
ARTIFICIAL INTELLIGENCE AND FEMALE PERFORMANCE IN CAPTAIN ELECHI AMADI POLYTECHNIC RIVERS STATE

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Abstract

The study examined artificial intelligence and female performance with special focus on graduate females of Captain Elechi Amadi Polytechnic Rivers State. The choice of topic was motivated by the challenges faced in organizations by females not being able to contribute their full potentials because of their triple complex role demands. The study adopted a descriptive survey and two hypotheses guided the study. Data were collected from a sample of 133 graduate females of Captain Elechi Amadi Polytechnic determined by Taro Yamane model and 130 questionnaires were duly filled and returned which formed the sample size for the study. The formulated hypotheses were tested using descriptive statistics and spear man correlation matrix with the aid of SPSS version 23, artificial intelligence measured in terms of deep learning and pattern recognition (independent variables) and female performance measured with tasks accomplishment and timeline/parameter (dependent variable). The result of the study revealed that female performance is influenced by artificial intelligence measures of deep learning and pattern recognition. Based on the findings the study concluded that artificial intelligence has a strong significant relationship on female performance at Captain Elechi Amadi Polytechnic. From the conclusion the study recommended, amongst others, that the institution management need to encourage consistent training and retraining system for employees especially the female, to get their full contributions to attain organizational goals,

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management need to also enhance performance through making available current technology gargets required to perform tasks to get the females familiar with the machine language and processes.

Keywords: Artificial intelligence, female performance, Captain Elechi Amadi Polytechnic.

Introduction

Performance is defined as the outcome or contribution of employees to make them attain goals (Herbert, John, Lee (2000) in Elijah (2021). Performance may also be seen as the achievement of specific tasks measured against predetermined or identified standard of accuracy, completeness, cost and speed respectively. Female performance in the organization is attributive to the peculiarities of the many responsibilities which they perform that affect the organizational performance intentional efforts should be made to balance these activities.

Artificial intelligence becomes one of the many instrumentalities that organizations use to address this menace. Artificial intelligence is the ability of a machine to be aware of the environments and respond to his environmental cues or stimuli. It covers a number of senses such as: the ability to see, speak, process thought and even data of a system to fashion out appropriate responses to attain predetermined goals.

Copeland (2022) defined AI as the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent being.

Intelligence as it is ascribed to human behaviour characterize by the combination of many diverse abilities as learning, reasoning, problem solving, perception, use of language and others. Artificial intelligence in the other hand is an ideal intelligence machine flexible reaction agent that perceives its environment and take acting that maximize it chance of success to attain stated goals. It is applied when a machine minimizes cognitive functions that humans associate with other minds. Capable of learning and solving problems stated to attain specified goals.

Artificial intelligence changes uncertain and complex business environmental new digital technologies which when reconstructed into the landscape of the organization can enable the effective interaction for female employees especially at captain Elechi Amadi Polytechnic to work without physical presence at the workplace. The methods of machines in use are:

- Computer based performance
- Use of monitoring devices
- Electronic mail monitoring
- Use of video recording device such as camera and alert system.

The use of these methods requires certain level of intelligence characterize by deep learning, pattern recognition and image processing. While female performance is measured by tasks accomplishment and times/parameter.

Statement of the problem

The identification of the place of females in the organizations seeks to consider the interest of their contributions to organizational performance. Hence The use of artificial intelligence-controlled machine in the discharge of assigned duties is used to close the gap for a physical presence at workplace therefore increasing their performance.

Artificial intelligence requires certain level of learning intelligent skills, ability, knowledge and the review of the fundamental principle of work for expected result to be attained. The organization need to adapt a training system because not all are familiar with the use of these machines. This is a problem and may result poor performance, low commitment and high level of dissatisfaction if a prompt attention is not given in this regard. It is against this backdrop that the researcher investigates the relationship between artificial intelligence and female performance in Captain Elechi Amadi Polytechnic.

Objectives of the Study

The core objective of this study is to examine the relationship between artificial intelligence and female performance in Captain Elechi Amadi Polytechnic. Other sub-objectives include the following:

- To establish the nature of relationship between Deep learning and Task accomplishment of females
- To ascertain the nature of relationship between pattern recognition and timeliness. /parameter.

Research Questions

1. What is the nature of relationship between deep learning and tasks accomplishment of females?
2. Does pattern recognition relate with timelines/parameter

Hypotheses

Ho₁: Deep learning has no significant relationship with tasks accomplishment of females.

Ho₂: Pattern recognition has no significant relationship with timelines/parameter

Conceptualization of Concepts

Concept of Artificial Intelligence

Artificial intelligence is the ability of a machine to be aware of its environments respond to environmental cues or stimuli's. It is applied when a machine minimizes cognitive functions that humans associate problem solving. Udenzi (2016) defined AI as an emerging area of the study of machines. The attribute of these machines has the abilities to be aware of their environmental cues. In other words, the ability of a machine to reason and act in response to a certain environmental cue or stimuli like natural intelligence.

United Nation Education Science Cultural Organization (2022) refers AI as a machine board system that can, for a given set of human defined objective make prediction, recommendations or decisions influencing real or virtual environment. It is also reported globally by, UNESCO (2019) that women in labour force are paid less, hold fewer positions and participate less in science, technology, engineering and mathematics. A comprehensive account of possibilities for female employees in Captain Elechi Amadi ~Polytechnic will require an awareness education and skills of AI to cover the gap created.

The broad work on digital literacy is apt in the various industries especially at Captain Amadi Polytechnic.

Dimensions of Artificial Intelligence

Deep Learning

Andrew, (2020) defined (DL) as a structured approach use to develop a natural network which is use as a foundation for any project regardless the complexity.

Deep learning could also be seen as a new form of garget of data use to explore details. But on our content, we see (DL) as the ability within the user of the machine to understand the skills, abilities and adequate review of fundamentals of work and image recognition / parameter of organization on machine performance to enhance organization productivity.

University of Minnesota, highlight certain skill you will gain from AL as; analysis benefits, compensation, entrepreneurship human resource and leadership. And the integration of these skills members requires training and deep learning reinforce to attain performance. .Supporting the view, Peter Drucker, a management scientist once said that, people have a perverse tendency to be like human beings because they are not machine and certainly not programmable but through insights gained in organization behavior, training and retaining are carried out to reset performance in accordance to schedule, Raes (2020).Machine learning is the ability of a computer to automatically refine its methods and improve its results as it gets more data, (Brynjolfsson & McAfee 2014) in Chernou & Chernova (2019). This entails understanding and analysis of language used by the human being.

Pattern Recognition

Pattern recognition is the ability to follow explicitly programmed instructions and regulations in data. Understanding and analyzing language used by human beings is the base for recognition. pattern recognition is a type of problem identification (Brynjolfsson & McAfee 2014) in Chernou & Chernova (2019). Pattern recognition can also be the ability to classify data based on knowledge already gained on information extracted.

It can be use to analyze movement of time data series into the future in a technological context, Chandu, (2018).

The importance of pattern recognition of the data or technology in use can lead to increase performance thereby modifying system sensitivity of a female actual contribution to attain organizational goals.

Female Performance

Performance entails a whole lot of factors that measures effectiveness, efficiency and satisfaction Performance is defined as the outcome or contribution of employees to make them attain goals, Herbert, John Lee, (2000) In Elijah (2021).

The complexity of female gender role expectations creates the gap for their performance discharges which necessitate others mean for adequate contributions to their various organizational performances hence the applications of AI.

Tasks Accomplishment

This is the act of doing a certain task by an individual or a group of individuals in order to finish in a way that ensures success. It helps to determine a situation when objectives of the task are accomplished according to preset priorities, time limits, process requirements, responsibilities and authorities. World Economic Forum (2018) in Anahita, Andrea & Ashkan (2022) affirms, AI as gender specific pattern field highly dominated by men, with adequate institutional awareness and education females will integrate to build their skills on AI.

Timelines/Parameter.

Oxford Language Learner Dictionary defined timeline as a period of time on which important event are marked. It is also a schedule for which a process or procedure will be carried out

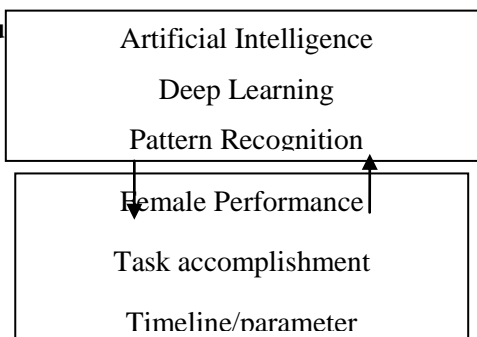
Cambridge English Dictionary, defined parameter as a set of facts or a fixed limit that establishes or limits how something can or must happen or be done.

Meaning the females must keep within the parameters of expectations of performance otherwise lower the predetermined standard.

Theoretical Framework

This research is primarily based on Peter Drucker’s theory of innovativeness (1909-2005) in Wokocha & Nwaduwa (2018), which provides adequate justification for the hypotheses in this study. The theory of innovativeness assert, resource and proactive behaviour as the keys to effective, efficient and satisfactory performance. Because machines are made and operationalize by human beings, through insights gained in behavior, training and retraining behavior, females reset performance in accordance to schedule of the organization.

Conceptual Framework of the Study



The framework shows how Artificial intelligence (independent variable) represented with deep learning and pattern recognition influences female performance represented by tasks accomplishment, and timeline/parameter.

Importance of Artificial intelligence to the organization

- a. It improves worker performance
- b. It improves employee competence
- c. It encourages remote work
- d. It increases worker productivity
- e. It makes work faster.

Research Design

The research design adopted was descriptive survey which is considered appropriate for the study because it involves exploration of graduate female staff of Captain Elechi Amadi Polytechnic.

Population of the Study

The population of the study is therefore made up of the female graduate staff of Captain Elechi Amadi Polytechnic which is 200

Sampling Techniques and Determination

The researcher adopted simple random sampling to select the women in Captain Elechi Amadi polytechnic (CAEPOLY) and sample size was determined by Taro Yameen model. The model is given as:

$$n = \frac{N \times 200}{1 + N (0.05)^2} = \frac{200 \times 200}{1 + 200(0.05)^2} = 1 + 200(0.0025) = 133.33$$

The sample size therefore is **133**

Method of Data Analysis

The demographic data were analyzed using frequencies and percentage while the null hypotheses were analyzed using descriptive statistics and spear man correlation matrix with the aid of SPSS version 23

Data Presentation

In other to establish a comprehended presentation of the data of this study, questionnaires were administered to the women in CAEPOLY. The questionnaire tagged Artificial Intelligence and Female Performance ((AIFP) aimed at eliciting information from the women that make up the sample size. Out of one hundred and thirty-three (133) copies of questionnaires distributed to them, a total of one hundred thirty (130) copies were returned and are used. The number of questionnaires distributed, the number returned and number unreturned and their percentages are presented on the table below:

Table 4.1 Questionnaire Distributed, Returned, Unreturned and Percentages.

Description	Frequencies	Percentages
Questionnaire Distributed	133	100
Questionnaire Returned	130	97.74
Questionnaire Unreturned	3	2.26

Source: Field Survey (2022)

Data Analysis

Demographic Analysis

Table 4.2 SEX

S/NO	Description	Frequency	Percentage
1.	Male	0	0
2.	Female	130	100
	Total	130	100

Source: Field Survey (2022)

From the table above, 0(0%) were male whereas 130(100%) were female.

Table 4.3 Years of Experience

S/NO	Description	Frequency	Percentages
1.	30 and above	30	23.08
2.	41-50 years	60	46.15
3.	51-60 years	40	30.77
	Total	130	100

Source: Field Survey (2022)

From the table above, 30(23.08%) had 30 years and above experience, 60(46.15%) had 41-50 years' experience and 40 (30.77%) had 51-60 years' experience

Table 4.4 Educational Qualification

S/NO	Description	Frequency	Percentage
1.	Secondary	40	30.77
2.	Tertiary	70	53.85
3.	Post Graduate	20	15.38
	Total	130	100

Source: Field Survey (2022)

From the table above, 40(30.77%) secondary education, 70(53.85%) had tertiary education and 20 (15.38%) post graduate education.

Table 4.5 Organization of data for Deep Learning

S/No	Deep Learning	SA (5)	A (4)	U (3)	D (2)	SD (1)	TOTAL	MEAN (\bar{X})	STD (σ)	Decision
4	I recognize my learning capacity and their effects on my accomplishment?	50	50	20	10	0	130	4.0769	0.92019	Accept

5	I can recognize my strength through training/learning in the use of computer, monitory devices, telephone, email and video recording, camera and alert system pattern recognition.	40	40	30	10	10	130		3.6923	1.20623	Accept
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SPSS print out based on field survey 2022,

Table 4.5 revealed that items on deep learning are above the criterion mean of 3.0. Respondents on I recognize my learning capacity and their effects on my accomplishment has a mean score of 4.0769 and I can recognize my strength through training/learning in the use of computer, monitory devices, telephone, email and video recording, camera and alert system pattern recognition has a mean score of 3.6923. This means that deep learning influences female performance in Captain Elechi Amadi Polytechnic.

Table 4.6 Organization of data for Task Accomplishment

S/No	Task Accomplishment	SA (5)	A (4)	U (3)	D (2)	SD (1)	TOTAL	MEAN (\bar{X})	STD (σ)	Decision
6	I can recognize data base on knowledge information extracted from the system environment.	40	40	20	15	15	130	3.5769	1.34028	Accept
7	I can analyze movement time series of future technology via acquired capacity.	50	60	10	10	0	130	4.1538	0.86680	Accept

SPSS print out based on field survey 2022,

Table 4.6 revealed that items on task accomplishment are above the criterion mean of 3.0. Respondents on I can recognize data base on knowledge information extracted from the system environment has a mean score of 3.5769 and I can analyze movement time series of future technology via acquired capacity has a mean score of

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4.1538. This means that task accomplishment is an adequate measure for female performance in Captain Elechi Amadi Polytechnic.

Table 4.7 Organization of data for Pattern of Recognition

S/No	Pattern of Recognition	SA (5)	A (4)	U (3)	D (2)	SD (1)	TOTAL	MEAN (\bar{X})	STD ($\hat{\sigma}$)	Decision
8	Tasks accomplishment my duties can be adequately attained via the use of computer, networking devices, telephone, email, video recording, camera and alert system with physical presence	60	40	10	10	10	130	4.0000	1.24515	Accept
9	I understand the content of task of in technology use.	60	40	0	20	10	130	3.9231	1.33304	Accept

SPSS print out based on field survey 2022,

Table 4.7 revealed that items on pattern of recognition are above the criterion mean of 3.0. Respondents on tasks accomplishment my duties can be adequately attained via the use of computer, networking devices, telephone, email, video recording, camera and alert system with physical presence has a mean score of 4.0000 and I understand the content of task of in technology use has a mean score of 3.9231. This means that pattern of recognition influences female performance in Captain Elechi Amadi Polytechnic

Table 4.8 Organization of data for Timeliness/Parameter

S/N	Timeliness/Parameter	SA (5)	A (4)	U (3)	D (2)	SD (1)	TOTAL	MEAN (\bar{X})	STD ($\hat{\sigma}$)	Decision
10	Timeline/Parameters performance schedule events always meet procedure	70	40	10	10	0	130	4.3077	0.91369	Accept
11	I recognize time limits, responsibilities and process requirements.	60	50	8	10	2	130	4.2000	0.96770	Accept

SPSS print out based on field survey 2022,

Table 4.8 revealed that items on timeliness/parameter are above the criterion mean of 3.0. Respondents on Timeline/Parameters performance schedule events always meet procedure has a mean score of 4.3077 and I recognize time limits, responsibilities and process requirements has a mean score of 4.2000. This means that timeliness/parameter is an adequate measure for female performance in Captain Elechi Amadi Polytechnic.

Test of Hypotheses

Hypotheses were tested to answer the research questions. In all, two hypotheses were tested for the study.

Ho₁: Deep learning has no significant relationship with tasks accomplishment of females.

This answered research question one - What is the nature of the relationship between deep learning and tasks accomplishment of females?

The result of the analysis is displayed based on table 4.5& 4.6 above:

Table 4.9 The result of Deep Learning and Task Accomplishment Correlations

			DL	TA
Spearman's rho	DL	Correlation Coefficient	1.000	.980**
		Sig. (2-tailed)	.	.000
		N	130	130
	TA	Correlation Coefficient	.980**	1.000
		Sig. (2-tailed)	.000	.
		N	130	130

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

Decision rule

Accept alternate hypothesis (Ha) if the calculated p-value is less than the critical value and reject null hypothesis (Ho), otherwise accept Ho and reject Ha.

Decision

From table 4.9, we deduced that calculated p-value is less than the critical value i.e. $0.000 < 0.05$ and therefore conclude that there is a relationship between deep learning and tasks accomplishment of females.

Ho₂:Pattern recognition has no significant relationship with timelines/parameter

This answered research question two - Does pattern recognition relate with timelines/parameter?

The result of the analysis is displayed based on table 4.7& 4.8 above:

Table 4.10 the result of pattern Recognition and Timeline/Parameter Correlations

			PR	TP
Spearman's rho	PR	Correlation Coefficient	1.000	.942**
		Sig. (2-tailed)	.	.000
		N	130	130
	TP	Correlation Coefficient	.942**	1.000
		Sig. (2-tailed)	.000	.
		N	130	130

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

Decision rule

Accept alternate hypothesis (Ha) if the calculated p-value is less than the critical value and reject null hypothesis (Ho), otherwise accept Ho and reject Ha.

Decision

From table 4.9, we deduced that calculated p-value is less than the critical value i.e. $0.000 < 0.05$ and therefore conclude that there is a relationship between pattern recognition and timeline/parameter of females.

Discussion of Findings

The research work conducted on artificial intelligence and female performance in Captain Elechi Amadi polytechnic Rivers state revealed that there is a significant relationship between deep learning and tasks accomplishment of females. The p-value 0.000 is less that critical value 0.05. The coefficient of correlation (R) is very high i.e. 0.980. This showed that there is a strong relationship between deep learning and tasks accomplishment of females. This is in line with the study carried out by USECO (2019) that AI will shaping gender stereo types, reskilling and up skilling of women workers consequently improve access to quality performance.

Secondly, the study also revealed that there is a significant relationship between pattern recognition and timeline/parameter of females. The p-value 0.000 is less than critical value 0.05. The coefficient of correlation (R) is also very high i.e. 0.942. This showed that there is a strong relationship between pattern recognition and timeline/parameter of females. The work of Chernon & Chernova (2019) affirmed the outcome of the study, as its findings reviews that understanding and analyzing languages is based on humans' language recognition.

Conclusion

There is a strong and significant relationship between deep learning and tasks accomplishment of female performance. This indicates that the more females understand the fundamental of the work that they do, machine language and use, the higher their accomplishment. Pattern recognition has strong relationship with timelines/parameter. This buttresses the point that the act of accomplishing a successful task require preset of priorities, time limit and others.

Recommendations

Based on the findings the following recommendations were made:

1. The institution management needs to encourage consistent training and retraining system for employees especially the females to get full contribution of all.
2. Management need to enhance performance through consideration of making available current technological gargets required to get the females familiar with the machine language and processes.

References

- Andrew Ng (2020) Natural Newtorks and Deep Learning . Online Publication.
- Anahita Hajibabael, Andrea Schiffauerova and Ashkam Ebadi, (2019) Gender-specific pattern in the Artificial Intelligence Scientific Ecosystem.
- Cambridge English Dictionary
- Copeland B.J. (2022) Artificial Intelligence in society.
- Chernou A & Chenova (2019) Artificial Intelligence in Management Challenges and Opportunities
- Elijah O.E. (2021) Collective Bargaining and Organizational Performance (Unpublished material)
- Goddyson Tamunoene A. Alapiku. M & Omodu I.M. (2014) ICT

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Application for Effective and Efficient Marketing. Journal Publication.

Haag, Bultzan & Philip A. (2006) Business Drivers Technology,
McGraw – Hill New York.

Okachi-Okereke G.C, Maru N-G & Dun Becky (2011). Research
and Telecommuting Panacea for female sustainable Development Journal Publication.

Oxford Language Learner Dictionary

Peter Drucker (2005) Theory of Enterprise

Rase E.D. (2020) Employment Relation, U.K. Dearson Education

Udensi C.E. (2016) Lecture Note Unpublished Material

USECO, OECD, IDB (2022) The effect of AI on the working lives of women.

Wokocha I.H. & Nwaduwa (2018) Introduction and Elements of
Entregrenew

World Economic Forum (2018). The global gender gap report (2018)