benefits an organization can draw from the right application of analytics by HR, 30% of research focused on smooth change an organization should focus, 12% of articles focus on shortcoming of adoption of HR Analytics, approximately 5% researches validate the notions of HR analytics.

LIMITATION AND DIRECTION FOR FUTURE RESEARCH:

Our study was not beyond the limitations. Future research could ascertain wider aspect of research framework. Additionally, the gaps identified in the research strategy segment on the basis of degree of closeness of measurement and frequency of occurrence and while making research the most adapted strategy could be considered to validate the results. New trends and new growth always address new changes may be fundamental, technical or adaption, however our study indicate the need of formulating theoretical frameworks or guiding theories.

It is observed that most of the research articles from the selected pool address important parameters in HR Analytics, a broader range of research strategies could be employed as postulated by Scandura and Williams, 2000 and Jourdon and Marshall 2008 that the research strategies drawn over passage of time provides useful information after triangulation within the area specify how the theories are formulated. The research shows a less work on literature review and thus an absence of theory development affecting HR Analytics to be difficult and unmeaning for much organization and often confused with the application of HRIS. It´s time to make large, small and medium enterprises know its benefits, a smooth operational technique, strategizing its future use and solution to deal with shortcomings but research is required to validate the benefits placed by various authors and identify new applications techniques and tools.

CONCLUSION:

A deep study was conducted on HR Analytics, where each contributed well to understanding concepts, application, derived benefits and shortcomings. As a review paper, it might not hold and justify each and every work of researchers but however an attempt is made to deal with the detailed review from text based semantic theme to content-based study. This paper mainly studies the semantic and strategic approach of work on HR Analytics and contributed by stating future scope of study.

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