

An Integrative Review of HR Analytics Implementation

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ABSTRACT

Different organizations worldwide are increasingly turning to human resource analytics to improve their strategic human resource and business goals. Specifically, this has been necessitated by advances in information technology in the corporate business world. Therefore, this advancement in information technology has heightened expectations and contributed to a positive perception of human resource analytics. On the other hand, using HRA to manage the human endeavor is still marred by different implementation challenges owing to a lack of understanding and appreciation by the key stakeholders. Using an integrative synthesis, the researchers conducted an integrative review of refereed journal articles on HRA Implementation. A search from three major data banks turned up 133 410 hits, and according to the search criteria, only twelve relevant articles were reviewed. Consequently, the number of articles in refereed journals and the research question addressed were used to categorize the articles. The articles were classified according to the following four questions: What exactly is HRA? How does HRA function? What are the consequences of using HRA? What factors influence HRA adoption? Researchers concluded that despite information connecting HRA adoption to firm strategic performance, academic research and HRA adoption are extremely low, resulting in a scarcity of evidence on the subject. All in all, such a revelation warrants further investigation through longitudinal and cross-sectional field surveys.

KEYWORDS: Human Resource Analytics, Workforce Analytics, Talent Analytics, People Analytics.

ABBREVIATIONS

HR: Human Resource, HRA: Human Resource Analytics, HRM: Human Resource Management.

1.0 INTRODUCTION

For the effectiveness of practice, HR professionals need human resource analytics [1,2]. Given the preceding, human resource managers feel exhilarated and zeal in pursuing HRA as an emerging topic in the management science discipline. HRA is concerned with the measurement of human assets such that organizations can realize their contribution to organizational performance [3]. The concept of human resource measurement originated from industrial management methodology based on four principles of management [4]. As efforts to increase output increased, human capital analytics emerged. More so, machine learning and visualization tools, for example, are assisting in the systematic implementation of human capital analytics [5]. As a result, the research provides knowledge on what HRA is and how it can benefit organizations. An integrative synthesis of published peer-reviewed literature was carried out using evidence-based practice guidelines [6]. The researchers developed specific questions and systematically searched and retrieved promulgated and peer-reviewed articles. Subsequently, a critical examination of the findings' quality and implications and the pattern and extent of evidence was done. Integrative synthesis, a well-established evidence-based methodology, was used by researchers to answer key research questions [6]. According to research, only 10% of Fortune 500 companies use advanced analytics [7]. As a result, there is insufficient quantitative empirical research to support a meta-analysis of HRA. Hence, the justification of an integrative review study. Integrative synthesis is distinguished by the use of predetermined questions and selection criteria [8]. Researchers used diffusion of innovation theory to develop predetermined questions that guided evidence-based integrative synthesis [9]. From the diffusion of innovation theory, HRA can be regarded as a spreading innovation. The decision to implement an innovation, according to Rogers [9], consists of five steps: [i] knowledge, [ii] persuasion, [iii] decision, [iv] implementation, and [v] confirmation. Since HRA is still in its infancy, researchers focused on the first two stages, knowledge and persuasion: learning about HRA and being persuaded to implement HRA.

The choice to examine HRA through the lens of innovation adoption is consistent with recent advances in theories about why organizations adopt new practices. Thus, our integrative synthesis address the following HRA information gathering questions in this first stage of information gathering: [i] What exactly is HRA? [ii] What is the

approach to human resource analytics and reporting? The first question concerns developing construct validity, while the second concerns internal validity [10]. In the second step of the decision-making process, the decision-maker seeks information about the expected outcomes of implementing the innovation to decide whether to implement it. Questions about the consequences of adoption and contextual factors that may influence the adoption of the innovation are being raised at this stage. As a result, two additional questions guided our integrative synthesis: [iii] What are the ramifications of implementing HRA? [iv] What factors influence the adoption of HRA?

2.0 METHODOLOGY

The integrative synthesis procedure recommended by Oermann and Knafel [11] was used as the research methodology. The researchers created a narrative synthesis of qualitative, quantitative, case study, and theoretical studies to present the findings. The research methodology is supported by empirical evidence from previously published works by [12-14]. Since systematic reviews include studies based on various information sources, they can help improve understanding of complex concepts and the state of science on this HRA topic [11]. As a result, we conducted searches in three major multidisciplinary publication databases: Emerald Insight, Taylor and Francis Online Search, and JSTOR. According to Daash [15], human resource analytics can also be referred to as people, talent, and workforce analytics. Workforce Analytics is concerned with other departments, such as customer relations, research and development, sales, advertising, and branding, whereas HRA is concerned with the HR department. HRA enables HR professionals to better source top candidates for various roles within the organization by leveraging data-driven metrics and acumen [ibid]. A variety of labels and forms show that the subject is still evolving [12]. However, a careful reading of scholarly articles by the researchers revealed that all of these forms and labels are simply synonyms for the same idea. As a result, the search protocol for the three databases included looking for article titles that included HRA or human resource analytics, people analytics, talent analytics, and workforce analytics. To ensure that the search found articles that were specifically about the topic of interest, the researchers looked for articles in which key search terms such as HRA, people analytics, talent analytics, and workforce analytics appeared as a single phrase in the title, and they excluded articles in which the words HR and Analytics appeared separately. A search of journal article databases turned up 133 410 hits. As a result, only twelve relevant articles were reviewed based on the search criteria, achieving the purposive sampling method [16]. Despite a few well-known articles, consulting reports, and press reports, the number and pattern of publications on the subject in searched databases remain extremely low.

2.1 CLASSIFICATION OF REFEREED ARTICLES

The articles in scholarly peer-reviewed journals were classified based on quantity and the research question they addressed. What is HRA? How to report on HRA? Ramifications of implementing HRA and Factors influencing HRA adoption are the research questions. This classification is summarized in Table 1.

Table 1: Peer-reviewed publications on HRA and reporting.

Journal Publication	Quantity
Journal of Management Analytics	1
European Journal of Information Systems	1
The International Journal of Human Resource Management	3
Indian Journal of Industrial Relations	1
Journal of Work-Applied Management	1
Journal of Organizational Effectiveness: People and Performance	3
Management Decision	1
Global Knowledge, Memory and Communication	1
Total	12

Source: Authors' data, 2022.

2.2 METHODOLOGICAL APPROACH CATEGORIZATION

2.2.1 THE EMPIRICAL METHOD

Researchers must be confident in the study's findings for research to inform critical thinking effectively. Researchers evaluated the empirical approach used to provide evidence for the identified relationships in past research. We started by classifying each article as empirical or non-empirical. We also came across mostly conceptual or prescriptive research rather than empirical. In this category, we also included brief case studies and conceptual and conference papers used for illustrative and prescriptive purposes rather than deriving possible relationships between constructs inductively or based on well-accepted scientific qualitative research protocols.

2.2.2 ANALYTICAL LEVELS

As HRA is a process that can be used on individual and group-level data, researchers chose to identify the levels of analysis addressed in the research. The level of analysis used in the study must also be reported to ensure that the underlying theoretical framework is consistent with the level of analysis used in the study. Any study's level of analysis should be linked to its theoretical foundation. As a result, the research reported in the article was divided into three categories based on whether it was evaluated or analyzed at the individual, group, or organization level. It was discovered that the majority of the articles in this category concentrated on the organization level of analysis. Where studies focused on the individual level of analysis, this included multilevel data in which individuals were sorted into groups such as departments, divisions, or business units, and these were classified within a company, and multilevel data handling was properly addressed. The other nine studies were case studies, conceptual papers, or conference papers, with three including quantitative analyses.

2.3 CATEGORIZATION OF JOURNALS BY THE RESEARCH STRATEGY

Table 2: Research strategy tabular array.

Study Authors	Level of Analysis	Empirical or Not	Research Method
[17]	Individuals within companies	Quantitative empirical	Cross-sectional survey. A sample of 387 professionals in the service sector
[18]	HR processes, individuals and teams within companies	Quantitative empirical	A cross-sectional survey of 155 firms
[19]	Individuals within companies	Quantitative empirical	Survey design, a sample of 302 HR professionals
[20]	Companies	Non-quantitative empirical	Insider Econometrics survey
[21]	HRA Team in a company	Qualitative empirical	Illustrative case study, observations, and interviews
[22]	Individuals and groups in a company	Non-empirical	Narrative literature review
[23]	Individuals in a company	Non-empirical	Special issue-collection of papers
[24]	Professionals in a company	Non-empirical	Literature and conceptual review
[25]	HR Professionals in a company	Non-empirical	Literature review
[26]	Individuals and groups in a company	Non-empirical	Literature review
[14]	Employees in a company	Non-empirical	Systematic literature review
[27]	Companies	Non-empirical	Conceptual review

3.0 RESULTS AND DISCUSSION

The positions of our sample articles are summarized in the tables above, and there is a clear pattern. The existing body of knowledge on HRA answers the question, "What is HRA?" All 12 articles on company-level analysis addressed this question in some way. The dominance of non-empirical evidence is another notable result of this summary.

Seven of the twelve peer-reviewed articles published have no theoretically derived hypotheses tested but rather provide paper collections, literature reviews, and conceptual models. Five noted articles are qualitative, quantitative, or illustrative case studies based on empirical research evidence. Therefore, the ensuing paragraphs disentangle the study findings according to the identified research questions.

3.1 WHAT EXACTLY IS HRA?

A scholarly survey of management literature reveals that HRA has its roots in scientific management methodology based on four management principles. Machine learning and visualization tools are assisting in the systematic adoption of human capital analytics [5]. Although definitions differ, human resource analytics is defined as "Investing in information which supports proper governance of different establishments [21]." According to Arora *et al.* [17], HRA is concerned with a coherent analysis of human resource and organizational data to enable the realization of strategic business goals. Eleven of the twelve accounts briefly summarized in Table 2 above are more specific, listing particular components of HRA such as specific analyses, specific practices, or the concept of using evidence-based decision-making. According to Falletta and Combs [27], HRA is an active and organized procedure for ethically assembling, analyzing, communicating, and applying evidence-based HR research and analytical insights to assist organizations in achieving their strategic goals.

Peeters *et al.* [22] adopted the definition of people analytics as "HR praxis enabled by computerized information." Ellmer and Reichel [21] define HRA as a policy-making process in an organization. These definitions share several characteristics. First and foremost, HRA entails a more thorough examination of varied human resource functions-related information. Secondly, it is about more than just HR structural information; it is about integrating information from various inner functions as well as data from outside the organization. Third, HRA entails the use of info-tech to accumulate, influence, and report data. Lastly, HRA is concerned with assisting with personnel decisions as well as fastening HR resolutions to an organization's performance against its goals and objectives.

When all of these definitions are combined, it is clear that HRA is: An orderly perpetual manpower praxis enabled by info-tech that makes use of all useful collected data related to business functions and external business links to facilitate risk management. In this discourse, HRA is defined as a human resources management transformation. The spread of innovation theory enunciates that creativity spreads predictably and consistently across social groups. A single person or a large group may find innovation novel. However, professionals who appreciate the subject matter through relevant qualifications and quantitative self-efficacy would only realize the novelty. Given the snail pace adoption of this subject matter in various entities worldwide, it remains unknown when this innovation will be firmly embedded in management practice. Reviewed literature reveals that organizations are at various stages of human resource analytics implementation and appreciation. Possible differences in this appreciation and understanding could be emanating from power dynamics in organizations and levels of technological advancement in the economy. That is a case of ambiguity in which researchers assumed that responses to the three remaining questions of this article would find the answer to this conjecture.

3.2 HOW TO REPORT ON HRA

For HRA reporting in organizations, the majority of articles recommend at least three stages. Reporting analytics are classified into three levels, descriptive, predictive analytics, and prescriptive [14]. Meanwhile, Gurusinghe *et al.* [26] stated that HRA reporting could be done at three levels: operational, advanced, and predictive. Therefore, people management leaders must be conversant with quantitative techniques in the business. When doing HRA reporting, data sharing, data security, privacy, and ethics must be carefully considered [25]. What is most important must be measured, not what is simplest. It moves beyond descriptive metrics into inferential statistics and predictive modeling [20]. The preceding statements teach us that HRA reporting will involve at least three common stages of describing, predicting, and prescribing, resulting in a three-stage linear model.

In these circumstances, HR professionals must be trained in research methodology, statistics, and econometrics to embrace HRA fully. Eventually, this would put an end to the ongoing academic debate over whether organizations should hire statisticians to do HRA and which departments in organizations are tasked with HRA. A purely trained statistician/data analyst with no knowledge of the HRM discipline would not assist organizations in implementing HRA. The definitions provided by the cited articles portray the negative aspects of HRA. Data sharing, security, and ethical practices are all important common puzzles that must be solved collaboratively across organizations. Employees' HIV/AIDS status and salary rates are too difficult to disclose without violating standard HRM/business ethical practices. Aside from Statutory Instruments and Acts that govern how some of these data issues should be handled, individual businesses are encouraged to develop codes of conduct/best practices that are appropriate to the nature of their business operations.

3.3 RAMIFICATIONS OF IMPLEMENTING HRA

All twelve articles painted a positive picture of the use of HRA to improve organizational performance, achieve strategic goals, and make evidence-based decisions. According to Gurusinghe *et al.* [26], HRA assists in making accurate HR decisions that can be linked to business outcomes, thereby improving organizational performance. The articles chosen for this study were noteworthy in that none mentioned any negative consequences of implementing HRA. Perhaps more field research is required to gather more empirical evidence since the number of organizations using advanced HRA is still small around the world. Notwithstanding the above revelations on the benefits of human resource analytics, more challenges can still be encountered in day-to-day business practice. Custody of confidential information pertaining to company operations and human endeavors could be at risk of being hacked either by ordinary hackers or secret service personnel without the knowledge of the concerned organization. Challenges of properly trained personnel could be another negative side of this technology-driven strategic human resource management panorama.

3.4 FACTORS INFLUENCING THE ACCEPTANCE OF HRA

Giermendl *et al.* [14] lamented the lack of an integrated and analytic approach and silo mentalities in businesses. Senior management support, data, infrastructure, and knowledge/skills are lacking. Compliance, organizational politics, and cultural challenges were discovered by Ellmer and Reichel [21]. Their findings revealed individual and organizational context factors and other external business environmental factors that stifle HRA adoption in organizations.

How can these micro- and macro-environmental factors be addressed? Since establishments do not operate in a vacuum, national issues like the country's economic performance, national culture, and national laws would assist in the

acceptance of human resource analytics. To determine the extent to which these factors impede the full adoption of HRA as an innovation and potential solution, longitudinal, cross-sectional field surveys and comparative studies between developing and developed countries are now required. Ultimately, implementing a work program where all stakeholders know its pros and cons would bring certainty to operations and relations. Knowing the pros and cons should certainly lead to the craft of water-tight implementation policies. Significantly, the ongoing education and awareness of crafted policies for all company employees would improve the possible HRA acceptance challenges.

4.0 CONCLUSION

There is scholarly evidence indicating that measurement in human resource practice was coined sometime immemorial. Its adoption and utility value in realizing strategic goals leave much to be desired in different establishments. The scientific evidence in the sampled articles was severely restricted. There was a dominance of non-empirical evidence in the articles selected as guided by the selection criteria chosen by researchers. However, they did provide some information on key definitions and contextual factors impeding HRA adoption.

Nevertheless, the few empirical studies identified assisted in achieving generalizability. A noteworthy discovery from the sampled articles is individual and organizational context factors and other external business environmental factors that stifle HRA adoption in organizations. From the angle of individual factors stifling HRA adoption in organizations, researchers reasoned that ethical issues, lack of appreciation of figures, and other personal weaknesses come into play. Organizational factors impeding HRA adoption could be managerial styles adopted by an individual organization.

Since the father of scientific management founded the notion of measurement in management, it carries with it a connotation of treating employees as machines instead of humans. Hence, some management practitioners resort to the human relations approach in managing human endeavors. Thus, failure to embrace any innovation in human resource management [HRA adoption]. It is assumed that accounting can handle measurement matters, and operations/production management uses similar metrics to measure organizational productivity. The future is predictable through strategic planning and forecasting, and any legal battle would be fought using internal or hired legal experts. Researchers advise that HRA adoption is in the hands of HR practitioners, academic institutions, professional bodies, and like-minded people, locally and the world over. People would be interested in exercising their minds when teaching college/university courses. Therefore, academic/professional institutions should include this subject matter in their curriculum design. Legislation should regulate the HR practice where HRA is a necessity. Overall, compared to management and labor relations function, the notion of measurement in human resource practice has not piqued the interest of the bulk of management intellects. The scarcity of evidence on the subject indicates that we are yet to attract management professionals' attention.

In conclusion, even though HRA is a topical issue, a search for refereed articles indicates that not much field research has been done on HRA. Though diffusion of innovation theory can inform management about technology-oriented change, policymakers looking for a sufficient body of key indicators would not get much from their expectations.

Presumably, because innovation patterns and adoption processes follow certain linear patterns, most risk takers would be few due to lack of information and being risk averse. Surprisingly, obtainable information demonstrates that the notion of measurements in human resource practice positively impacts adoption, but adoption seems to be slow. Thus, this state of affairs warrants further investigation. Falletta and Combs [27] suggested conceptual frameworks or mixed methodologies. There is a point of convergence between the current study and similar past research [14,21,26] on the definitions of what analytics is, how it is reported, and the benefits and challenges of implementation. Hence, this convergence assists in adding to the already existing body of knowledge about the subject matter and closing common research time-bound gaps.

4.1 IMPLICATIONS

We chose three databases to search for peer-reviewed articles on HRA. Thus, opportunities exist for fellow scholars to examine different databases to find out more information about the subject matter. Other researchers could extend our approach (narrative synthesis) by making use of the PRISMA flow diagram. Furthermore, organizational leaders and practitioners in charge of organizational performance and human resource management measurement can be informed through our study on factors impeding the full adoption of HRA.

4.2 LIMITATIONS

The grey literature search was not used in this paper. Hence future researchers can always incorporate such sources and others like ancestry search to increase the sample size. Systematic integrative reviews have research issues. Combining empirical and theoretical reports brings bias and lack of rigor due to the complexities of incorporating diverse methodologies. This gap can be closed by further investigation through mixed methodologies and longitudinal and cross-sectional field surveys.

AUTHOR CONTRIBUTIONS

- KM did the following sections of the article: title, abstract, introduction, keywords, methodology, results and discussion, conclusions and recommendations, implications and limitations, and references.
- DC contributed to the discussion and abstract sections of the article.
- FM contributed to the introduction section of the article.
- PN contributed to the introduction section of the article.

CONFLICT OF INTEREST

None.

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