PREDICTIVE HUMAN RESOURCE ANALYTICS AND ORGANISATIONAL PERFORMANCE OF MOBILE TELECOMMUNICATION IN SOUTH-SOUTH, NIGERIA

Nyedah, B. B.
Department of Business Administration, Faculty of Administration and Management, Rivers State University, Port Harcourt, Nigeria
Email: *nyedahb@yahoo.com*

and

Baridam, L. Q.
Department of Business Administration, Faculty of Administration and Management, Rivers State University, Port Harcourt, Nigeria

ABSTRACT

This study examined the relationship between predictive human resource analytics and organizational performance of mobile telecommunication companies in South-South Nigeria. The study adopted a cross-sectional survey research design which is explanatory in nature. The target study element was 96 respondents from (4) four mobile telecommunication companies found on the National Communication Commission Directory operational in South-South states. Data for the study was collected through a structured questionnaire while the five (5) point Likert scale was used to measure the responses from the respondents. Cronbach's Alpha Coefficients were used to examine the reliability of the instruments. Data was analyzed using mean and standard deviations with charts to display the study variables, while inferential statistics such as the Spearman' Rank Order Correlation Coefficient Statistics technique was used to test the research hypotheses with the aid of a statistical package for social science version 26.0. The findings showed a positive and negative significant relationship between predictive human resource analytics and organizational performance in mobile telecommunication companies in South-South Nigeria. The study concludes that predictive human resource analytics has a strong positive and negative influence on the outcomes of organizational performance such as: market performance, and operational performance, in the mobile telecommunication companies in South-South Nigeria. The study therefore recommends that human resource practitioners in the mobile telecommunication companies in Nigeria need to incorporate the use of

Keywords: Predictive human resource analytics, organisational performance, market performance, and operational performance

INTRODUCTION

Nigeria is the largest black nation with a population of over 200 million people and a vast sectoral economy (National Bureau of Statistics, 2019), with an incredible contribution of 2 trillion Naira to its Gross Domestic Product (GDP). The telecommunication sector has gradually risen to be one of the major contributors of the economic development of the Nigerian economy as at 2019 (National Bureau of Statistics, 2019). In the final quarter of 2015, the National Bureau of Statistics declared that, mobile telecommunication firms, which represents a major part of the telecommunications sector, was responsible for about ₦1.7 billion of the nation's GDP earnings (National Bureau of Statistics, 2015). Right from the formal inception of their operations in 2001, the mobile telecommunication operators have successfully connected the nation to the world by providing stress-free and efficient operationin satisfying the communication needs of Nigerian people (Balogun, 2000), but how stress-free and efficient these operations are, remain a concern that calls for research attention.

Organizational performance refers to the ability of an organization to achieve its goals, objectives, and mission. It encompasses various aspects, including: efficiency and effectiveness, productivity, quality, innovation, financial performance, customer satisfaction, employee engagement, social responsibility and adaptation. It is influenced by various factors like leadership, culture, structure, processes, technology and external environment. Measuring organizational performance involves using various metrics and benchmarks, such as: key Performance Indicators (KPIs), balanced scorecard, benchmarking, performance management systems, audits and assessments. By understanding and improving organizational performance, businesses can achieve sustainable success, drive growth, and enhance stakeholder value (Nsikan, Bob-Manuel, & Olowononi, 2017)).

Organizational performance describes the health of a firm as an outcome of business activities and programmes, and in reference to stated objectives or compared to the health of competing firms (Ateke & Nwulu, 2017). Daft (2010) defined organizational performance as the organization's ability to attain its goals by using resources efficiently and effectively. Selen and Faruk (2015) described organizational performance as the extent to which the business is able to meet the needs of its stakeholders and its own needs for growth. Although the mobile telecommunication operators in Nigeria are mainly focused on service quality delivery (operational performance), they are however saddled with the pressure and ultimate challenge of poor service level (Adegoke & Babalola, 2011; NCC, 2006). However, Adegoke and Babalola (2011) traced these challenges to infrastructural inefficiencies and instability of power supply, while Akanji, Mordi and Taylor (2015) of the opinion that the contributions of the mobile service operators to service level represent a critical part of human resource forecasting that should be of concern to the operators. Thus, mobile telecommunication companies rely on the internet for their operations and timely decision making. Therefore, they require sophisticated tools that can enhance customers' experience (stakeholders' satisfaction) and higher sales growth (market performance).

Human Resource Analytics (HR Analytics) is the process of analyzing and interpreting HR data to improve organizational decision-making and performance. It involves using statistical methods and data visualization techniques to examine HR-related data, such as: workforce demographics, employee engagement, turnover and retention, training and development, performance management, compensation and benefits, diversity and inclusion. HR Analytics aims to identify trends and patterns in HR data, measure the impact of HR initiatives on business outcome, inform data-driven decision-making, optimize HR processes and programs and enhance employee experience and well-being. Some common HR Analytics tools and techniques include: Descriptive analytics (reporting, dashboards), predictive analytics (regression, forecasting), prescriptive analytics (optimization, simulation), machine learning algorithms (clustering, decision trees), data visualization tools (Tableau, Power BI). HR Analytics can drive business outcomes by: improving talent acquisition and retention, enhancing employee engagement and productivity, optimizing compensation and benefits, informing diversity and inclusion strategies, supporting strategic workforce planning. However, HR Analytics also faces challenges, such as: data quality and integration, ensuring data privacy and security, building analytics capabilities and skills gaining stakeholder buy-in and support, sustaining analytics initiatives over time. By leveraging HR Analytics, organizations can unlock the full potential of their workforce and drive business success (Heuvel & Bondarouk, 2017).

Data from industrialized countries have dominated research on human resource practices and performance - Western European and North American industries (Sarooghi, Libaersa, & Burkemper, 2015). Also, evidence from less-developed industries such as Nigeria remains few in this research stream. The implication of these gaps in the organizational theory literature is that knowledge is lacking on how and when this relationship works in developing countries (Weinzimmer, Michel, &Franczak, 2011). According to Fink (2010) this gap is as a result of the fact that they have either nor be able to use the right measures or have only be able to adopt standard analytical models that have probably hindered the detection of underlying reason for the manifested outcomes. Although, Meehan and Ahmed (1990) developed integrated, complex HR forecasting models, they are however, focused only on projecting the movement of people in an organization and also impracticable for smaller organizations and neglect how human resource analytics influences performance in less developed countries such as Nigeria. In view of the foregoing, a study of this nature needs to be done to ascertain the nature of relationship that exists between HR analytics and performance. Specifically, this study focused on the relationship predictive between human resource analytics and performance of mobile telecommunication companies in South-South Nigeria.

Conceptual Framework

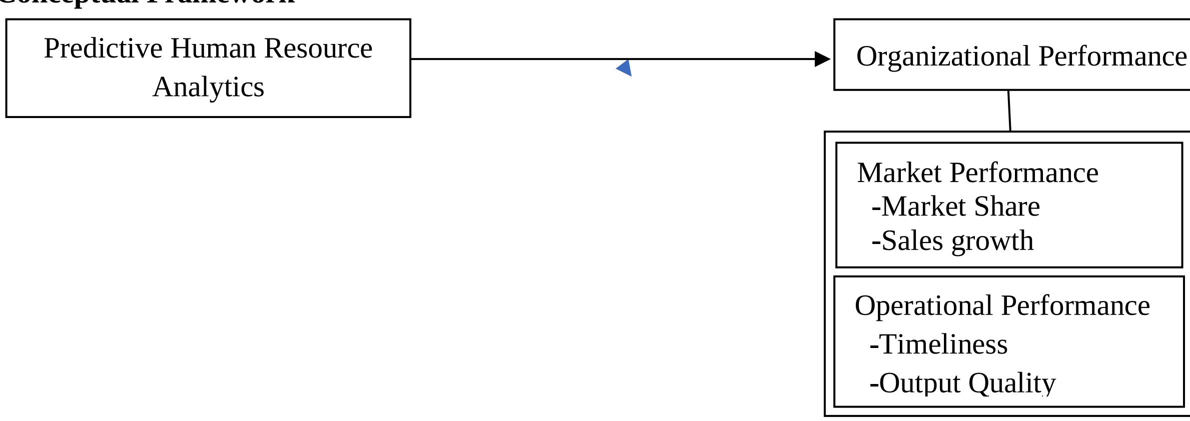

Figure 1: Predictive human resource analytics and organizational performance

Source: Research's Desk, 2024

The following research questions were pose to guide the study:

1. How does predictive human resource analytics affect market performance of the mobile telecommunication companies in South-South Nigeria?
2. How does predictive human resource analytics affect operational performance of the mobile telecommunication companies in South-South Nigeria?

LITERATURE REVIEW

Conceptual Review

Concept of Predictive Human Resource Analytics

Predictive analytics is the application of various statistical tools/techniques and models to forecast how a variable will influence a subject in future and based on the inferences the human resources may design new course of action. Generally predictive analytics are used in human resources for forecasting attrition rate, retention percentage, performance & productivity, cost of hiring etc. So it foretells the managers about the impact various people policies can have on different people issues. Predictive analytics has been defined to have data modeling as a prerequisite when making authoritative predictions about the future using business forecasting and simulation (Delen & Demirkan, 2013). These address the questions of "what will happen" and "why will it happen" (Delen & Demirkan, 2013). Time-series methods are also parts of predictive analytics, making use of methods such as moving averages, exponential smoothing, autoregressive models, linear, non-linear and logistic regression (Souza, 2014).

Predictive capabilities such as forecasting and simulation provide enhanced insight that managers can use to make informed decisions. The use of trends of time series data and correlations to identify patterns, predictive analytics applies advanced statistical analysis and data mining as well as sophisticated mathematics to validate assumptions and test hypotheses to provide a solid, data based foundation that can raise managers' confidence. Predictive analytics provides organizations with futuristic likelihoods which in turn helps managers identify conditions for potential deficiencies or surpluses in the future. Predictive analytic give organization the capabilities to leverage on its data for evaluation purposes for productivity anticipation or likelihood of failure (Davenport, 2010). Similarly, Ejo-Orusa and Okwakpam (2018) suggest that predictive HR analytics is the application of statistical models to historic HR data to understand the relationships existing between or among combined metrics to recognize patterns that will give insight to future occurrence or state. In addition, Lauby (2017) opines that predictive HR analytics is all about connecting the three types of metrics that are important to every organization – effectiveness, efficiency and impact/outcome, to gain insight to the future, and subsequently make plausible decisions. It is important to note that, analytics generally, is said to be technology based (Kremer, 2018).

Concept of Organizational Performance

Performance in business describes the health of a firm as an outcome of business activities and programmes, and in reference to stated objectives or compared to the health of competing firms (Ateke & Nwulu, 2017). Atkinson (2012) defined performance as the achievement of results ensuring the delivery of desirable outcomes for a firm‘s stakeholders. Daft (2010) defined organizational performance as the organization's ability to attain its goals by using resources efficiently and effectively. Performance of organization is the ability of the organization to achieve its goals and objectives. Ateke and Simeon (2018) states that business performance is a measure of how well a firm achieves its set goals by optimizing scarce resources, and by undertaking activities designed to better their lot. Laitinen (2002) define performance as the capability of a firm to generate results in predetermined dimensions in relation to target goals and objectives. Selen and Faruk (2015) described performance as the extent to which the business is able to meet the needs of its stakeholders and its own needs for growth. Furthermore, performance of any organization is an overall measure of the ability to produce goods or services (Kohli, 2013). Timpson (2011) defined performance as the accomplishment of a given task measure against preset known standard of acquiring competences, cost, and speed. Firm performance is the actual productivity of an organization measured against its projected goals and objectives (Upadhaya, Munir, & Blount, 2014). The performance of an organizational is based on the perception that the organization is comprised of valuable resources that include personnel, physical and capital assets that are used to achieve a shared goal. These diverse constituents result in many different interpretations of ‘successful or poor performance of organizations (Barney, 2002).

Measures of Organizational Performance

Market Performance

The market performance of the organization details features that reflect the organizations condition, functionality and wellbeing in its market the most popular indicator for the market performance is the market share. O’Regan (2002) defines market share as a company’s sales in relation to total industry sales for a certain period. Pearce and Robinson (2003) also use the same definition that market share is sales relative to those of other competitors in the market. Market share is usually used to express competitive position. It is also generally accepted that increased market share can be equated with success whereas decrease market share is a manifestation of unfavorable actions by firms and usually equated with failure. The most common explanation as to why market share leads to higher profitability are higher economies of scale, experience and market power (Buzzel, 2004). Economies of Scale provide larger firms with cost advantages (Sharp, 2002). However, most studies indicate that economies of scale dissipate at a small percentage of the market. According to the efficiency hypothesis, market share is the consequence of efficiency rather than its cause. Differences in profitability among firms are due to higher efficiency. Efficient firms obtain large market share and earn high profits to induce a causal association between size and profitability. Firms offering products that offer customers greater value enjoy gains in market share.

Better managed firms that have a competitive advantage grow faster than rival firms. Firms with superior skill and foresight gain market share through lower prices or through better products. Some researchers suggest that the observed positive relationships between market share and profitability may be the result of the quality of management (Sharp, 2002). Superior management causes firms to operate at a higher level of effectiveness and efficiency than their competitors. Higher effectiveness and efficiency include the capability to design and execute better strategies and plans, better control of cost, maintain efficient operations, having innovative products and market strategies, meeting customer needs better than competitors as well as the ability to achieve higher productivity through training and motivation of employees. The positive relationship between market share and profitability may be a direct result of the stability in the economics and competitive environment.

Operational Performance

Assen (2011) defines operational performance as the design and management to maximize operating profits through continuous operation of an excellent production and delivery system that offering product and services to customers at right value. Dunggan (2011) explained that operational excellence is a term that the operation is at the top level of performance and the organization has reached the highest operation can be. Operational excellence is not only about operation performance such as cost, time, quality, and flexibility metrics but also about how operation side of the business support the business growth. It also not only includes cost reduction and quality improvement but also need to handle people and resources efficiently. Russell and Koch (2009) stated that operational excellence is about reaching the height of operational efficiency through doing things better, faster, and cheaper. Traditionally, operational excellence means optimizing business processes, production and manufacturing that aim to satisfy customer demand, improve quality and increase productivity and efficiency. Miller (2014) posit that operational excellence is the continuously pursuit of better performance and effectiveness in all dimension of the organization.

Operational performance is not only concerned about production process, consistency and reducing waste but also concern in creating value through interaction performance of employees, customers and supply chain (Ogunkoya, 2019). Hence, operational excellence is not for perfection but to achieve the superior performance and profits by using a systematic approach which is focusing on people and implement the changes by involving customers, constantly innovating, operation continuous improvement and moving at optimal speed. Harrington (2005) process and product quality can be defined broadly as superiority or excellence. Blazey (2011) described that product is anything that can be offered to a market for attention, acquisition, use, or consumption that might satisfy a want or need. Sekhon, (2015) noted that quality of product is the customer's perception of the overall quality or superiority of the product or service, with respect to its intended purpose, relative to alternatives.

An indicant of operational performance is timeliness, which refers to the speed in the completion of tasks or provision of services. For example, in a manufacturing company; a time based indicator is the time frame used to produce a product or cycle time for a specific operation. Time is the most crucial resource to be considered in the performance of any activity. Time determines the imperativeness of any other resources in accomplishing organizational set out objectives and goals (Ugwulashi, 2011). It is an essential resource every manager needs to achieve the goals and objectives of an organization (Adeojo, 2012). Time, according to Nwaiwu (2000), is the interval between the beginning and the end of an operation. It is so delicate that it cannot be saved but can only be spent and once misused it can never be regained. According to the Oxford Advanced Learner’s Dictionary time is defined as a period either long or short, during which you do something or something happens. Time is an immaterial resource, inelastic, scarce, and erodes fast and once spent, cannot be won back, stored or recalled for use (Kalu, 2012). It is an essential resource; it’s irrecoverable, limited, and dynamic. It is irrevocable because every minute spent is gone forever, limited because only 24 hours exist in a day, and dynamic because it is never static (Adeojo, 2012). Managing time appropriately leads to achieving results easily with limited resources. Consequently, any productive system, whatever its structure, human, technology or financial support requires efficient and effective time management procedure. Consequently, Mullins (1999) refers time as one of the most valuable, but limited resources and it is important that administrators utilize time to the maximum advantage.

Empirical Review

Cherotich and Mose, (2023) established the influence of human resource analytics on performance of independent regulatory bodies in Kenya. The specific objectives were to establish influence of human resource data access and workforce planning on performance of independent regulatory bodies in Kenya.

The study was guided by Resource-Based View Theory and Ability, motivation and opportunity theory. This study employed a descriptive research design. The target population was the management level employees within 25 independent regulatory bodies hence 75 management staff. The study used the census approach since the target population is small. Primary data was collected by use of a questionnaire. Content validity of the research instruments was achieved through validation by university supervisor. The researcher used Cronbach's alpha coefficient to test for reliability. Quantitative data collected was analyzed using descriptive statistics techniques. Pearson R correlation was used to measure strength and the direction of linear relationship between variables. Multiple regression models were fitted to the data in order to determine how the independent variables affect the dependent variable. Findings show a strong significant relationship between human resource data access and performance of independent regulatory bodies in Kenya and a moderate significant relationship between workforce planning and performance of independent regulatory bodies in Kenya. The study recommends that the organizations should use big data across the departments to improve on employee skills and organization effectiveness.

Oladipupo and Olubusayo (2020) conducted a study on human resource analytics dimensions and employee engagement in Manufacturing Industry in Nigeria. 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. The study also proposed a model that can be tested empirically to determine the level of influence between HR analytics dimension and employee engagement.

Obisi, Samuel and Ilesanmi (2020) investigated the impact of workforce planning on organizational performance in Lagos, Nigeria's manufacturing sector. The study employed a survey research methodology, selecting 300 pieces of the questionnaires administered from a sample size determination table. Data from a sample of 166 respondents was used for analysis, or 55 percent of the questionnaires recovered. Descriptive and inferential methods were used to analyse the data that had been obtained. The results demonstrated that workforce planning affects organizational performance. Consequently, the following research hypotheses were stated to guide the study:

Ho1: There is no significant relationship between predictive human resource analytics and market performance of mobile telecommunication companies in South-South Nigeria?

Ho2: There is no significant relationship between predictive human resource analytics and operational performance of mobile telecommunication companies in South-South Nigeria?

METHODOLOGY

Descriptive research design was adopted because it allowed the researcher to generalize the results to a wider population and it is more accurate because it includes a carefully planned description of the occurrences. This is in line with Saunders, Lewis and Thornhill (2009) who observe that descriptive research design is a means of gathering information by questioning a group of individuals or conducting a questionnaire. Considering the research questions of the study, the positivist-quantitative explanatory approach is found most suitable. the population of the study consists of four (4) mobile telecommunication companies operating in South-South Nigeria. These companies are: MTN Nig Comm. Plc, Airtel Networks Limited Plc, GlobacomLimted, 9Mobile Limited call centres. The sample size of the study was (96) ninety-six and data was collected using a structure questionnaire. In assessing the validity for this study, two forms of validity were involved; the face, and content validity, and the reliability test was carried out using Cronbach's alpha coefficient (Cronbach, 1951). Pearson Product Moment Correlation (PPMC) was used to analyze the bi-variate relationsip at a 0.01 significance level.

DATA ANALYSIS AND RESULTS

Table 1: Correlations Analysis on Predictive Human Resource Analytics and the measures of Organizational Performance

Correlations

			Predictive Analytics	Market Performance	Operational Performance	Stakeholders Satisfaction
Spearman's rho	Predictive Analytics	Correlation Coefficient	1.000	.528**	.512**	-.799
		Sig. (2-tailed)	.	.000	.000	.000
		N	83	83	83	83
	Market Performance	Correlation Coefficient	.528**	1.000	.851**	.039
		Sig. (2-tailed)	.000	.	.000	.729
		N	83	83	83	83
	Operational Performance	Correlation Coefficient	.512**	.851**	1.000	.052
		Sig. (2-tailed)	.000	.000	.	.643
		N	83	83	83	83
			83	83	83	83

**. Correlation is significant at the 0.01 level (2-tailed).
Source: SPSS Version 26.0 Result, 2024

Research Question 1: How does predictive resource human analytics affect market performance in the mobile telecommunication companies in South-South Nigeria?

Table 1 with (*rho* = 528**), indicates that there is moderate positive relationship between predictive resource human analytics and market performance. Hence, the more the predictive resource human analytics is applied the more the market performance increase in the mobile telecommunication companies in South-South Nigeria.

Research Question 2: How does predictive resource human analytics affect operational performance in the mobile telecommunication companies in South-South Nigeria?

Table 1 with (*rho* = 512**), indicates that there is moderate positive relationship between predictive resource human analytics and operational performance. Hence, the more the predictive resource human analytics is applied the more the operational performance improved in the mobile telecommunication companies in South-South Nigeria.

The test for the two hypothetical statements:

Ho_1 There is no significant relationship between predictive human resource analytics and market performance in the mobile telecommunication companies in South-South Nigeria

Table 2 on predictive human resource analytics and market performance showed the probability value (P-v=0.000 < 0.05%) level of significance, hence from the decision rule, null hypothesis is rejected indicating that there is a significant relationship between predictive human resource analytics and market performance. This shows that predictive human resource analytics if applied will has a significant influence on market performance in the mobile telecommunication companies in South-South Nigeria.

Ho_2 There is no significant relationship between predictive human resource analytics and operational performance in the mobile telecommunication companies in South-South Nigeria

Table 2 on predictive human resource analytics and operational performance showed the probability value (P-v=0.000 < 0.05%) level of significance, hence from the decision rule, null hypothesis is rejected indicating that there is a significant relationship between predictive human resource analytics and operational performance. This shows that predictive human resource analytics if applied will has a significant influence on operational performance in the mobile telecommunication companies in South-South Nigeria.

DISCUSSION OF FINDINGS

The first, and second research hypotheses sought to examine the relationship between predictive analytics and the two measures of organizational performance using Spearman’s Rank-order Correlation Coefficients techniques and the findings showed that: predictive human resource analytics has a moderate positive and significant relationship with market performance. Similarly, predictive human resource analytics has a moderate positive and significant relationship with operational performance of mobile telecommunication industry in South-South Nigeria. The findings of this study support the findings of Ejo-Orusa, and Okwakpam (2018) whose outcome from the correlation analyses showed that there is a significant positive relationship between predictive human resource analytics and the HRM practices used for the study. Based on the findings, it can be concluded that predictive human resource analytics is an important factor in enhancing the HRM practice outcomes. Therefore, the study recommends that HRM practitioners should embrace the use of predictive human resource analytics in their practices.

CONCLUSION AND RECOMMENDATIONS

The study concludes that predictive human resource analytics is an indispensable tool for organizational performance in the mobile telecommunication companies in South-South Nigeria. This is because predictive human resource analytics showed a significant influence on organizational performance in the mobile telecommunication companies under study. Specifically, the study concludes that: predictive human resource analytics has a moderate influence on the measures of organizational performance such as: market performance, and operational performance in the mobile telecommunication companies in South-South Nigeria.

It is thus recommended that HR practitioners' in the mobile telecommunication companies in Nigeria need to incorporate the use of predictive human resource analytics in their HRM practice functions to achieve timely results. Thus, practitioners should lay more emphasis on utilizing this level of analytics in their HRM practice functions, as doing so would help them achieve their HR objectives efficiency and effectiveness; and ultimately earn a strategic position in the competitive business environment.

REFERENCES

Adegoke, A. S., & Babalola, I. T. (2011). Quality of service analysis of GSM telephone system in Nigeria. *American Journal of Scientific and Industrial Research*, *2*(5), 707-712.

Akanji, B., Mordi, C., & Taylor, A. (2015). The nature and outcomes of emotion work in customer service management: Trends and Challenges. *Economic Insights,4*(67) 13 – 21.

Ateke, B. W., & Nwulu, C. S. (2018). Corporate branding and marketing success of quick service restaurants. *International Journal of Business and Law Research*, 6(2), 9-19.

Ateke, B. W., & Simeon, B. (2018). Marketing alliance and business wellness of deposit money banks. *International Journal of Innovations in Marketing Research and Entrepreneurial Studies*, *7*(4), 126-136.

Barney, J. B. (1986). Organizational culture: Can it be a source of sustained competitive advantage? *Academy of Management Review, 11*(3), 656-665.

Cherotich, H., & Mose, T. (2023). Human resource analytics and performance of independent Regulatory Agencies in Kenya. *International Journal of Management and Business Research*, 5(2), 107-119.

Cronbach, L. J. & Meehl, P. E. (1979). Construct validity in psychological tests; in Bynner and Stribley.

Davenport, T. H. (2000). *Working Knowledge: How organizations manage what they know*. Harvard Business School Press.

Delen, D., & Demirkan, H. (2013). Data, infomation and analytics as services. *Decision Support Systems*, *1*(2), 359-363.

Ejo-Orusa, H., & Okwakpam, J. A. A. (2018). Predictive HR analytics and human resource management amongst human resource management practitioners in Port Harcourt, Nigeria. *Global Scientific Journal*, *6*(7), 254.

Fink, A. A. (2010). New trends in human capital research and analytics. *People and Strategy*, *33*(2), 14.

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), 157-178.

National Bureau of Statistics (NBS, 2016). *Nigerian Telecommunications Sector summary report and the full year of 2019*. Lagos: NBS.

Nsikan, N., Bob-Manuel, I, & Olowononi, F. (2017). The Nigerian Telecommunication Industry: Analysis of the first fifteen years of the growths and challenges in the GSM market (2001 – 2016). *Proceedings of the World Congress on Engineering and Computer Science*

Obisi, C., Samuel, R., & Ilesanmi, A. (2020). Influence of workforce planning on organizational performance in the manufacturing industry of Lagos, Nigeria. *Global Business Review*, *21*(2), 404–417.

Oladipupo, O. O., & Olubusayo, F. H. (2020). Human resource analytics dimensions and employee engagement in Manufacturing Industry in Nigeria: A conceptual review. *Journal of Management Information and Decision Sciences*, *23*(5), 629-637.

O'Riordan, D. & Humphreys, G. (2002). How much do high-performance work practices matter? A meta-analysis of their effects on organizational performance. *Personnel Psychology*, *5*(9), 501-528.

Selen, D., & Faruk, S., (2011). Managerial resourcefulness: Validation of a new questionnaire measure in the Turkish context. *Journal of Entrepreneurship, 20*(2), 249-272.