ORGANIZATIONAL PERFORMANCE AND HUMAN RESOURCES ANALYTICS IN A DEVELOPING COUNTRY

Siddiqua S.I., Abaker M.O.S.M, Afnan R.T.*

Abstract: This research is significant for businesses looking to increase their human resource technology competencies or develop their HR analytics initiatives since it demonstrates how HR analytics may boost organizational performance. Investing in HR analytics and employing evidence-based decision-making approaches increases organizational effectiveness. The article aims to show an empirical study on organizational performance and human resource analytics in Bangladeshi firms. It is unclear whether HR analytics enhance a company's performance, while few corporations benefit from them. HR departments that utilize manpower analytics data for planning and employment decisions are examples of how HR analytics improve business performance. Using a quantitative method, 206 questionnaires were collected from professional services, financial services, information and communications technology, and other service firms. Smart-PLS 3.2.8 and the Structural Equation Modeling (SEM) instrument were used for data analysis. The results confirm the suggested chain model, which states that having access to human resource technology allows for HR analytics and evidence-based management decision-making, thus improving performance. Past studies have not addressed the human resource analytics view in developing countries. This research bridges that gap by offering empirical evidence from Bangladesh.

Keywords: Human resources analytics, organizational performance, evidence-based decision-making, Asia, Bangladesh

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Introduction

To effectively implement and realize the potential of HR analytics, experts recommend changing the corporate culture to one that values analytics and changing the decision-making paradigm to one that emphasizes evidence-based reasoning. Human resource analytics (HR analytics) is an excellent tool for improving human

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resource (HR) processes and policies while adding value to the performance of an organization. The application of data and analytics ideas have received increased attention as practitioners seek to know how data can be translated into actionable visions that lead to enriched organizational productivity (Chierici et al., 2019; Ferraris et al., 2019; Singh and Giudice, 2019). Human capital analytics is concerned not only with studying and developing human capital but also involves employing analytical methods to analyse employee data to influence organizational strategy and increase performance (Kusairi et al., 2023; Chalutz Ben-Gal, 2019). Among many, Harris et al. (2011) address the value of HR analytics to an organization's long-term success, prescribe strategies to retain key employees intending to leave and reallocate funds to more important initiatives by delivering measurable investment returns. Based on the above argument, our research seeks to test hypotheses and develop a theoretical model to understand better how HR analytics affect organizational performance. This study uses evidence-based management (EBM) theory as the underlying framework to assess the effect of HR technology on HR analytics and how it leads to organizational performance (Baba and Hakem Zadeh, 2012; Barends and Rousseau, 2018).

The existing HR analytics literature focuses on the current obstacles to HR analytics progress and decision-making (Levenson and Fink, 2017; Marler and Boudreau, 2017; Huselid, 2018; Minbaeva, 2018). There is a paucity of research on how HR analytics impact organization performance, despite an increasing amount of research on case studies of HR analytics indicating that HR analytics improved decisionmaking and firm operation (Fernandez and Gallardo Gallardo, 2020; Margherita, 2022; Marler and Boudreau, 2017; Huselid, 2018; Minbaeva, 2018). According to the Scopus Database, there are few studies on organizational performance and HR analytics in Bangladeshi companies. Data curation, a lack of data analytics expertise and skills, privacy and compliance, a lack of top-level support, a shortage of experienced technology users who can understand and use the analytical tools, and budgetary constraints are all problems with HR analytics. This study examines how to close the HR analytics research gap by testing and developing HR analytics theories to understand how they impact organizational performance. The study's objectives were to investigate how human resource analytics affected corporate performance in Bangladeshi companies as follows: To examine the relationship between HR analytics and decision-making in organizations. To identify the impact of HR analytics on organizational performance. To determine the relationship between HR technologies and HR analytics to achieve organizational performance. The following questions were asked to help achieve the research objectives: What is the relationship between HR analytics and organizational decision-making? How do HR analytics affect organizational performance? What is the relationship between HR technology and HR analytics in terms of improving organizational performance? The research hypotheses were subdivided into specific hypotheses in the literature review section, such as that there is a positive relationship between HR Analytics and Organizational Evidence-based decision-making. Human resource analytics

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mediates the relationship with organizational performance. There is a positive relationship between HR Analytics and HR technology on Organizational Performance.

Literature Review

The literature explores HR analytics and assesses their impact on organizational performance. According to Islam et al. (2022), adopting artificial intelligence (AI) in HR management in emerging countries like Bangladesh heavily relies on userfriendly AI technologies. The study enhances our knowledge of how HR analytics promote the performance of organizations by testing hypotheses and creating a chain model integrating access to HR technology, HR analytics, EBM, and organizational productivity. These were covered in the subsections. Due to continuous digital revolutions, HR departments are increasingly using workforce data to inform decisions in areas like recruitment, performance appraisal, diversity, and planning for employees (Hamilton and Sodeman, 2020; Harris et al., 2011; Marler and Boudreau 2017; Rasmussen and Ulrich 2015; Islam et al., 2022). However, managers' decision-making is critical to their role; nonetheless, they often do so under uncertainty and with limited information. HR must move from an administrative handler to a strategic decision-maker. Moreover, Evidence-based management (EBM) involves integrating and employing scientific, and corporate data, as well as expert input, and stakeholder judgment, to justify the managers' decision-making process (Baba and Hakem Zadeh, 2012; Barends and Rousseau, 2018). HR analytics, on the other hand, generate produce employee administrative evidence by collecting and converting data into useful information, resulting in critical corporate awareness (Coron, 2021; Marler and Boudreau, 2017; Minbaeva, 2018). While some decision-makers base their decisions on various facts to reinforce their conclusions, many others rely on common sense, obsolete knowledge, individual capability, or a mixture of these to defend their choices (Baba and HakemZadeh 2012; Barends and Rousseau 2018). Management academics have advocated for a change in the way management decisions are made, with a focus on promoting EBM. To effectively leverage HR analytics, companies need high-quality data, analytical skills, and strategic capabilities. This ensures meaningful utilization and application of HR analytics for additional value (Minbaeva, 2018). According to Coron (2021) and Choi et al. (2023), evidence-based human resource management uses employee data and analytics to develop knowledge to improve HR decisionmaking. Based on the literature, the following hypothesis is formulated:

H1: There is a positive relationship between HR analytics and organizational evidence-based decision-making.

HR analytics has a varied impact on the success of the firm. Today, the purpose of using analytics in companies is to be accountable for the various actions associated with the staff, as firms are aware that happier and healthier employees create better-satisfied customers. The HR analytics process is used to gain a competitive advantage in the industry and will continue to thrive within businesses. However,

the critical effort in making HR play a strategic role in any firm depends on the system's effective integration. Analytics involves transforming raw data into meaningful information, as well as data generation, storage, and conversions. When HR analytics ideas are combined with other sources of information to make decisions, the effectiveness of decision-making is expected to increase, leading to greater company efficiency. This is attested to by numerous case studies that highlight how HR analytics encourages evidence-based decision-making to enhance HR and organizational performance. (Harris et al., 2011; Marler and Boudreau, 2017; Rasmussen and Ulrich, 2015; Cho et al., 2023). Bank of America, for example, implemented HR analytics in partnership with Humanyze, as shown in a study by Garay et al. (2015), which emphasized enhanced HR and business performance as a significant outcome of employee interactions. (Garay et al., 2015). HR analytics "involves descriptive, visual, and statistical analysis of data on HR procedures, human capital, organizational performance, and external economic benchmarks to determine business impact and enable data-driven decision-making" (Marler and Boudreau, 2017; Cho et al., 2023; Kusairi et al., 2023). As a result, we propose that organizational EBM plays a mediating function in the HR analytics and organizational performance relationship. Thus, the researchers propose the following hypothesis:

H2: Human Resource analytics mediates the relationship with organizational performance.

HR technology in this study means an HR department having an HR software solution that provides capturing, storing, and analyzing data connected to the HR department that employees can access them (Maamari and Osta, 2021; Marler and Boudreau, 2017). Due to the digital revolution and the impact of information technology, organizations are now utilizing big data to their advantage (Dubey et al., 2019; McCartney and Fu, 2022). Technology integration, particularly chatbots and other AI-driven solutions speed up HR procedures. HR technology offers real-time workforce data for informed decision-making and is the cornerstone of HR analytics (McIver, Lengnick-Hall, and Lengnick-Hall, 2018). This makes it easier to gather. clean, and manipulate data from many sources, enabling HR managers to improve decision-making and expedite processes in the data-driven business environment of today (McIver, Lengnick-Hall and Lengnick-Hall, 2018). HR technology, for example, facilitates collecting, cleaning, and manipulating multiple data types from diverse data sources that can be utilized to improve corporate decision-making (McIver, Lengnick-Hall, and Lengnick-Hall, 2018). As a result, the first aspect of the HR analytics architecture, high-quality data, is met (Minbaeva, 2018). Second, HR technology helps in the transformation of workforce data into information, allowing executives, human resource experts, and line managers to make strategic personnel decisions based on statistical and predictive analysis (Fernandez and Gallardo Gallardo, 2020). This enables HR practitioners to gather data and conduct predictive analyses, which would otherwise be impossible. Therefore, HR analytics will be facilitated by access to HR technology, which transforms workforce data into

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organizational knowledge and awareness. Islam et al. (2022) stated that HR professionals in Bangladesh are more likely to adopt AI-based technologies if they perceive them to be user-friendly and are influenced by employees. Thus, we suggest the following hypothesis:

H3: There is a positive relationship between HR technology and HR analytics.

Research Methodology

This is a causal study that uses a quantitative research method to investigate the relationship between HR analytics and organizational performance. The study collected primary data from 206 randomly selected respondents through a structured questionnaire. A self-administered questionnaire was designed in two parts to collect data for this research. The first comprised perceived organizational performance (POP) and HR technology (HRT) with 20 research questions that were segmented into four sections, including perceived organizational performance (POP1 to POP5), HR analytics (HRA1 to HRA6), evidence-based decision making (EBM1 to EBM6), and access to HR technology (HRT1 to HRT3). The first part focused on an organizational-based questionnaire that examines perceptions of perceived organizational performance (POP), HR analytics (HRA), evidence-based decision-making (EBM), and access to HR technology (HRT1):

- -POP evaluates the organization's performance in areas such as new programs, product quality, employee relations, customer satisfaction, and HR technology.
- -HRA investigates HR data correctness, dependability, consistency, problem identification, and value creation.
- -EBM measures the process of converting issues into questions, searching for evidence, determining trustworthiness, and incorporating evidence into decision-making.
- -HRT assesses access to tools and investments in HR analytics.

The second part gathered demographic information from the respondents by asking five questions about their gender, age, job title, industry, and type of organization. All constructs and individual items were operationalized using a 7-point Likert scale, which is a widely used method in large-scale empirical studies (Mikalef et al., 2018). Options begin with strongly disagree and conclude with strongly agree; neutral is a midpoint. The scale allows the participants to provide useful data that helps answer the research questions and test the hypotheses. 350 e-mails and messages were sent via social media, mainly WhatsApp, Facebook, Messenger, and LinkedIn, to respondents who were believed to have knowledge and experience with HR analytics and organizational performance. 206 complete responses were received. The study used the easy sampling technique, which is considered a suitable method. A Google Form was created and made available to the respondents.

The questionnaire was distributed to different organizations, including professional services (accounting, advertising, architecture, consulting, and law), financial services (banking, insurance, compliance, and risk), ICT, and other services (education, healthcare, pharmaceutical, and engineering).. Personal administration

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and online data gathering were used to get the data. The study followed the quantitative research design for testing hypotheses and analyzing variable dependency. This research used Smart-PLS 3.2.8 and the Structural Equation Modeling (SEM) application for data analyses. PLS-SEM has no normal distribution over data and may be used in observation with a small pattern size that is good for formative constructs. PLS is preferred to explain complex relationships. It eliminates unwanted results and unpredictable factors (Dubey et al., 2019) because it is more reliable with small sample sizes. The study used a bootstrap sample for analysis, and two models—the measurement model and the structural model—were used within PLS-SEM (Akhtar et al., 2019). In this paper, the internal consistency (Cronbach's α) coefficients were 0.945, 0.946, 0.956, and 0.965 for the whole questionnaire, which is above 0.70 and indicates outstanding construct reliability for all composite scales, as Table 1 shows.

Research Results

This section begins with the demographic profile of the respondents, which served as the basis for our analysis and is shown in Table 1.

Table 1. Demographics Profile

Demographics	Classification	%	Demographics	Classification	%
Age	25-30 years	34.47	Designation	Director	4.37
	31-40 years	37.86		Senior Manager	4.37
	41-50 years	26.70		Manager	8.74
	51-60	0.97		Assistant Manager	12.14
	60 +	0.00		Supervisor	15.53
Gender	Male	62.62		Team Member	40.29
	Female	37.38		Technician	4.37
Organization Industry	Professional services	20.87		Entry Level	10.19
	Financial service firms	42.72	Organization type	Public	7.77
	Information, communication and technology (ICT)	12.14		Private	92.23
	Education, healthcare, pharmaceutical, engineering	24.27			

Table 1 shows more than one-third of respondents were between the ages of 31 and 40, and almost half of them were from financial service firms (banking, insurance, compliance, and risk firms). The IT industry received the fewest responses. More than 90% of workers belonged to the private sector, and more than 62% were men.

Measurement Model

The validity and reliability of reflective constructs and model fit were assessed in this study (see Table 2) using the method proposed by Henseler et al. (2016). The model's reliability and validity were analyzed in two steps, beginning with examining the factor loadings of reflective variables to ensure that the items load onto their construct and do not cross-load onto other constructs. Cronbach's alpha was used to assess the internal consistency of the constructs. The findings showed that the item loadings were higher than the typical level of 0.702, and each

component demonstrated convergent validity with an average variance extracted (AVE) greater than 50%. Internal consistency reliability was found to be satisfactory, with Cronbach's alpha, composite reliability, and dependability rho scores of 0.70. This supports the conclusion that the independent construct indicator discriminates effectively and meets the requirement for discriminant validity (Fornell and Larcker, 1981).

Table 2: Measurement Model

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Items	Loading	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)		
EBM1	0.897		0.956	0.965	0.820		
EBM2	0.910	0.956					
EBM3	0.914						
EBM4	0.903						
EBM5	0.905						
EBM6	0.903						
HRA1	0.908	0.057	0.966	0.972	0.852		
HRA2	0.936						
HRA3	0.911						
HRA4	0.907	0.965					
HRA5	0.933						
HRA6	0.943						
HRT1	0.950						
HRT2	0.943	0.946	0.947	0.966	0.903		
HRT3	0.958						
POP1	0.898						
POP2	0.897						
POP3	0.913	0.945	0.947	0.958	0.821		
POP4	0.928						
POP5	0.894						

Items descriptions: Perceived organizational performance (POP); HR technology (HRT); Organizational performance (POP1 to POP5); HR analytics (HRA1 to HRA6); Evidence-based decision making (EBM1 to EBM6); and HR technology (HRT1 to HRT3)

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Convergent Validity

Convergent validity refers to the accuracy with which the elements of a variable are correctly considered within its indicator. It is validated by examining factor loading, composite reliability, and extracted average variance (Akhtar et al., 2019). The result of this study showed that the measures used met the convergent validity criteria, with significant factor loadings, composite reliability greater than 0.70, and average variance extracted greater than 0.5. In support of our result, we can establish that item loading greater than 0.70 indicates statistical significance. Composite construction has a reliability greater than 0.80 and an AVE greater than 0.50. Table 2 shows that this study met the criteria for convergent validity.

Discriminant Validity

Discriminant validity measures how well a construct differs from other constructs in a model and how well it corresponds to the model as a whole (Akhtar et al., 2019). If the variance is less than 0.7, the indicator is deemed unreliable. To indicate reliability, the outer loading must be greater than 0.7 and have high t-values. To assess the outer loading or relation between the construct and its indicator variables, regression analysis was used. According to the findings, the discriminant validity met the Fornell-Larcker test requirements. (Table 3).

Table 3: Fornell-Larcker Criterion

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	HRT	HRA	EBM	POP
HRT	0.950			
HRA	0.752	0.923		
EBM	0.762	0.866	0.905	
POP	0.771	0.883	0.864	0.906

Hypotheses Testing

Two of the three hypotheses, Hypothesis 1 and Hypothesis 2, were accepted; however, Hypothesis 3, which proposed that HR analytics and HR technology are positively associated, was not established (Figure 1 and Table 4).

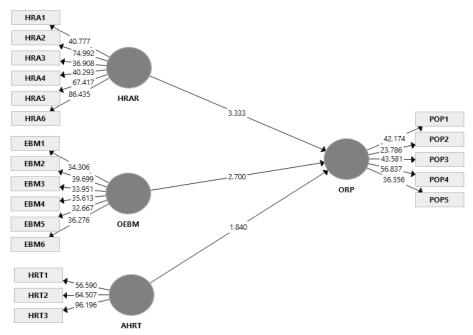


Figure 1: Structural Model

Standard Original Sample T Statistics **Deviation** Valu Sample (O) (|O/STDEV|) Mean (M) (STDEV) es HRA -> 0.481 0.484 0.001 0.144 3.333 POP **EBM** -> 0.322 0.320 0.119 2.700 0.007 POP HRT -> 0.164 0.162 0.089 1.840 0.066 **POP**

Table 4: Mean, STDEV, T-Values, P-Values

Table 4 shows that **H1** proposed that HR analytics and organizational performance are positively linked, where ($\beta = 0.481$, t = 3.333, and p < 0.05), indicates that an alternative hypothesis was established and HR analytics mediates the relationship with organizational performance. Hypothesis 2 concludes that evidence-based decision-making positively impacts organizational performance, with ($\beta = 0.322$, t

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=2.700, and p < 0.05), indicating the establishment of an alternative hypothesis and EBM's mediating effect in connection between organizational performance and HR analytics. On the contrary, Hypothesis 3 proposes that HR technology is positively associated with HR analytics. However, it is observed that access to HR technology has no impact on organizational performance, where (β = 0.164, t =1.840, and p > 0.05), which means hypothesis 3 was not confirmed.

Table: Hypotheses Test Results

Hypotheses	Statements	Test Results
H1	There is a positive relationship between HR Analytics and Organizational Evidence-based decision-making.	Supported
H2	HR analytics mediates the relationship with organizational performance.	Supported
Н3	There is a positive relationship between HR Analytics and HR technology on Organizational Performance.	Not Supported

Discussion

The literature review indicated how HR analytics has been described by many theoretical concepts and reported in several earlier empirical studies. In this context, this study aimed to examine the effect of HR analytics on organizational functioning in Bangladeshi companies. Most of those surveyed were males working in the private sector, with the majority in the financial services industry. The quantitative data collected in Bangladesh yielded meaningful results, with two of the three tested hypotheses confirmed. The study confirmed Hypothesis 1, revealing a positive correlation between HR analytics and organizational performance, with HR analytics serving as a mediator, consistent with Coron (2021), Marler and Boudreau (2017), Minbaeva (2018), and Cho et al. (2023). Furthermore, evidence-backed decisionmaking was found to mediate the link between HR analytics and organizational performance, supporting Hypothesis 2. This aligns with Harris et al. (2011), Rasmussen and Ulrich (2015), Garay et al. (2015), and Cho et al. (2023), emphasizing the pivotal role of peer relations in productivity prediction. However, the study indicated that access to HR technology did not influence organizational performance.

In contrast, Hypothesis 3 suggested that HR technology is favorably linked to HR analytics. According to our findings, access to HR technology does not affect organizational performance, but HR analytics and evidence-based decision-making do. It is suggested that Hypothesis 3 be further examined. Despite the focus on HR analytics, research into their impact on organizational performance is still in its beginning (Rasmussen and Ulrich, 2015). The study's purpose was to investigate the impact of HR analytics on organizational performance in Bangladeshi businesses, focusing on the relationship between HR analytics, HR technology, and evidence-based decision-making. Our research proposes a chain model based on EBM stages

and firm dynamic capabilities to show how HR technology enables HR analytics and improves organizational performance. The study contributes to the field of HR analytics by demonstrating the relationship between HR technology and HR analytics in the context of Bangladeshi firms. As discussed earlier, having access to HR technology makes HR analytics achievable for its ability to collect and analyze workforce data. Using this idea as a foundation referencing the firm's RBV and dynamic capacities, the study proposes that HR Analytics is a business resource capable of changing data into evidence in the form of business facts that are deployed through the organizational EBM capability, thereby improving organizational performance. Finally, we propose a chain model that links organizational performance, EBM, HR technology, and HR analytics for further testing (Figure 2).

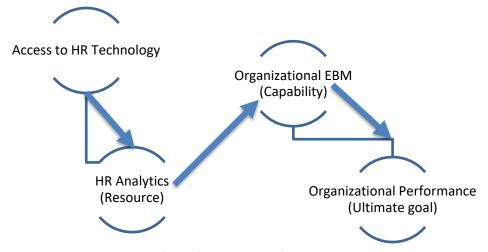


Figure 2: The Theoretical Model

Conclusion

The study findings supported the hypotheses by showing a positive relationship between HR analytics and decision-making and a positive relationship between HR analytics and organizational performance. Consequently, a theoretical chain model has been developed, wherein access to HR technology serves as a catalyst for HR analytics, thereby fostering evidence-based decision-making (EBM) and ultimately enhancing organizational performance. The study showed that decisions made about people in organizations play an important role in the smooth functioning of organizations, and recognizes the impact of HR analytics on organizational performance. The study adds to academic knowledge of HR analytics, allowing HR managers, business experts, policymakers, and practitioners to forecast employee behavior in organizations. As a result, it helps establish HR analytics-related goals and objectives and formulation of organizational policies that contribute to personnel planning and hiring. For example, policymakers in Bangladesh may design and enforce HR policies that encourage organizations to use data and analytics to

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increase corporate operation through HR procedures and practices such as manpower planning, selection, and recruitment.

Managerial Implications

First, this research shows that HR analytics benefit organizational performance, implying that investing in HR analytics and using EBM practices can improve organizational performance. Second, the study adds to the growing body of evidence that access to HR technology is crucial to improving the impact of HR analytics on EBM. This research is significant for companies wishing to improve their HR technology competences or develop their HR analytics efforts. Encouraging firms to invest in HR analytics by forming HR analytics teams committed to analyzing labour force data to make strategic personnel decisions is vital. The study demonstrates how developing and cultivating a decision-making culture can significantly improve organizational performance. As a result, we suggest that organizations use HR analytics to develop organizational facts and integrate them into their decision-making processes.

Limitations and Future Research

The limitations are the small sample size and the setting in which it was conducted. Future studies should gather longitudinal data from numerous sectors and data sets from various countries. Another study can be conducted on various districts of Bangladesh or the comparative basis of two different socio-economic countries. Future research into the relationship between HR technology and HR analytics is required, as it poses the question of whether more advanced HR technology leads to more intelligent HR analytics.

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WYDAJNOŚĆ ORGANIZACYJNA I ANALITYKA ZASOBÓW LUDZKICH W KRAJACH ROZWIJAJĄCYCH SIĘ

Streszczenie: Badania te są istotne dla organizacji, które chcą poprawić swoje kompetencje w zakresie technologii HR lub rozszerzyć swoje inicjatywy w zakresie analityki HR, ponieważ pokazują, w jaki sposób analityka HR może zwiększyć wydajność organizacji. Inwestowanie w analitykę HR i stosowanie opartych na dowodach podejść do podejmowania decyzji zwiększa efektywność organizacyjną. Niniejszy artykuł ma na celu przedstawienie badań empirycznych dotyczących analizy zasobów ludzkich i wydajności organizacyjnej w firmach z Bangladeszu. Chociaż niektóre firmy korzystają z analiz HR, nie ma pewności, czy analizy HR poprawiają wyniki organizacji. Analityka HR wykorzystuje dane i analizy w celu poprawy wydajności korporacyjnej poprzez procesy i polityki HR, wykorzystując dane dotyczące siły roboczej do podejmowania opartych na danych decyzji dotyczących planowania i zatrudniania pracowników. Wykorzystując metodę ilościową, zebrano 206 kwestionariuszy od firm świadczących profesjonalne usługi, usługi finansowe, technologie informacyjne i komunikacyjne oraz innych firm usługowych. Do analizy danych wykorzystano Smart-PLS 3.2.8 i narzędzie do modelowania równań strukturalnych (SEM). Wyniki potwierdzają proponowany model łańcuchowy, zgodnie z którym dostęp do technologii zasobów ludzkich umożliwia analizę zasobów ludzkich i podejmowanie decyzji zarządczych opartych na dowodach, poprawiając w ten sposób wyniki. Wcześniejsze badania nie koncentrowały się na perspektywie analityki HR w krajach rozwijających się. Niniejszy artykuł wypełnia te luke, przedstawiajac dowody empiryczne z kraju rozwijającego się, jakim jest Bangladesz.

Słowa kluczowe: Analityka zasobów ludzkich, wydajność organizacyjna, zarządzanie zasobami ludzkimi, podejmowanie decyzji w oparciu o dowody, Azja, Bangladesz