

## **Artificial Intelligence and Organisational Agility of Heads of Department in Tertiary Institutions within Port Harcourt Metropolis, Rivers State, Nigeria.**

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**ABSTRACT:-** The aim of this research was to examine the extent to which artificial intelligence predicts organizational agility of head of departments (HODs) of tertiary institutions in Rivers state. A total of three (3) tertiary institutions were investigated. Cross sectional research design was adopted for the study while a total of 45 HODs were sampled using the random sampling technique. Structured questionnaire was used for data gathering. Descriptive statistics was used for analysis of data while Spearman correlation statistics was used in testing the hypotheses formulated. The findings indicated that artificial intelligence influences competence and flexibility positively and significantly. The study concluded that artificial intelligence can act as a tool in attaining organizational agility. It was recommended that tertiary institutions should develop an enabling environment to enhance the propensity of employees to use and value artificial intelligence thereby boosting a deeper sense of interconnectedness and harmony; likely prerequisites for greater cohesiveness and ultimately competence and flexibility.

**Key Words:** Agility, Artificial intelligence, Competence, Flexibility.

### **I. INTRODUCTION**

The world of work is evolving and uncertain given the unpredictable changes and turbulence of its environmental elements, leading to the need for organizations to adequately position it to stay afloat. Bottani (2001) proposed that agility is a fundamental prerequisite for organizational survival and competitive advantage. This assertion further stipulates that organizational agility will include actions, reactions; learning and unlearning which helps the organizations survive and stand strong/tall in business. An organization assuming an agility disposition is an effective strategy to gain market leadership position. Since human mind capabilities are limited in terms of grasping important changes that takes place in the environment surrounding it, so has the current business environment for any organization in the world become complicated and highly dynamic (Zain et al., 2005). The need therefore for organization to create a mix with which it survives and this premise, has become the major challenge facing organizations and its management today.

Artificial intelligence is referred to as machine intelligence. It is intelligence that is demonstrated by machines compared to the natural intelligence depicted by humans. Artificial intelligence is a term used to describe machines or computer related technology that mimics cognitive functions associated with the human mind for learning, retaining and problem solving (Carroll, 2020). In the unpredictable and competitive world of today, organizations must have different competitive features to compete; otherwise, they will move toward decline and eventually extinction from the business world. One of these features that organizations need in the turbulent environments of today is agility. Agility provides the organization with the possibility of quick response and compatibility with environment that allows the organization to improve its efficiency (Yeganegi & Azar, 2012).

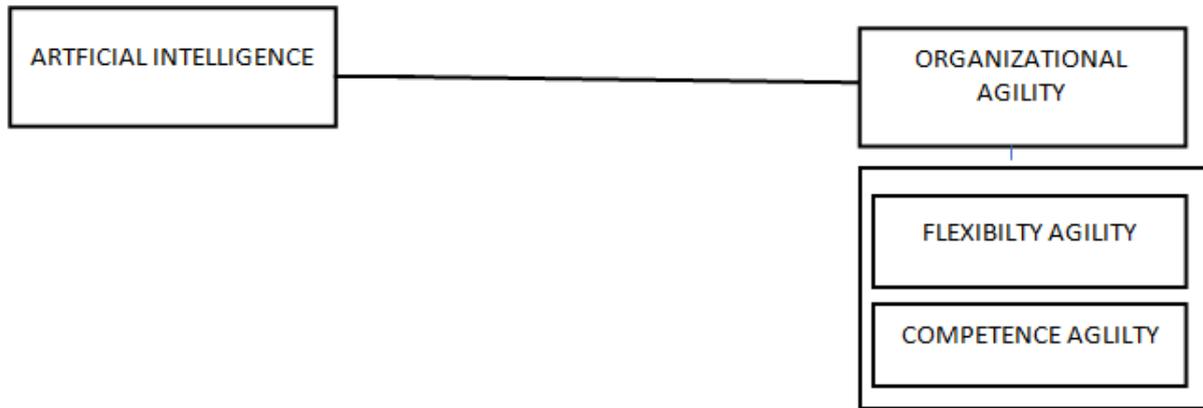
Organizational Agility (OA), plays an important role in the life of the organization as it provides personnel with knowledge, high skills, restructuring and organizational processes, employing new technology in response to environmental changes (Sherehiy, 2008). Porter (1980) identified five basic elements which characterize the competitive intensity of an industry in the external business environment as, threat of entrant, threat of exit, suppliers bargaining power, buyers bargaining power and rivalry among competitors. Hence this study seeks examine the relationship between artificial intelligence and organizational agility operationalized in flexibility and competences agility.

The study objectives therefore are as follows; (i) To determine the relationship between artificial intelligence and competence as a measure of organizational agility. (ii) To determine the relationship between artificial intelligence and flexibility as a measure of organizational ability.

Given the above identified objectives, the following research questions were developed as basis for assessment of the relationship between artificial intelligence and organizational agility.

- i. What is the relationship between artificial intelligence and competence as measure of organizational of heads of departments of tertiary institution in Port Harcourt metropolis in Rivers State?
- ii. What is the relationship between artificial intelligence and flexibility as measure of organizational of heads of departments of tertiary institution in port Harcourt metropolis in Rivers State?

Figure 1: Showing the relationship between artificial intelligence and organizational agility.



**Figure 1 Conceptual frame work of artificial intelligence and organizational agility.**

Source: Research Desk (2020)

Based on the stated research questions, we therefore make the following hypothesis as basis to ascertain the relationship between artificial intelligence and organizational agility of heads of department tertiary institutions in Rivers state.

**Ho<sub>1</sub>**: There is no significant relationship between artificial intelligence and competence as a measure of organizational agility.

**Ho<sub>2</sub>**: There is no significant relationship between artificial intelligence and flexibility as measure of organizational agility.

## II. LITERATURE REVIEW

### Theoretical foundation

The baseline theories that underpin this study is:

#### Ability Theory

Activity theory begins with the notion of activity. An activity is seen as a system of human “doing” whereby a subject works on an object in order to obtain a desired outcome. In order to do this, the subject employs tools which may be external. The activity theory was developed by Havighurst (1961) and it was pioneered by Russia psychologists named Vygossky (1978), Leontiev (1978). The activity theory is a concept that originated from the socio-cultural tradition of the Russia Psychology which focuses on individual activity in maintaining social interactions. It is understood to be purposeful, transformative and developing interactions between actors: social strata, hierarchical structure of activity and division of activities as actors in the system. Activity theory helps explain how social artifacts and social organization mediate social action. These psychologists sought to understand human activities as systemic and socially situated phenomena that go beyond the paradigms of reflexology (interpretation of behavior in terms of reflex actions). According to Bedny and Karwowski (2006), activity theory is designed to enhance human and computer interactions in carrying out definite task: application to human performance and work design giving room for learning. Activity theory is also seen as a theoretical foundation for information systems management and for developing data models (Nardi, 1996).

#### The concept of Artificial Intelligence

Artificial Intelligence is the zenith of human intelligence displayed: It is the ultimate augmentation of human thinking converted into a technological platform. Artificial intelligence finds its definition from the progress in human innovation. Artificial intelligence is seen in many industries/section in the world of business; transforming the way humans use technology to communicate and transact (financially, socially and otherwise), and to retrieve information. Artificial intelligence is a mechanism for creative disruption (Carroll, 2020). Artificial intelligence which is also referred to as machine intelligence is intelligence that demonstrated by machines compared to the natural intelligence depicted by humans. Artificial intelligence is a term used to

describe machines or computer related technology that mimics cognitive functions associated with the human mind for learning, retaining and problem solving (Kelly, 2012). Artificial intelligence is the ability of a computer system or machine technology to think, learn and retain, artificial intelligence is geared towards making machines smart (Sadek & Choudhury, 2012). Artificial intelligence is an old concept that finds metaphorical reinventions of itself.

### **The concept of Agility**

Researchers have strived in their individual and collective effort to give meaning to the idea agility in the organization, some researcher identified factors as a stimulus towards agility in the organization and the offspring of them is “change” (Tahmasebufard, Zangovienezhad & Jafari, 2000). This changes that now transpired faster than ever, may come to pass in the market completion, consumers technology and other social factors (Sharifi & Zhang, 1999). Agility disposition as a fundamental attribute of an organization is basically aimed at enriching and satisfying the needs of customers definitely rightly and timely. Agility lay numerous merits for organizations, and such merits include, Ability to respond quickly, swiftly and effectively to the changing market need, high ability to provide customized products to satisfy customers, ability to provide new products to market at lower prices (Swafford, Ghosh & Murthy, 2006). Reduce production cost, increase customer satisfaction, elimination of non-value added activities and increase competitiveness (Tseng & Lin, 2011). Given the rapid and unpredictable changes, turbulence, hostility, and complexity of environmental elements. Agility is characterized as fundamental attribute for organizations survival and competition. (Bottani, 2001). Indeed organizations assuming an agility disposition is an effective strategy to gain market leadership position.

**Flexibility as a measure of agility:** Every organization must need to change the long trend events and realities in their business live and history in order to survive the turbulence of today's business. Organization must imbibe in herself the flexibility or be swift enough to be change with time and events as it emanates from the environments of such organizations business. An organization is such that has the ability and capability to tackle her environmental turbulence with appropriate actions, adjustment where necessary, Organizations must always plan, learn and unlearn, and consistently change with events and happenings within her business environment is she must thrive and survive. Similarly, Teece & Augier(2009) posits that a company can gain competitive advantage when in possession of resources or competence but without flexibility the returns can be sustained for a short period of time.

**Competence as a measure of agility:** For an organization to stay afloat, organization will need to develop ability and strength to face today's turbulence. According to Stevenson (2000) an organization needs to become more competent, develop the necessary skills, knowledge and attribute, to evolve and mature as a project based organization. For individuals it is generally accepted that competence comprise of knowledge, ability, skills, attitudes and behaviors that are actually related to superior performance. At the organizational level the dimension of competence are identified as; technical specialization, product specialization, service specialization, market specialization, business knowledge, policy/procedural frame work, methods and systems, culture and behavior as well as effective management and support of its projects.

### **III. METHODOLOGY**

This study adopted the cross-sectional survey design, the population of the study comprise of all the heads of department in three tertiary institutions located within Port Harcourt metropolis, in Rivers State, Nigeria. They are namely; Port Harcourt Polytechnics, Rivers State University, and Ignatius Ajuru University of Education. The researcher sampled 45 heads of departments in these tertiary institutions, with each institution giving a total of 15 respondents within Port Harcourt metropolis in Rivers State Nigeria. The questionnaire consisted of 12 close-ended questions addressing artificial intelligent (4), competence (4) and flexibility (4) respectively on a 5-point Likert scale (where, 5 = very high extent, 4 = high extent, 3 = moderate extent, 2 = low extent, 1 = very low extent), showing the level of perceptions with the content of each item. The structured questionnaire the relationship between artificial intelligence and organizational agility was tested using the spearman rank order correlation coefficient at 95% confidence level, to enable us arrive at a conclusion regarding the null hypothesis postulated earlier by the researcher.

### **IV. FINDINGS**

The study analyzed how artificial intelligence relates to the measures organizational agility. There was analysis of two measures (competence and flexibility) with artificial intelligence respectively using the Spearman rank order correlation coefficient statistical tool via the SPSS software.

**Hypothesis 1**

**Ho<sub>1</sub>:** There is no significant relationship between artificial intelligence and competence of heads of department in tertiary institutions in Rivers state.

The test statistics used in testing the above hypothesis is the spearman’s rank order correlation coefficient. The computation of the value of the test statistics as done using SPSS is represented in the table below.

**Table 1. Spearman rank order calculation Correlations**

			Artificial_ Intelligence	Competence
Spearman's rho	Artificial_ Intelligence	Correlation Coefficient	1.000	.646**
		Sig. (2-tailed)	.	.009
		N	45	45
	Competence	Correlation Coefficient	.646**	1.000
		Sig. (2-tailed)	.009	.
		N	45	45

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Source: Survey data, 2020.**

The statistics gave an r value of 0.646 which it gives from our scaled list a highly marked correlation between the variables under investigation. The probability value from the table is 0.009, which implies that the variables are statistically significant. Therefore, we can reject the null hypothesis which states that “there is no significant relationship between artificial intelligence and competence as a measure of organizational agility”, and accept the alternative hypothesis, “there is significant relationship between artificial intelligence and competence as a measure of organizational agility”.

**Hypothesis 2**

**Ho<sub>2</sub>:** There is no significant relationship between artificial intelligence and flexibility of heads of department in tertiary institutions in Rivers state.

The table below shows the computed value for the above hypothesis using Spearman rank order correlation coefficient through SPSS.

**Table 2. Spearman rank order calculation Correlations**

			Artificial_ Intelligence	Flexibility
Spearman's rho	Artificial_ Intelligence	Correlation Coefficient	1.000	.561*
		Sig. (2-tailed)	.	.030
		N	45	45
	Flexibility	Correlation Coefficient	.561*	1.000
		Sig. (2-tailed)	.030	.
		N	45	45

\*. Correlation is significant at the 0.05 level (2-tailed).

**Source: Survey data, 2020.**

The statistics gave an r value of 0.561 which it gives from our scaled list indicates a 56.1% explanation of the variables under investigation. This implies a marked correlation between the variables under investigation. The probability value from the table is 0.030, which is less than the 0.05 implies that the variables are statistically significant. Therefore, we can reject the null hypothesis which states that “there is no significant relationship between artificial intelligence and flexibility of heads of department in tertiary institutions in Rivers state”, and accept the alternative hypothesis, “there is significant relationship between artificial intelligence and flexibility of heads of department in tertiary institutions in Rivers state”.

## **V. DISCUSSION OF FINDINGS**

### **Association between Artificial intelligence and Competence**

There is a positive and significant relationship between artificial intelligence and competence. Competence is defined as perceived ability, skill and expertise within a work area of varying backgrounds and specialization and the ability to interpret and perceive patterns and conduct forward reasoning (Ibrahim & Ribbers, 2009). This ability gives one the openness and the willingness to share information based upon transparency and equity (Ibrahim & Ribbers, 2009). Chen and Chang (2010) stated that competence was firm-specific and was dependent upon employee interaction. Without interaction, competence was only potential and was hidden within the organization. Through artificial intelligence automatic data recording and data processing, traditional 'back-office' activities are no longer in demand. Autonomous software will collect necessary information and send it to the employee who needs it, making interaction easier and faster.

Therefore;

- i. Artificial intelligence encourages the learning of shared values and the facilitation of intergroup cohesiveness in an organization.
- ii. Thereby decreasing clumsiness and increasing worker competence and resultant group cohesiveness.
- iii. Therefore, artificial intelligence enhances competence as a measure of organizational agility.

### **Association between Artificial Intelligence and Flexibility**

There is a negative and significant relationship between cultural competence and intrapersonal conflict in the multinational oil companies in Nigeria.

Flexibility required for changes which are familiar and often lead to a temporary change in the level of activity of the organization. In flexibility, there is no substantial shift in the relationship between an organization and its environment. Flexibility is necessary to react to changes in the direct environment which brings competitive changes that causes major transformations in the strategic position of a firm or an employee in the industry.

Janićijević (2017) acknowledged that machines or robots with artificial intelligence can perform better than human performance level in some certain circumstances only. Kelly (2012) also agreed that some existing jobs can be performed by robots more effective than humans and robotic machines can do some jobs that humans cannot perform such as dealing directly with poisonous items, work under atmosphere with high pressure or limited oxygen and other risky tasks (Knight, 2017). On the other hand, there are some scientists, researches and scholars Mahanta (2017); Mahmodey, (2017); McFarlane (2017) who are quite pessimistic in the roles and influence of artificial intelligence on human beings at workplaces. Therefore, becoming flexible requires the ability to draw on the values, traditions and customs of other cultural groups, to work with knowledgeable persons from other cultures, and shape service delivery to meet peoples' social, cultural and linguistic needs by developing targeted interventions and other supports (Betancourt et al., 2002). Thus;

- i. Artificial intelligence shows and gives employees a sense of work compatibility that reduces work frustration.
- ii. The presence of this perceived compatibility creates a platform for reduced frustration, which also is a determinant of flexibility.
- iii. Therefore, artificial intelligence increases flexibility of heads of departments in tertiary institutions.

## **VI. CONCLUSION AND RECOMMENDATIONS**

Based on the summary of findings, the following conclusion was made. The study concluded that artificial intelligence contributes positively and significantly to competence and flexibility in the understudied tertiary institutions in Rivers state, Nigeria. This suggests that the capacity to draw on the inherent characteristics of other social gatherings, to work with people from different societies based on merit, and even shape administration conveyance to meet others' cultural, social and semantic needs by creating focused mediations is influenced by artificial intelligence. Therefore, this paper concludes that an increase in artificial intelligence results in a substantial increase in competence and flexibility within an organization.

From the conclusion above the following recommendations were made.

1. It was recommended that tertiary institutions should develop an enabling environment to enhance the propensity of employees to use and value artificial intelligence thereby boosting a deeper sense of interconnectedness and harmony; likely prerequisites for greater cohesiveness and ultimately competence.
2. Organizations should enhance artificial intelligence as this will build confidence in the employees on all organizational processes, and this in turn will enable the workers share common understanding that will aid flexibility in all their work endeavors.

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