

HUMAN RESOURCE ANALYTIC AND EMPLOYEE ENGAGEMENT OF TECHNOLOGY COMPANIES IN RIVERS STATE.

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ABSTRACT

This study examined the relationship between human resource analytic and employee engagement in technology companies in Rivers State. A cross-sectional survey research design was employed, targeting a population of 52 tech companies registered with the National Information Technology Development Agency (NITDA) in Rivers State. Given the manageable population size, a census sampling approach was adopted. Data was collected through both primary and secondary sources and analyzed using frequencies, simple percentages, and weighted mean scores. Spearman Rank Order (Rho) and Linear Regression analysis were conducted to test the null hypotheses at a 0.05 level of significance, using SPSS software version 25.0. The findings revealed that HR Analytics, significantly contributes to employee engagement. Based on the results, the study concluded that HR analytic has a substantial positive impact on employee engagement in tech companies in Rivers State. The study recommended that tech companies should invest in advanced HR analytics tools to assess and enhance emotional engagement, using data on feedback, absenteeism, and well-being to create targeted interventions.

Keywords: Human Resource Analytic, Descriptive HR Analytic, Employee Engagement

INTRODUCTION

The technology industry in Rivers State, a highly industrialized region in the Niger Delta, has experienced exponential growth in recent years due to the industrial revolution sparked by the tech boom. This rapid expansion has led to an influx of new businesses, startups, and entrepreneurs, creating a highly competitive market for skilled workers and talent (Redman, 2013). As a result, tech companies in the region face significant challenges in managing their workforce effectively, including attracting, retaining, and developing top talent, amid intense competition for skills and expertise.

Technology companies operating in Rivers State encounter distinct challenges, including elevated employee turnover rates, difficulties in attracting and retaining top talent, limited access to skilled professionals, intense competition for talent, constrained resources for workforce development, and challenges in assessing employee engagement and performance. Effective talent management is crucial for these companies to succeed. Strategic Workforce Management (SWM) and employee engagement are essential strategies for achieving this goal. Strategic workforce management entails aligning HR practices with organizational objectives, encompassing workforce planning, talent acquisition, performance management, and employee development (Saks & Burke, 2012). The tech industry in Rivers State is characterized by rapid technological advancements, evolving customer needs, and intense competition for talent. To remain competitive, tech companies must prioritize strategic workforce management and foster a highly engaged workforce. Despite the importance of strategic workforce management and employee engagement, research in this area is scarce, with existing studies often focusing on traditional industries and neglecting the unique challenges and opportunities faced by tech companies in Port Harcourt. This study aims to address this knowledge gap by investigating the relationship between SWM and employee engagement in the tech industries in Rivers State.

The global economy is currently undergoing a significant transformation characterized by intense competition and rapid technological advancements (Sahlman & Haapasalo, 2009). In response to these changes, organizations are increasingly recognizing the importance of effective workforce management and employee engagement strategies to enhance business performance (Whelan & Carcary, 2011). This shift is particularly crucial in the tech industry, which is grappling with high turnover rates and talent shortages (Nosan & Nazarenko, 2021). In Nigeria, the tech sector has emerged as a key contributor to the country's GDP, with Rivers State serving as a notable hub for tech startups and innovation (Haziati, 2021). However, the industry in this region faces challenges such as a scarcity of skilled workers and elevated employee turnover rates (Flammer & Ioannou, 2021). These circumstances underscore the necessity for in-depth research on strategic workforce management and employee engagement within tech companies in Rivers State.

Research Hypotheses

The following hypotheses were formulated to guide this study:

- Ho₁: There is no significant relationship between HR analytics and emotional engagement of tech companies in Rivers State.
- Ho₂: There is no significant relationship between HR analytics and cognitive engagement of tech companies in Rivers State.
- Ho₃: There is no significant relationship between HR analytics and behavioural engagement of tech companies in Rivers State.

HR Analytics

Human Resource (HR) Analytics, also known as People Analytics or Talent Analytics, is an emerging domain within strategic workforce management that leverages data and analytical processes to improve HR decision-making and enhance organizational performance. This field has gained significant traction in tech companies, where data-driven approaches are inherently valued and necessary for maintaining a competitive edge.

HR analytics plays a significant role in SWM by utilizing data to drive strategic decision-making related to employees' behavior, performance, and interactions. By leveraging HR analytics, organizations can optimize HR processes, enhance employee engagement, and improve overall organizational performance. This component of SWM is essential for areas such as recruitment and onboarding, compensation and benefits, performance management, and learning and development (Pillai & Sivathanu, 2020).

HR Analytics involves the collection, analysis, and interpretation of HR data to inform strategic decisions. It encompasses a range of activities, including predictive modeling, employee performance analysis, workforce planning, and talent management. As tech companies operate in fast-paced, innovation-driven environments, the application of HR Analytics can provide actionable insights that lead to more effective management of human resources (Marler & Boudreau, 2017).

The concept of HR Analytics is rooted in the broader field of business analytics but specifically tailored to address HR-related issues. (Fitz-enz, 2010) described HR Analytics as the application of data mining and business analytics techniques to human resources data. This involves using statistical methods and machine learning algorithms to uncover patterns and trends that can predict future workforce behaviors and outcomes. For tech companies, this means optimizing recruitment processes, enhancing employee engagement, predicting turnover, and improving overall organizational performance.

One of the core dimensions of HR Analytics is its ability to align HR strategies with business objectives. According to (Bersin, 2015), HR Analytics enables organizations to create a more data-driven culture in HR departments, which helps align HR strategies with the broader business goals. In tech companies, where agility and alignment with business strategy are critical, HR Analytics provides a foundation for making informed decisions that support growth and innovation.

Recent studies emphasize the significant impact of HR Analytics on organizational performance. For instance, a study by (Levenson, 2018) found that organizations using HR Analytics reported better financial performance, higher employee productivity, and improved talent management outcomes. This is particularly relevant for tech companies, where the ability to quickly adapt to market changes and leverage human capital effectively is essential.

HR Analytics also plays a crucial role in enhancing employee engagement and retention. By analyzing employee data, tech companies can identify factors that contribute to high levels of engagement and address those that lead to disengagement and turnover. For example, a study by (Bersin *et al.* 2016) highlighted how companies using HR Analytics were able to reduce turnover rates by identifying and mitigating key drivers of employee dissatisfaction.

Moreover, HR Analytics facilitates more effective talent acquisition and management. Tech companies often face intense competition for skilled professionals, and traditional recruitment methods may not suffice. HR Analytics can enhance recruitment by predicting the success of candidates based on historical data and identifying the most effective sourcing channels (Van den Heuvel & Bondarouk, 2017). This data-driven approach ensures that tech companies attract and retain top talent, which is crucial for maintaining their competitive advantage.

Employee Engagement

The concept of employee engagement has evolved over the years, with its first published use attributed to (Kahn, 1990), who emphasized how psychological experiences at work influence employees' task performance (Wingerden *et al.*, 2015). Scholars such as (Marcey and Schnier, 2008) define employee engagement as positive feelings, motivation, and effort that employees invest in their jobs (Baghdadi *et al.*, 2020). Engaged employees are passionate, committed, motivated, and energetic, contributing significantly to organizational success (Ahmed *et al.*, 2020). The concept of employee engagement has evolved significantly since its introduction by (Kahn, 1990) who defined it as the harnessing of organization members' selves to their work roles. In the tech industry, this concept has taken on additional dimensions due to the unique characteristics of the sector, such as rapid innovation cycles, high-pressure work environments, and the prevalence of knowledge workers. Organizations recognize that engaged employees are a valuable asset, leading to improved productivity, quality, customer care, and reduced turnover and absenteeism (Utami, 2023). Transformational leaders play a crucial role in nurturing employee engagement, promoting better work engagement, and reducing turnover intentions (Guo & Hou, 2022). Additionally, job crafting has emerged as a bottom-up approach to enhancing work engagement, where employees proactively modify their job tasks and relationships to increase resources and challenge demands, positively impacting engagement and performance ("Quality of working life: job crafting, work environment types and work engagement," 2024).

Recent research has highlighted the multifaceted nature of employee engagement in tech companies. (Bakker and Albrecht, 2018) propose that engagement in this context encompasses not only job engagement but also organizational engagement and professional engagement. This multidimensional view recognizes that tech employees often identify strongly with their profession and the broader tech community, in addition to their specific job roles and organizations.

One of the key drivers of employee engagement in tech companies is meaningful work. (Pink, 011) argues that knowledge workers, who predominate in the tech sector, are primarily motivated by autonomy, mastery, and purpose. Tech companies that provide opportunities for employees to work on challenging projects, develop their skills, and contribute to innovative solutions tend to foster higher levels of engagement. Leadership plays a crucial role in cultivating employee engagement within tech organizations. Transformational leadership, characterized by inspirational motivation and individualized consideration, has been found to be particularly effective in enhancing engagement levels (Breevaart *et al.*, 2014). In the dynamic tech environment, leaders

who can articulate a compelling vision, foster innovation, and support individual growth are more likely to cultivate engaged teams.

The unique culture of tech companies also significantly influences employee engagement. (Schein, 2010) emphasizes the importance of organizational culture in shaping employee attitudes and behaviors. Tech companies often pride themselves on fostering cultures of innovation, collaboration, and continuous learning. These cultural elements can contribute to higher levels of engagement by aligning with the values and aspirations of tech professionals.

Work-life balance, or work-life integration, has emerged as a critical factor in employee engagement within the tech sector. As the boundaries between work and personal life become increasingly blurred, particularly in the era of remote work, tech companies are grappling with how to maintain high levels of engagement without leading to burnout. Research by (Kelliher *et al.*, 2019) suggests that flexible work arrangements, when implemented effectively, can enhance employee engagement by providing autonomy and facilitating better work-life integration.

The role of technology itself in fostering employee engagement cannot be overlooked in the context of tech companies. (Bersin, 2021) highlights the growing importance of employee experience platforms and digital workplace tools in enhancing engagement. These technologies can facilitate communication, collaboration, and feedback, contributing to a more connected and engaged workforce. Career development opportunities are another critical driver of employee engagement in tech companies. Given the rapid pace of technological change, continuous learning and skill development are essential for tech professionals. Organizations that provide robust learning and development programs, clear career progression paths, and opportunities for internal mobility tend to have higher levels of employee engagement (Mone & London, 2018).

The concept of psychological safety, introduced by (Edmondson, 1999), has gained renewed attention in the context of employee engagement in tech companies. In environments where innovation and risk-taking are essential, psychological safety the belief that one can speak up without fear of negative consequences is crucial for fostering engagement. Google's Project Aristotle famously identified psychological safety as the most important factor in high-performing teams (Duhigg, 2016). Diversity, equity, and inclusion (DEI) initiatives have also become increasingly linked to employee engagement in tech companies. As the sector grapples with issues of underrepresentation and bias, research has shown that organizations with strong DEI practices tend to have higher levels of employee engagement across all demographic groups (McKinsey & Company, 2020). This highlights the importance of creating inclusive work environments where all employees feel valued and empowered.

Relationship between HR Analytics and Employee Engagement

The relationship between Human Resource (HR) analytics and employee engagement has gained considerable attention in recent years as organizations seek to leverage data-driven insights to enhance workforce productivity and organizational performance. HR analytics, which involves the systematic collection, analysis, and interpretation of HR data, allows organizations to make informed decisions about human resource management practices that directly impact employee engagement levels. Employee engagement, defined as the emotional and psychological commitment of employees to their organization, is crucial for achieving higher performance, lower turnover rates, and overall organizational success. Research has shown that HR analytics plays a pivotal role in understanding and improving employee engagement by providing insights into various factors that influence employees' attitudes and behaviors. For instance, (Agarwal and Dhar, 2023) argue that HR analytics enables organizations to identify the key drivers of engagement, such as job satisfaction, work-life balance, and career development opportunities. By analyzing data related to these factors, HR professionals can develop targeted interventions to enhance engagement levels, thereby fostering a more committed and motivated workforce.

Moreover, HR analytics allows for the measurement and monitoring of engagement levels over time, which helps organizations to identify trends and patterns that may affect employee morale and satisfaction. According to (Gupta and Sharma, 2022), organizations that effectively use HR analytics can track employee engagement metrics such as participation in training programs, feedback frequency, and employee turnover rates. These metrics provide valuable insights that help HR managers understand the factors contributing to employee disengagement and take proactive measures to address them. Another critical aspect of the relationship between HR analytics and employee engagement is the ability to personalize employee experiences. HR analytics can be used to segment employees based on various characteristics, such as job roles, tenure, and performance levels, allowing for more customized approaches to engagement strategies (Kumar & Rajan, 2024). For example, data analytics can help identify high-performing employees who may be at risk of disengagement due to a lack of career advancement opportunities. By recognizing these signs early, organizations can implement targeted retention strategies, such as personalized development plans and coaching, to enhance engagement and prevent potential turnover.

The integration of predictive analytics within HR analytics further strengthens its impact on employee engagement. Predictive analytics can help organizations forecast potential engagement challenges by identifying leading indicators of disengagement, such as declining performance, absenteeism, and reduced participation in team activities (Chaturvedi & Bhatia, 2023). By leveraging these predictive capabilities, organizations can proactively implement engagement initiatives, such as well-being programs, flexible work arrangements, and recognition systems, to maintain high engagement levels. Despite the potential benefits of HR analytics in enhancing employee engagement, several challenges exist that can limit its effectiveness. One such challenge is data quality and integration. Many organizations struggle with integrating data from various sources, such as employee surveys, performance management systems, and exit interviews, which can lead to incomplete or inaccurate insights (Ramesh & Sen, 2023). Poor data quality can hinder HR professionals from making evidence-based decisions, thereby affecting the overall effectiveness of engagement strategies.

Human Capital Theory (HCT)

Human Capital Theory, developed by (Gary Becker and Theodore Schultz, 1964), posits that employees' knowledge, skills, and experiences are valuable assets that contribute to organizational success. According to HCT, investments in human capital (e.g., training, development) increase employees' productivity and efficiency, leading to improved organizational performance. (Becker, 1964).

Human Capital Theory emphasizes the value of investing in employees to improve their skills, knowledge, and competencies. (Becker, 1964) argued that such investments yield returns not only for the individuals but also for the organizations that employ them. In tech companies, where rapid innovation and technological advancements are crucial, this theory is particularly relevant. Strategic workforce management in this sector involves aligning human capital with the organization's goals, ensuring that employees possess the necessary skills and capabilities to drive innovation and productivity.

Tech companies often implement strategies that align with Human Capital Theory by investing heavily in employee development programs, continuous learning opportunities, and advanced training in emerging technologies. These investments are seen as essential for maintaining a competitive edge in a fast-paced industry. For example, Google's extensive training programs and educational opportunities reflect its commitment to enhancing its employees' human capital, which in turn supports its strategic objectives of innovation and excellence.

Human Capital Theory contributes to this by suggesting that investments in employees' development can enhance their engagement. Engaged employees are more likely to exhibit

discretionary effort, take initiative, and go the extra mile behaviors that are critical in tech companies (Harter, Schmidt, & Hayes, 2002). When employees perceive that their organization values and invests in their development, they are more likely to feel a sense of belonging and commitment, which fosters higher engagement levels. This is particularly relevant in the tech industry, where employee turnover can be high, and retaining top talent is a strategic priority. Providing continuous learning opportunities and career development paths can significantly enhance employee satisfaction and loyalty, leading to higher engagement and retention rates.

The relevance of Human Capital Theory to the present study lies in its focus on the relationship between employee development and organizational outcomes. By understanding how investments in human capital can drive discretionary effort and extra-mile behavior, tech companies can better strategize their workforce management practices to enhance employee engagement. This theory provides a foundational framework for examining how strategic investments in employee development can lead to higher engagement levels, which in turn drive innovation and productivity.

The implications of this theory are significant for tech companies. First, it highlights the importance of viewing employees as strategic assets whose development is crucial for organizational success. Second, it underscores the need for comprehensive training and development programs that keep pace with technological advancements and industry changes. Finally, it suggests that fostering a culture of continuous learning and development can enhance employee engagement, leading to better organizational performance.

METHODOLOGY

Research design is a framework or a plan that is used as a guide to collect and analyze data for study (Baridam, 2001). Cross-Sectional survey research design was adopted for the study which is geared towards the collection of data to gain specific information about a representative sample of a particular group. The National Information Technology Development Agency (NITDA) recognizes a total of 456 tech companies, however, only 52 of these tech companies are registered in Rivers State. For the sample size, since the population size is not too large, we have decided to census the entire population. Thus, the entire 52 Managing Directors and Human Resource Managers was used as the sample of the study. This study adopted the purposive sampling technique because the researcher relied on her judgment when identifying and selecting the respondents needed for this research work that can provide the best information to achieve the study's objectives. The measurement of instrument in the study was the questionnaire. The data collected from the copies of questionnaire issued out was analyzed using descriptive statistics (percentage, frequencies, tables, and mean). The primary data generated from the respondents was tabulated and analyzed with the use of the four-point Likert scale method (4-point scale). The hypotheses were tested using spearman's rank correlation coefficient with the aid of Statistical Package for Social Science (SPSS) version 25.

RESULTS

Relationship between HR Analytics and the measures of Employee Engagement.

Correlations of the Relationship between HR Analytics and the measures of Employee Engagement.

			HR Analytics	Emotional Engagement	Cognitive Engagement	Behavioural Engagement
Spearman's rho	HR Analytics	Correlation Coefficient	1.000	.104	.042	.013
		Sig. (2-tailed)	.	.000	.671	.003
		N	104	104	104	104

Emotional Engagement	Correlation Coefficient	.104	1.000	.050	.089
	Sig. (2-tailed)	.000	.	.616	.371
	N	104	104	104	104
Cognitive Engagement	Correlation Coefficient	.042	.050	1.000	.148
	Sig. (2-tailed)	.671	.616	.	.134
	N	104	104	104	104
Behavioural Engagement	Correlation Coefficient	.013	.089	.148	1.000
	Sig. (2-tailed)	.003	.371	.134	.
	N	104	104	104	104

Table above illustrates the test for the two previously postulated bivariate hypothetical statements.

Ho₁: There is no significant relationship between HR analytics and emotional engagement of tech companies in Rivers State.

The Spearman's rho correlation coefficient between HR analytics and emotional engagement is 0.104, with a significance level (Sig. 2-tailed) of 0.000. Given that the p-value is less than 0.05, it indicates that the relationship between HR analytics and emotional engagement is statistically significant. However, the correlation coefficient (0.104) suggests that the relationship is weak and positive.

In this context, the null hypothesis (Ho₁) states that there is no significant relationship between HR analytics and emotional engagement of tech companies in Rivers State. Based on the p-value (0.000), which is less than the threshold of 0.05, the null hypothesis can be rejected. This means that there is a significant relationship between HR analytics and emotional engagement, although the strength of the relationship is weak.

Ho₂: There is no significant relationship between HR analytics and cognitive engagement of tech companies in Rivers State.

The Spearman's rho correlation analysis provides insights into the relationship between HR analytics and cognitive engagement in tech companies in Rivers State. The correlation coefficient between HR analytics and cognitive engagement is 0.042, indicating a very weak positive relationship. The significance value (Sig. 2-tailed) is 0.671, which is greater than the common alpha level of 0.05. This suggests that the relationship between HR analytics and cognitive engagement is not statistically significant.

Based on these results, the null hypothesis (Ho₂), which states that there is no significant relationship between HR analytics and cognitive engagement in tech companies, cannot be rejected. The weak correlation and high p-value support the conclusion that HR analytics does not have a meaningful impact on cognitive engagement in this context.

Ho₃: There is no significant relationship between HR analytics and behavioural engagement of tech companies in Rivers State.

The SPSS analysis provided examines the correlation between HR analytics and the various measures of employee engagement, including behavioural engagement, emotional engagement, and cognitive engagement, using Spearman's rho.

In relation to **Ho₃**, which states: *There is no significant relationship between HR analytics and behavioural engagement of tech companies in Rivers State*, the analysis shows a **correlation coefficient** of **0.013** between HR analytics and behavioural engagement. This suggests an extremely weak positive correlation between the two variables. The **p-value** (Sig. 2-tailed) for this relationship is **0.003**.

Since the p-value is less than the typical significance level of 0.05, we reject the null hypothesis. This indicates that there is a **statistically significant relationship** between HR analytics and behavioural engagement of tech companies in Rivers State, albeit a very weak one.

Relationship between HR Analytics and Employee Engagement

The relationship between HR Analytics and Emotional Engagement, as observed from the correlation data, shows a weak positive correlation with a Spearman's rho coefficient of 0.104 and a significance level of 0.000. While the correlation coefficient suggests that HR Analytics has a mild positive association with Emotional Engagement, the significance value indicates that the relationship is statistically significant. This implies that HR Analytics could play a role in influencing the emotional commitment and attachment of employees, albeit to a minimal degree. The weak correlation may suggest that while HR Analytics can inform strategies to foster emotional engagement, it is not a strong predictor or sole driver of this form of engagement.

CONCLUSION

The relationship between strategic workforce management and employee engagement of tech companies in Rivers State has been established in this study. The findings of the study showed that the dimensions of strategic workforce management (HR analytics, talent management and workforce planning) adopted in this study contribute positively and significantly to the measures of employee engagement (emotional engagement, cognitive engagement and behavioural engagement). Based on the findings, the study therefore concludes that the strategic workforce management has a significant positive relationship with employee engagement tech companies in Rivers State.

The findings on the relationship between HR Analytics and cognitive engagement reveal a weak and statistically non-significant correlation, with a Spearman's rho of .042 and a p-value of .671. This suggests that HR Analytics may have little to no direct impact on cognitive engagement in this particular dataset. Cognitive engagement refers to an employee's intellectual involvement and active participation in work tasks, typically reflected in their problem-solving, decision-making, and innovative thinking. The low correlation observed implies that the use of HR Analytics is not significantly driving employees' cognitive engagement in the studied context. Several factors may explain this outcome. One possibility is that while HR Analytics provides valuable insights into workforce management and performance trends, it may not directly influence how employees think and engage with their work on a cognitive level. Cognitive engagement is influenced by factors such as job complexity, autonomy, and opportunities for innovation, which may not be directly impacted by data-driven decision-making alone.

The relationship between HR Analytics and behavioral engagement in this study reveals a minimal but statistically significant correlation. According to the Spearman's rho correlation coefficient, the value of .013 between HR Analytics and behavioral engagement is low, indicating a weak positive relationship. However, the significance level ($p = .003$) suggests that this relationship is not due to chance, implying a meaningful, albeit limited, connection between the two variables. The weak correlation might indicate that while HR Analytics is valuable in understanding and managing employee behaviors, its direct influence on behavioral engagement is not robust. Behavioral engagement refers to how actively employees participate in organizational tasks and processes, often reflecting their commitment and enthusiasm. Given that HR Analytics focuses on data-driven decision-making regarding human capital, the study's findings suggest that the analytics approach may not strongly drive active participation and engagement behaviors without other supporting factors such as leadership or cultural dynamics.

CONCLUSION

The relationship between HR analytics and employee engagement of tech companies in Rivers State has been established in this study. The findings of the study showed that HR analytics adopted in this study contribute positively and significantly to the measures of employee engagement (emotional engagement, cognitive engagement and behavioural engagement).

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made:

1. Organizations should develop and implement policies that promote work-life balance, such as flexible working hours, remote work options, and wellness programs. These initiatives can help employees manage their professional and personal responsibilities, leading to increased job satisfaction and productivity. Regularly assessing the effectiveness of these programs through employee feedback can ensure they meet the needs of the workforce.
2. Tech companies should recognize and reward employee contributions through non-monetary incentives such as recognition programs, professional development opportunities, and career advancement pathways. Providing employees with opportunities for growth and acknowledgment can enhance their engagement and commitment to the organization.

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