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Unlocking the Future of HR: Investigating the Determinants Influencing Human Resource Analytics Adoption in Indian Organizations

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ABSTRACT: Human Resource Analytics (HRA) is growing in almost every field. It is a data-driven technique that has emerged as a transformative tool for enhancing organisation efficiency and strategic planning. Despite its relevance, there is a lack of adoption of HR analytics among many organisations. There is a need to identify the key enablers that affect its adoption. Thus, the main objective of this study was to find out the key factors affecting adoption of human resource analytics. Data was collected through questionnaires, distributed to HR professionals working in IT companies in Delhi-NCR mainly in Delhi, Gurugram and Noida through systematic sampling technique. Sample size was 450. SmartPLS is used to analyse the data. Results indicated that Top Management support, social influence, competitive pressure, HR professional's analytical competency and performance expectancy influenced the adoption of human resource analytics.

Keywords: HR analytics, Adoption, Competitive Pressure, SmartPLS

Introduction:

As organizations increasingly embrace digital transformation, Human Resource (HR) analytics has become an essential tool for data-driven workforce decision-making. It enables companies to use employee data to enhance HR functions such as recruitment, performance management, and talent retention, thereby aligning HR strategy with broader organizational goals (Marler & Boudreau, 2017). Sometimes referred to as people analytics or workforce analytics, this approach integrates statistical techniques and technology to uncover patterns and insights from HR data (Rasmussen & Ulrich, 2015; Huselid, 1995).

Human Resource Analytics—often referred to as workforce or people analytics—represents a modern method for enhancing the management and development of an organization's human capital. In today's fast-paced, technology-driven environment, where data plays a critical role in shaping decisions, HR analytics applies data analysis techniques to refine HR policies, optimize processes, and improve workforce-related outcomes.

Despite its advantages, the implementation of HR analytics remains uneven across different sectors and regions. Prior research suggests that challenges such as skill gaps, insufficient infrastructure, and resistance to change often hinder its adoption (Davenport, Harris, & Shapiro, 2010; Angrave et al., 2016). These issues are more pronounced in developing economies and among smaller firms, where resource limitations and lack of expertise are common obstacles (Minbaeva, 2018).

Various studies have highlighted the importance of several organizational and individual-level factors that influence the uptake of HR analytics. Elements such as leadership commitment, employee competencies in analytics, and perceived usefulness of technology have been identified as critical drivers (Levenson, 2018). Understanding these factors is vital for organizations seeking to fully realize the potential of HR analytics.

This research aims to explore the key variables that influence the adoption of HR analytics, specifically among HR professionals working in IT companies in the Delhi NCR region. By identifying these factors,

the study intends to provide actionable insights that can support more effective integration of analytics into HR practices and contribute to the ongoing development of strategic human resource management.

Definitions of HR Analytics:

Fitz-enz (2014) defines HR analytics as a methodology for measuring past and current HR performance to predict future trends. It is used to inform HR strategy and resource allocation based on factual insights.

Bassi, Carpenter, and McMurrer (2012) view HR analytics as a method to evaluate the efficiency and effectiveness of HR interventions. It helps organizations measure how HR contributes to business success through empirical evidence.

Rasmussen and Ulrich (2015) describe HR analytics as a data-driven approach to managing people at work. It involves collecting, analyzing, and interpreting HR-related data to make better human capital decisions and demonstrate the impact of HR practices on business outcomes.

Marler and Boudreau (2017) define HR analytics as the application of statistical analysis and modeling to human resources data. It is used to provide insights that support strategic decision-making and improve the overall effectiveness of HR practices.

Objectives:

1. To find out the factors affecting the adoption of HR Analytics.

Literature Review and Hypothesis Development

According to (Tomatzky, 1990)**,** Technology-organisation-environment theory suggested a framework by which firms can adopt any technology in their companies. It recognised three aspects technology aspect, organisation aspect and environment aspect which affect the adoption of technology. In organisation context *Top management support* is one of the factor.(Baker, 2012) .

(Troshani & Jerram, 2010), in their qualitative study found out main construct using TOE framework and suggested that they affect the adoption of HRIS.

"H1: Top Management Support will positively influence HR analytics Adoption."

HR analytics is an emerging technology that is gradually transforming the field of human resource management. It is important to evaluate the current level of acceptance and adoption among HR professionals. Several researchers have highlighted the need for further investigation into the adoption of HR analytics, particularly to understand the factors influencing its integration into organizational practices. Embracing HR analytics has become increasingly crucial for organizations seeking to enhance their decision-making capabilities and gain a competitive advantage in today's data-driven business environment.(Vargas et al., 2018)

Additionally, Analytical skills are very important for HR professionals to use HR analytics. HR professionals need to develop these skills for their competitive advantage.(Marler & Boudreau, 2017).

Moreover, Many organizations have followed traditional HR practices for years, making it difficult to secure leadership buy-in for investing in data-driven tools. Since HR analytics involves collecting and analyzing workforce-related data, senior management often requires strong justification and clear evidence of return on investment before committing resources to such initiatives. Adopting HR analytics is the lack of support from top management. (Tomar, (2020)).

"H2: HR professional's Analytical competencies will positively influence HR analytics Adoption."

Social influence refers to the degree to which an individual's decision to adopt new innovation is shaped by the opinions, behaviors, or expectations of others within their social or professional group. (Talukder,

2012). Social influence can shape an individual's perception toward adopting an innovation, especially when the person believes that adoption may lead to potential benefits, prompting them to follow or emulate others. (Busaibe, 2017). Additionally, Research by Talukder and Quazi (2011) and Marler and Boudreau (2017) revealed a strong positive relationship between social influence and innovation adoption. Additionally, the attitudes and encouragement of peers or colleagues play a significant role in shaping an individual's motivation and willingness to embrace new innovations.(Talukder M. &., 2011);(Marler & Boudreau, 2017).

"H3: Social Influence will positively influence HR analytics Adoption."

Porter and Millar (1985) explored the strategic reasons linking competitive pressure to the adoption of IT innovations. They argued that when competitors implement new technologies, it can reshape the industry landscape, redefine competitive dynamics, and lead to the emergence of entirely new value propositions and business models. Competitive pressure is very important factor regarding use of technology. (Chen et al., 2015). Firms are often compelled to respond proactively to maintain their market position. The pressure created by competitors adopting new technologies encourages firms to embrace innovation themselves, not only to stay relevant but also to capitalize on new opportunities for growth and efficiency. (Shiwei Sun et al., 2019); (Alaskar, 2021).

"H4: Competitive Pressure will positively influence HR analytics Adoption."

Performance Expectancy is "the degree to which an individual believes that using the system will help him or her to attain gains in job performance" (Venkatesh et al., 2003). As a result, individuals may conclude that time and effort required to master application or innovation outweighs benefits of improved job performance. Thus, value of employing or adopting invention is countered. Performance expectancy as a "strong predictor of behavioural intention" for adoption of new technology has been proved by previous studies (Venkatesh et al., 2012; Kabra et al., 2017). Studies reveal that making use of new technology enhances the individual's performance. So forth, HRA has also proved to be a game-changer, to increase skills of employee, develop decision-making process and overseeing other jobs (Van der Togt & Rasmussen, 2017; Mohammed & Quddus, 2019; Wandhe, 2020). Earlier studies revealed the influence of performance expectancy in order to adopt the technology (Venkatesh et al., 2012).

Performance expectancy refers to the extent to which an individual believes that using a particular system or technology will lead to improvements in job performance. (Venkatesh et al., 2003). Additionaaly, Studies have also demonstrated that the use of modern technologies can enhance employee performance by improving efficiency and decision-making. In the context of HR analytics, it has emerged as a transformative tool that not only boosts employee competencies but also strengthens organizational decision-making and job oversight. (Mohammed & Quddus, 2019); (Wandhe, 2020); (Garg, 2022)

"H5: Performance expectancy will positively influence HR analytics Adoption."

Conceptual Framework:

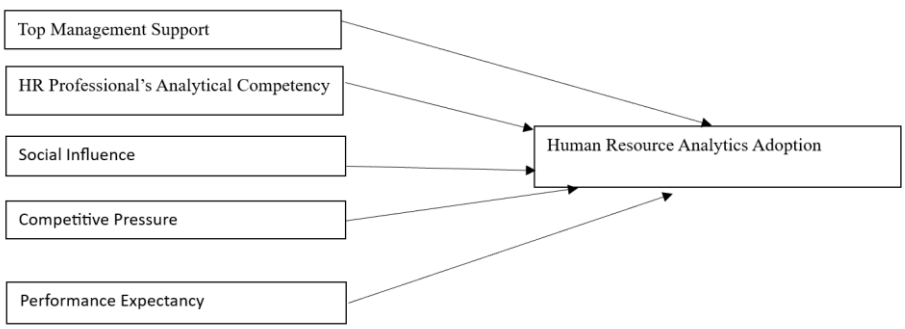


Figure:1

Research Methodology:

In this study, descriptive research design was used. Systematic sampling was engaged to gather the sample from the respondents. Data is collected from 450 HR Professionals working in IT companies in Delhi NCR region. Respondents are contacted through e-mail Id's and linkedIn platform. A "Likert scale" where 1= "Strongly Disagree" and 5= "Strongly Agree" was used to structure the questionnaire items.

In the present study, five factors ("*Top management Support", "HR Professional's Analytical Competencies", "Social Influence", "Competitive Pressure", "Performance Expectancy")* are taken as independent variables and "*HR analytics Adoption"* is taken as a dependent variable as proposed in the conceptual model. Data is collected through a questionnaire. For structuring the questionnaire, several scales are adapted. For "top management support and HR professional's analytical competency -Zhu and Engels (2014); social influence – Vargas(2015) & competitive pressure -Johnston and Warkentin (2010); Performance Expectancy-Davis (1989) and Chau (2001); HRA adoption- Vargas (2015)" are considered. Data was analysed by using SmartPLS v 4.1.1.2. Structural model and measurement model were the two stages of the study, followed by SEM process described by Anderson and Gerbing(1988). Both stages were performed by using SmartPLS SEM.

"Table 1: Demographic Profile of Respondents

Classification	Frequency	Percentage (%)
Gender		
Male	330	73.3%
Female	120	26.7%
Age		
18-24 years	112	24.9%
25-35 years	209	46.4%
36-45 years	76	16.9%
46 years and above	53	11.8%
Qualification		
B. Tech/ B.E.	99	22%
BBA	179	39.8%
MBA	118	26.2%
PGDBM	54	12%
Office Location		
Delhi	188	41.8%
Noida	153	34%
Gurugram	109	24.2%
Experience		
0-2 years	73	16.2%
3-5 years	173	38.4%
6-10 years	89	19.8%
11-15 years	61	13.6%
16years and above	54	12%"

Results:

Measurement Model

Reliability Analysis

Hair et al. (2020) recommend a minimum threshold of 0.60 for acceptable outer loadings. Upon careful evaluation, certain items were found to fall below this standard and were therefore excluded from the analysis. These items include one of adoption of HR analytics and other is of Social influence (Adop_3- 0.606, SI 3- 0.616). As the item loadings are slightly above threshold value but it affects the AVE, therefore researcher exclude these items.

Convergent Validity

The SmartPLS technique was utilized to calculate outer loadings, Average Variance Extracted (AVE), and Composite Reliability (CR) to assess convergent validity. According to Hair et al. (2020), convergent validity is confirmed when factor loadings exceed 0.60, CR values are above 0.70, and AVE scores are greater than 0.50. The results of this assessment are presented in following table.

"Table-2: Outer loadings, reliability analysis and AVE

Variables	Items	Factor Loadings	Cronbach Alpha	Composite Reliability	AVE
Top Management Support	TMS1 TMS2 TMS3	0.769 0.892 0.816	0.78	0.866	0.685
HR Professional's Analytical competencies	HPAC1 HPAC2 HPAC3	0.828 0.888 0.825	0.804	0.884	0.718
Social Influence	SI1 SI2 SI3	0.806 0.82 0.841	0.762	0.863	0.677
Competitive Pressure	CP1 CP2 CP3	0.882 0.88 0.767	0.798	0.882	0.713
Performance Expectancy	PE1 PE2 PE3	0.849 0.815 0.871	0.8	0.882	0.714
HRA adoption	Adop_HRA1 Adop_HRA2 Adop_HRA3	0.722 0.809 0.736	0.626	0.8	0.572"

Validity:

According to Fornell and Larcker (1981), the square root of AVE of the construct should be higher than the other construct. In Table-3, all the values are satisfied as per Fornell and Larcker (1981).(Fornell & Larcker, 1981)

"Table-3: Discriminant validity test (Fornell-Larcker results)

	Adop_HRA	CP	HPAC	PE	SI	TMS
Adop_HRA	0.757					
CP	0.501	0.845				
HPAC	0.418	0.218	0.847			
PE	0.473	0.482	0.39	0.845		
SI	0.546	0.784	0.282	0.516	0.823	
TMS	0.299	0.185	0.302	0.386	0.189	0.827"

Structural Equation Model

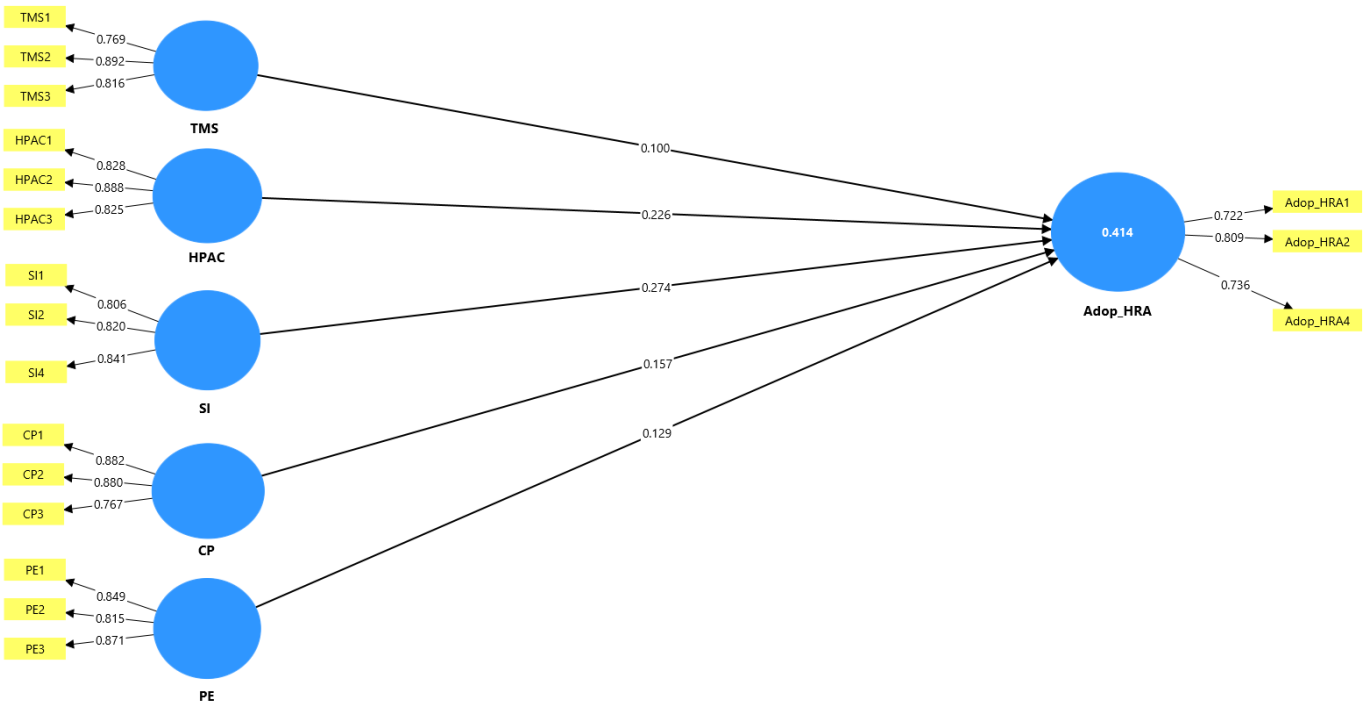
R Square

This benchmark plays a crucial role in determining the adequacy of the study's conceptual framework. As per Cohen's (1988) guideline, an R^2 value exceeding 0.26 (or 26%) is considered sufficient to indicate a meaningful level of explained variance. (Cohen, 1988).

Table-4: R Square Results

	R square
HRA adoption	0.414

Hypothesis Results



"Table: Hypothesis Results

Hypothesis	T-value	P-value	Results
Top Management Support (TMS) -> HRA Adoption (Adop_HRA)	2.399	.016	Supported
HR Professional's Analytical Competency (HPAC) -> HRA Adoption (Adop_HRA)	4.513	.000	Supported
Social Influence (SI) -> HRA Adoption (Adop_HRA)	3.910	.000	Supported
Competitive Pressure (CP) -> HRA Adoption (Adop_HRA)	2.504	.012	Supported
Performance Expectancy (PE) -> HRA Adoption (Adop_HRA)	2.166	.030	Supported"

All the hypotheses are supported as the p-value and t-value are significant. Threshold for p-values <.05 and t-values.1.96.(Hair et al., 2014)

Discussion

Top Management support has a significant positive influence on HRA adoption. HRA adoption is influenced by the managers and leadership support. Thus the results are supported by (Troshani & Jerram, 2010).

As the result suggested, Social Influence and Performance Expectancy are also positively influenced adoption of Human resource analytics. Thus, the results are constant with the findings of (Ghulam Muhammad, 2023) and (Kalvakolanu, 2023).

Additionally, HR analytics adoption is also influenced by competitive pressure (to seek competitive advantage over others at workplace) and analytical skills of HR Professionals. Findings are constant as suggested by (Alaskar, 2021) and (Marler & Boudreau, 2017b)

Conclusion

HR analytics offers significant potential for organizations aiming to strengthen their competitive edge in the current business landscape. Nevertheless, its adoption remains relatively low. This study highlights five crucial elements that influence the implementation of HR analytics among HR professionals: support from top management, the analytical skills of HR personnel, perceived usefulness, external competitive forces, and social influence. By focusing on these factors, organizations can develop targeted strategies to encourage the use of HR analytics, such as enhancing employee capabilities, fostering a culture of data-driven decision-making, and ensuring strong leadership backing.

To conclude, recognizing and addressing these determinants can support a more effective and widespread adoption of HR analytics, ultimately enabling organizations to make more informed decisions and drive long-term success.

Limitations and Future Scope

The present study has several limitations and forthcoming scope:

- The sample size is limited to 450 respondents from the Delhi NCR region. Only HR professionals from IT companies were included in this research, which may limit the generalizability of the findings to other regions or industries. Future researchers may consider exploring other sectors.
- This study focuses on five factors influencing the adoption of HR analytics. Other potentially relevant factors, such as data availability and general self-efficacy, were not explored and can be considered in future research.
- The study did not examine any mediating or moderating effects. Future studies could incorporate these aspects to gain deeper insights.
- As this is a cross-sectional study, future research may adopt a longitudinal approach to observe changes over time.
- Comparative studies could also be conducted to examine the application of HR analytics across different sectors.

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