Enhancing Organizational Competitiveness through HR Analytics

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Abstract

The utilization of data in businesses has transformed, primarily centered on fulfilling legal employment obligations rather than the traditional approach. This shift in data application has progressively reshaped the landscape of Human Resource Management (HRM), leading employers to expect top-tier analysis from HR professionals for business requirements. The data was collected using a quantitative approach that combines the elements of HRA competency and assesses how they affect business results. A sample population of 230 HR professionals who have exposure to HR analytics have been interviewed and collected the data through questionnaires. This population comes from various industries from Bangalore city, India.

A range of statistical techniques were utilized to examine the data in order to reveal the impact of HRA on business results as well as the discrepancy between the competencies in HRA as they exist today and as they should. The results emphasized how important it is to give competent employees motivation and opportunities to develop their analytical skills. The results of business operations are greatly impacted by these analytical skills. The study, taken as a whole, gave a significant representation of how HR analysts influence business outcomes and the discrepancy between the competencies that HR analysts exhibit and the expected levels of competency.

Keywords: *HR Analytics, Human Resource Management, Performance analysis, Decision-making, Competency matrix.*

1. Introduction

Three major developments that have an impact on how organizations operate today have contributed to the growth of HRA. First, there is more competition now because organizations operate in a global setting. Technology has advanced in tandem with this. As such, the HR function has to change in order to blend with the new competitive environment (Beer, 1997; Caldwell, 2003; Haines and Lafleur, 2008). Second, the realization of the human capital's value from a competitive position and as a sign of outstanding human capital management came about as a result of the globalization of organizations (Bassi 2011; Dias and Sousa, 2015). Third, corporate analytics became more popular as a way to handle data of massive volume with the introduction of big data, and this trend has also reached HR. The team have been able to gather data very effectively to store and retrieve for upcoming days through this latest technology and tools. Furthermore the procedure helps to save time when it comes to assigning administrators to new positions.

Recently, HR analytics has become an emerging trend in the HRM domain. This results in the growing belief that in future the HRA will become the solution of many HR challenges that are currently there. In addition, the objective will revolve around the transformation of large accumulated complex data into knowledge with the help of these analytics. It is anticipated that in the future, the executive will be processing all the decisions through data that helps foresee more accurately and make data-driven decisions rather than just summarizing the past (Rasmussen and Ulrich, 2015). But HR analytics have become more complex with the addition of scorecards, benchmarking as well as the basic reporting. The application of predictive analytics has made prescriptive analytics possible. The emphasis has gradually shifted from explaining the past to improving future projections. It's clear that in the near future, measuring the HRM decision-making process will shift from being reactive to proactive.

HR analytics are a multifaceted discipline which adopts the data-driven process for supporting strong decision-making that has become integral and evolving alongside the rapid expansion of data science. Consequently, HR analytics is deeply embedded in the mindset of various business organizations. This age-old discipline has also left its mark in the realms of mathematics, statistics, and economics. Industrial and organizational psychologists have acknowledged this integration for many decades, acknowledging its significance in shaping decision-making processes within the domain. They used the data for rationalising employee selection as well as their training with several other practices within the organisations. However, for some organisations, the emergence of the HR analytics has been observed as the rebranding of an existing function, whereas in other organisations, it has been

labelled as the introduction of an entirely new function. The emphasis on strategic methods supported by feedback in HR analytics has attracted a lot of attention. The roles of HRM are closely related to these developments in human resource analytics. HR analytics, which are included in HR-specific strategies, cover a wide range of data analysis ideas and methods. These methods incorporate multiple factors at the same time, such as business, legal, and ethical issues and their consequences (Rasmussen and Ulrich, 2015).

Any organization should prioritize management that is based on evidence, according to Pfeffer and Sutton (2006) over traditional techniques and habits of management practices and their impact on economic success. These researchers opined that if the decision-making is done on the basis of evidence, then the decision will be apt and favourable.

The vital business domains of supply chain management, finance, marketing, research, and development have all seen a great deal of study, but data analysis pertaining to the personnel within any given corporation is still lacking. Organizations and enterprises need to adjust to the changing labor dynamics (Guest, 2004). The relationship between employers and employees becomes significantly more efficient when the HR department effectively merges with the data analytics division, leading to measurable improvements in productivity.

2. Literature Review

The theoretical and conceptual frameworks of HRM were the main focus of research published in the early period(Awasthi et al., 2023) . While recent publications have emphasized the need to adopt numerous tools and technologies for optimal resource utilisation and sustainable organisational development, the HR analytics gained traction in the middle phase. The results of the study(McCartney et al., 2022) lend credence to the hypothesized chain model, indicating that HR analytics are made possible by access to HR technology, which in turn makes EBM easier and improves organizational performance. The following are the trends in HRA(Ben-Gal, H. C., 2019): evidence-based approach, strategic management tool, decision-making support tool, and management fad.

In order to analyse employee data, a growing trend of adoption of sophisticated methods has been observed(Davenport et al., 2010) among the knowledge-intensive companies to enhance their competitive advantage in the existing marketplace . Balmer Lawrie and Co. Ltd. (BL) can be credited for their introductory initiative in understanding the integral role of "talent analytics" for attaining the imaginative and superior products along with services during the adoption of the top-level talent acquisition practices within the organization. BL had urged their top employees, the greatest asset of the company, to give their best performance and at the same time taken the reasonable responsibility for people management. The companies even modified its HR tactics for evaluating the data of employees to place the right employees who can add value as a human capital. Rather, accumulating data on employee efficiency, talent analytics emphasizes on gaining insights into each process involves collecting data and using it to expedite informed decision-making, specifically aimed at improving business processes. (Sen, 2015).

To investigate the role of HR managers' capability, opportunity and motivation (COM) on existing HRA.

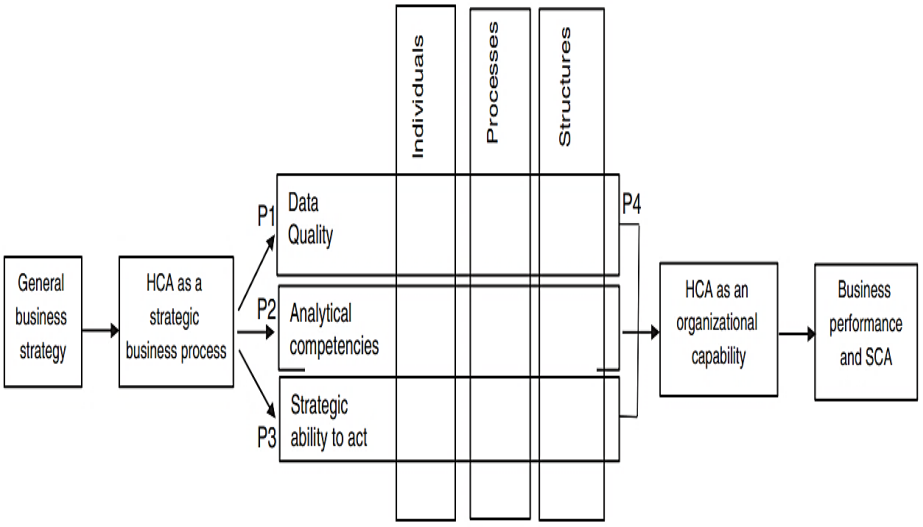

Figure 1 : Framework of the COM model

Hypothesis

HCA as an Organizational Capability for Strategy Implementation

Utilizing a research instrument, data collection entails gathering information from research participants. The most widely used research tool for conducting surveys is the interview and questionnaire. To fulfill its goals, the study gathered primary and secondary data. Primary data was collected from the study participants, who are HR professionals from various organisations in this case, using the questionnaire and secondary data was collected by conducting literature review on the topic. Literatures from various sources like Scopus, Google Scholar, EBSCO Host, etc. were reviewed for the study.

H1: Human capital analytics as an organizational capability for strategy implementation

Utilisation of Competency Outcomes (data analysis) by the Organization through Performance Processes

For an organization to excel in its performance, the contribution of each employee plays a major role. Based on the opinions provided by the HR analysts, the organizations are utilising the data analysis competencies only up to a moderate extent. This was particularly followed in case of employee attitude surveys (3.739 ±1.095), recruitment analysis (3.622 ± 1.322), , management development assessments (3.709 ± 1.441) and design or dysfunctional aspects of workflow (3.478 ± 1.174). The data analysis were highly used for performance evaluations (4.026 ± 1.243) and, organisational development assessments (4.035 ± 1.129). However, performance processes such as compensation analysis (3.339 ± 1.278), downsizing workforce evaluation (3.022 ± 1.349) and labour compliance (3.339 ± 1.104) were being utilised only to some extent, implying a scope for improvement particularly in these areas. Overall, it can be inferred that the organizations were only focusing on applying data analysis outputs in assessing the overall performance of employees and organizational development. The application of data in assessing the individual operational and performance related factors is only moderate. This showcases the fact that the organizations were either not aware of the benefits of data analysis in enhancing the operations in a productive manner or facing challenges in appropriate data analysis.

H2 : Utilisation of Competency Outcomes (data analysis) by the Organization through Performance Processes

3. Methodology

3.1 Sampling

The sample needed for this research was taken in three stages. At first, employees across India who use HR analytics software were identified as the general population. General population constitutes those who share a common attribute of interest (Creswell et al., 2003), in this case the common attribute being the adoption and usage of HR analytics. General population is also defined as a group of people about whom certain facts need to be determined. In the current study, the variable that needs to be determined is the impact of HR analytics competencies on business performance. Since it is beyond the scope of the study to include the entire general population, the researcher considered only those working in the city of Bangalore. However, all the employees may not be willing to participate in the study and may not be reachable by the researcher. Hence, a smaller accessible population was derived through simple random sampling technique as the final sample for the study.

3.2 Reliability of the Study

It can be suggested that for the pilot study Understanding of data individually represented the most important factor that accounts for 45.687% of the total variation within Existing HR analytic competencies, followed by Analytical skills (10.24%) and Interpretation skills (7.68%). In total, all the factors of Existing HR analytic competencies together exhibited an explanatory power of more than 69%. It was discovered that every item had acceptable factor loadings between 0.5 and 0.8, demonstrating its importance in explaining the HR analytical skills seen in the current organizations. The process performance accounts for 55.79% of the total variation in the Utilization of competency outcome which is the most significant component. Strategies came in second (8.93%). It was discovered that every item had acceptable factor loadings between 0.5 and 0.9, demonstrating its importance in explaining the Utilization of skill outcomes.

Utilisation of Competency Outcomes (data analysis) by the Organization in Performance Process.

Table 1 : Mean and Standard Deviation values.	**Mean**	**Std. Deviation**
Compensation analysis	3.365	1.267
Employee attitude surveys	3.739	1.095
Recruitment analysis	3.622	1.322
Employee competency assessments	3.978	1.224
Employee performance assessments	4.026	1.243
Organizational development assessments	4.035	1.129
Organization design/dysfunctional aspects of work flow	3.478	1.174
Management development assessments	3.709	1.441
Downsizing workforce assessment	3.048	1.326
Labour compliance	3.335	1.088

Table 2 : KMO and Bartlett's Test for HRA Capability

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.833
Bartlett's Test of Sphericity	Approx. Chi-Square	3497.057
	Df	105
	Sig.	0.000

Using factor analysis, it was revealed the HRA capabilities explained 81.396% variance in the data. The HRA capability showed that there are three factors in HRA capabilities, namely, knowledge, skills and behaviour. Knowledge was among the most important component of HRA capabilities, accounting for 35.303% of the difference in HRA capability overall. Skills and behavior accounted for 29.187% and 16.905%, respectively, of the total variability in the variable. Furthermore, all of those elements were shown to have a considerable impact on measuring the HRA capability by considering more than 0.4 as the factor loading value for each item.

Table 3 : Factors of HRA Capability

Factors	**Factor Loadings**	**% of Variance**	**Cumulative %**
Knowledge		**35.303**	**35.303**
Knowledge of organizational design factors	0.873		
Knowledge of cost management	0.851		
Knowledge of employee retention tactics	0.802		
Knowledge of the external market and customer demands	0.685		
Knowledge on how to assess the job design	0.639		
Knowledge of the company's culture and the interaction it makes with previous workers	0.552		
Skills		**29.187**	**64.491**
Skills for analysing internal and external environments (e.g., understand vendor requirements, etc).	0.843		
Skills of change management	0.830		
Skills to understand the causal factors of outcome	0.741		
Skills for identifying the content of the analysis	0.683		
Skills to transfer training into practice on the floor.	0.682		

Factors	Factor Loadings	% of Variance	Cumulative %
Behaviour		**16.905**	**81.396**
We meet the timeline of the given task consistently	0.850		
We have the ability to transfer the training into actual practice	0.731		
We diligently perform the given task to meet the quality standards	0.728		
We share the analytical knowledge to fellow employee in a quick and an unproblematic way	0.692		

The significance of the main construct on each of the sub-constructs can be studied. The significance of the item factor loadings and the output of the regression path coefficient is shown in the table. It can be observed that the effect of 'Capability' on all its sub-constructs is significant ($p<0.01$). Thus, it can be inferred that the construct Capability loads well on all of its three sub-constructs (i.e. Behaviour, Knowledge and Skills). Further, the Critical Ratio (CR) values were found to be greater than 1.96 which indicates that the paths are significant, i.e. Capability significantly explains its three sub-constructs.

4. Results

By analyzing the standardized estimates, the association between the variables that can be observed and the underlying constructs can be examined by analyzing the standardized estimates. All of the factor loadings of the items measuring the reflective constructs, understanding data (UD), analysing data (AD), and interpreting data (ID) were found to be greater than or close to 0.6, with the exception of AS_6 (intermediate data analysis skills), AS_7 (basic multivariate analysis skills), AS_9 (software knowledge), and AS_10 (knowledge of vlookup).

As a result, all but these four of the other elements on the scale that measured understanding, analyzing, and interpreting data were removed. The convergent validity of the scale's items is indicated by the standardized factor loadings of the construct-measuring items, which were found to be ≥ 0.5. The composite reliability of all the items has been found to be above the threshold values of 0.6, which implies that the items in the scale are reliable. The squared multiple correlations shows that about 16 to 82 per cent variance in the indicators can be explained by the corresponding construct. Hence, the indicators measuring the first order constructs of Expected HRA were also found to be reliable.

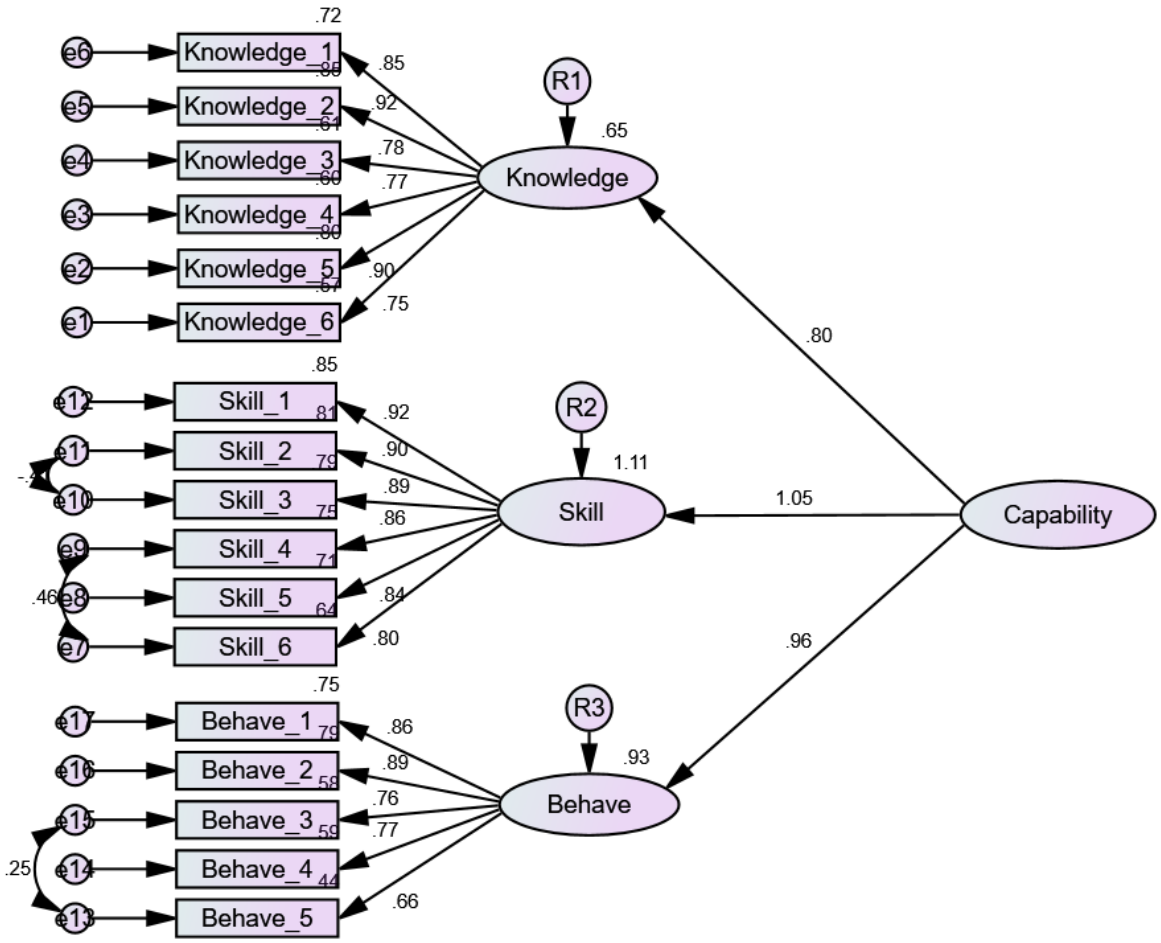

Figure 2 : Structured Equation Modelling for the variables.

5. Discussion

Since gathering primary data requires little financial investment and little training for both the subjects and the researcher, a well-structured questionnaire was created (Jones et al., 2008) to minimize the cost of data collection. Additionally, using a questionnaire lowers the possibility of bias during data collecting and offers a wider geographic coverage. As a result questionnaires have been used in this study to improve the validity of the data gathered by enabling respondents to respond even when the researcher is not present.

Main construct	Sub-constructs	No. of items
Existing Human Resources Analytic competencies	Understanding of data	4
	Analytical skills	11
	Interpretation skills	5
Expected Human Resources Analytic competencies	Understanding of data	4
	Analytical skills	11
	Interpretation skills	5

Utilisation of HRA competency outcomes	Process Performance	10
	Strategies	4

Table 4 : Constructs with the sub constructs

5.1 Data Analysis- Utilisation of Competency Outcomes for process and strategies:

The utilisation of competency outcomes in HR professionals are measured using two factors: performance process and strategies.

- Within the performance processes, the HR professionals are used for a high level of employee performance assessments (4.026 ± 1.243) and organisational development assessments (4.035 ± 1.129), whereas they are least bothered with downsizing workforce assessment (3.048 ± 1.326) and labour compliance (3.335 ± 1.088). Thus, the HRA are utilized to a moderate extent to improve the performance process of the organisation.
- In terms of strategic processes, the HR professionals were utilized mostly in HR manpower planning (4.009 ± 1.118) and least in succession planning for leadership development (3.417 ± 1.200).
- The research indicates that HR professionals' analytical competencies are well below what is required of them. The study finds that, aside from the HR professionals' fundamental data analysis abilities, none of their other analytical proficiencies fulfilled the requirements of the expected HR analytic capabilities in terms of data comprehension. The large discrepancies between the expected and actual analytics competencies point to both the organizations' callous disregard for providing HR professionals with the necessary training in contemporary analytical skills as well as their lack of awareness of the importance of analytics competencies in process and strategies. Hence, in the wake of these findings, the present study recommends the organizations to provide adequate trainings to dedicated analysts to improve various data analysis skills, such as Correlation, regression, ANOVA etc. Moreover, in the wake of findings, the study also suggests the organizations to take adequate measured to improve the knowledge of analysts in modern analysis software such as R, Python, Lavaan, etc. as these soft wares are largely using for analyzing the row data, which is necessary for the organizations to analyze the performance.
- It shows the level of existing HRA competency based on business outcome. This indicates that decision-making process (M=3.915 SD=0.679) occurs due to lower HRA competency than the return on investments (M=3.937, SD=0.545). The correlation between the business outcome and the current HRA competency was evaluated through MANOVA. The results showed that the existing HRA competency had a direct significant impact on business outcomes in terms of understanding of data (F(2,224) =10.511, η_p^2 =0.086), analytical skills (F(2,224) = 1.40,η_p^2 =0.012) and interpretation skills (F(2,224) =37.214, η_p^2 =0.249). The effect size was found to be small in the case of understanding of data as well as analytical skills and large for interpretation skills.
- The Wilk's Lambda values for data comprehension, analytical abilities, and business outcome interpretation are 0.914, 0.988, and 0.751, correspondingly. This indicates that the intergroup variances did not account for 91.4% of the variation in data understanding, 98.8% of the variation in analytical skills, and 75.1% of the variation in interpretive skills.

6. Study implications

Theoretical implications

Organizations now use data differently, focusing more on meeting the legal requirements of employment. The way that data is used has gradually altered the dynamics of the HRM function, and employers now demand high-quality analysis from HR professionals. According to the studies, HR professionals could gain a variety of perspectives on how they contribute to the financial goals of the organizations by using HRA to create appropriate assessments. In spite of these conclusions, few research have looked at HRA's potential to boost business in Indian firms. The studies which examined the gap between existing and expected HRA competencies, is also very much limited. Under this context, the current study looked at the space between the competences that Indian firms' HR analysts should possess and what they really do.

Managerial implications

The results indicate that HR professionals' analytical competencies are well below what is required of them. The study finds that, aside from the HR professionals' fundamental data analysis abilities, none of their other analytical proficiencies fulfilled the requirements of the expected HR analytic capabilities in terms of data comprehension. The

large discrepancies between the expected and actual analytics competencies point to both the organizations' callous disregard for providing HR professionals with the necessary training in contemporary analytical skills as well as their lack of awareness of the importance of analytics competencies. Hence, in the wake of these findings, the present study recommends the organizations to provide adequate training to dedicated analysts to improve various data analysis skills, such as Correlation, regression, ANOVA etc. Moreover, in the wake of findings, the study also suggests the organizations to take adequate measured to improve the knowledge of analysts in modern analysis software such as R, Python, Lavaan, etc. as these soft wares are largely using for analyzing the row data, which is necessary for the organizations to analyze the performance.

7. Conclusion

Even though the study has both theoretical and practical significance for HR professionals and the research scholars .It also suffers certain limitations, which restricts its scope. The study outcome is derived from the responses of a number of respondents of Bengaluru, Karnataka, India to get an idea of HRA, its competence and business outcomes. However, this may not be true all the time because several factors used by the current study cannot be applied to other areas due to differences in demographic, economic, and social factors, especially for other countries. Further, the study adopted random sampling procedure for the selection of sample population; however, it inherently brings in all its limitations. Due to busy schedules and lack of interest in survey participation, the finalized sample size stood at 230 respondents, which can be considered as an acceptable size. It is also felt that for a consumer research like this, using a larger sample size will be preferable, and cover the perceptions of more representatives of the whole population of HR personnel. Another limitation was related to the data collection. The collection of primary data was comparatively very difficult and occasionally the subject of non-reaction emerges because the general population does not prefer to uncover the data. As no primary data collected through the sample survey are free from bias and inaccuracy in one respect or the other, the data collected and used in the study might not be free from certain errors due to limited knowledge of respondents. This research was confined to one area constituting this geographic region. The findings of the research may not be generalized for the entire state or nation

8. Limitations

The present study covers only a small representation of the population of HR professionals. In addition, it focuses on HR professionals from the city of Bengaluru, Karnataka. The same conclusion needs to be drawn from the rest of the country. Future studies can expand the research to include the whole of India with a greater number of respondents. Further, the study only focuses on the impact of HRA on business outcome, it did not explore the factors that influence the HR analytics competence. This can be explored in the future studies.

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