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MACHINE LEARNING AND HUMAN RESOURCE AGILITY IN TELECOMMUNICATION COMPANIES IN NIGERIA

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ABSTRACT

This study investigated the relationship between machine learning and human resource agility. The study was carried out in telecommunication firms in Nigeria.. Survey design was adopted in the generation of data. The instrument for data collection used in this study was the questionnaire. The target population of the study comprised the three hundred and sixty (360) employees in four telecommunications companies. From the population, using Krejcie and Morgan sample determination table a sample size of one hundred and eighty-six (186) respondents was used for the study. Descriptive statistics (mean, standard deviation, percentages) were used as statistical tools for analyzing the data, while Spearman Rank Order Correlation was used as statistical tools to test the hypotheses with the Statistical Package for Social Sciences (SPSS). Findings revealed that there is positive relationship between machine learning and human resource agility. Hence the study concludes that hike in machine learning improves the agility of telecommunication companies. Therefore, among other recommendations, the study strongly suggests that telecommunication firms greatly build a strong organizational culture in order to adapt to emerging change brought about by the adoption of machine learning.

Keywords: Machine Learning, Human Resource, Agility, Telecommunication

INTRODUCTION

Adoption of human resource agility approach with benefits such as increased autonomy and employee control, job enrichment, better performance, well-being (Abrisham, Kar & Abdollahi, 2006), improved quality, providing better customer service, accelerated learning curve, economic savings in all processes, the improvement of organizational culture, leads to economic excellence (Hopp & Van Oyen, 2004); and the lack of agility really can lead to significant losses of opportunity and even threaten the survival of the organization in the long run (Qin & Nembhard, 2010). Unlike traditional methods, agile methods rely on employees and their creativity to fight against instabilities (Muduli, 2016). The social security organization, as the largest provider of social services in Iran, covers the salaried employees, wage earners, and self-employed business owners. Nowadays, this organization continuously encounters internal and external issues, including reduced earned premiums, unemployment of production factors, production costs, rising unemployment insurance costs, members' increased retirement pension, increased average age of insured and pensioners, organization reaching its middle age, existence of liquidity crisis, the growth of various insurance companies, and so on. Given that an organization is a social phenomenon and has a continuous interactive environment, it is

inevitable for its survival to constantly revise its internal structure and policies so that it can move towards organizational and human resource agility and become more adapted to the dynamic and changing environment.

Machine learning has become one of the mainstays of the information technology in the past two decades and thus, an important, but hidden, part of our life. The increasing amount of data that is being generated (and stored) daily by individuals and corporations, demands a smart analysis. It is here where machine learning comes to stage as a necessary ingredient for technological progress (. Smola & Vishwanathan, 2008). As the word stands for, machine learning is the study of computer algorithms capable of learning to improve their performance of a task on the basis of their own previous experience. It focuses in achieving that programmable devices and "machines" learn automatically, by themselves. Basically, it is all about systems learning from data.

Machine learning is a subset of AI, or an application of AI (Marr 2016). For professional, machine learning is a category of algorithm which being built to receive input data then use it based on statistical analysis to predict output data while keep updating output data as new input data (Rouse. 2019). Human, they are too lazy to spend all day in front of a screen and upload data into database so they invent a "machine" which can search, access, upload, save and create database - basically can "learn" by themselves. Another point which human preferred a machine can learn by itself because of Internet. Let's imagine the size of data in Internet, no one can sit in front of computer screen all day to upload those data into a machine, just connect that machine with Internet let them be. The question is how human teach a machine "learn" something? How can we define "learn"? The answer is Neural network. It is a computer system designed for classifying data in the same way human brain does with knowledge (Marr 2016). Based on recognizing image, color, size, text, all kind of elements which data contains, a machine can divide it into difference groups. Then depend on any requirement from human, the machine can give you the group of data you want. You can imagine how much time you can save with machine learning technology in all kind of industry, at the time of free access to internet at anywhere, anytime.

Machine Learning

Machine learning is a synthetic intelligence (AI) discipline meshed toward the technological development of human information. Machine learning permits computers to handle new things via analysis, self-training, observation and knowledge. Machine learning facilitates the continual advancement of computing through exposure to new situations, testing and adaptation, whereas using pattern and trend detection for improved selections in future (though not identical) things. Machine learning is usually confused with data processing and information discovery in databases (KDD), that share the same methodology. It's troublesome to copy human intuition in a very machine, primarily as a result of persons typically learn and execute selections unconsciously.

The recent paradigm of methods has enabled a data-driven learning approach, fuelled by the advances in machine learning (Agrawal et al. 2017). By feeding data to a model, it can learn to estimate properties enabling higher automated and sophisticated behaviour to be achieved without explicitly program each function (Bakashi & Bakashi 2018). It essentially learns from the provided examples that the data represents, which is a central property in the development of AI and represents a different way of developing software

solutions. The approach can be used to create monitoring- (Holst 2002), anomaly detection- (Angra & Ahuja 2017), recommendation- (Jannach et al. 2016), prediction- (Shah 2007) and classification applications.

Other methods include building ways for machines to store and utilise knowledge enabling logic-based reasoning and decision making within a limited domain (Mohammed et al. 2019). It can use what it knows or stored in its knowledge base to make inference and deduction within this domain. Further, AI methods can also be used for both planning and problem solving with applications to make dynamic applications such as route planning, scheduling and logistic planning. Lastly, advances in natural language processing methods, enabling man to machine communications that improve potential customer engagement (Hirschberg & Manning 2015). It is featured in the recent upswing of smart agents such as Siri, Alexa among others. It furthers provides access to a reservoir of unstructured data in text and audio to be utilised (Chowdhury 2013).

Frey and Osborne (2013) describe how machine learning algorithms not only allows computers to perform routine tasks, but how the algorithms can also substitute for non-routine cognitive tasks. Until recently humans were needed to perform those tasks (Frey & Osborne, 2013), machine learning algorithms could thus take over work from humans. Machine learning is seen as the process of performing tasks by looking at historic data and from that draw generalized conclusions to respond to new situations. At the very core, machine learning is a "branch of artificial intelligence employing pattern recognition software that analyses vast amounts of data to predict … behaviour" (Mena, 2011, p. 1). The ultimate goal of machine learning is to transform apparently dissimilar problems to a set of relatively similar sorts of problems after which the problem can be solved using various algorithms and to – ultimately – generalize the algorithm to examples beyond those in the training set (Smola & Vishwanathan, 2008; Domingos, 2012; Frey & Osborn, 2013). In other words, machine learning algorithms continuously learn from context specific historical data and make future predictions with high internal validity and can autonomously perform routine and non-routine tasks. In many ways then, machine learning is not that dissimilar from human learning, in fact Carbonell, Michalski and Mitchell (1983) argue that it shows remarkable similarities. Simon (1983) elaborates on learning – be it machine or human – by pointing out that it is "any change in a system that allows it [the system] to perform better the second time on repetition of the same task or on other tasks drawn from the same population" (p. 28). Computers do this by generalizing from examples and figure out how to perform tasks by learning from the huge amount of data available (Mena, 2011; Domingos, 2012). Without machine learning algorithms these tasks could not be performed, as manual programming those tasks would prove inefficient (Simon, 1983). Simultaneously, machine learning applications have benefitted from the rise of big data making them accessible to more organizations (Frey & Osborne, 2013).

Human Resource Agility (HRA)

The complexity of the business environment, the increasing development of science and technology, the emergence of growing needs of environment, the diversity and composition of them, the various demands of customers, reduced time of product delivery, as well as the effects from accepting globalization, increased competition, and even de-globalization have led to instability and a tendency to ongoing change, and in

general, the lack of predictability of the environment (Khosravi, 2011). Due to this situation, traditional models and past business priorities have lost their ability to face organizational and environmental challenges (Jafarinejad & Shahayi, 2007). Among the various solutions offered to address these conditions, agility has been noted as the dominant business paradigm in the third millennium and the best option for survival by most manufacturing and service organizations (Sherehiy, Karwowski, & Layer, 2007). In consequence of the organization's attention, many efforts have been made to achieve a desirable and proportionate level of agility. Until recently, it was believed that the agility strategy could be developed through advanced information technology, but based on research it was found that strategic flexibility and agility were more dependent on the staff of the organization than technology. Thus, one of the most fundamental mistakes is to ignore the prominent role of manpower in promoting agility (Abbaspour, Mirkamali, Hesam, Amiri & Moradi, 2014).

Although agility in human resources has been mentioned as a profitable strategy in the dynamic business environment, the lack of agile workforce has been identified as one of the main reasons in the organizations' failures in keeping with market and technology changes (Qin & Nembhard, 2015). Hence, achieving success at the organization level will not be possible unless human resource and the manner of its engagement in processes is noted. The methods of managing and motivating the human capital play a key role in moving individuals towards agility.

Research Design

The research design adopted in this study by the researcher was the cross sectional correlational survey design.

Population of the Study

The targeted population was obtained from four Telecommunication companies in Nigeria and with offices in Port Harcourt, Rivers State. These companies were: MTN, Global-com, Airtel, and 9mobile. The population consists of these four organizations with a size of three hundred and sixty (360) employees comprising one hundred and one (101) employees of MTN, eighty-five (85) employees of 9mobile, eight-five (85) employees of Airtel and eighty-nine (89) employees of Global-com.

Sample and Sampling Techniques

The sample size for the study was determined using Krejcie and Morgan (1970) sample size determination table. The table was used to obtained the sample size of 186 employees based on the total population of 360 employees in the four Telecommunication companies. The sampling technique was purposive sampling for top and functional management and random sampling for supervisors and workforce. Bowley (1926) proportional allocation formula was used to allocate sample size for each company.

TABLE 1 Summary of Sample Size

S/N	TELECOM COMPANIES	Top Mgt	Functional Mgt	Supervisors	Workforce	Total
1	MTN	5	10	7	30	52
2	9mobile	4	10	7	23	44

3	Airtel	5	11	7	21	44
4	Global-com	5	12	8	21	46
	Total	19	43	29	95	186

Source: Field Survey, 2019.

Methods of Data Analysis

The copies of questionnaire were coded for analysis using SPSS version IBM 23. Descriptive statistics of percentage, mean and standard deviation was and Inferential statistics (Spearman's Rank Order Correlation Co-efficient) were used for data analysis.

Results

Machine Learning and organizational agility

H_{o1}: Machine learning strategies do not significantly correlate with human resource agility of telecommunication companies in Nigeria.

Table 1 Analysis of Relationship between Machine Learning and Organizational agility.

			ML	HRA
Spearman's rho	ML	Rho	1.000	.278**
		Sig. (2-tailed)	.	.000
		N	181	181

Source: Source: SPSS Data Output, 2020

The result in table 1 shows that the sig (2 tailed) value of Human Resource Agility when compared to machine learning with rho =0.278, is less than the p value at P<0.05 significant level. With this result, the null hypothesis was rejected. The result therefore implies that machine learning has a significantly weak association with Human Resource Agility in telecommunication firms.

CONCLUSIONS

The study having taken cognizance of necessary precautions and carried out the research, carefully handling data and analyses, it concludes that there is a positive and significant relationship between study variable (Machine learning and human resource agility). Based on the result it is concluded the use of machine learning has a great effect on the organizational agility of telecommunication companies.

RECOMMENDATIONS

Judging from the findings of the study, the researcher hereby makes the following recommendations:

1. Since machine learning positively correlates human resource agility, telecommunication firms should improve on their adaptation to machine learning system as well as other emerging technological advancement in to further improve their organizational agility.
2. Since Competitiveness of a telecom firm's product in the market is dependent on its agility which is dependent on strong cultural practice, it is therefore important that telecommunication firms greatly build a strong organizational in order to adapt to emerging change brought about by the adoption of artificial intelligence system.

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