

# HUMAN RESOURCE ANALYTICS DIMENSIONS AND EMPLOYEE ENGAGEMENT IN MANUFACTURING INDUSTRY IN NIGERIA: A CONCEPTUAL REVIEW

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## ABSTRACT

*Every organization is interested in the contribution of the employee to the bottom line of the organization. Therefore, the level of employee engagement becomes paramount in driving organizational overall performance. The objective of this study is to assess different dimensions of HR analytics and how they can be leveraged for better-quality engagement of the employee in the manufacturing industry. The study used different reports from secondary data context as published in reputable journals. Information gathered within the scope of the study was theoretically analyzed and discussed in line with the objective of the study. The purpose is to find out if HR analytics dimensions adopted in manufacturing firms contribute to employees' engagement. The findings revealed that HR analytics contribute considerably to the level at which employees are engaged. Therefore, organizations should leverage HR analytics dimension for improved job engagement. The study also proposed a model that can be tested empirically to determine the level of influence between HR analytics dimension and employee engagement.*

**Keywords:** Descriptive Analytics; Diagnostic Analytics; Predictive Analytics; Prescriptive Analytics; Employee Engagement.

## INTRODUCTION

Human resources started to be seen as an integral part of the organization that can serve as a competitive advantage because there was a shifting of focus during the 1900s on human resources in all organizations including the manufacturing industry. Manufacturing has been generally viewed and acknowledged as the engine of any country's growth and development. It acts as a conduit for the production of goods and services, creating huge opportunities for employment, production of goods and services and increasing profits (Olorunfei et al., 2013). Manufacturing is known as the produce of goods for sale or use by use of machines, equipment, and manpower, biological and chemical formulations. This includes both human activity handicrafts and high-tech operations through which raw materials are processed or converted to a large-scale finished product (Adofu et al., 2015). It is said that the quickest medium through which accelerated sustainable development and growth can be accomplished in any economy is through technological innovation, industrial capacity, and business development rather than massive human resources and the amount of material resources (Olamade et al., 2014). Due to the effective manufacturing sector exploitation, most industrialized/developed countries like Germany have grown to become one of the world's largest economies today, given its low natural resources and

inflation it has experienced since the 1920s. As a consequence of its inability to develop the manufacturing sector to reach international standards, Nigeria is currently a developing country.

Du Plessis (2009) opines that among all the factors of production, one of the most essential and vital elements are the human resource. The human resource of the organizations must be encouraged to put in their best towards achieving the strategic goals of the organization. Organizations that guide their decision-making processes with the use of business and data analytics are known to be more efficient and productive. Also, they realize higher returns than their competitors that fail to utilize data and business analytics (Brown et al., 2011). Lack of recognition has been a serious challenge of human resource management as noted in Peter Drucker works in 1950. However, in the mid-1980's, it got its revolution (Kaufman, 2015). Increase in the competition of having the right talent that is caused by advancement in technology, initiation of telecommunication and the globalization wave have made organizations in the manufacturing sector look for ways to counter these changing conditions with the utilization for effective and efficient human resource management practices to retain their talents (Horgan, 2003).

To this end, vendors in the technological field developed software that can be used by HR professionals to measure cost per time, turnover rate, and many other metrics related to HR functions and practices. However, to achieve employee engagement, it is inevitable for HR professionals to contribute to the bottom line of the organization. Therefore, HR professionals particularly in manufacturing firms need to be proactive. The new wave of the implementation of analytics enables HR professionals to be a strategic partner with the ability to use HR Analytics (HRA) effectively. Fitz-enz (2013) opines that in recent times, there has been a significant push for the HR professionals to adhere to the utilization of analytics and also pushed towards the alignment of themselves with the financial and business aspect of the organization so as not to be left behind. Moreover, HR professionals lack the prerequisite skills to analyses the data to aid organizational decision-making (Bassi, 2011). In today's era, as proclaimed by Bresciani et al. (2018) technology has a significant effect on the organization.

Over the years, it has been concluded that HRA has four different dimensions (Gartner, 2013) that can influence different organizational outcomes. The four dimensions of HRA are Descriptive analysis, Diagnostic analysis, Predictive analysis and Prescriptive analysis, which are utilized to answer the following questions; "what happened?", "Why did it happen?", "what will happen?" and "How can we make it happen?" respectively (Gartner, 2013). HRM practices should be able to complement one another so as to attain high job engagement of employees (Falola et al., 2020). Collins and Smith (2006) posited that the utilization of the appropriate HRA dimension would promote performance and, high engagement of employee. To this end, this study tends to explore conceptually, the influence of human resource analytics on employee engagement.

## METHODOLOGICAL APPROACH

A conceptual approach was adopted in this study to explore the role of human resource analytics on employee engagement in the manufacturing sector. The employee engagement is subdivided into outcomes are cognitive, emotional and behavioral engagement. For the explanation of the subject matter, the existing literature is being relied upon to source vital articles indexed in a reputable database. Relevant articles on the subject of human resource analytics and employee engagement were used for this study by the researchers.

## FINDINGS AND DISCUSSION

### Concept of Human Resource Analytics Dimensions

Human Resource analytics is also referred to as workforce science and workforce analytics, talent analytics, people research and people analytic, human capital analytics, talents decision science, talent architecture, Human capital metrics and strategy, HR architecture and metrics (Xylia. 2018). According to Marler & Boudreau (2017), Human Resources Analytics as a branch of Business Analytics and Business intelligence can be described as a practice in Human Resources aided by information technology which utilises visual, statistical and descriptive analyses of data linked to organisational performance, human capital, external economic benchmarks and HR processes to helping in making effective decision-making. Human Resource analytics show the influence of employee's data on organisational outcomes (Carson et al., 2011). So, as to gain meaningful insight, data understanding is essential, and analytics must be grounded in it (Angrave et al., 2016). The goal of HRM is to enhance performance, processes and make decisions that are data-driven in relation to business strategy. For the HR to be considered as a genuine strategic business partner, they must utilise HRA.

AIHR is a consulting company within HR analytics, based in Netherland. They are one of the leading companies in that field. In defining HR analytics, they made use of the definition by Heuvel & Bondarouk (2017), which states that “HR analytics is the systematic identification and qualification of people’s drivers of business outcome”. Heuvel & Bondarouk (2017) opines that in 2015, HRA was not used to provide actual analysis, but it was primarily used for conducting metrics and reports. Angrave et al. (2016) stated that HR does lack HRA implementation because they possess analytical skills. In the year 2025, Heuvel & Bondarouks (2017) believes that HRA in relation to HR themes, will include; strategic workforce planning, retention management, leadership, employability and employee health. Look at the HR themes that have been utilised today, we would see that it is not different from it, but organisational challenges that will be addressed using business data will be the main focus.

In local and global organisations, HRA is a major topic. Although for decades now, there has been the availability of metrics in HRM, currently there has been a paradigm shift. The integration of Human Resource Information Systems (HRIS) has been a vital driver of HR analytics and metrics (Carlson & Kavanagh, 2011). The slow manual process utilised by HR professionals experienced a shift to a quicker and easier process with the utilisation of technology since the adoption of HRIS. HRA helps in predicting employee's behaviour so as to effectively use to human capital that will, in turn, benefit the Human Resources (Schneider, 2006).

In general, scholars have shown that along a continuum, analytics practice and application can be defined (Cascio & Boudreau, 2011; Fitz-Enz & Mattox, 2014; Pease, 2015; Isson & Harriot, 2016; Witte, 2016; Kaur & Fink, 2017). Organizations may practice two broad analytics categories: retrospective and prospective. Molefe (2014) opines that retrospective analytics is used for reporting previous organizational performance making the approach backward-looking. Heuvel and Bondarouk (2017) opine that prospective analytics is used for predicting future performance of the organization based on retrospective data making the approach forward-looking.

### Descriptive analytics

As stated earlier, the type of question answered, data focused on and the endowment to generate worth for business makes a difference between the four types of analytics. Descriptive analytics focuses on the past to make an informed decision (Naasz & Nadel, 2015), and it is more concerned with differences and relationships between different groups. According to Ranjan and Basak (2013), the most accessible type of analytics is descriptive analytics. It uses raw data that were derived from various sources to give a good insight into the past. The technology that is being utilized is secure, but advanced statistical tools are needed in the process. "what happened?" is the question that is tried to be answered by this type of analytics. Ruohonen (2015) stated that the main characteristics of descriptive analytics are describing the historical and current patterns of data and events, the focus of process improvement and cost reduction and visualization format; scorecards and dashboards.

### **Diagnostic analytics**

"Why things happened?" is the question that is tried to be answered by diagnostic analytics (Gartner, 2013). This type of analytics does provide deep insights into a certain problem. Ruohonen (2015) stated that the main characteristics of diagnostic analytics are; enablement of the discovery of unpredictable relationships between historical and current patterns, explain effect relation, causes and correlation and visualization format; dashboards on data discovery which focuses on visualizing complex dimensions, measures and relationships simultaneously.

### **Predictive analytics**

The current pattern of data prediction and generating certain meaning to the data for the future is a ground for predictive analytics which serves as a complementary factor (Fitz-enz, 2009). "what will happen?" is a question that is tried to be answered by predictive analytics. It uses the findings of diagnostic and descriptive analytics to predict future trends. Depending on both the internal and external data sources, predictive analytics makes use of a huge volume of variables which needs specialised analytical tools coupled with advanced statistical tools (Ranjan & Basak, 2013). Ruohonen (2015) stated that the main characteristics of predictive analytics are; emphasis on potential and probabilities impact, description of relationships, historical and current data patterns but this type of analytics also do include future events and predicts the impact on the business and visualization format; scorecards and dashboards on future, current and historical events.

### **Prescriptive analytics**

Ranjan & Basak (2013) opines that this type of analytics comes into play when predictive analytics is done. It focuses on the prescription of actions that are needed to be implemented for the predicted future events. "How can we make it happen?" is the question that is being tried to be answered by this type of analytics. This analytic utilises advance technologies and tools which makes it sophisticated to manage and implement. Ruohonen (2015) stated that the main characteristics of prescriptive analytics are; emphasis on decision alternatives and also the optimisation which is depending on future outcomes that were predicted, description of futuristic decision options and their impact on the business and visualisation format; scorecards and

dashboards of future actions to be undergone based on the alternatives of decision and also the impact of the business.

## **Engagement**

Nimon et al. (2016) define employee engagement as a positive psychological state which is work-related that is invoked by the direction and intensity of behavioural, emotional and cognitive energy. Employee engagement is the degree of influence, intimacy, interaction and involvement individual possesses with an organization over a period of time (Falola et al., 2020; Men, 2015). Employee engagement is vital in the getting of organizational outcomes. Hanaysha (2016) opines when engagement is low, it affects retention and commitment negatively. It also includes the readiness of the workforce to assist in attaining the organizational goals and objectives. An individual employee can be differently motivated and engaged in different countries by lifestyle, economy, sociological character, religion, culture and various factors (Falola et al., 2020; Sonia et al., 2015). The following are the dimensions of employee engagement.

### **Cognitive engagement**

Being psychologically engaged in the early stage of cognitive engagement. Employees that are cognitively engaged are concentrated in their organisation, and they divert their mental energy to their day-to-day activities in the organisation (Falola et al., 2018; Shuck et al., 2017). The personal perspective of the employee and the framework in which their day-to-day activities evolve around (i.e., appraisal, alignment) serves as the bedrock for the development of cognitive engagement (Alagaraja & Shuck, 2015). Shuck et al. (2017) opines that an employee that is cognitively engaged shows attention, focus and concentration to their day-to-day activities.

### **Emotional engagement**

This refers to the willingness and intensity at which an employee invests his/her emotionality to the day-to-day activities of their work so as to get the desired outcome (Shuck et al. 2017). The bond that has been established when an employee personally decides to engage cognitively, give themselves willingly and commonly share a purpose with the organization gives rise for emotional engagement (Alagaraja & Shuck, 2015). This dimension of engagement showcases an emotionally, active and deep connection to the day-to-day activities of the organization (Shuck et al., 2017). An emotional, engaged employee does believe in the purpose and mission of their organization (Shuck et al., 2017).

### **Behavioural engagement**

This dimension of engagement showcases that an employee is willing to invest their actions in the day-to-day activities that will, in turn, positively affect the performance of the organization. It is generally seen as the employee manifestation of the emotional and cognitive engagement his/she possess (Alagaraja & Shuck, 2015). Employees that are behaviorally engaged willing to work harder do more than expected and put in extra effort for their organisation (Falola et al., 2018).

## THEORETICAL FRAMEWORK

### Technology Acceptance Model

To know the reason behind the rejection or acceptance of information technology, Davis (1989) started to research and a study on adoption models. Two important elements were focused on they will be explained below:

#### Effort expectancy

Perceived ease of use is used interchangeably with effort expectancy (Davis, 1989). This is the rate at which an individual believes that the utilization of a particular application will be effort-free. This implies that an individual will adopt the utilization of an application if he/she perceives that it is easy to use (Davis, 1989).

#### Performance expectancy

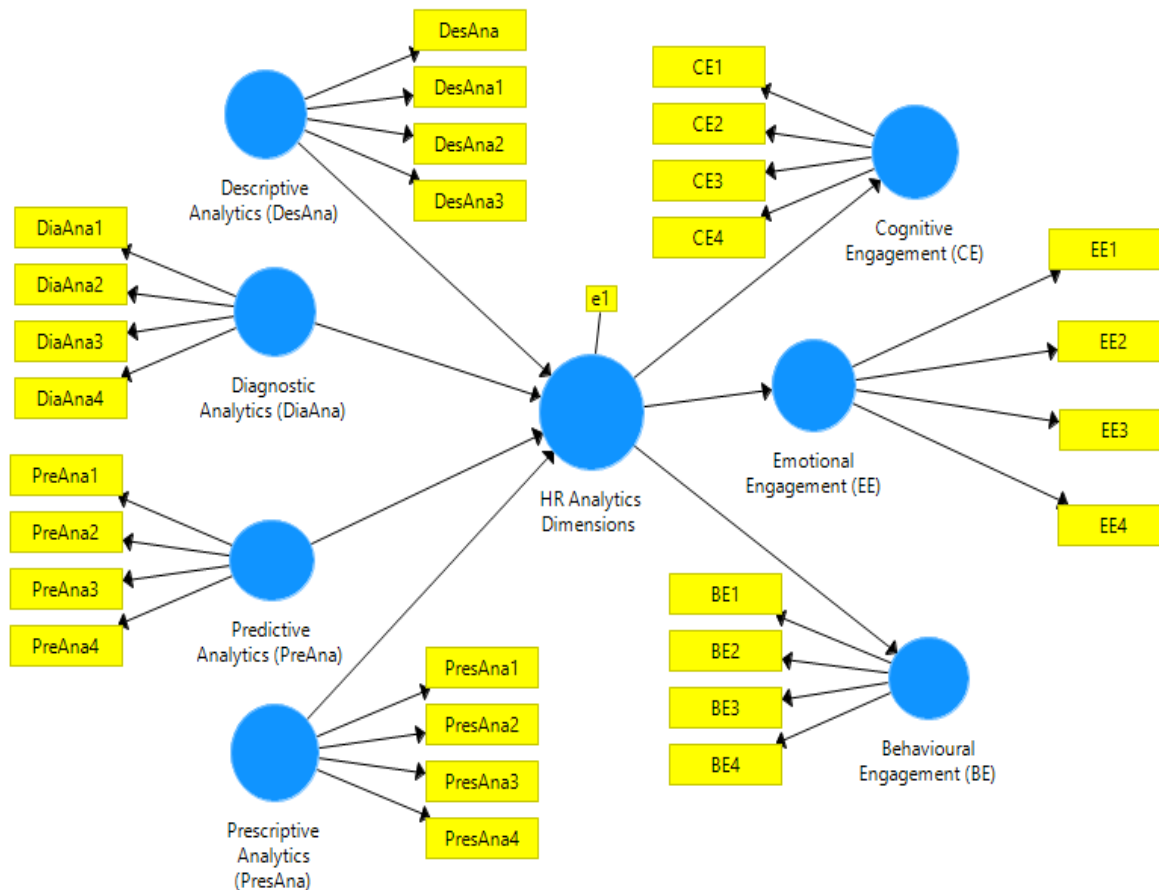
Davis (1989) defined it as "the degree to which an individual perceives that his or her job performance can be enhanced using a particular system". Talukder et al. (2008) opines that if an individual believes that the utilization of an application will have a positive influence on his/her job performance, it will affect the choice of the individual on whether or not to use the application. Even though an individual may believe using an application may be very useful, this does not imply that the application will be easy to use. After weighing the cost and benefit of adopting an application, if an individual perceives that the cost (difficulty and effort of learning) is higher than the benefit of adoption, the application cannot be adopted. Talukder et al. (2008) believe that usage is influenced by "ease of use".

#### How It Relates to the Study

The technology acceptance model supports Human Resource Analytics (HRA) because it sees how individuals do adopt technology for their use. This technology acceptance model assumes that the adoption of an application by an individual is based on two factors, ease to use and usefulness of the application to the performance of the individual. Now when relating it to HRA, it implies that if the HRM of an organization perceives that adoption of HRA analytics will be useful in the day to day activities of the organization and also the application is easy to use, then they will go ahead and adopt the application or system to the organization.

#### Proposed Model

In a nutshell, the study explores the influence of HR analytics dimension and how it can affect the level of employee work engagement in the manufacturing firms in Nigeria. However, the study proposes a model which shows the interplay between HR analytics dimensions and employee engagement in the world of work as depicted in Figure 1.



**FIGURE 1**

### HR ANALYTICS DIMENSIONS AND EMPLOYEE ENGAGEMENT MODEL

Figure 1, shows a proposed model on HR analytics dimensions and employee engagement. This model looked at various dimensions of HR analytics such as descriptive analytics, diagnostic analytics, predictive analytics and prescriptive analytics) that could perhaps drive employees job engagement, particularly in the manufacturing firms. Meanwhile, as established in the literature, these dimensions of human resource analytics are capable of transforming and enhancing both individual employees and organizational engagement. The engagement could be in terms of cognitive, emotional and behavioral engagements of the employees in the world of work. The empirical investigation of the model will help to determine the level of significant influence of these dimensions of HR analytics on employee cognitive, affective and behavioral engagement particularly in the manufacturing industry of both developed and developing countries.

### MANAGERIAL IMPLICATIONS AND CONCLUSIONS

Over the years, it has been discovered that the human resource has not been able to fully utilize the potentials in HR analytics in their day to day activities. In manufacturing industry in

Nigeria, HR analytics is still in its infancy. The aim of this study was to deepen HR analytics understanding. It provides insights on the role and implementation of HR analytics in the operations of manufacturing organizations and how it can influence the employee engagement and the over performance of the manufacturing organizations.

There are different HR analytics dimensions that have to be utilized to get a certain result in the manufacturing organizations. When those dimensions are effectively harnessed, they help the organization achieve set goals and objectives, and in return, achieving forester employee engagement and organizational performance. The implication is that, if the management of manufacturing organizations pays attention to various HR analytics dimensions and strategically integrates them to the operational activities of the employees; it will invariably enhance the job engagement of the employees. This could perhaps culminate into the productive performance of the manufacturing organizations. Since it is evident that there is an existence of a relationship between HR analytics dimensions and job engagement, it is suggested that organization should utilize the HR dimensions effectively and know the right dimension to utilize so as to attain the desired outcome.

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