

Predictive Analytics and Organizational Competence of Global System for Mobile Telecommunication Firms in Nigeria

¹Ambie I. Georgewill, ²Isaac Zeb-Obipi and ³Austin O. Oparanma

Department of Management, Faculty of Management Sciences

Rivers State University, Port Harcourt

Abstract

The purpose of this paper was to ascertain the relationship between predictive analytics and organizational competence of GSM telecommunication firms in Nigeria. The objectives centred around identifying the relationship between predictive analytics and the measures of organizational competence (functional competence, technological competence, quality control). The design for the study was the correlational design and the population for this study comprised of four functional GSM telecommunication firms with the population elements comprising 16 managers of the firms/. Data collection instrument was the structured questionnaire, which was assessed using the Cronbach alpha reliability test. The Spearman's rank order correlation was used in testing for the bivariate hypotheses. The results from the analysis revealed that there is a significant relationship between predictive analytics and organizational competence of GSM telecommunication firms in Nigeria. It was concluded that activities concerned with the adoption of utility of predictive analytical processes, enhances and contributes substantially towards the organizations competence level. It was recommended that the management of the related telecommunication firms focus on advancing suitable frameworks and policies that further the interest of its predictive analytical goals.

Keywords: *Predictive Analytics, Functional Competence, Technological Competence, Quality Control.*

Introduction

The success and achievements of organizations depend on the competence and capabilities of its workers. Zeb-Obipi (2017) noted that organizations are fundamentally driven by the features of their human resources. However, it is the responsibility of the organization to ensure that such human resources are patterned adequately to address the needs of the organization. This is in agreement with Arifin (2015) who stated that the workers behaviour, skills and knowledge are key to the organizations ability to adapt and meet with the demands of its markets. Thus, the competence of the organization draws inherently from the capacities and skills of its workforce, a process which when applied effectively, ensures improved levels of performance for the organization. However, recent studies suggests that apart from the human resource composition of the organization, there is the need for studies to also address organizational actions of monitoring, control and the application of information related analytical systems to the management of the organizations human resource as a basis for attaining the organizations goals. This is as Derwin (2016) described such analytical processes as infusive on the behaviour of the organization with strong implications for organizational competence.

Nwulu and Ateke (2018) described organizational competence as the composition of skills, knowledge and capabilities captured and detailed within the context of the organization and structured in such a way that enables the organizations effectiveness and performance in specific areas of interest or concern. From the above definition, two qualities of competence at the organizational level are emphasized – (a) the detailed composition of skills, knowledge and capabilities, and (b) the usefulness and capacity to apply such in a manner that offers value to the clients and customers of the organization. Competence is as such both a composition and action in line with the organizations market. Sushil and Burgess (2016) asserted that to be competent suggests a state or disposition which at the same time could be expressed given demanding situations. Thus, the human resource content and capabilities can be said to drive and condition the organizations competence and also determine how well the organization is able to cope and address the demands of its environment. Going by Mugo (2016) position on the imperatives of understanding the environment, and the application of such knowledge in advancing a healthier and more effective human resource content, with the necessary capabilities and capacities essential for facilitating outcomes of performance and effectiveness; one finds that a growing number of organizations today rely and utilize various forms of knowledge-based technologies which are designed to efficiently bridge the differences between the organizations human resource content and its environment. These knowledge and data-based technological approaches are such that engage a myriad of factors and processes in ascertaining the wellbeing and compatibility of the organizations human resource with its goals and objectives (Falletta, 2014; IBM, 2016; Green, 2017). Not only have these processes and

systems grown popular due to their effectiveness in data management and control, but they also provide for contextual concerns and the development of specific functional formats suited to various situations and organizations. Primary to this study is that of workforce analytics.

Workforce analytics describes the various protocols and actions that draw on data management and systems thinking in outlining human resource gaps and strengths and also apportioning suitable recommendations or options for addressing its related concerns (Evans & Charles, 2012; Fink & Michael, 2017). Workforce analytics is important for several reasons, primary of which is its emphasis on efficiency in data processing and its relative accuracy in predicting and prescribing solutions or actions for improved outcomes. Bock (2015) argued that workforce analytics provides for a more integrating approach towards human resource control and coordination – apart from its focus on the current conditions and capacities availed in the organizations workforce, it also brings into consideration factors concerned with the future and relevance of the workers and their skill sets given possible changes and emerging dynamics in the environment of the organization (Garvin, 2013; Deloitte, 2017). As such, it diagnosis, describes and in the same vein makes predictions on the viability and value of the organizations human resource in future markets (Levenson, 2017). Workforce analytics also reflects human resource management actions involving the use of statistical methods and data on the human resource of the organization aimed at enhancing their features and through that, ensuring improved organizational outcomes (Van der Togt & Ramussen, 2017), Lesser and Hoffman (2012) noted that the changing context and processes of business organizations today stems from its growing recognition and reliance on information technology, and the nature of its application and use in the organization. This has also impacted on the nature of human resource management which overtime has experienced a switch in form and attributes – shifting from the traditional documentation and filing of records and reports on workers to a more elaborate and systematic data-based processing of the human resource content of the organization. Levenson, (2018) opined that not only has such shifts in operations and human resource management facilitated effectiveness in the coordination and harnessing of the human resource capacities but it has also enabled efficient systems and the smooth management of the organizations human resource content.

Studies on organizational competence (Bran & Udrea 2016; Hettiararchichi & Jayaranthna, 2014; Kubaisi, 2013) are such that are increasingly aligning with emerging thoughts on the usefulness and imperatives of descriptive and predictive data analytics – promoting organizational capacities and capabilities through the effective discerning of their human resource gaps and shortcomings, particularly within their context of operations. Nonetheless, much more is required in bridging the observed disparities in actual practice and theorized solutions especially within African nations which commendably, are beginning to pick up pace in terms of technological applications in business (Kubaisi, 2013; Jarvis, 2014). This is because apart from improved levels of efficiency and performance outcomes, such technological and data analytical systems have the potential of boosting the competitiveness of related organizations and advancing their functional as well as operational features in ways that propel them beyond their local industries to a more globalized context – reinforcing their presence and success levels.

Unfortunately, the role of workforce analytics in outcomes of organizational competence has received scant attention over the years – thereby posing a major gap in research on organizational competence. This is as previous studies on organizational competence have dwelled on predictors such as human resource development (Sheehan, Garavan & Carbery, 2014), knowledge management (Mohamed & Abdellah, 2017) leadership style (Sushil & Burgess, 2016) and organizational culture (Derwin, 2016) – focusing mostly on related actions that deal with direct relationships and the orthodox monitoring of human resource features. This is as Huslid (2015) noted that the concept of workforce analytics is understudied and with little considerations in research addressing organizational outcomes. Similarly, Pape (2016) argued that the infusion of information technology and statistical analysis in the management and development of the human resource enables a more controlled and well adapted process, suited to the challenges of the current business era. This study as such contributes towards enriching literature and extending knowledge on the relationship between predictive analytics and organizational competence as well as the influence of organizational structure on the relationship between the variables in GSM telecommunication firms in Nigeria. The purpose of this paper was to ascertain the relationship between predictive analytics and organizational competence of GSM telecommunication firms in Nigeria.

This study was guided by the following research question:

- i. What is the relationship between predictive analytics and functional competence of GSM telecommunication firms in Nigeria?
- ii. What is the relationship between predictive analytics and technological competence of GSM telecommunication firms in Nigeria?
- iii. What is the relationship between predictive analytics and quality control of GSM telecommunication firms in Nigeria?

Conceptual Framework

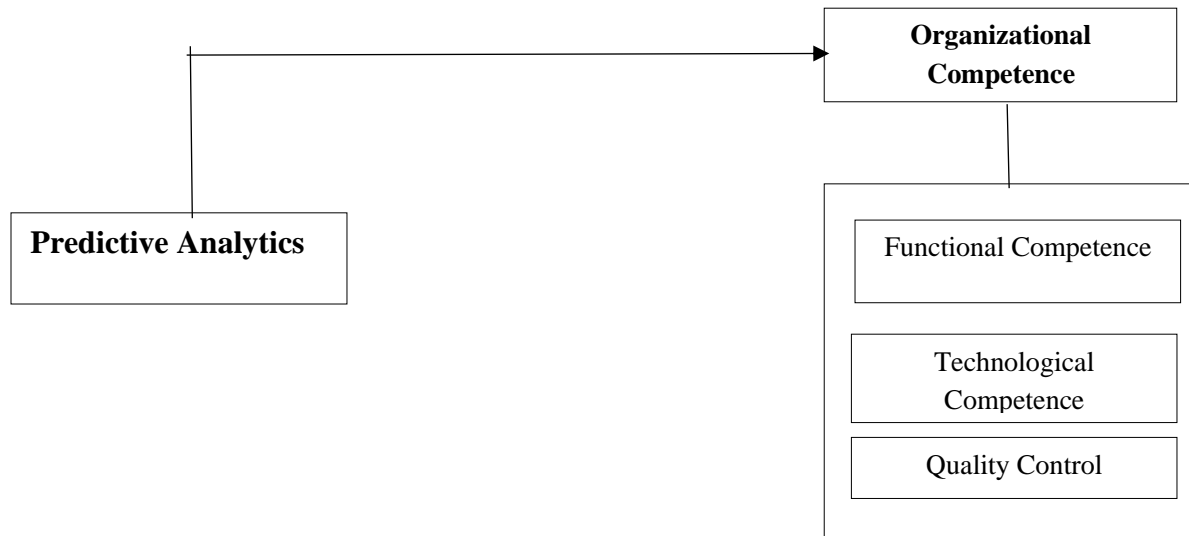


Fig.1: Conceptual framework for Predictive Analytics and Organizational Competence
Source: Researchers (2021)

Theoretical Foundation
Knowledge-Based View Theory

The knowledge-based theory draws its tenets from the resource-based view theory (Nagano, 2015). While the resource-based theory addresses a broad and more encompassing perspective of the organizations human resource, the knowledge-based view theory focuses more on the latent features of knowledge and skills derivable from the workers in the organization. Rathi, Given and Forcier (2016) described the knowledge-based theory as primarily addressing the potentials and functional capacities of the organization. The theory prescribes investments and the consistent evaluation of the organizations human expertise as imperative for driving its competitiveness and success. Key to this position is the fact that the theory specifically differentiates between the human resource and the human capital – where the former represents the available manpower within the organization, and the latter represents the capacities, skills, knowledge and creative content of such manpower.

Likewise, organizational competences have been defined as “the collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies (Rosenberg, 2014). Essentially, competences and capabilities both are relatively stable collective abilities for relatively stable and organized activities that benefit the organization. They concern the coordination and integration of resources, most of which are intangible. Capabilities exist on many levels in the organization, and range from individual skills, operational capabilities, and functional capabilities (e.g., R & D capability, marketing capability) to organizational capabilities and even inter-organizational and network-level capabilities.

The knowledge-based view theory ultimately ascribes the organizations success to the capacity of its human resource – pin pointing related policies and vices necessary for the development of the human capital as necessities and mechanisms that ensure the organizations survival. The theory reinforces the position of studies (Rosenberg, 2014; Feng, Morgan & Rego, 2017) which consider the organization as fundamentally an economic as well as social action, constituted for gain as well as meaning and connectivity – thus, knowledge within the organization can be expressed by the workers within the organization or can be sourced from its culture, documentations, system, routines and even policies. Organizations are therefore a composition of people which through their interaction and functions within the organization generate key features vital to the organizations operations (Nagano, 2015). These features present the organization with the required lever for pursuing its goals. However, as the knowledge-based view theory proposes, organizations which are able to consistently fine tune and adapt their features and human resource capacities through the required programs and role functions, have a higher tendency and chance for survival and success.

The Concept of Predictive Analytics

Predictive analytics reflects the actions concerned with assessing the future needs of the human resource in line with the goals of the organization and the changes in its environment (Marler & Boudreau, 2017). It is as such a proactive action. The predictive analytic dimension, much like the diagnostic analytic dimension, focuses on both internal as well as external factors in its assessment and redress of its human resource content (Arora & Rahman, 2016). However, the former makes comparisons it also assesses trends and is mostly interested in the future of the organization and what is required of its human resource for the actualization of that future; whereas the latter is more interested in existing market and industry situations and the organizations competence in scaling through its challenges and problems given current or existing human resource content at its disposal (Marler & Boudreau, 2017).

Lawrence (2012) reported the biggest driver of development in the HR area to be predictive analytics. He states that in previous years most people have made the mistake of talking about predictive analytics when they actually meant descriptive analytics i.e. reporting based on summary of historical events. Thus it makes sense to spend a few moments with the definitions of analysis, analytics and predictive analytics. As said, some believe that a single report on historical events equals an analysis or analytics. A report shows only one dimension of the topic under examination. Regardless how many reports you have in the past, you need to be able to interpret them and draw some conclusions, connections and insights between events and effects before you should state that the action taken has been “an analysis”. Thus an analysis can be defined as the interpretation of provided information (Fitz-enz and Mattox 2014.) Analytics then again expand the concept of analysis. Analytics include taking the tools into use for the analysis. Others understand analytics simply as running some statistical models.

Analytics is the transformation of the data into actionable insight. Analytics is also broadening the concept of analysis to cover the usage of different statistical techniques but it also covers the technological aspects. In today’s world, where the amount of data grows continuously, one needs to incorporate machine power to be able to perform the analysis more efficiently. According to Naasz and Nadel (2015) today’s possibility of using the machine power in categorizing, analyzing and consolidating data answers today’s challenges of rapidly growing data volumes, variety and data velocity. It would be impossible for a human eye to filter out meaningful information out of masses of data without any help of the machine-aided analytics. As Fitz-enz and Mattox (2014) describe it, around 80% of the currently produced data is unstructured such as images, non-numeric data, text and videos. The amount of the data continues to grow alongside the rise of the social media usage and the result will be a mixture of structured and unstructured data. In order to create information from this mixture of fast growing, variable data in HR but also in the other areas, one needs to exploit the logical problem solving and statistical analysis of the data. In addition, analysing both structured and unstructured data becomes an important source for understanding patterns in data. For example, natural language datasets present extraordinary versatility. User-generated content is frequently analysed to understand and predict customer behaviour. Coupled with unsupervised learning methods such as clustering and dimension reduction, an analysis of the semantically coherent groups and themes emerging from textual corpus or images is found to be helpful to assist operational decisions.

The Concept of Organizational Competence

Organizational competence concerns its capacity for expressing value and effectively addressing the concerns of its existence. As earlier noted, competence is not only a condition or attribute but also the expression and actual demonstration of such. In terms of attributes, competence denotes existing infrastructure, systems and skill levels that reflect capacities that are in tune with the nature and evolving features of the organizations context or environment (Dessler, 2015; Sheehan et al,

2014). It depicts soundness and change readiness from an upfront assessment of the organizations components or factors. Hence, it is possible for competence to be perceived without its actual manifestation in terms of action or behaviour, but rather from an assessment of its qualities and properties. Mohammad, Davoud and Samaneh (2015) argued that organization competence is observable and can also be determined from its characteristics and the nature or composition of its personnel. According to the author, capacities can be detected and in most situations justified based on an assessment of the organizations existing records of performance, structure, operational capacities, social ties or connections, and the qualifications and experience of its staff or human resource (Ateke & Kalu, 2016; Abou-Moghli, 2015).

In addition, competences leverage learning and skills to build growth alternatives, and reduce uncertainty (Kubaisi, 2013). In a sense, to achieve competitive edge, core competencies should provide potential access to a wide variety of markets, make a significant contribution to the perceived customer benefits of the end products, and should be difficult for competitors to imitate. They should also be (1) unique to the corporation, (2) essential to the development of core products and eventually to end products, and (3) marketable and commercially valuable (Baba, 2012). Hence, successfully developing core competencies depend on organizational learning, knowledge acquisition, experimentation and dynamic organizational routines because those factors lead to accumulation of universal and tacit knowledge, continuous improvement and firm-specific skills and capabilities. Tacitness reflects the extent that a competency is intuitive, non-verbalized and yet unarticulated and tacit knowledge is inherently more ambiguous than articulated knowledge (Kubaisi, 2013). Tacit knowledge protects a competency from being imitated by competitors. Building core competencies will enhance using firm's internal resources effectively and taking advantage of capabilities in developing successful products, penetrate emerging markets, and satisfying customer demands. In a sense, the real sources of advantage are to be found in management's ability to consolidate corporate wide technologies and production skills into competencies that empower individual businesses to adapt quickly to changing opportunities (Minbaeva, 2018). Therefore, to dominate and shape the dynamic market, managers should think of needed skills, technologies, and capabilities that organization must possess. Wright et al. (1998) identified 3 possible core competencies of petrochemical refineries: (1) skilled workforce, (2) efficient production, and (3) new business development. Infrastructure capabilities, for example, concern the internal operations of the company, and technological capabilities provide direct support to the product or service portfolio (Simon & Ferreiro, 2018).

Functional Competence

This is the capacity of workers within the organization to carry out their roles and responsibilities in a manner that is expected and which matches with the demands of the environment of the organization (Derwin, 2016). The functional competence describes the extent to which the human resource expresses adeptness and an overall knowledgeable ability of their roles and responsibilities in the organization. Functional competence according to Derwin (2016) embodies the level or extent to which the organization can boast of qualified staff who are able to effectively meet with the demands of the organization and in efficient and sustainable ways that contribute or add to the organizations overall performance.

Mugo (2016) noted that there is an evident link between the capacities and skills of the human resource and the organizations capacity to function effectively. This ties to the fact that workers competences translate to the outcomes of functions in the organization. Derwin (2016) argued that to bridge the differences between what is obtainable in terms of skills and the expectations of the organization, it is imperative that organizations focus on reprogramming,, harnessing and effectively applying the human resource content of the organization in ways that enhance their impact and contributions towards the organization. According to Mugo (2016), functional competence drives the wellbeing of the organization and facilitates its ability to address related challenges and emerging demands within its context of environment (Mei & Seng, 2015).

Quality Control Competence

This is the capacity of workers to adhere and act in line with established work and output models, or formats, which are aligned in such a way as to advance high-rating services and products of value (Derwin, 2016). As such, this measure relates to the level of cohesion and cooperation that exists between the workers, and the extent to which such drive the organizations ability to its objectives (Bohlouli, Ansari, Kakarontzas & Angelis, 2015; Dessler, 2015; Diad & Musa, 2015). Quality control competence demonstrates the extent to which workers conform to work statutes and established operational frameworks in the organization. Syahrums *et. al.*

(2016) argued that quality control requires the installation of mechanisms and in most cases software systems that monitor and ensure compliance on the part of all organizational members (Baek & Kim, 2014; William, Adolfina & Sumarauw, 2015; Mei & Seng, 2015; Mugo *et al*, 2016), thereby enhancing the level of value and quality alignment to established standards in the organization.

The extent to which members of the organization are able to maintain and adhere to established function and quality standards or benchmarks is also considered a form of competence, especially since it anchors on a good understanding and knowledge of the implications and requirements for such. Dessler (2015) argued that to build capacity, organizations must first establish standards or targets. This is important for streamlining behaviour and ensuring actions are effectively coordinated and fixated in a way that benefits the organization substantially. Studies point to quality control competence as a major factor in determining factors such as the consistency and reliability in the behaviour of the organization – ascertaining its capacity to be dependable during times of uncertainty and turbulence within its environment (Derwin, 2016; Baek & Kim, 2014). Thus, where there is substantial quality control, there is also adequate performance and effective coordination of human resource actions.

Technology Competence

This is the capacity for technological know-how and effective application of organizational software and hardware applications such that enhance the organizations performance. Derwin (2016) argued that technology competence or skill is such that denotes the change readiness of the organization. Technology competence entails the workers ability to adapt and consistently upgrade their knowledge and expertise in line with changing technological systems and features. Hasbidin (2017) reiterated the need for workers to be responsive in terms of modern technological systems which could be disruptive to the organizations operations. The author stressed on the workers change and technology learning behaviour as being highly critical to the workers. Levenson (2017) argued that the technology competence of the organization, much like other forms of competence, is relative and highly fluid. Hasbidin (2017) opined that competence in line with technology builds on the changes and direction of competition within the industry, especially that which is anchored on technological systems – that is to say, what might have been considered as competent yesterday, may not be the same within the context of today’s level of competition and technological advancements. Hasbidin (2017) further noted that where management is able to integrate its technology effectively using trained and competent staff, there is a higher tendency for efficient processes and more effective outcomes. Similarly, Levenson (2017) argued that competent workers are a cushion against possible disruptive technologies – helping to bridge possible shocks from new or recently adopted technological systems and their use in the operations of the organization.

Predictive Analytics and Organizational Competence of Global System for Mobile Telecommunication Firms in Nigeria

The use of predictive analytics in advancing the required human resource forms and content is such that builds on an understanding on the environment and market of the organization. Most often organizations rely on actions related to research and development as a basis for assessing the trends of their markets and in that way structuring human resource content suited for such. Bradford et al (2017) observed that the effectiveness of the human resource of the organization is directly linked to the value it offers and the gap it addresses within its context. The human resource draws its relevance from the its capacity to satisfy the changing and emerging needs of the organization – particularly, that which bothers on the dynamic nature of the organizations market (Zeb-Obipi, 2017). The use and application of predictive analysis is futuristic in nature – in that it tends to proffer estimates that focus on identifying the possible trends and direction of business or organizational interest; thus specifying what skills, qualifications or roles would be most important or necessary in upcoming years or within new and emerging markets (Fechey-Lippens et al, 2015). However, there is scant literature addressing the nature of the relationship between predictive analytics and organizational competence.

Thus the following hypotheses are put forward:

Ho₁: There is no significant relationship between predictive analytics and functional competence of GSM telecommunication firms in Nigeria

Ho₂: There is no significant relationship between predictive analytics and technology competence of GSM telecommunication firms in Nigeria

Ho₃: There is no significant relationship between predictive analytics and quality control competence of GSM telecommunication firms in Nigeria.

Methodology

The design for the study was the correlational design and the population for this study comprised of all four functional GSM telecommunication firms with the units of measurement comprising 16 managers of the firms. Data collection instrument was the structured questionnaire, which was assessed using the Cronbach alpha reliability test. The Spearman’s rank order correlation was used in testing for the bivariate hypotheses with the aid of Statistical Package for Social Sciences version 23.0. The tests were carried out at a 95% confidence interval and a 0.05 level of significance.

Data Analysis and Results

Table 1: Hypotheses for Predictive Analytics and Organizational Competence

			Function	Tech	Quality
Spearman's rho	Predictive	Correlation Coefficient	.723**	.760**	.749**
		Sig. (2-tailed)	.000	.000	.000
		N	16	16	16
	Function	Correlation Coefficient	1.000	.692**	.639**
		Sig. (2-tailed)	.	.001	.003
		N	16	16	16
	Tech	Correlation Coefficient	.692**	1.000	.715**
		Sig. (2-tailed)	.001	.	.001
		N	16	16	16
	Quality	Correlation Coefficient	.639**	.715**	1.000
		Sig. (2-tailed)	.003	.001	.
		N	16	16	16

Source: Survey Results, 2021

Table 1 above illustrates the relationship between predictive analytics and the measures of organizational competence.

What is the relationship between predictive analytics and organizational competence of GSM telecommunication firms in Nigeria?

The evidence reveals that the relationship between predictive analytics and functional competence has a rho = 0.723; the relationship between predictive analytics and technological competence has a rho = 0.760; and the relationship between predictive analytics and quality control has a rho = 0.749. The results show that predictive analytics has a strong relationship with all measures of the criterion variable hence the relationship between predictive analytics and organizational competence is positive and strong.

- i. The result for Hypothesis 1 indicates that predictive analytics has a strong positive relationship with the function of the GSM telecommunication firms where rho = .723 and the relationship is significant with P = 0.000. The evidence suggests that predictive analytics is a strong and high predictor of the firm’s ability to function effectively and express competence in their area of expertise.
- ii. The result for Hypothesis 2 indicates that predictive analytics has a strong positive relationship with the technology of the GSM telecommunication firms where rho = .760 and the relationship is significant with P = 0.000. The evidence suggests that diagnostic analytics is a strong and high predictor of the firm’s ability to apply technology effectively and express competence in their area of expertise.
- iii. The result for Hypothesis 3 indicates that predictive analytics has a strong positive relationship with the quality control of the GSM telecommunication firms where rho = .749 and the relationship is significant with P = 0.000. The evidence suggests that diagnostic analytics is a strong and high predictor of the firm’s ability to control their work forms effectively and expresses competence in their area of expertise.

Discussion of Findings

The nature of the relationship between predictive analytics and the dimensions of organizational competence are all noted to be significant. The findings of the study in this way projects the organizations systems and functions as being vital and imperative to its overall success with regards to organizational competence. Munck and Borim-de-Souza (2009) argued that sustainable organizational actions are those responsible for causing the least quality control impact possible due to operational activities and adopted processes, while simultaneously paying attention to socio-functional development that will enable the survival of present and future generations. Such development, according to the authors (Dyllick & Hockerts, 2002), should occur in a manner completely dependent upon the people inserted within organizational and societal environments, because they are those ultimately responsible for the final decisions and validation of all such propositions. This suggest a detailing of organizational processes with analysis based on the experiences of the various stakeholders of the organization who in turn, define what is acceptable or unacceptable to them. By considering that in order to enact their activities, organizations consume not only financial resources, but also technological and quality control ones, it is therefore imperative that the predictive analytics of the organization should begin with and address these factors as well in their operations.

Elkington (cited in Dyllick & Hockerts, 2002) identified predictive analytics as imperative for advancing effective organizational measures and systems for dealing with the three pillars of competence: functional, technological and environmental. The findings of this study serve to reinforce his idea, which is further echoed in Dyllick and Hockerts (2002), that these three elements have different properties and therefore require different approaches. Dyllick and Hockerts (2002), in an attempt to match competence expectations with organizational requirements, affirmed that researchers in this area seek to discover how organizations can promote quality control competence at the same time as they increase their technological and quality control efficiency. In order for a company to truly become sustainable, it is necessary for it to integrate the various features that compose organizational competence.

Conclusion and Recommendations

This study concludes by affirming that predictive analytics significantly predicts the organizational competence of GSM telecommunication firms in Nigeria. This statement follows the evidence provided by the results from the tests on the hypothetical statements and the findings generated from the results. The study showed that when predictive analytics is well applied its related tools applied, it enhances the organizational competence of GSM telecommunication firms. The study recommends that the management of the GSM telecommunication firms focus on ensuring the reliability and validity of data and information about the trends and changes in their environment and thus enrich their predictive analytical processes in ways that enhance its appropriateness and effectiveness in supporting decision-making.

REFERENCES

- Abou-Moghli, A. (2015). The role of organizational support in improving employees performance. *International Business Research*, 8(2), 198-203.
- Alimin, I. I., Raduan, C. R., Jegak, U., & Haslmda, A. (2012). The effects of organizational resources, capabilities and systems on competitive advantage. *International Business Management*, 6(2), 176-186.
- Arifin, M. (2015). The influence of competence, motivation, and organisational culture to high school teacher job satisfaction and performance. *International Education Studies*, 8(1), 1913-9039.
- Arora, B., & Rahman, Z. (2016). Using big data analytics for competitive advantage. *International Journal of Innovative Research and Development*, 5, 247-250.
- Ateke, B. W., & Kalu, S. E. (2016). Managing the sales force for competitiveness: experience from insurance firms in Port Harcourt. *Ilorin Journal of Marketing*, 3(2)1-15.

- Baba, Y. (2012). Adopting a specific innovation type versus composition of different innovation types Case study of a Ghanaian bank. *International Journal of Bank Marketing*, 30(3), 218-240.
- Baek, P., & Kim, N. (2014). Exploring a theoretical foundation for HRD in society: Toward a model of stakeholder-based HRD. *Human Resource Development International*, 17(5), 499–513.
- Bock, L. (2015). *Work rules!: Insights from inside Google that will transform how you live and lead*. New York: Twelve Books.
- Bohlouli, M., Ansari, F., Kakarontzas, G., & Angelis, L. (2015). An adaptive model for competences assessment of IT professionals. *Integrated Systems: Innovations and Applications*, 91–110.
- Bradford, H., Guzmán, A., & Trujillo, M. A. (2017). Determinants of successful internationalisation processes in business schools. *Journal of Higher Education Policy and Management*, 39, 435-452
- Bran, C., & Udrea, C. I. (2016). The influence of motivation and flexibility on job performance. *European Proceedings of Social & Behavioural Sciences*, 15, 135-143.
- Bran, C., Militaru, G., & Ionescu, S. (2015). Cyber marketing, a key driver for the improvement of flexibility in the sales process of a company. In *International Conference on Management and Industrial Engineering* 7(91). Niculescu Publishing House.
- Cania, L., & Korsita, B. (2015). Knowledge management: The key to sustainability of economic crisis. *Mediterranean Journal of Social Sciences*, 6(1 S1), 548-548.
- Deloitte. (2017). *Rewriting the rules for the digital age: 2017 Deloitte human capital trends*. New York: Deloitte University Press.
- Derwin, G. (2016). The influence of competence and job satisfaction of employee performance through work culture, 5(2), 2302-1411.
- Derwin, G. (2016). The influence of competence and job satisfaction of employee performance through work culture, 5(2), 2302-1411.
- Dessler, G. (2015). *Human resource management*, 14th ed. Prentice Hall
- Dessler, G. (2015). *Human resource management*, 14th ed. Prentice Hall
- Diad, S.M., Musa, T.A. (2015). The influence of training on employee's performance, organizational commitment, and quality of medical service of Jordanian private hospitals. *International Journal of Business and Management*, 10(2), 117-127.
- Dias, C., & Escoval, A. (2014). Organizational flexibility as a strategic option: fostering dynamic capabilities of hospitals. *Healthcare Quarterly*, 17(2), 38-43.
- Dias, C., & Escoval, A. (2014). Organizational flexibility as a strategic option: fostering dynamic capabilities of hospitals. *Healthcare Quarterly*, 17(2), 38-43.
- Dyllick, T., & Hockerts, K. (2002). Beyond the business case for corporate sustainability. *Business strategy and the environment*, 11(2), 130-141.
- Ebrahimian, Y., & Jelodar, M. (2011). Organizational agility, speed of accountability, and flexibility. *Journal of Police Human Development*, 39, 13-34.
- Falletta, S. (2014). In search of HR intelligence: evidence-based HR analytics practices in high performing companies. *People and Strategy*, 36(4), 28.
- Fecheyr-Lippens, B., Schaninger, B., & Tanner, K. (2015). Power to the new people analytics. *McKinsey Quarterly*, 51(1), 61-63.

- Fink, Alexis A., and Michael C. Sturman. (2017). *HR Metrics and Talent Analytics*. In *The Oxford Handbook of Talent Management*. Edited by David G. Collings, Kamel Mellahi and Wayne F. Cascio. Oxford: Oxford University Press
- Fitz-Enz, J., & John Mattox, I. I. (2014). *Predictive analytics for human resources*. John Wiley & Sons.
- Garvin, D. A. (2013). How Google sold its engineers on management. *Harvard Business Review*, 21, 75–82.
- Green, David. (2017). The best practices to excel at people analytics. *Journal of Organizational Effectiveness: People and Performance* 4: 137–44
- Guilherme, B.R., Claudia, S.P. & Gilberto, T.S. (2017). *What is the social gain from competency management?* The employees' perception at a Brazilian public university. *Revista de Administracao*, 52, 233-245.
- Hasbidin, F. (2017). Factors affecting employee performance of bank SyariahMandiri, Medan City, *At-Tawassuth Journal*, 2(1), 98-121
- Hettiararchchi, H. A. H., & Jayarathna, S. M. D. Y. (2014). The effect of employee work related attitudes on employee job performance: A study of tertiary and vocational education sector in Sri Lanka. *IOSR journal of Business and management*, 16(4), 74-83.
- Huselid, M. A. (2015). Workforce analytics for strategy execution. In D. Ulrich, W. A. Schiemann, & L. Sartain (Eds.). *The rise of HR: Wisdom from 72 HR thought leaders*. Alexandria, VA. Human Resource Certification Institute.
- IBM. (2016). *Redefining Talent: Insights from the Global C-Suite Study–The CHRO Perspective*. Armonk: IBM Institute for Business Value.
- Kubaisi, S. (2013). The effect of the principles of the resolution (OODA) on strategic agility of movement: a field study in a number of hospitals in the city of Baghdad. *The Magazine of Dinars*, 3, 162-194
- Kubaisi, S. (2013). The effect of the principles of the resolution (OODA) on strategic agility of movement: a field study in a number of hospitals in the city of Baghdad. *The Magazine of Dinars*, 3, 162-194
- Lesser, E., & Hoffman, C. (2012). Workforce analytics: Making the most of a critical asset. *Ivey Business Journal Online*, 76(4).
- Levenson, A. (2017). *Strategic analytics: Advancing strategy execution and organizational effectiveness*. New York: Barrett-Koehler Publishers.
- Levenson, A. (2017). *Strategic analytics: Advancing strategy execution and organizational effectiveness*. New York: Barrett-Koehler Publishers.
- Levenson, A. (2018). Using workforce analytics to improve strategy execution. *Human Resource Management*, 57(3), 685–700.
- 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.
- Mei, P. L., & Seng, F. (2015). The role of internal corporate social responsibility in professional service sector: an empirical study from Klang Valley, Malaysia. *Asia Pacific Journal of Advanced Business and Social Studies*, 1(1).
- Minbaeva, D. B. (2018). Building credible human capital analytics for organizational
- Mohammad, M.M., Davoud, V. & Samaneh, A.N. (2015). Review of the effect of enterprise systems on agility in the organization. *Technical Journal of Engineering and Applied Sciences*, 5(5), 243-252

- Morgan, J. (2017). *The employee experience advantage: How to win the war for talent by giving employees the workspaces they want, the tools they need, and a culture they can celebrate*. John Wiley & Sons.
- Mugo, I. N., Namusonge, S. G., & Sakwa, M. M. (2016). Effect of organizational core competences on performance in the insurance industry in Kenya. *The Strategic Journal of Change and Business management*, 3(4), 1634-1668.
- Muhammad, F., & Abdul, A. (2015). Learning organization and competitive advantage an integrated approach. *Asian Economic and Social Society*, 5(4),73-79.
- Naasz, K., & Nadel, S. (2015). Advances in big data and analytics can unlock insights and drive HR actions. *HR focus*, 92(5), 1-4.
- Nagano, H. (2015). *The evolution of resource-based view*, Chuokeizai-sha, Tokyo.
- Nwulu, C. S., & Ateke, B. W. (2018). Frontline employee competence development and responsiveness of quick service restaurants. *European Journal of Social Sciences Studies*, 2(10), 1-17.
- Okpara, J. O. (2015). Exploring the effects of intangible resources on competitive advantage and performance of listed firms in Nigeria. *Business and Applied Sciences Academy of North America*, 8.
- Pape, T. (2016). Prioritising data items for business analytics: Framework and application to human resources. *European Journal of Operational Research*, 252(2), 687-698.
- Rathi, D., Given, L. M., & Forcier, E. (2016). Knowledge needs in the non-profit sector: an evidence-based model of organizational practices. *Journal of Knowledge Management*, 20(1), 23–48.
- Rosenberg Hansen J, Ferlie E. (2014). Applying strategic management theories in public sector organizations: Developing a Typology. *Public Management Review*, 3(9).
- Rowold, J. (2012). Multiple effect of human resource development interventions. *Journal of European Industrial Training*, 32(1), 32-44.
- Sheehan, M., Garavan, T. N., & Carbery, R. (2014). Innovation and human resource development (HRD). *European Journal of Training and Development*, 38(1/2), 2–14.
- Sheehan, M., Garavan, T. N., & Carbery, R. (2014). Innovation and human resource development (HRD). *European Journal of Training and Development*, 38(1/2), 2–14.
- Simón, C., & Ferreiro, E. (2018). Workforce analytics: A case study of scholar-practitioner collaboration. *Human Resource Management*, 57(3), 781–793
- Sushil, C.J. & Burgess, J. (2016). *Flexible work organizations, the challenges of capacity building in Asia*. New Delhi: Springer
- Syahrum, A., Brahmasari, I. A., & Nugroho, R. (2016). Effect of competence, organizational culture and climate of organization to the organizational commitment, job satisfaction and the performance of employees in the scope of makassar city government. *International Journal of Business and Management Invention*, 5(4), 52-64.
- Van der Togt, J., & Rasmussen, T. H. (2017). Toward evidence-based HR. *Journal of Organizational Effectiveness: People and Performance*, 4(2), 127–132.

Wang, W. C., Lin, C. H., & Chu, Y. C. (2011). Types of competitive advantage and analysis. *International Journal of Business and Management*, 6(5), 100.

William L. Adolfini G. & Sumaraw H. (2015). The effect of training, job placement, and compensation on employee performance on PT. Bank sulutgokantorpusat Manado. *Journal EMBA*, 3(4), 44-45.

Zeb-Obipi, I. (2017). Human resource management: The worker competence management approach. *Conference Proceedings, Department of Marketing, Rivers State University*, 3-4 May, 407-420.