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INTERNET OF THINGS AND HUMAN RESOURCE AGILITY IN TELECOMMUNICATION COMPANIES IN NIGERIA

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Abstract

This study investigated the relationship between internet of things 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, and 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 internet of things and human resource agility. Hence the study concludes that hike in internet of thins 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 internet of things

Keywords: Internet of Things, Human Resource, Agility, Telecommunication

Introduction

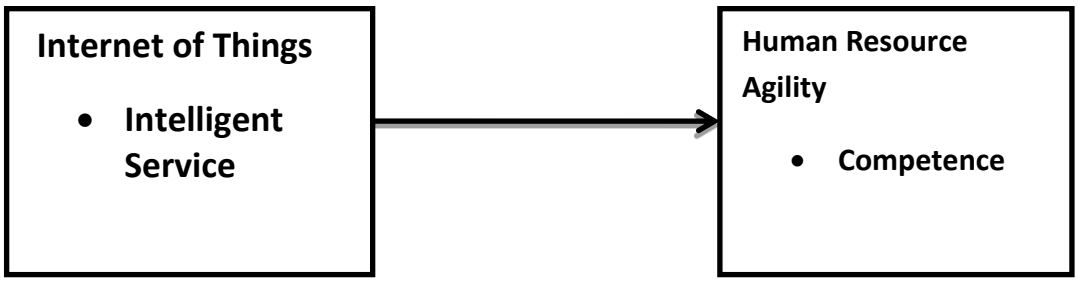
Today companies struggle with massive amounts of data they don't know how to handle or even less, how to process. There is a demand for solutions able to process massive amount of data in real-time and simultaneously draw its own conclusions. There is a need for dynamic technology that can manage, control and adapt different processes to sudden changes in the surroundings. Robots and algorithms have previously been able to perform tasks that are monotonous and static with poor abilities to adapt to alterations or changes. Previous technology has also lacked initiative. The capabilities of machine learning are challenging this truth. When training an intelligent algorithm, the code eventually starts making its own assumptions about the sample data and can use these assumptions to adapt to new tasks or do alterations in the current task (LeCun, Bengio & Hinton, 2015).

Internet of Things (IoT) is a concept and a paradigm that considers pervasive presence in the environment of a variety of things/objects that through wireless and wired connections and unique addressing schemes are able to interact with each other and cooperate with other things/objects to create new applications/services and reach common goals (Atzori Iera, & Morabito, 2010). In this context the research and development challenges to create a smart world are enormous. A world where the real,

digital and the virtual are converging to create smart environments that make energy, transport, cities and many other areas more intelligent. The goal of the Internet of Things is to enable things to be connected anytime, anyplace, with anything and anyone ideally using any path/network and any service. Human resource agility is referred to as people's capability and flexibility to have crucial roles in an agile organization which faces a permanent change in the circumstances. Information Technology Agility is the exchange of information amongst collaborating organizations necessary to secure their important information system, relationship, and inflexibility. Innovation Agility is a means by which an organization provides solutions to customers rather than just selling products, by expanding their horizons, and employing creative ways throughout the newly designated process (Saeed, Abolhasan, Faheri, Mahdi & Norooz. 2013).

There is very scanty empirical research exploring how the technology affects the organization. Little research has been done in form of empirical studies, especially in specific contexts. Most of the research currently available is done abroad, where the job market and working conditions are different from the conditions in Nigeria, questioning if the findings from these researches are applicable in Nigeria. Hence, there is a gap in empirical studies with regards to the relationship between internet of things and human resource agility.

Operational Conceptual Framework



Hypothesis

H_{o1}: Internet of things does not significantly correlate with human resource agility of telecommunication companies in Nigeria.

Resource Based View

According to the Resource Based View Theory, competitive advantage stems from a firm's unique resources that are valuable, rare, and inimitable (Barney, 1991). Firm resources include both assets and capabilities. Assets are observable and can be valued, such as spatial preemption, brand equity, and patents. In contrast, capabilities are not observable and difficult to quantify; they are the glue that brings the assets together and deploys them advantageously (Makadok, 2001). Because capabilities are deeply embedded in organizational routines, they are idiosyncratic and difficult to imitate or duplicate, which makes them the most likely sources of competitive advantage. According to RBV capability can transform firm assets into superior performance. Therefore, in relation to this study, these specific capabilities are at the centre stage in determining how an organization responds to changes in the environment in which it operates. In this study, the capabilities are seen in form of artificial intelligence, IT adoption, strategic alliances and human resources management practices. Further, capabilities touch on the intricate

aptitude for the firm to offer high quality services to match customer needs and expectations. This to a great extent would enhance agility of the firm.

Internet of Things (IoT)

According to IERC (2010), IoT is "A dynamic global network infrastructure with self-configuring capabilities based on standard and interoperable communication protocols where physical and virtual "things" have identities, physical attributes, and virtual personalities and use intelligent interfaces, and are seamlessly integrated into the information network."

The goal of the Internet of Things is to enable things to be connected anytime, anyplace, with anything and anyone ideally using any path/network and any service. Internet of Things is a new revolution of the Internet. Objects make themselves recognizable and they obtain intelligence by making or enabling context related decisions thanks to the fact that they can communicate information about themselves and they can access information that has been aggregated by other things, or they can be components of complex services.

The Internet of Things makes use of synergies that are generated by the convergence of Consumer, Business and Industrial Internet Consumer, Business and Industrial Internet. The convergence creates the open, global network connecting people, data, and things. This convergence leverages the cloud to connect intelligent things that sense and transmit a broad array of data, helping creating services that would not be obvious without this level of connectivity and analytical intelligence. The use of platforms is being driven by transformative technologies such as cloud, things, and mobile.

INDUSTRY 1.0 (INDUSTRIALISATION): Industry 1.0 is known as the beginning of the industrial age, around 1800. For the first time, goods and services were produced by machines. Besides the first railways, coal mining and heavy industry, the steam engine was the essential invention of the first industrial revolution; steam engines replaced many employees, which led to social unrest. At the end of the 18th century, steam engines were introduced for the first time in factories in the UK; they were a great driving force for industrialisation, since they provided energy at any location for any purpose.

INDUSTRY 2.0 (ELECTRIFICATION): The second industrial revolution began at the beginning of electrification at the end of the 19th century. The equivalent of the steam engine in the first industrial revolution was the assembly line, which was first used in the automotive industry. It helped accelerate and automate production processes. The term Industry 2.0 is characterised by separate steps being executed by workers specialised in respective areas. Serial production was born. At the same time, automatically manufactured goods were transported to different continents for the first time. This was aided by the beginning of aviation.

INDUSTRY 3.0 (DIGITALISATION): The third industrial revolution began in the 1970s and was distinguished by IT and further automation through electronics. When personal computers and the internet took hold in working life, it meant global access to information and automation of working steps. Human labour was replaced by machines in serial production. A process that was intensified in the context of Industry 4.0 was already in the offing at that time.

INDUSTRY 4.0: The term Industry 4.0 means in essence the technical integration of cyber physical systems (CPS) into production and logistics and the use of the 'internet of things' (connection between everyday objects)10 and services in (industrial) processes – including the consequences for a new creation of value, business models as well as

downstream services and work organisation. CPS refers to the network connections between humans, machines, products, objects and ICT (information and communication technology) systems Within the next five years, it is expected that over 50 billion connected machines will exist throughout the world. The introduction of AI in the service sector distinguishes the fourth industrial revolution from the third

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 . Due to this situation, traditional models and past business priorities have lost their ability to face organizational and environmental challenges.

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).

Methodology

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

Hypotheses 1: Internet of Things and Human Resource Agility

Table 2: Analysis of Relationship between Internet of Things and Human Resource Agility.

			IoT	HRA
Spearman's rho	IoT	Rho	1.000	.507**
		Sig. (2-tailed)	.	.000
		N	181	181

Source: Source: SPSS Data Output, 2020

The result in table 2 showed that there is a significant correlation between Internet of Things and Human resource agility rate evidenced by the correlation coefficient (rho) of 0.507 at $p < 0.05$. On this premise, the null hypothesis was rejected hence there is a positive relationship between the adaptation to Internet of Things and human resource agility of telecommunication firms.

Discussion

Internet of Things and Human Resource Agility:

Result of correlation analysis of Internet of Things and human resource agility divulge a low to moderate association between the use of Internet of Things and variables of Human Resource Agility. In all, the study showed a significant positive correlation of Internet of Things with human resouce agility of the telecom firms. This result is in agreement with the findings of Otieno (2008) which depicted that if technological advancement which include Internet of Things are not properly implemented it can result to colossal increase in competitive advantage of the firm. It also confirms the assertion of Ovia (2000) which stated that increased dependence on the development of information technology would not be far from the high correlation of IT advancement with organizational performance of the telecommunication industry. The situation beyond the borders of Nigeria is not different as other international studies also confirmed the findings of this study. One of such is De Yong, *et al* (2007) who reported that internet adoption improved telecoms firm's profitability in U.S. community.

Conclusions

The study having taken cognizance of necessary precautions and carried out the research, carefully handling data and analyzing it, concludes that there is a positive and significant relationship between study variable (Internet of Things and human resource agility)

Based on the result it is concluded the use of various aspects of internet of things has a great effect on the human resource agility of telecommunication companies.

Recommendations

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

1. Since internet of things positively correlates human resource agility, telecommunication firms should improve on their adaptation to internet of things as well as other emerging technological advancement in to further improve their human resource 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 internet of things

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