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IMPACT OF ARTIFICIAL INTELLIGENCE ON WORKFORCE PLANNING IN COLLEGES OF EDUCATION IN KADUNA STATE, NIGERIA

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Abstract

The study investigated the Impact of Artificial Intelligence on Workforce Planning in Colleges of Education in Kaduna State, Nigeria. The study was conducted with the objective to: assess the impact of artificial intelligence on workforce planning in colleges of education in Kaduna State, Nigeria. In line with the objective, a research question and a hypothesis were formulated and tested. The study adopted survey research design with population of 3,181 respondents which comprised 1,658 lecturers and 1,523 senior management staff in the two (2) government owned Colleges of Education in Kaduna State, Nigeria. A sample size of 346 participants, consisting of 180 lecturers and 166 senior management staff were used in the study. The instrument titled ―Artificial Intelligence and Workforce Planning Questionnaire (ARIWPQ)‖ was used for data collection in the study. The validated instrument was pilot tested, the reliability co-efficient was determined using Cronbach Alpha statistic and a reliability coefficient of 0.82 was obtained. The data collected in the study was computerized into database using Statistical Package for Social Sciences (SPSS) version 23.0. The descriptive statistics of frequency counts, mean and standard deviation were used to answer the research question, while Kruskal-Wallis was used to test the hypotheses at 0.05 level of significance. Findings revealed that; artificial intelligence had no significant impact on workforce planning in colleges of education in Kaduna State, Nigeria. Based on the findings of the study, it was recommended among others that: The management of the colleges of education should exercise caution in applying artificial intelligence to determine the skill gap of the workers so as to avoid an unwarranted situation whereby the majority of their workforce will be affected, consequently leading to job losses.

Keywords: Artificial intelligence, Workforce Planning, Colleges of Education

Introduction

Advances in technology are changing the demand for skills at an accelerated pace. New technologies can not only handle a growing number of repetitive and manual tasks but also perform increasingly sophisticated kinds of knowledge-based work such as research, coding, and writing that have long been considered safe from disruption. The average half-life of skills is now less than five years, and in some tech fields it‘s as low as two and a half years. Not all knowledge workers will lose their jobs in the years ahead, of course, but as they carry out their daily tasks, many of them may well discover that AI (Artificial Intelligence) and other new technologies have so significantly altered the nature of what they do that in effect they are working in completely new fields (Tamayo et al., 2023). Moreover, Tamayo et al. (2023) posited that to cope with these disruptions, a number of organizations are already investing heavily in up-skilling their workforces. One recent BCG (Boston Consulting Group, 2023) study suggests that such investments represent as much as 1.5% of those organizations‘ total budgets. But up-skilling alone won‘t be enough. If the Organisation for Economic Co-operation and Development (OECD) estimates are correct, in the coming decades millions of workers may need to be entirely reskilled; a fundamental and profoundly complex societal challenge that will require workers not only to acquire new skills but to use them to change occupations (Tamayo et al., 2023).

The AI‘s influence spans beyond workforce transformation, permeating various aspects of society (Hedau, 2023). From digital transformation to new technologies, AI has become an integral part of educational operations,

shaping the future of work. It is driving innovation, automation, and efficiency in healthcare, finance, manufacturing, and retail industries. In digital transformation, AI is revolutionizing educational systems by automating tasks, analysing large amounts of data, and providing actionable insights to drive decision-making. With the ability to process and interpret massive datasets, AI enables informed decisions, optimize processes, and enhanced efficiency in operation. Furthermore, Hedau (2023) posited that artificial intelligence (AI) – once the stuff of sci-fi, is now weaving itself into the very fabric of our lives. From Siri navigating one's commute to algorithms recommending an individual next binge-watch, AI's tentacles reach far and wide. But amidst its meteoric rise, a crucial question looms: what does this mean for the future of work?

The field of artificial intelligence (AI) is dynamic and fast developing, involving the creation of intelligent software systems that can carry out tasks that conventionally need human intelligence. Massive volumes of data are manipulated and analyzed by AI systems, which also extract insightful information that boosts innovation and corporate efficiency. Moreover, the rapid advancement of Artificial Intelligence (AI) has brought about significant changes to the job market and the skills required to flourish in it. As AI continues to penetrate various industries, the workforce must adapt and up-skill to stay relevant and competitive (Edifypath, 2023).Chiancone (2023) posited that the advent of Artificial Intelligence (AI) has brought about a significant shift in the global job market. As AI continues to evolve, it is increasingly important for educational institutions to adapt and prepare their workforce for this change. One of the most effective ways to do this is through up- skilling and reskilling. Up-skilling and reskilling are two strategies that can help educational institutions navigate the AI revolution. Up-skilling involves providing employees with additional training to enhance their existing skills, while reskilling involves training employees in entirely new skill areas.

Artificial intelligence can be described as the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision- making and translation between languages. In addition, it refers to computer systems capable of performing complex tasks that historically only a human can do, such as reasoning, making decisions, or solving problems (Coursera, 2024). Some of the most common examples of AI in use across the globe include ChatGPT, Google Translate, Netflix, Tesla etc. Artificial intelligence has become a buzzword in recent years, revolutionizing how companies approach workforce transformation. The concept of AI in workforce transformation goes beyond automation and cost savings. It encompasses employee engagement, strategic goals, and organizational transformation. AI empowers companies to engage their workforce in new and innovative ways. By automating mundane and repetitive tasks, employees can focus on more strategic and value-added work, boosting productivity and job satisfaction. Moreover, AI technologies enable personalized experiences tailored to individual employee needs, fostering a culture of continuous learning and development (Teknowledge, 2024). AI's capabilities redefine strategic goals and business operations. With the ability to analyze vast amounts of data and generate insights, companies can make data-driven decisions that align with their strategic objectives. AI-driven workforce transformation enables companies to adapt and thrive in an increasingly competitive business landscape, maximizing productivity and driving growth (Teknowledge, 2024).

Workforce planning can be described as a process whereby organizations strategically plan and align their workforce in line with its business goals, while identifying skills gap and developing strategies for attracting, retaining and developing talents for itself. It is the process of analysing, forecasting and planning workforce supply and demand, assessing gaps, and determining target talent management interventions to ensure that an organization has the right people – with the right skills in the right places at the right time – to fulfil its mandate and strategic objectives. The phases of workforce planning include the following: strategic direction, supply analysis, demand analysis, gap analysis, solution implementation and monitoring progress (Teknowledge, 2024). Workforce planning, previously a time-consuming and complex process, benefits significantly from AI technologies. With AI-driven analytics, organizations can strategically

align their workforce with business goals, identify skills gaps, and develop targeted strategies for attracting, retaining, and developing talent. Additionally, AI helps companies stay agile in changing market dynamics, allowing them to optimize workforce operations and deploy resources effectively (Teknowledge, 2024).

Statement of the Problem

Artificial intelligence (AI) is rapidly transforming our world, and its impact on operations of educational organisations is a particularly potent dance worth examining. Key terms like automation, the process of using technology to replace human tasks and job displacement, the resulting loss of those jobs, lie at the heart of this discussion. The spectre of technological unemployment, where AI renders entire swathes of jobs obsolete, further fuels anxieties about the future of work (Hedau, 2023).However, the rapid advancement of AI also poses a challenge. Many jobs, particularly those involving routine tasks, are at risk of being automated. This has led to concerns about job displacement and the widening of the skills gap (Chiancone, 2023). Artificial intelligence has the potential to automate a wide range of tasks, from simple data entry to complex problem-solving. This has led to a growing demand for AI-related skills in the job market. According to a report by LinkedIn, AI specialists were among the most sought-after professionals in 2020 (Chiancone, 2023).Across industries, specific jobs face high risks of automation. Repetitive tasks in manufacturing, like assembly lines, are prime targets. Data entry roles in educational sector, are vulnerable to AI‘s superior data processing abilities. Customer service, too, could see AI chatbots replacing human interaction for routine inquiries. These examples paint a picture of potential displacement, particularly impacting low-skilled and middle-income staff.

The economic and social consequences of widespread job displacement due to AI could be significant. Increased unemployment could lead to economic instability, income inequality, and social unrest. Communities heavily reliant on educational institutions vulnerable to automation may face particular challenges. Moreover, the psychological impact of job loss and the potential erosion of identity associated with work cannot be ignored (Hedau, 2023). Therefore, this study was necessitated by the need to examine the impact of artificial intelligence on workforce planning in College of Education in Kaduna State, Nigeria.

Objective of the Study

The objective of the study is to:

1. Assess the impact of artificial intelligence on workforce planning in colleges of education in Kaduna State, Nigeria.

Research Questions

This research question was answered in the study:

1. What is the impact of artificial intelligence on workforce planning in colleges of education in Kaduna State, Nigeria?

Research Hypothesis

This null hypothesis was tested at 0.05 in the study:

$H0_1$: There is no significant difference in the impact of artificial intelligence on workforce planning in colleges of education in Kaduna State, Nigeria.

Methodology

This study adopted survey research design. Survey research design was selected because it was suitable with its inherent advantage of cost benefit and speed for gathering relevant information on the topic of the study. The population of the study is made up of 3,181 (three thousand one hundred and eighty-one) respondents which comprised 1,658 (one thousand six hundred and fifty-eight) lecturers, and 1,523 (one thousand five hundred and twenty-three) senior management staff) in the two (2) government owned Colleges of Education in Kaduna State, Nigeria. A sample size of three hundred and forty-six (346) participants, consisting of one hundred and eighty lecturers (180) and one hundred and sixty-six (166) senior management staff were used in the study. The samples were randomly sampled using the recommendation of Research Advisors (2006) sample size table (see Appendix B). According to Research Advisors (2006) sample size table, for a population of 2,500 – 3,500, a sample size of 346

should be used. The instrument titled ―Artificial Intelligence and Workforce Planning Questionnaire (ARIWPQ)‖ was used for data collection in the study. After validation of the instrument by experts, pilot study was carried out in order to determine the reliability co- efficient of the instrument and to determine problem areas in the conduct of the main research. A total of ten (10) lecturers and ten (10) senior management staff were used. The questionnaire was administered once and reliability coefficient of 0.82 was obtained using Cronbach Alpha formula. According to Bennett (2006), for a scale to be considered reliable, it should have an alpha value of 0.5 and above. descriptive statistics such as frequency count, mean and standard deviation was used to respond to the research questions while Chi-square
($\square^2$) was used to test the four null hypotheses at 0.05 level of significance. Chi-square was used because descriptive data (Cohen, Manion& Morrison, 2007) involving two categories of respondents was collected in the study. Hence, hypothesis that has p-value greater than 0.05 or p = > 0.05 was retained and the one with less than 0.05 or p < 0.05 was rejected.

Results

Research Question: What is the impact of artificial intelligence on workforce planning in colleges of education in Kaduna State, Nigeria?

Table 1: Impact of Artificial Intelligence on Workforce Planning in Colleges of Education in Kaduna State, Nigeria

SN	Item Statements	Respondents	SA	A	U	D	SD	Mean	SD	Remark
1.	Artificial intelligence impacts workforce planning in colleges of education in Kaduna State.	Lecturers	29	43	16	30	62	2.705	1.534	Negative
		SMgt. Staff	7	25	9	87	38	2.253	1.099	
2.	Artificial intelligence has brought about changes to the job demand in colleges of education in Kaduna State.	Lecturers	12	99	29	13	27	3.311	1.183	Negative
		SMgt. Staff	4	67	25	13	57	2.686	1.365	
3.	Artificial intelligence impacts workforce supply in colleges of education in Kaduna State.	Lecturers	27	28	32	27	66	2.572	1.483	Negative
		SMgt. Staff	9	11	17	74	55	2.066	1.090	
4.	ChatGPT as example of artificial intelligence impacts workforce planning in colleges of education in Kaduna State.	Lecturers	22	91	25	28	14	3.438	1.129	Positive
		SMgt. Staff	6	71	36	43	10	3.120	1.031	
5.	Google Home Assistant as example of artificial intelligence increases workforce demand in colleges of education in Kaduna	Lecturers	22	62	40	30	26	3.133	1.252	Positive
		SMgt. Staff	2	88	40	29	7	3.295	0.916	
6.	Robot as example of artificial intelligence has reduced the demand for workforce in colleges of education in Kaduna State.	Lecturers	15	77	55	24	9	3.077	1.248	Negative
		SMgt. Staff	4	52	51	41	18	2.897	1.042	
7.	Siri as example of artificial intelligence impacts workforce supply analysis in colleges of education in Kaduna State.	Lecturers	15	72	35	28	30	3.461	1.115	Negative
		SMgt. Staff	-	66	34	61	5	2.969	0.943	

8. Chatbots as examples of artificial intelligence has brought about reduction in workforce demand in colleges of education in Kaduna State.	Lecturers	29	78	27	39	7	2.955	1.336	Negative
	SMgt. Staff	17	22	16	76	35	2.457	1.248	
9. Alexa as example of artificial intelligence has brought about changes to workforce supply in colleges of education in Kaduna	Lecturers	7	87	25	13	48	2.605	1.318	Negative
	SMgt. Staff	-	72	23	32	39	2.771	1.234	
10. AI algorithms impact workforce supply analysis in colleges of education in Kaduna State.	Lecturers	7	57	30	30	56	3.061	1.269	Negative
	SMgt. Staff	2	43	12	65	44	2.361	1.165	
		Average Mean					2.86	1.2	

Table 1 showed that artificial intelligence does not have impact on workforce planning in colleges of education in Kaduna State, Nigeria. The table presents the average response mean of 2.86 which is lower than the rating mean of 3.0. By implication, artificial intelligence negatively affect workforce planning in colleges of education in Kaduna State, Nigeria. Most of the items stated on the research question recorded a response mean lower than the rating mean of 3.0, which indicated disagreement on the part of the participants.

Table 2: Summary of Chi-square test on the Impact of Artificial Intelligence on Workforce Planning in Colleges of Education in Kaduna State, Nigeria

Number	χ^2 cal.	χ^2 crit.	α	df	P-value	Decision
346	12.076	20.164	0.05	36	.630	Retained

Table 2 revealed that the χ^2 cal. (12.076) is lesser than the χ^2 crit. (20.164) at 36 degrees of freedom and at 0.05 level of significance. This result therefore means that there is no significant difference in the impact of artificial intelligence on workforce planning in colleges of education in Kaduna State, Nigeria. The implication of this result is to accept the hypothesis which says that there is no significant difference in the impact of artificial intelligence on workforce planning in colleges of education in Kaduna State, Nigeria.

Findings

The study found out that:

Artificial intelligence had no significant impact on workforce planning in colleges of education in Kaduna State, Nigeria.

Discussion of Findings

Finding arising from opinion of study participants revealed that artificial intelligence have no impact on the workforce planning in colleges of education in Kaduna State. Therefore, the hypothesis that there is no significant difference in the opinion on the impact of artificial intelligence on workforce planning in colleges of education in Kaduna State, Nigeria was accepted. The finding contradicts that of Morandiniet al. (2023) which holds that artificial intelligence can free up staff time and resources to focus on more complex and demanding tasks that require transversal skills. The study revealed that artificial intelligence optimises and streamlines certain processes, and AI-driven analytics, organizations can strategically align their workforce with business goals, identify skills gaps, and develop targeted strategies for attracting, retaining and developing talent. Specifically, artificial intelligence allows organisations to optimize workforce operations and deploy resources effectively.

Conclusions

In view of the findings from this study, it was concluded that: Artificial intelligence does not have

impact on workforce planning in colleges of education in Kaduna State, Nigeria.

Recommendation

The study recommends that:

The management of colleges of education should carefully deploy artificial intelligence in the planning of workforce within the tertiary institutions in order to forestall the negative impact of the technology on the workers involving academic and non-academic staff.

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