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HR ANALYTICS – AN ORGANIZATIONAL STRATEGY FOR COMPETITIVE ADVANTAGE IN THE AGE OF DIGITALIZATION

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ABSTRACT

The accelerated technological development has revolutionized the society and continues to impact and change the way organizations work. It puts pressure on organizations and its people to adapt to the fast-changing world and the increasing amount of digital innovations. Human Resource Analytics (HR analytics) is an area in the field of analytics that refers to applying analytic processes to the human resource department with a hope of improving human resource capability, living standards and socio economic development for competitive advantage. Digitalization demands HRM to evolve, as it requires new HR competencies, new employment forms and agile HR processes. HR analytics demonstrates the causal relationship between the activities exacted by an HR department and the business outcomes that result from this activity. Establishing a cause-and-effect relationship between what HR does and business outcomes - and then creating strategies to assist the business in attaining competitive advantage. HR has core functions that can be enhanced by applying processes in analytics. These are acquisition, optimization, paying and developing the workforce of the organization. HR analytics can help to dig problems and issues surrounding these requirements and using analytical workflow will guide the managers to answer questions and gain insights from information at hand, then make relevant decisions and take appropriate actions. With this background the researchers wish to through a light on to examine the employee perception on role of HR Analytics for competitive advantage. The survey was conducted among the 100 sample respondents in select manufacturing units in Vijayawada and the findings and suggestions are presented.

KEYWORDS:

HR Analytics, Digitalization, HR Competencies, Acquisition, Optimization, Strategy, Competitive Advantage,

INTRODUCTION

The accelerated technological development has revolutionized the society and continues to impact and change the way organizations work. It puts pressure on organizations and its people to adapt to the fast-changing world and the increasing amount of digital innovations. Human Resource Analytics (HR analytics) is an area in the field of analytics that refers to applying analytic processes to the human resource department with a hope of improving human resource capability, living standards and socio economic development for competitive advantage. Human Resource analytics is basically a sector within the broader field of analytics that involves the application of analytic processes within a human resource department for the purpose of improving employee performance. When this process is actualized, businesses benefit by attaining a greater ROI (return on investment) which enables the organization to become competitive. While some people reduce the field of human resources analytics to the accumulation and review of data regarding employee efficacy, its scope is much broader. HR analytics does not just deal with gathering data on employee efficiency. Instead, it aims to provide insight into each process by gathering data and then using it to make relevant decisions about how to improve these processes. Digitalization demands HRM to evolve, as it requires new HR competencies, new employment forms and agile HR processes.

HR analytics demonstrates the causal relationship between the activities exacted by an HR department and the business outcomes that result from this activity. Establishing a cause-and-effect relationship between what HR does and business outcomes - and then creating strategies to assist the

business in attaining competitive advantage. HR has core functions that can be enhanced by applying processes in analytics. These are acquisition, optimization, paying and developing the workforce of the organization. HR analytics can help to dig problems and issues surrounding these requirements and using analytical workflow will guide the managers to answer questions and gain insights from information at hand, then make relevant decisions and take appropriate actions. Thus, the goal of human resources analytics is to provide an organization with insights for effectively managing employees so that business goals can be reached quickly and efficiently. Tin Ringo (2017) HR analytics - Analytics and insights that focus on the present and look forward in time; create insights to current and future business imperatives; use predictive modeling to support the overall company, help shape the organization strategy and create competitive advantage.

APPLICATIONS OF HR ANALYTICS

Organisations across the globe are facing VUCA (Vulnerability, Uncertainty, Complexity and Ambiguity) in the agile and evolving business environment. Immediate retrospection and taking charge to make the right decisions and for sustaining competitive advantage are the critical goals of any organisation. Data Analytics is the buzzword today. Measuring and predicting people performance is one of the top priorities for business leaders today and this can be done using data analytics. Organizations, big and small, across the world and across industries are leveraging their data using analytics for improved performance. Networking, social media, websites, cloud-based software services, mobile apps, big data & other management systems have completely changed the way the world networks and operates. There is a whole lot of data that the world generates and analyses everyday as technology and systems have facilitated capturing, storing and assessing thousands of terabytes. However, most of this data is unstructured, raw and therefore meaningless. Analytics turns this data into a treasure-trove by gathering all the data from different platforms, filtering the relevant data and analyzing it using powerful algorithms to extract timely and appropriate information.

HR Analytics, also called Talent Analytics or People Analytics is not mere analysis of HR data. Analytics applies technology and statistical tools to relevant data to logically comprehend the performance of existing processes and redesign them for improved performance in the future. It helps unearth the real issues behind the existing problems by taking a holistic approach. In other words, HR Analytics correlates business data and people data, thus establishing vital links. It equips the HR managers with precise tools to visualize the future more expansively and thus design more effective strategies. This would conclusively put HR in a position of strength where it can add immense value to the business of an organization. There has been an increasing emphasis today on HR Analytics. This is precisely the reason why more and more big technology players are trying to get a foothold in the growing market for competitive advantage.

Compiling Information - Some HR analysts gather statistics on salaries for specific job titles. They then work with HR managers in setting salary ranges for open positions. Others may be more specialized in selecting, interviewing and hiring new employees. They may analyze which, if any, personality or skills tests are needed to better select candidates. Analysts may also obtain information for establishing company policies and procedures. For example, an HR analyst specializing in compensation and benefits may ensure that their company policies conform to certain labor laws, according to StateUniversity.com.

Collecting Data - Sometimes HR analysts may be involved in improving employee training programs or determining their job satisfaction. They may conduct surveys to gain such information. Analysts can then analyze the data and recommend ways for company managers to improve employee relations, job satisfaction and morale. Some HR analysts may assess which training programs work best for developing employee skills. They may also analyze the reasons employees leave the company and use the information to increase employee retention.

Maximizing Efficiency - Many HR analysts work with human resource managers and directors in creating department budgets. During this process, the HR analyst may ensure that certain job responsibilities are allocated to the appropriate employees. This helps ensure maximum output and efficiency. These professionals may also determine which evaluation tools are most effective in improving performance. For example, an HR analyst may determine that a "360 evaluation" system works best, which includes self-assessments from employees, interviews with peers and supervisory evaluations for more comprehensive reviews. The supervisor can then recommend various action plans to improve skills in which employees are weak.

Considerations - HR analysts in some companies may determine which medical and retirement plans work best for their organizations. They may invite benefit and retirement planning specialists to meet with employees. They may then analyze various plans, selecting the ones that keep medical costs down and maximize returns for employees. An HR analyst may also ask employees which medical and retirement plans work best for them, combining their assessments with employee preferences before deciding on a plan.

Measuring performance with workforce analytics - Workforce analytics is earning its place in Human Resources departments but it can be a chore to determine how it fits into yours. The concept can be used in so many areas, from recruiting to hiring to learning and development and development. It cuts down on the guess work in many cases, helping to identify trends and have a good idea of what an outcome will be before it's even reached, so it's no surprise that it's now reaching into employee performance evaluations.

Standardizing the process - One of the most difficult things to achieve with company-wide employee performance evaluation is standardization. Some companies struggle to standardize their employee evaluation method, while some struggle with training managers to evaluate evenly across the board, despite their personal management style or feelings about employees. One of the main benefits of utilizing workforce analytics to evaluate employees is that you'll be comparing certain aspects of their work to that of others. It much less biased and subjective, so there's less of a margin for error when it comes to giving a fair evaluation.

Fitz-Enz, Phillips, Ray (2012) describes the three levels of analytics as descriptive, predictive and prescriptive. **Descriptive** – Descriptive analytics answers questions such as "What happened" and "What is happening now". It the common HR analytics used in most of the organization by publishing a real-time dashboard and/or email reports etc. but

this is diagnostic and reactive approach which only provides a reason for some event which has already happened or happening. **Predictive** – Predictive analytics is an analysis of likely scenarios of what might happen linked to an organisations desired business results. This helps an organisation predict where it is going, it also contribute to the attribute of an HR measurement system that will maximise decision support for executives. **Prescriptive** – This type of analysis reveals what actions should be taken, it described what the best course of action is. This level of analytics combines predictions and decision making while taking into account the impact of those decisions. This is the most Valuable kind of analysis and usually results in rules and recommendations from this type of analysis.

REVIEW OF LITERATURE

Thomas Davenport (2007) in his famous book "Competing on Analytics" developed the concept that firms have been doing analytics for years but it is only a recent phenomenon that they were actually competing on analytics, that is, using analytics as a basis for competition. Davenport uses the analogy of the alignment of planets to discuss why competing on analytics has become so popular in modern times highlighting such factors as the availability of data and powerful computing resources along with increased global competitive factors.

Peter (2013) discussed how the use of analytics is increasingly commonplace in business given the widespread availability of data and high-speed computing. Moreover, he points out that as a result, it's hard for firms to gain a lasting competitive advantage from analytics. Fogarty and Bhaduri (2015) discussed advanced analytics as a way for firms to create a competitive advantage.

RESEARCH GAP

Previous research focuses on consequences of digitalization or analytics for customer preferences, buying behavior, marketing and business performance. However, how it affects organizations internally has generally been neglected by the research field, specifically in regards to the consequences it implies for human resource management to correlate HR function with the organizational goals for competitive advantage.

OBJECTIVE OF THE STUDY

- To examine the employee perception on role of HR Analytics for competitive advantage.
- To put forth certain suggestion based on the findings that have been arrived

RESEARCH METHODOLOGY

To fulfill the aforesaid objectives the data are collected from two sources i.e. primary and secondary sources. The secondary data are collected from various journals, periodicals, magazines, books and unpublished documents. The primary data are collected directly from the sample respondents with pre - designed and tested questionnaire.

Research Approach

A quantitative approach is followed in this exploratory study. The primary data are collected by using the questionnaire. Results are presented by means of descriptive group statistics and correlations.

Research Method

The respondents selected for this study are the employees of select manufacturing companies in Vijayawada. The participants were selected using convenient sampling method. Total 100 employees were selected from select manufacturing sector companies.

DATA ANALYSIS AND INTERPRETATIONS

Table-1: Correlation Matrix[a] Relating to HR Analytics in Competitive Advantage

Correlation Matrix[a]								
	1	2	3	4	5	6	7	8
Correlation								
HR Analytics ensure minimization of HR Expenses	1	.614	.747	.270	.298	.471	.301	.482
HR Analytics facilitates hiring HR professionals with Experience	.614	1	.689	.238	.322	.631	.385	.455
HR Analytics provides tools to monitor Employee Performance	.747	.689	1	.367	.207	.561	.201	.333
HR Analytics facilitates in determining Training Programmes	.270	.238	.367	1	.246	.283	.406	.122
HR Analytics ensures naturing Employee Innovations	.298	.322	.207	.246	1	.250	.316	.485
HR Analytics increases operational effectiveness	.471	.631	.561	.283	.250	1	.358	.581
HR Analytics enhances Total Quality Management	.301	.385	.201	.406	.316	.358	1	.190
HR Analytics improves work place health and safety	.482	.455	.333	.122	.485	.581	.190	1
Sig. (1-tailed)								
HR Analytics ensure minimisation of HR Expenses		.000	.000	.005	.002	.000	.002	.000
HR Analytics facilitates hiring HR professionals with Experience	.000		.000	.012	.001	.000	.000	.000
HR Analytics provides tools to monitor Employee Performance	.000	.000		.000	.025	.000	.029	.001
HR Analytics facilitates in determining Training Programmes	.005	.012	.000		.010	.003	.000	.126
HR Analytics ensures naturing Employee Innovations	.002	.001	.025	.010		.009	.001	.000
HR Analytics increases operational effectiveness	.000	.000	.000	.003	.009		.000	.000
HR Analytics enhances Total Quality Management	.002	.000	.029	.000	.001	.000		.036
HR Analytics improves work place health and safety	.000	.000	.001	.126	.000	.000	.036	
a. Determinant = .027								

(Source: Primary Data/ Structured Questionnaire)

Table-1 shows the Correlation Matrix[a] relating to HR Analytics in Competitive Advantage. The top half of this table contains Pearson correlation coefficient between all pairs of questions, whereas the bottom half contains the one- tailed significance of these coefficients. The researcher first scanned the significant values and looked for the variables for which the values are greater than 0.05. Then scanned the correlation coefficients themselves and looked for the values greater than 0.9. If anyone is found more than 0.9 then there is a problem of singularity in the data and thus those questions have to be removed. But here all correlation values are below 0.9 only, so there is significant correlation between each and every pair. There is a significant correlation between the questions, because majority of the values are below 0.05. The determinant of the matrix must be greater than 0.00001. Here it shows the determinant value is 0.027. So multi-co linearity (according to changes in one dimension other dimensions are also changing i.e., eligible for comparisons) is not a problem for this data. To sum up, all the questions correlate fairly well and none of the correlation coefficients are particularly large therefore no need to eliminate any question at this stage. After declaring these aspects, the researcher made KMO and Bartlett's test.

KMO (Kaiser-Meyer-Olkin) and Bartlett's test

The KMO statistic varies between 0 and 1. A value of 0 indicates that the sum of partial correlations is longer than the relative the sum of correlations, indicating diffusion in the pattern of correlations (if so the factor analysis is likely to be inappropriate). A value close to 1 indicates that patterns of correlations are relatively compact, so the factor analysis should yield distinct and reliable factors. Following **Table – 2** shows the results of the KMO and Bartlett's test.

Table – 2: KMO and Bartlett's Test Relating to HR Analytics in Competitive Advantage

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.710
Bartlett's Test of Sphericity	Approx. Chi-Square	309.517
	df	28
	Sig.	.000

(Source: Primary Data/ Structured Questionnaire)

The above **Table - 2** reveals that KMO value i.e., .710 is neither nearer to 0 nor close to 1. So the range is found to be good. Bartlett's measure tests the null hypothesis that the original correlation matrix is an identity matrix. For factor analysis, there is a need of some relationships among variables and if the R-matrix is an identity matrix then all correlation coefficients would be zero. Therefore, this test should be significant (i.e., have a significant values less than 0.05). A significant chi-square test tells that the R-matrix is not an identity matrix. For this data, Bartlett's test is highly significant ($p<0.001$), therefore the factor analysis is appropriate.

Table – 3: Anti-image Correlation Matrix relating to HR Analytics in Competitive Advantage

Anti-image Correlation								
	1	2	3	4	5	6	7	8
HR Analytics ensure minimisation of HR Expenses	**.736**[a]	-.067	-.609	.072	.013	.192	-.225	-.348
HR Analytics facilitates hiring HR professionals with Experience	-.067	**.837**[a]	-.399	.179	-.112	-.257	-.254	-.064
HR Analytics provides tools to monitor Employee Performance	-.609	-.399	**.659**[a]	-.300	.008	-.284	.322	.251
HR Analytics facilitates in determining Training Programmes	.072	.179	-.300	**.677**[a]	-.149	-.068	-.349	.059
HR Analytics ensures naturing Employee Innovations	.013	-.112	.008	-.149	**.709**[a]	.188	-.190	-.422
HR Analytics increases operational effectiveness	.192	-.257	-.284	-.068	.188	**.748**[a]	-.227	-.496
HR Analytics enhances Total Quality Management	-.225	-.254	.322	-.349	-.190	-.227	**.603**[a]	.198
HR Analytics improves work place health and safety	-.348	-.064	.251	.059	-.422	-.496	.198	**.642**[a]
a. Measures of Sampling Adequacy(MSA)								

(Source: Primary Data/ Structured Questionnaire)

Table – 3 shows KMO, Barlett's test of sphericity and anti-image correlation matrix. As Kaiser (1974) recommends a bare minimum of .5 and that values between .5 and .7 are mediocre, values between .7 and .8 are good, values between .8 and .9 are great, and values above .9 are superb (Hutcheson and Sufroniu, 1999). The KMO values for individual variables are produced on the diagonal of the anti-image correlation matrix. After scanning it is found that for all variables the values are above 0.5. Thus, all the variables can be considered for further analysis. The off diagonal elements represent the partial correlations between variables. Therefore, off diagonal values been examined to ensure they are smaller than diagonal values and found off diagonal values are smaller than diagonal values.

Communalities:

Initial communalities are estimates of the variance in each variable accounted for, by all components or factors. Extraction communalities are estimates of the variance in each variable accounted for the factors (or components) in the factor solution. Following **Table -4** gives the details of communalities of HR Analytics in Competitive Advantage.

Table-4: Communalities – HR Analytics in Competitive Advantage

Communalities		
	Initial	**Extraction**
HR Analytics ensure minimisation of HR Expenses	1.000	.720
HR Analytics facilitates hiring HR professionals with Experience	1.000	.731
HR Analytics provides tools to monitor Employee Performance	1.000	.853
HR Analytics facilitates in determining Training Programmes	1.000	.735
HR Analytics ensures naturing Employee Innovations	1.000	.770
HR Analytics increases operational effectiveness	1.000	.631
HR Analytics enhances Total Quality Management	1.000	.685
HR Analytics improves work place health and safety	1.000	.803
Extraction Method: Principal Component Analysis.		

(Source: Primary Data/ Structured Questionnaire)

The above **Table-4** shows the communalities of extraction. Principal component analysis works on the initial assumption that all variances are common; therefore in the initial the communalities all are 1. The communalities in the column labeled extraction reflect the common variance in the data structure. For, HR Analytics provides tools to monitor Employee Performance 85.3 per cent of variance recorded is common or shared variance. Another way to look at these communalities is in terms of the proportion of variance explained by the underlying factors.

To know about the exact level of variance among variables is initially assumed as all communalities are '1'. Then found the differentiated values for each variable. HR Analytics ensure minimisation of HR Expenses has 72.0 per cent, HR Analytics facilitates hiring HR professionals with Experience has 73.1 per cent, HR Analytics facilitates in determining Training Programmes has 73.5 per cent, HR Analytics ensures naturing Employee Innovations has 77.0 per cent, HR Analytics increases operational effectiveness has 63.1 per cent, HR Analytics enhances Total Quality Management has 68.5 per cent and HR Analytics improves work place health and safety has 80.3 per cent. These variables indicate the variance in structure. It is shown in detail in the following **Table-5.**

Table-5: Total Variance Explained- HR Analytics in Competitive Advantage

Total Variance Explained							
Component	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**			**Rotation Sums of Squared Loadings[a]**
	Total	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**	**Total**
1	3.807	47.583	47.583	3.807	47.583	47.583	3.428
2	1.105	13.812	61.394	1.105	13.812	61.394	1.836
3	1.014	12.679	74.074	1.014	12.679	74.074	1.977
4	.673	8.416	82.490				
5	.583	7.286	89.776				
6	.409	5.110	94.885				
7	.257	3.210	98.095				
8	.152	1.905	100.000				
Extraction Method: Principal Component Analysis.							
a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.							

(Source: Primary Data/ Structured Questionnaire)

The above **Table-5** reveals that Eigen values associated with each factor represent the variance explained by that particular linear component. It also displays the Eigen values in terms of the percentage of variance explain. So factor 1 explains 47.583, factor 2 explains 13.812, and factor 3 explains 12.679 per cent of total variance; it should be clear that these three factors explains relatively large amount of variance of 74.074. It should be clear that the first three factors explain relatively large amount of variance whereas subsequent factors explain only small amounts of variance. There are three factors among all with Eigen value greater than 1. The Eigen values associated with these factors are again displayed and the percentages of variance explained in the columns are labeled extraction sums of squared loadings.

From the above **Table-5** it is identified that only first three factors in HR Analytics in Competitive Advantage are highly changeable aspect in the organization and the remaining were of not that much. Because it only exceeds Eigen value more than 1.

Table-6: Pattern Matrix[a] - HR Analytics in Competitive Advantage

Pattern Matrix[a]			
	Component		
	1	**2**	**3**
HR Analytics provides tools to monitor Employee Performance	.955		
HR Analytics ensure minimisation of HR Expenses	.834		
HR Analytics facilitates hiring HR professionals with Experience	.796		
HR Analytics increases operational effectiveness	.675		
HR Analytics facilitates in determining Training Programmes		.831	
HR Analytics enhances Total Quality Management		.758	
HR Analytics ensures naturing Employee Innovations			.837
HR Analytics improves work place health and safety			.723
Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization.			
a. Rotation converged in 5 iterations.			

(Source: Primary Data/ Structured Questionnaire)

Table-6 shows the pattern matrix. On the basis of Oblimin with Kaiser Normalization, three factors emerged. These three factors are constituted of all those variables that have factor loadings greater than or at least equal to 0.5. Thus, the first factor consists four dimensions like HR Analytics provides tools to monitor Employee Performance, HR Analytics ensure minimisation of HR Expenses, HR Analytics facilitates hiring HR professionals with Experience, HR Analytics increases operational effectiveness these four dimensions are combined together to get one factor and it is conceptualized as "factor 1". Further for second component there are two dimensions like HR Analytics facilitates in determining Training Programmers, HR Analytics enhances Total Quality Management dimensions combined together to get one factor extracted and it is conceptualized as "Factor 2". Finally the third dimension consists of two factors like HR Analytics ensures naturing Employee Innovations, HR Analytics improves work place health and safety dimensions combined together to get one factor extracted and it is conceptualized as "Factor 3".

Table-7: Component Correlation Matrix – HR Analytics in Competitive Advantage

Component Correlation Matrix			
Component	1	2	3
1	1.000	.296	.336
2	.296	1.000	.188
3	.336	.188	1.000
Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization.			

(Source: Primary Data/ Structured Questionnaire)

The final part of the factor analysis output is a correlation matrix between the factors. This matrix contains the correlation coefficients between the factors. From **Table-7** it is understood that all these factors are interrelated with each other to some degree. The fact that these correlations exists tells that the constructs measured can be interrelated. If the constructs are independent then the component correlation matrix should have been identity matrix. Therefore, from this final matrix it appears that the independence of the factors cannot be assumed.

FINDINGS

- Total 8 HR Analytics factors found to be significant for Competitive Advantage
- Among them HR Analytics provides tools to monitor Employee Performance and HR Analytics ensures naturing Employee Innovations found to be highly significant
- HR Analytics ensure minimisation of HR Expenses and HR Analytics facilitates in determining Training Programmers found to be moderately significant.
- HR Analytics increases operational effectiveness found to be less significant while comparing with other variables.

SUGGESTIONS

- ✓ HR Analytics provides tools to monitor Employee Performance and HR Analytics ensure naturing Employee Innovations found to be highly significant according to employee's perception. Therefore, organisations have to use HR analytics so as to monitor employee performance efficiently. The organisations which are not able to use employee innovations has to use HR Analytics as a tool to get as much as innovations as possible from employees.
- ✓ HR Analytics facilitates in determining Training Programmers. HR Analytics compares employee competencies with job requirements and determines the training programmes with fewer expenses and also within less time.
- ✓ Less significance of HR Analytics increases operational effectiveness doesn't mean that HR Analytics will not help in increasing operational effectiveness but there are other important factors which are highly influencing operational effectiveness.

CONCLUSION

It is conclude that HR analytics and insights that focus on the present and look forward in time, create insights to current and future business imperatives, use predictive modeling to support the overall company, helps to shape the organization strategy and create competitive advantage.

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