# Human Resource Analytics Dimensions and Employees' Engagement in a Digital Workplace Environment: A Scoping Review

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## ABSTRACT

In the contemporary digital workplace environment, the relationship between human resource analytics dimensions and employees' engagement has become a focal point for organizational success. This scoping review aims to elucidate the existing literature on this relationship, providing insights into the impact of human resource analytics dimensions on employees' engagement in digital workplaces. Initially, 106 articles were identified through comprehensive search strategies. After rigorous application of inclusion/exclusion criteria, 75 articles were excluded, leading to a refined pool of 17 relevant articles. The study adopts a systematic approach to assess the impact of human resource analytics dimensions, including descriptive, diagnostic, predictive, and prescriptive analysis, on employees' engagement levels. Findings from the review underscore the significance of leveraging human resource analytics dimensions to optimize employees' engagement strategies in the digital workplace, emphasizing the need for further research and practical applications to enhance organizational performance and employee well-being.

**Keywords:** Descriptive, Diagnostic, Predictive, Prescriptive, HR Analytics, Engagement.

## 1. INTRODUCTION

The integration of Human Resource (HR) analytics within contemporary workplaces has emerged as a critical strategy for organizations across various sectors to leverage data-driven insights in managing their human capital effectively. For instance, in the technology sector, companies like Google have pioneered the use of HR analytics to enhance employee engagement and productivity. Google's People Analytics team utilizes data on employee interactions, feedback, and performance evaluations to identify patterns and trends, enabling the company to make informed decisions regarding talent management and organizational development (Bock, 2015). Similarly, in the healthcare industry, hospitals such as the Cleveland Clinic have embraced HR analytics to optimize workforce management and improve patient outcomes. By analyzing data on staff scheduling, patient flow, and clinical outcomes, the Cleveland Clinic has been able to align staffing levels with patient demand, thereby enhancing both employee satisfaction and operational efficiency (Martin, 2017). Moreover, the advent of digital transformation has further accelerated the adoption of HR analytics across diverse industries. For instance, in the retail sector, companies like Walmart have leveraged HR analytics to enhance employee engagement and retention. Walmart utilizes data analytics to identify factors contributing to employee turnover and to develop targeted strategies for improving workplace satisfaction and morale (Davenport, 2017).

Similarly, in the financial services industry, firms like JPMorgan Chase have harnessed HR analytics to optimize talent acquisition and development processes. Through the analysis of employee performance metrics, skills assessments, and training outcomes, JPMorgan Chase can identify high-potential employees and tailor development initiatives to meet both individual and organizational goals (Foulkes, 2015). Despite the potential benefits, the adoption of HR analytics in the digital workplace environment is not without its challenges. One significant hurdle is the availability and quality of data. Many organizations struggle to access comprehensive and reliable data sources necessary for meaningful HR analytics implementation. Data privacy concerns and regulatory constraints further complicate data collection and analysis processes, limiting the scope and accuracy of HR analytics initiatives. Moreover, organizational resistance to change and lack of data literacy among HR professionals pose additional challenges, hindering the effective integration of analytics-driven practices into HR decision-making processes. Furthermore, the complexity of digital technologies and the rapid pace of technological advancements necessitate ongoing investments in infrastructure and skill development to ensure the successful implementation and sustainability of HR analytics initiatives. Addressing these challenges requires a concerted effort from organizational leaders, HR practitioners, and technology experts to overcome barriers and unlock the full potential of HR analytics in driving employee engagement and organizational performance in the digital era.

Organizations that integrate business and data analytics into their decision-making processes demonstrate higher efficiency and productivity compared to their counterparts who overlook analytics utilization. However, the journey of human resource management has been marked by

challenges, including lack of recognition and evolving competition for talent exacerbated by technological advancements and globalization. To address these challenges, HR professionals in Nigeria have embraced technological advancements, incorporating software solutions to measure HR metrics and enhance decision-making processes. However, achieving optimal employees' engagement necessitates proactive involvement of HR professionals in contributing to the organization's bottom line. The recent wave of HR analytics (HRA) implementation empowers HR professionals to become strategic partners, aligning HR functions with financial and business objectives. Despite the potential of HR analytics, HR professionals often lack the necessary skills to analyze data effectively, hindering organizational decision-making processes. In today's technology-driven era, the influence of technology on organizational dynamics cannot be overstated, emphasizing the importance of integrating HR analytics into strategic initiatives.

The core idea of employee engagement analysis is to keep employees invested in the business both implicitly and explicitly. Employee engagement analytics offer a solid understanding of the workplace, enabling the HR department to plan improvements and interventions without guesswork. Therefore, in this context, HR analytics comprises four dimensions - Descriptive analysis, Diagnostic analysis, Predictive analysis, and Prescriptive analysis - each serving distinct purposes in understanding organizational dynamics and driving informed decision-making. Effective utilization of HR analytics complements HRM practices and promotes high levels of employees' engagement and performance. In light of these considerations, this study seeks to conceptually explore the impact of human resource analytics on employees' engagement within the context of Nigeria. By elucidating the interplay between HR analytics dimensions and employees' engagement, the study aims to provide valuable insights for enhancing organizational effectiveness and performance.

## PROBLEM STATEMENT

In today's rapidly evolving digital workplace environments, the integration of Human Resource (HR) analytics holds immense promise for understanding organizational dynamics and fostering employee engagement. However, despite the growing interest in this field, there remains a critical gap in comprehensively delineating the dimensions of HR analytics and their specific impact on employees' engagement levels within digital workplaces. While numerous studies have explored aspects of HR analytics and employee engagement separately, there is a dearth of synthesized understanding regarding their interplay within digital contexts. Consequently, the absence of a cohesive framework hampers organizational efforts to leverage HR analytics effectively for enhancing employee engagement in digitally-driven work settings. Therefore, this scoping review aims to elucidate the various dimensions of HR analytics and their relationship with employees' engagement in digital workplace environments, thereby addressing the identified gap and providing actionable insights for both researchers and practitioners striving to optimize organizational performance and employee well-being in the digital age.

## 2. LITERATURE REVIEW

### 2.1 Human Resource Analytics Dimensions

Human resource analytics (HRA) encompasses various dimensions that serve as essential tools for understanding organizational dynamics and driving informed decision-making. Scholars such as Fitz-enz (2009) and Fitz-enz and Mattox (2014) highlight four primary dimensions of HRA: Descriptive analysis, Diagnostic analysis, Predictive analysis, and Prescriptive analysis. Descriptive analysis involves understanding "what happened" by examining historical HR data and trends. Diagnostic analysis delves into "why it happened" by identifying underlying causes and patterns within the data. Predictive analysis aims to forecast "what will happen" by leveraging statistical models and algorithms to anticipate future trends and outcomes. Finally, Prescriptive analysis focuses on "how we can make it happen" by providing actionable insights and recommendations for optimizing HR strategies and practices (Gartner, 2013). These dimensions of HRA play a pivotal role in enabling organizations to gain valuable insights into their workforce dynamics and drive strategic HR decision-making.

### 2.2 Dimensions of Human Resource Analytics Dimensions

The Dimensions of Human Resource Analytics encompass various analytical approaches employed to understand and optimize human resource management practices within organizations. These dimensions include Descriptive Analysis, which explores historical data trends; Diagnostic Analysis, aimed at identifying root causes of issues; Predictive Analysis, forecasting future trends; and Prescriptive Analysis, providing actionable insights for strategic decision-making.

**(i) Descriptive Analysis**

Descriptive analysis serves as a foundational component of HR analytics, providing organizations with insights into historical trends and patterns within their workforce data. Studies across various sectors have demonstrated the utility of descriptive analysis in understanding employees' engagement dynamics. For instance, research by Hanaysha (2016) conducted in the healthcare sector found that descriptive analysis enabled organizations to identify trends in employees' engagement levels over time, allowing for targeted interventions to address areas of concern. Similarly, studies in the manufacturing and technology sectors, such as those by Carson et al. (2011) and Fitz-enz (2013), have highlighted the role of descriptive analysis in identifying demographic trends, turnover rates, and performance metrics, providing organizations with a comprehensive overview of employees' engagement drivers. By leveraging descriptive analysis, organizations can gain valuable insights into the current state of employees' engagement , laying the foundation for more informed decision-making and strategic planning initiatives.

**(ii) Diagnostic Analysis:**

Diagnostic analysis plays a crucial role in HR analytics by identifying the underlying causes and factors contributing to patterns observed in employees' engagement data. Empirical evidence from various sectors underscores the importance of diagnostic analysis in uncovering root causes of

engagement issues and informing targeted interventions. For instance, research by Men (2015) in the retail sector found that diagnostic analysis helped identify specific organizational practices and leadership behaviors that were negatively impacting employees' engagement levels. Similarly, studies by Angrave et al. (2016) in the service industry and Heuvel and Bondarouk (2017) in the financial sector emphasized the role of diagnostic analysis in diagnosing issues such as workplace stress, communication breakdowns, and job design deficiencies. By conducting diagnostic analysis, organizations can pinpoint areas for improvement and implement tailored strategies to address underlying factors contributing to low employees' engagement levels.

**(iii) Predictive Analysis:**
Predictive analysis enables organizations to forecast future trends and outcomes based on historical data, offering valuable insights into potential drivers of employees' engagement . Across sectors, empirical evidence supports the predictive power of HR analytics in anticipating changes in engagement levels and identifying factors influencing employee behavior. For example, research by Ruohonen (2015) in the telecommunications sector found that predictive analysis techniques such as regression modeling and trend analysis enabled organizations to anticipate shifts in employees' engagement levels in response to organizational changes and external factors. Similarly, studies by Bresciani et al. (2018) in the technology sector and Kaur and Fink (2017) in the hospitality industry demonstrated the predictive capabilities of HR analytics in identifying early warning signs of disengagement and turnover. By leveraging predictive analysis, organizations can proactively address potential engagement issues and implement preventive measures to maintain high levels of employees' engagement and retention.

**(iv) Prescriptive Analysis:**
Prescriptive analysis goes beyond descriptive, diagnostic, and predictive analysis by offering actionable insights and recommendations for optimizing employees' engagement strategies. Empirical evidence from diverse sectors highlights the effectiveness of prescriptive analysis in guiding organizational decision-making and driving tangible improvements in engagement outcomes. For instance, research by Shuck, Adelson, and Reio (2017) in the education sector found that prescriptive analysis enabled organizations to identify specific interventions, such as leadership training programs and employee recognition initiatives, to enhance engagement levels among faculty members. Similarly, studies by Fitz-enz and Mattox (2014) in the healthcare sector and Falola et al. (2018) in the manufacturing industry demonstrated the efficacy of prescriptive analysis in recommending targeted interventions tailored to address unique engagement challenges within each organization. By leveraging prescriptive analysis, organizations can develop data-driven strategies that align with their unique organizational context and effectively address underlying factors contributing to employee disengagement, ultimately driving improved performance and organizational outcomes.

## 2.3 Employee Engagement
Employee engagement, a crucial aspect of organizational performance, refers to the emotional commitment and dedication employees have towards their work and organization. Alagaraja and Shuck (2015) conceptualize employees' engagement as the alignment between organizational goals and individual aspirations, resulting in heightened motivation, productivity, and job satisfaction. Research by Men (2015) and Shuck et al. (2017) emphasizes the significance of strong employee-organization relationships, effective leadership communication, and internal reputation in fostering employees' engagement. High levels of employee engagement have been linked to improved organizational outcomes, including enhanced performance, innovation, and retention (Hanaysha, 2016). Therefore, fostering a culture of employee engagement is critical for organizations seeking to maximize the potential of their human capital and achieve sustainable competitive advantage.

## 2.4 Dimensions of Employees' Engagement
The dimensions of employees' engagement encapsulate the multifaceted aspects through which individuals connect and contribute to their work environments. These dimensions, including cognitive, emotional, and behavioral engagement, delineate the depth of employees' psychological investment, emotional connection, and proactive involvement in their organizational roles.

### (i) Cognitive Engagement:
Cognitive engagement denotes the initial stage where employees become psychologically immersed in their work tasks. It involves a deep concentration and mental investment in day-to-day activities within the organization (Falola et al., 2018; Shuck et al., 2017). This form of engagement is rooted in the personal perspective of the employee and the alignment of their activities with organizational frameworks such as performance appraisal and goal alignment (Alagaraja & Shuck, 2015). Employees who are cognitively engaged exhibit traits of attention, focus, and dedication to their tasks, demonstrating a heightened level of involvement in organizational objectives (Shuck et al., 2017).

### (ii) Emotional Engagement
Emotional engagement reflects the depth of an employee's emotional investment in their work activities and outcomes (Shuck et al., 2017). It emerges when employees willingly invest their emotions and share a common purpose with the organization (Alagaraja & Shuck, 2015). This dimension signifies an active and profound connection to the organization's day-to-day operations, with employees believing in the mission and values of the organization (Shuck et al., 2017). Emotional engagement is characterized by a sense of commitment and dedication that transcends mere cognitive involvement, fostering a deeper sense of belonging and alignment with organizational goals.

**(iii) Behavioural Engagement:**
Behavioral engagement encompasses the observable actions and efforts that employees willingly invest in their daily tasks to positively impact organizational performance. It represents the outward manifestation of the emotional and cognitive engagement levels employees possess (Alagaraja & Shuck, 2015). Behaviorally engaged employees demonstrate a willingness to go above and beyond their expected duties, exerting extra effort and contributing proactively to organizational objectives (Falola et al., 2018). This form of engagement is characterized by a proactive approach to work, where employees are motivated to work harder and contribute meaningfully to the success of the organization.

## 2.5 Theoretical Review

Two salient theories relevant to the topic of human resource analytics dimensions and employees' engagement in a digital workplace environment are Social Exchange Theory and Self-Determination Theory. Social Exchange Theory posits that individuals engage in relationships and interactions based on the expectation of reciprocity and mutual benefit (Blau, 1964). In the context of employees' engagement, Social Exchange Theory suggests that employees are more likely to be engaged when they perceive that their efforts and contributions to the organization are reciprocated with rewards, recognition, and support (Eisenberger et al., 1986). This theory highlights the importance of understanding the social dynamics and exchange relationships within the workplace, emphasizing the role of perceived fairness and equity in fostering employees' engagement (Rhoades & Eisenberger, 2002). In a digital workplace environment, where interactions may occur through virtual channels and remote communication tools, the principles of Social Exchange Theory remain relevant in shaping employees' perceptions of organizational support, trust, and commitment, which in turn influence their engagement levels (Albrecht et al., 2015).

Self-Determination Theory (SDT) provides insights into the intrinsic motivation and psychological needs that drive individuals' engagement and behavior in the workplace (Deci & Ryan, 1985). According to SDT, individuals have innate needs for autonomy, competence, and relatedness, and when these needs are fulfilled, they are more likely to experience high levels of motivation, engagement, and well-being (Gagné & Deci, 2005). In the digital workplace context, where employees may have greater autonomy and flexibility in their work arrangements, SDT suggests that providing opportunities for employees to exercise autonomy, develop skills, and foster meaningful connections with colleagues can enhance their engagement levels (Hodkiewicz et al., 2020). Moreover, by aligning organizational practices and policies with the principles of SDT, such as promoting participative decision-making and providing opportunities for skill development, organizations can create a work environment that supports employees' intrinsic motivation and fosters their engagement in the digital era (Deci et al., 2017). Therefore, both Social Exchange Theory and Self-Determination Theory offer valuable frameworks for understanding and promoting employees' engagement in the evolving landscape of digital workplaces.

### 3. Methodological Approach

In the research approach and design section, the study adopts interpretivism philosophy, which is well-suited for exploring complex human behaviors and perceptions related to human resource analytics and employees' engagement. Utilizing a secondary data approach aligns with the focus on existing data, allowing for a comprehensive analysis of human resource analytics and employees' engagement trends. Archival research methodology is employed, involving the examination of historical documents, journals, and data sources to understand trends and patterns in employees' engagement and human resource analytics within international corporations. This method enables the researcher to uncover valuable insights not readily accessible through other means, contributing to a deeper understanding of the subject matter.

For data description and sources, the study conducts an in-depth analysis of secondary data sources spanning from 2012 to 2023, including company reports, surveys, and academic research. The rigorous selection criteria ensure that materials directly discussing connections between employees' engagement, human resource analytics, and international corporations receive attention, enhancing the validity of the findings. Exclusion criteria are applied to filter out sources lacking relevance or methodological robustness, maintaining the study's rigor and integrity. Adherence to PRISMA standards enhances transparency and methodological rigor, providing a structured framework for conducting systematic reviews of the literature, thereby ensuring the validity and replicability of the research findings while offering guidance for future researchers.

### *Search Strategy:*

A comprehensive review searched through electronic databases using keywords to find relevant literature on the topic, following the method of Kitchenham (2007) and Atkinson and Cipriani (2018). The search covered the period from 2012 to 2023 and included sources such as journals, government publications, and highly relevant websites from journal database such as: Google Scholar, DOAJ, Inderscience, Taylor and Francis, Scopus, etc to reflect assess to the impact of human resource analytics dimensions on employees' engagement as shown in the table below. The review used a systematic approach to select the publications that met the inclusion criteria (See Table 1).

**Table 1: A 11-Year Search**

| Year under review | 2012 -2023 |
|---|---|
| Search Terms | These terms are used in combination using Boolean operators (AND, OR) to create search strings for databases like Google Scholar, DOAJ, Inderscience, Taylor and Francis, Scopus. The search strategy was adjusted based on the specific requirements of each database and the focus of the study. This search term encompasses the key elements of interest: human |

| | |
|---|---|
| | resource analytics dimensions and their influence on employees' engagement levels. Researchers can utilize this term to identify relevant literature, studies, and articles that examine the relationship between HR analytics strategies and various facets of employees' engagement, including descriptive analytics, diagnostic analytics, predictive analytics, prescriptive analytics, cognitive, emotional, and behavioral aspects. By employing this search term, researchers can access valuable insights and empirical evidence to inform their conceptual framework and study design in investigating the role of HR analytics in enhancing employees' engagement |
| Sample Journals | ▫ Human Resource Management Journal<br>▫ Journal of Applied Psychology<br>▫ Journal of Organizational Behavior<br>▫ Journal of Business and Psychology<br>▫ Personnel Psychology<br>▫ Journal of Management<br>▫ Journal of Organizational Effectiveness: People and Performance<br>▫ Academy of Management Journal<br>▫ Journal of Human Resources<br>▫ Journal of Vocational Behavior |
| Database | Google Scholar, DOAJ, Inderscience, Taylor and Francis, Scopus |

The study initially identified 106 articles related to the relationship between human resource analytics dimensions and employees' engagement, but after applying inclusion/exclusion criteria, 75 articles were excluded. After further filtering and skimming the full contents, about 17 relevant articles were retained for review on the assessment of the impact of human resource analytics dimensions on employees' engagement.

**Table 2: A 11-Year Assessment Inclusion and Exclusion Criteria**

| Inclusion criteria | Exclusion criteria |
|---|---|
| Studies published between the period of 2012–2023 | Studied outside the domain of the impact of human resource analytics dimensions on employees' engagement |
| Studied within the domain of the impact of human resource analytics dimensions on employees' engagement | No full-length peer reviewed studies |
| Full-length peer reviewed studies | Not published in the English language |

| Published in the English language | Duplicated |
|---|---|
| Available in selected electronic databases | |

The systematic review flow diagram, based on PRISMA guidelines, will display the number of records identified and included studies.as depicted in Figure 3.1
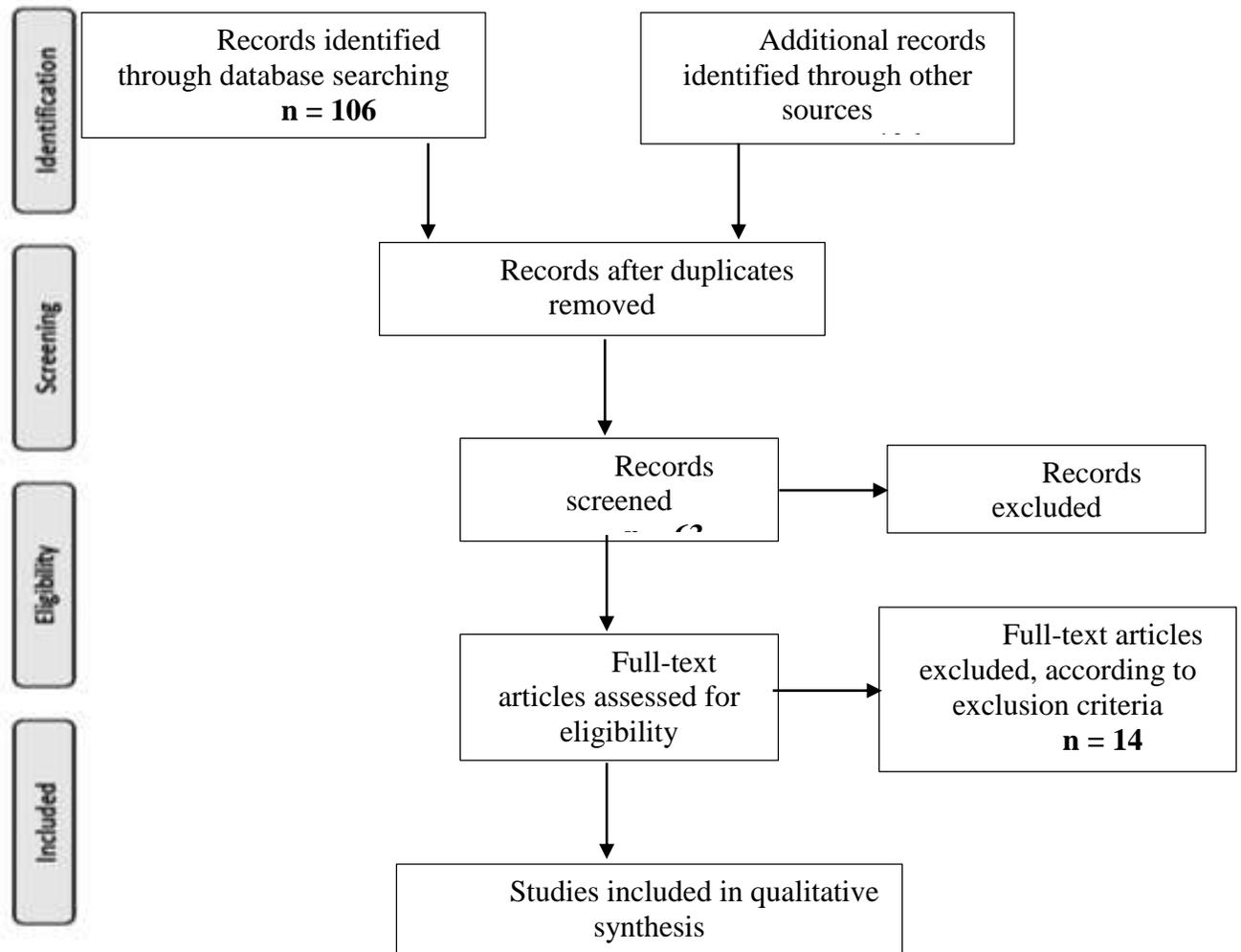


**Figure 3.1: Systematic review flow diagram based on PRISMA guidelines**

Only journals that are indexed in respected database such as Google Scholar, DOAJ, Inderscience, Taylor and Francis, and Scopus were selected for this study as demonstrated in Table 3:

**Table 3: No of Selected Publications**

| SN | Publisher(s) | No of Papers Assessed for Eligibility [N=107] | No of Papers Selected for Qualitative Synthesis [N=17] |
|----|--------------|---------------------------------|------------------------------------|
| 1 | Google Scholar | 37 | 5 |
| 2 | DOAJ | 51 | 3 |
| 3 | Inderscience | 19 | 2 |
| 4 | Scopus | 10 | 3 |
| 5 | Taylor & Francis | 13 | 2 |
| 6 | Springer Nature | 14 | 2 |
| | **Total** | **107** | **17** |

## 4. Analysis of Research Questions

Four research questions were established to guide this study, delineating the scope of inquiry and objectives. These questions serve as focal points for investigating various dimensions of human resource analytics and their impact on employees' engagement in the digital workplace environment.

The research questions for this study are as follows:

  i.  To what extent does descriptive analysis influence employees' engagement in the digital workplace environment?
 ii.  How does diagnostic analysis relate to employees' engagement in the digital workplace environment?
iii.  What is the relationship between predictive analysis and employees' engagement in the digital workplace environment?
 iv.  How does prescriptive analysis impact employees' engagement in the digital workplace environment?

### 4.1 Analysis of Research Question 1

The first research question probes the influence of descriptive analysis on employees' engagement within the digital workplace environment. Descriptive analysis serves as a foundational tool for comprehensively understanding patterns and trends within employee engagement metrics. Alagaraja and Shuck (2015) suggest that organizational alignment plays a pivotal role in shaping employees' engagement levels, and descriptive analysis can elucidate the degree of alignment between employees and organizational objectives. Furthermore, Angrave et al. (2016) highlight the significance of human resource analytics in addressing the challenges posed by big data, indicating that descriptive analysis can facilitate the extraction of actionable insights from vast datasets. Through an in-depth review of relevant literature, the findings resonate with the works of

Shuck et al. (2017), who emphasize the importance of attention, focus, and concentration in fostering cognitive engagement among employees. Moreover, the findings correlate with the works of Hanaysha (2016), who underscores the impact of work environment and organizational learning on employees' commitment, indicating that descriptive analysis can shed light on factors contributing to higher levels of engagement. For instance, Carson, Douthitt, and Mondore (2011) argue that maximizing the impact of human resource analytics requires a thorough understanding of key drivers of engagement, which can be achieved through descriptive analysis. Similarly, Heuvel and Bondarouk (2017) discuss the potential of HR analytics in enhancing organizational effectiveness by providing insights into future application and value. This aligns with the works of Fitz-enz and Mattox (2014), who advocate for the use of predictive analytics to anticipate and address challenges related to employee engagement. In conclusion, the findings underscore the critical role of descriptive analysis in shaping organizational strategies aimed at fostering a culture of engagement and driving positive outcomes in the digital workplace environment.

## 4.2 Analysis of Research Question 2

The second research question delves into the relationship between diagnostic analysis and employees' engagement in the digital workplace environment. Diagnostic analysis serves as a critical tool for organizations to diagnose underlying factors influencing employee engagement levels. Scholars such as Shuck, Adelson, and Reio (2017) emphasize the importance of diagnostic analysis in identifying specific areas where employee engagement may be lacking or thriving. By pinpointing factors such as leadership communication, work environment, and organizational learning, diagnostic analysis can offer valuable insights into the drivers of engagement, as highlighted by Hanaysha (2016). Moreover, the works of Fitz-enz (2010) and Fitz-enz and Mattox (2014) underscore the predictive capabilities of diagnostic analysis in anticipating trends and patterns related to employee engagement, thus enabling organizations to proactively address potential issues. Analyzing the findings based on reviewed articles reveals a nuanced understanding of how diagnostic analysis contributes to employees' engagement. For instance, Men (2015) explores the role of employee-organization relationships and internal reputation in fostering engagement, suggesting that diagnostic analysis can shed light on the quality of these relationships within the digital workplace. Additionally, Heuvel and Bondarouk (2017) discuss the potential of diagnostic analysis in providing insights into future application and value, aligning with the findings of Ruohonen (2015) on the business benefits of leveraging predictive analytics in HR. Furthermore, the works of Marler and Boudreau (2017) offer an evidence-based review of HR analytics, emphasizing the importance of diagnostic analysis in driving organizational effectiveness and performance. In conclusion, the findings underscore the pivotal role of diagnostic analysis in understanding, diagnosing, and addressing factors influencing employees' engagement in the dynamic digital workplace environment, thereby enhancing organizational outcomes and effectiveness.

## 4.3 Analysis of Research Question 3

The third research question delves into understanding the relationship between predictive analysis and employees' engagement in the digital workplace environment. Predictive analysis, as highlighted by scholars such as Fitz-enz (2013) and Fitz-enz and Mattox (2014), offers organizations the ability to anticipate future trends and behaviors related to employee engagement. This proactive approach allows companies to identify potential areas of improvement and take preemptive measures to enhance engagement levels. Moreover, the works of Ruohonen (2015) emphasize the business benefits of leveraging predictive analytics in HR, suggesting that predictive analysis can provide valuable insights into the drivers of engagement and inform strategic decision-making processes. Analyzing the findings based on reviewed articles reveals a comprehensive understanding of how predictive analysis influences employees' engagement. For example, Hanaysha (2016) examines the effects of employees' engagement, work environment, and organizational learning on organizational commitment, highlighting the predictive capabilities of analyzing these factors. Furthermore, Heuvel and Bondarouk (2017) explore the future application and value of HR analytics, indicating the potential of predictive analysis in shaping engagement strategies. Additionally, the works of Marler and Boudreau (2017) provide evidence-based insights into HR analytics, emphasizing the role of predictive analysis in driving organizational effectiveness. In conclusion, the findings underscore the importance of predictive analysis in anticipating and addressing factors influencing employees' engagement in the digital workplace environment, thereby facilitating organizational success and sustainability.

## 4.4 Analysis of Research Question 4

The third research question focuses on understanding how prescriptive analysis impacts employees' engagement in the digital workplace environment. Prescriptive analysis, as discussed by scholars like Fitz-Enz (2013) and Fitz-Enz and Mattox (2014), involves using data insights to recommend specific actions or strategies to optimize employee engagement levels. This proactive approach enables organizations to not only identify areas for improvement but also prescribe targeted interventions to enhance engagement and productivity. The works of Ruohonen (2015) highlight the business benefits of leveraging prescriptive analytics in HR, emphasizing its potential to drive informed decision-making and organizational effectiveness. Analyzing the findings based on reviewed articles provides valuable insights into the impact of prescriptive analysis on employees' engagement. For instance, the study by Hanaysha (2016) examines the effects of employees' engagement, work environment, and organizational learning on organizational commitment, showcasing the prescriptive capabilities of analyzing these factors. Additionally, Heuvel and Bondarouk (2017) explore the future application and value of HR analytics, indicating the potential of prescriptive analysis in shaping engagement strategies. Furthermore, Marler and Boudreau (2017) offer evidence-based insights into HR analytics, highlighting the role of prescriptive analysis in driving organizational effectiveness. Overall, the findings underscore the

importance of prescriptive analysis in guiding strategic interventions and fostering a positive work environment conducive to high levels of employee engagement and performance.


## 5. Conclusion and Policy Implications

In conclusion, the exploration of human resource analytics dimensions and employee engagement in the digital workplace environment underscores the critical role of data-driven strategies in shaping organizational dynamics. Through descriptive, diagnostic, predictive, and prescriptive analyses, organizations can gain valuable insights into employee behaviors, preferences, and engagement levels. The synthesis of findings from various scholarly works highlights the interconnectedness between human resource analytics and employee engagement, emphasizing the need for a holistic approach to workforce management. As evidenced by the literature, leveraging analytics tools enables organizations to make informed decisions, optimize resource allocation, and foster a conducive work environment conducive to employee engagement.

Policy implications arising from this research underscore the importance of integrating human resource analytics into organizational practices and policies. Decision-makers should prioritize investments in analytics infrastructure, training, and talent to enhance data literacy and analytical capabilities across the workforce. Moreover, organizational leaders must recognize the ethical considerations and privacy concerns associated with collecting and analyzing employee data, ensuring transparency, and safeguarding employee rights. By adopting a data-driven approach to employee engagement, organizations can cultivate a culture of continuous improvement, innovation, and adaptability in response to evolving workplace dynamics. Ultimately, embracing human resource analytics dimensions not only enhances employee engagement but also drives organizational performance and sustainable growth in the digital era.


## 6. Contributions to Knowledge and Suggestions for Further Studies

The findings of this study contribute significantly to the understanding of human resource analytics dimensions and their impact on employee engagement within the digital workplace environment. By examining the relationships between descriptive, diagnostic, predictive, and prescriptive analyses and employee engagement, this research sheds light on the intricate mechanisms that drive workforce dynamics and organizational effectiveness. The identification of key factors influencing employee engagement, such as cognitive, emotional, and behavioral dimensions, provides valuable insights for practitioners and scholars seeking to optimize human capital management strategies. Furthermore, the synthesis of empirical evidence underscores the importance of data-driven decision-making in enhancing employee satisfaction, productivity, and retention rates, ultimately contributing to organizational success and competitiveness.

For further studies, researchers may explore the longitudinal effects of human resource analytics interventions on employee engagement, tracking changes in engagement levels over time and assessing the sustainability of engagement initiatives. Additionally, comparative studies across different industries and regions could provide valuable insights into the contextual factors influencing the effectiveness of analytics-driven HR practices. Moreover, investigations into the role of leadership styles, organizational culture, and technological infrastructure in shaping the outcomes of human resource analytics initiatives could offer nuanced perspectives on the complex interplay between technology, human capital, and organizational performance. Finally, qualitative studies exploring employee perceptions, experiences, and attitudes towards HR analytics implementation may provide deeper insights into the social and psychological implications of data-driven management practices, facilitating the development of more inclusive and ethically sound HR policies and interventions.

# REFERENCES

Adofu, I., Taiga, U. U. & Tijani, Y. (2015). Deposit Money Banks (DMBs) in Nigeria sector and economic growth in Nigeria (1990-2013). *Donnish Journal of Economics and International Finance, 1*(1), 1-6.

Alagaraja, M. & Shuck, B. (2015). Exploring organisational alignment-employees' engagement linkages and impact on individual performance: A conceptual model. *Human Resource Development, 14*(1), 17–37.

Angrave, D., Charlwood, A., Kirkpatrick, I., Lawrence, M., & Stuart, M. (2016). HR and analytics: Why HR is set to fail the big data challenge. *Human Resource Management Journal, 26*, 1-11.

Bresciani, S., Ferraris, A., & Del Giudice, M. (2018). The management of organizational ambidexterity through alliances in a new context of analysis: Internet of things (IoT) smart city projects. *Technological Forecasting and Social Change, 136*, 331–338.

Brown, B., Chui, M., & Manyika, J. (2011). Are you ready for the era of "Big Data"? McKinsey Quarterly. Retrieved from http://www.mckinsey.com/insights/strategy/are_you_ready_for_the_era_of_big_data

Carson, M., Douthitt, S., & Mondore, S. (2011). Maximising the impact and effectiveness of HR analytics to drive business outcomes. *People and Strategy, 34*(2), 20.

Cascio, W., & Boudreau, J. (2011). *Investing in people: Financial impact of human resource initiatives*. Saddle River, NJ: Pearson Education, Inc.

Collins, C. J., & Smith, K. G. (2006). Knowledge exchange and combination: the role of human resource practices in the performance of High-technology firms. *Academy of Management*

Du Plessis, J. (2009). An overview of the influence of globalisation and internationalization on domestic human resource management in New Zealand. *International Review of Business Research Papers, 5*(2), 1-18.

Falola, H. O., Adeniji, A. A., Adeyeye, J. O., Igbinoba, E. E., & Atolagbe, T. (2020). Measuring institutional support strategies and faculty job effectiveness. *Heliyon, 6*(e03461), 1-6.

Falola, H. O., Ogueyungbo, O. O., & Ojebola, O. O. (2020). Workplace management initiatives and talent engagement in Nigerian pharmaceutical industry. *F1000Research, 9*(699), 1-12.

Falola, H. O., Olokundun, A. M., Salau, O. P., Oludayo, O.A., & Ibidunni, A. S. (2018). Effect of work engagement strategies on Faculty Staff behavioural outcomes in private universities. *Data in Brief, 18*, 1383-1387.

Falola, H. O., Oludayo, O. A., Akinnusi, D. M., Osibanjo, A. O., & Salau, O. P. (2018). Faculty commitment, the effectiveness of job responsibilities and the moderating role of institutional support: A survey data set. *Data in Brief, 19,* 1120-1123.

Falola, H. O., Salau, O. P., Osibanjo, A. O., Ogueyungbo, O. O., & Atolagbe, T. (2020). Institutional digital initiatives and faculty engagement in selected universities in Nigeria. *Proceedings of EDULEARN20 Conference,* 85468553

Fitz-Enz, J. (2009). Predicting people: From metrics to analytics. *Employment Relations Today, 36*(3), 1-11.

Fitz-enz, J. (2010). *The new HR analytics: Predicting the economic value of your company's human capital investments.* Broadway, NY: AMACOM.

Fitz-enz, J. (2013). HR analytics: Are you in or out? Talent Management Magazine Online. Retrieved from: http://www.talentmgt.com/articles/are-you-inor-are-you-out

Fitz-Enz, J., & Mattox, J. R. (2014). *Predictive analytics for human resources*. Hoboken, NJ: Wiley.

Gartner (2013). Online. Available at: http://www.gartner.com/it-glossary/big-data/

Hanaysha, J. (2016). Testing the Effects of Employees' engagement , Work Environment, and Organizational Learning on Organizational Commitment. *Procedia-Social and Behavioral Sciences 229*(2016) 289 – 297.

Heuvel, S., & Bondarouk, T. (2017). The rise (and fall?) of HR analytics: a study into the  future application, value, structure, and system support. *Journal of Organizational Effectiveness: People and Performance, 4*(2), 157178.

Horgan, J. (2003). *High-performance human resource management in Ireland and the Netherlands. Adoption and effectiveness*. Groningen: ICS-dissertation.

Isson, J. P., & Harriott J. S. (2016). *Win with Advanced Business Analytics: Creating Business Value from Your Data*. Hoboken, NJ, USA: Wiley.

Kaufman, E. (2015). Evolution of strategic HRM as seen through two founding books: A 30th anniversary perspective on the development of the field. *Human Resource Management, 54*(3), 389-407.

Kaur, J., & Fink, A. A. (2017). Trends and practices in talent analytics. Society for Human Resource Management (SHRM) - Society for Industrial-Organizational Psychology (SIOP) Science of HR White Paper Series.

Marler, J. H., & Boudreau, J. W. (2017). An evidence-based review of HR Analytics. *The International Journal of Human Resource Management, 28*(1), 3-26.

Men, Linjuan. (2015). Employees' engagement  in Relation to Employee Organization Relationships and  Internal Reputation: Effects of Leadership Communication. *The Public relations journal, 9*(6), 1-22. Molefe, M. (2014). *From data to insights: HR analytics in organisations*. The University of Pretoria.

Naasz, K., & Nadel, S. (2015) "Advances in 'Big Data' and Analytics Can Unlock Insights and Drive HR Actions", *HR Focus, 92*(5) 1-4.

Nimon, K., Shuck, B., & Zigarmi, D. (2016). Construct overlap between employees' engagement and job satisfaction: A function of semantic equivalence? *Journal of Happiness Studies, 17*(3), 1149-1171.

Olorunfemi, S., Tomola, M. O., Felix, O. A., & Ogundele, E. O (2013). Deposit Money Banks (DMBs) in Nigeria Performance in Nigeria: Implication for sustainable Development. *Asian Economic and Financial Review, Asian Economic and Social Society, 3*(9), 1195-1213.

Olumuyiwa O. O., Timothy O. O., & Samuel. O. O. (2014). Strategic ICT-Use Intensity of Deposit Money Banks (DMBs) in Nigeria Companies in Nigeria. *Journal of Asian Business Strategy, Asian Economic and Social Society, 4*(1), 1-17.

Pease, G. (2015). *Optimise your greatest asset-your people: How to apply analytics to big data to improve your human capital investments*. Hoboken, NJ: Wiley.

Ranjan, R., & Basak, A. (2013). *Creating Value through Analytics in HR. Role of Third-party services*. Everest Global.

Ruohonen, S. (2015). *Business benefits of leveraging predictive analytics in HR (Unpublished master's thesis).* Aalto University, Helsinki, Finland.

Schneider, C. (2006). The new human-capital metrics: A sophisticated crop of measurement tools could take the guesswork out of human resources management. *CFO Magazine*, 1-5.

Shuck, B., Adelson, J. L., & Reio, T. G. (2017). The employees' engagement  scale: initial evidence for  construct validity and implications for theory and practice. *Human Resource Management, 6*(6), 953–977.

Sonia, T., Scott, S. S., & Randall, Y. O. (2015). A culture of employees' engagement : a strategic perspective for global manager. *Journal of business strategy, 36*(3), 46-56.

Witte, L. (2016). We have HR analytics! So what?–An exploratory study into the impact of HR analytics on strategic HRM. *University of Twente,* 1-46.

Xylia. L. (2018). *Human Resource Analytics: Implications for Strategy Realisation and Organisational Performance*. Portland State University, Portland.