

HARNESSING ARTIFICIAL INTELLIGENCE FOR JOB OPPORTUNITIES IN NIGERIA BREWERY

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Authors' contributions

This study was a collaborative effort among all authors. Each author reviewed and approved the final version of the manuscript for publication.

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ABSTRACT

The integration of artificial Intelligence (AI) technologies into various sectors of human endeavours has ignited debates about its impact on employment. Recently, there have been growing concerns that AI could pose a debilitating threat to traditional job roles, and that it could create job displacement, social and economic disparity among regions and industries due to uneven adoption of AI due to different cultural and religious orientations of citizens. This research, therefore, explores how AI serves as a catalyst for job opportunities rather than a threat to traditional roles, By analyzing empirical data collected from administering two hundred and fifty structured questionnaires at fifty questionnaires to each of the five selected branches of Nigeria Brewery Plc, namely: Lagos, Ota, Aba, Kaduna and Ibadan branch. The analysis was based on Chi-square and t-test via SPSS version 26.0. The finding revealed that 70.5% of respondents agreed that AI plays an essential role in creating job opportunities as it creates new roles and generates new skill gaps to be filled, rather than replacing traditional roles. The study equally showed that there is a general lack of sensitisation and public awareness on the implementation and adoption of AI technology. The research further examines the ways AI complements human capabilities, creates new job categories, and reshapes existing industries. More so, the study investigates the importance of upskilling and reskilling initiatives to adapt to the evolving job market. Ultimately, this research provides insights into the symbiotic relationship between AI and employment, emphasising the potential for AI to drive economic growth and foster innovation while addressing challenges related to workforce transitions.

Keywords: Artificial Intelligence, Job Creation, Up skilling, Disruptive Technology, Robotic

INTRODUCTION

In this era of rapid technological advancement, Artificial Intelligence (AI) stands as a transformative force, reshaping industries and societies. While there are growing concerns about job displacement, skills gap and mismatch, suitable workforce in-availability and economic and social inequality due to uneven adoption of AI across regions and industries

have often over-shadowed discussions on AI, emerging evidence suggests that AI is not just a disruptive technology but also a catalyst for creating new job opportunities. This research aims to explore the multifaceted relationship between AI and employment, shedding light on how AI technologies are reshaping the job market, creating new roles, and enabling individuals to adapt and thrive in the digital economy. By examining the intersection of AI and job opportunities, this study seeks to uncover strategies for harnessing AI's potential to drive inclusive growth, enhance productivity and empower the workforce of the future. Artificial Intelligence (AI) has increasingly become a focal point in discussions about the future of work. While some narratives emphasise the potential for job displacement due to automation, a growing body of literature highlights AI's role in creating new job opportunities. This literature review synthesises key research findings on how AI acts as a catalyst for job creation, exploring various dimensions such as the nature of emerging jobs, the sectors most affected, the skills required, and the broader economic impacts.

EMERGING OPPORTUNITIES IN WORKPLACE

Several studies illustrate that AI not only automates tasks but also generates new roles that did not previously exist. For instance, Brynjolfsson and McAfee (2014) discuss how AI drives the creation of jobs in areas such as data analysis, machine learning, and AI system management. These roles require specialised skills in programming, data science, and machine learning algorithms. Furthermore, Bessen (2019) argues that AI complements human labour rather than replacing it. His research shows that adopting AI technologies leads to a shift in job functions, where routines and repetitive tasks are automated, freeing up human workers to engage in more complex, creative, and higher-value tasks. This shift not only improves productivity but also leads to the creation of new job categories such as AI trainers, explainers and sustainers. (Wilson, Daugherty & Morini-Biazino, 2017). In addition, AI presents many opportunities in the workplace, some of which are highlighted as follows:

ENHANCED PRODUCTIVITY AND EFFICIENCY THROUGH AUTOMATION: AI-powered automation can streamline repetitive tasks across industries, freeing up human workers to focus on higher-value activities. A Deloitte report highlights that AI and machine learning are expected to contribute to a significant increase (37%) in labour productivity by 2025. (Deloitte, 2023).

IMPROVED DECISION-MAKING WITH AI-POWERED DATA ANALYSIS: AI can analyze vast amounts of data to identify patterns and trends that humans might miss. This can empower businesses to make better decisions on everything from resource allocation to product development. A 2020 McKinsey report states that AI-driven insights can generate significant economic value, with an estimated potential of \$3.0 trillion to \$4.5 trillion across 19 industries by 2030. (McKinsey Global Institute, 2020).

CREATION OF NEW JOB ROLES IN AI DEVELOPMENT, MAINTENANCE, AND OVERSIGHT: The rise of AI necessitates a new workforce with expertise in its development, implementation, and management. A 2022 Workplace report by Meta highlights a surge in AI-related job openings, with businesses actively hiring software and data engineers to support their AI endeavours. (Meta, 2022). Personalised Experiences for Workers and Customers through AI: AI can personalise the work experience for employees by automating routine tasks and offering tailored learning and development opportunities. Similarly, AI-powered chatbots and recommendation engines can enhance customer experiences by providing relevant information and support. A 2020 study by Accenture highlights that personalisation powered by AI can significantly improve customer satisfaction and loyalty. Increased Safety in Hazardous or Repetitive Tasks Managed by AI: AI can be used to automate hazardous or repetitive tasks, reducing the risk of workplace injuries and improving workplace safety by automating high-risk activities. For example, AI-powered robots can handle dangerous tasks in manufacturing and logistics settings.

SECTORAL IMPACT OF AI

AI's impact on job creation varies significantly across different sectors. In healthcare industry, for instance, AI applications range from diagnostic tools to personalized medicine, creating demand for healthcare data analysts, AI specialists and bioinformatics experts. Similarly, the financial sector sees growth in jobs related to AI-driven risk management, fraud detection, and automated trading systems (Davenport & Ronanki, 2018). Manufacturing is another sector where AI is revolutionising job roles. AI-driven robotics and automation technologies have led to the emergence of jobs focused on robot maintenance, programming, and system integration. Moreover, the development of AI in customer service has created roles for chatbot developers and AI-assisted customer service representatives (Huang & Rust, 2018).

SKILLS AND TRAINING

The integration of AI into various industries necessitates a workforce equipped with new skills. Research by the World Economic Forum highlights the importance of upskilling and reskilling programs to prepare workers for AI-driven job roles. Skills in demand include data literacy, coding, machine learning, and a robust understanding of AI ethics and governance (Bughin *et al.*, 2018). Additionally, studies emphasize the need for interdisciplinary skills combining technical knowledge with soft skills such as problem-solving, creativity, and emotional intelligence. This interdisciplinary approach is crucial as AI systems often require human oversight and ethical considerations in their deployment and management.

ECONOMIC AND SOCIAL IMPLICATIONS

The broader economic implications of AI-driven job creation are multifaceted. On the positive side, AI can lead to increased productivity and economic growth. Acemoglu and Restrepo (2018) suggest that AI-driven productivity gains could lead to lower costs and the creation of new markets, spurring job creation. Moreover, AI has the potential to enhance job quality by reducing the physical and mental burden of repetitive tasks, allowing workers to focus on more fulfilling and creative work (Bessen, 2019). More so, AI is enabling businesses to analyze vast amounts of data, providing valuable insights that inform business strategies and drive innovation. With its ability to process large datasets, AI is helping businesses identify trends, patterns, and correlations that would be impossible for humans to detect (Kumar *et al.*, 2022). AI-powered tools are streamlining processes, enhancing productivity, and improving decision-making across industries. As AI continues to advance, it is likely to have a profound impact on various industries, including healthcare, finance, transportation, and education. By harnessing the power of AI, businesses will be able to drive growth, innovation, and productivity, ultimately transforming the way we live and work. However, the transition to an AI-integrated workforce also presents various challenges. The disparity in AI adoption across different regions and industries could exacerbate social and economic inequalities (Frank *et al.*, 2019). Therefore, policies promoting inclusive growth, equitable access to AI education, and fair labour practices are essential to ensure that the benefits of AI-driven job opportunities are broadly shared (West, 2018). The future of work will be significantly impacted by AI, presenting both opportunities and challenges. As AI continues to advance, it is likely to displace certain jobs while creating new ones, requiring workers to develop new skills to remain relevant in the job market. Businesses and policymakers must be aware of both the benefits and challenges posed by AI and work towards mitigating its negative impacts while maximising its potential. (Ford, 2022). Robots are bringing about productivity while at the same time lessening the employment opportunities (Kamran *et al.*, 2020). Robots have already taken over all the blue-collar jobs. Now robots have started to enter white-collar jobs as well. As a result, jobs in all areas will be at stake. Robots, artificial friends, can perform low-paid hard jobs in unsociable hours, generating a tremendous amount of comfort for the world. There is a high possibility that future generations will see robots as teachers and caregivers as soon as the robots are successfully learning feelings like compassion and complex response sensing. Robots perform jobs with faster speed as studies suggest that one robot functions similarly to 70 full-time human workers (Lewicki *et al.*, 2019), and the rise in robotic adoption could result in falling in employment opportunities (De Vries *et al.*, 2020).

Empirical Analysis**Table 1: Descriptive Results**

Questions		SD	D	A	SA
AI is a familiar and very popular concept that most industries are now adopting	Frequency	34	38	70	108
	Percentage (%)	13.6	15.2	28.0	43.2
AI will lead to job loss and displacement	Frequency	150	57	35	8
	Percentage (%)	60.0	22.8	14.0	3.2
The government is strongly supporting the integration of AI in the workforce to ensure maximum job creation	Frequency	4	35	186	25
	Percentage (%)	1.6	14.0	74.4	10.0
AI is transforming traditional job roles tremendously	Frequency	30	40	106	74
	Percentage (%)	12.0	16.0	42.4	29.6
AI technologies have improved job satisfaction and productivity in workplaces	Frequency	4	66	122	58
	Percentage (%)	1.6	26.4	48.8	23.2
Employees are adapting to new job roles created by AI	Frequency	0	53	163	34
	Percentage (%)	0	21.2	65.2	13.6
AI-created jobs offer better quality in terms of work-life balance, job security and compensation	Frequency	1	25	158	66
	Percentage (%)	0.4	10.0	63.2	26.4
AI could create social and economic disparity due to uneven adoption among industries and regions as a result of cultural and religious orientations.	Frequency	32	110	73	35
	Percentage (%)	12.8	44	29.2	14
Job markets in the next 10 years with the advancement in AI will be tremendous and very fascinating.	Frequency	0	73	128	49
	Percentage (%)	0	29.2	51.2	19.6
Most industries are being impacted positively with the advancement of AI.	Frequency	2	36	152	60
	Percentage (%)	0.8	14.4	60.8	24.0
AI used to automate hazardous repetitive tasks can reduce the risk of workplace injuries	Frequency	0	64	116	70
	Percentage(%)	0.0	25.6	46.4	28.0
AI will create more jobs opportunities and improve productivity.	Frequency	3	28	210	9
	Percentage (%)	12	11.2	84.0	2.6

Source: Field Survey 2024**Strongly disagreed (SD), Disagree (D), Agree (A, Strongly Agree (SA)**

Table 2: One Sample t-test Result

Descriptions	t	df	Sig. (2-tailed)	Inference
AI is a familiar and very popular concept that most industries are now adopting	44.693	249	.000	Significant
AI will lead to jobs lost and displacement	30.013	249	.000	Significant
Government is strongly supporting the integration of AI in the workforce to ensure maximum job creation.	84.522	249	.000	Significant
AI is transforming traditional job roles tremendously.	47.510	249	.000	Significant
AI technologies have improved job satisfaction and productivity in workplaces	62.138	249	.000	Significant
Employees are adapting to new job roles created by AI	78.872	249	.000	Significant
AI-created jobs offer better quality in terms of work-life balance, job security and compensation	83.506	249	.000	Significant
Job markets in the next 10 years, with the advancement in AI, will be tremendous and very fascinating.	43.587	249	.000	Significant
Most industries are being impacted positively with the advancement of AI..	66.226	249	.000	Significant
AI can be used to automate hazardous or repetitive tasks, reducing the risk of workplace injuries	75.940	249	.000	
AI will create more job opportunities and improve productivity.	65.213	249	.000	Significant
	106.106	249	.000	

Source: Field Survey 2024**INTERPRETATION OF RESULTS**

The results of the questionnaire were returned, and SPSS version 26.0 was used for the analysis. On the issue of AI is a familiar and very popular concept that most industries are now adopting, 34 respondents strongly disagreed representing 13.6% while 38 respondents (15.2%) disagreed, 70 respondents (28%) agreed while 108 respondents (43.2%) strongly agreed, this shows that most industries are now adopting AI in their organisation. The result of AI will lead to jobs lost and displacement was strongly opposed by the respondents. They opined that it will not lead to job loss as 150 (60%) of the respondents strongly disagreed with the notion with 57 (22.8%) disagreed, but only 35 (14%) and 8(3.2%) agreed and strongly agreed, respectively. Conclusively, 207 respondents (82.8%) disagreed and 43 (17.2%) agreed with it. The result of the Government is strongly supporting the integration of AI in the workforce to ensure maximum job creation, this was agreed that the government will strongly support AI in our workforce. This was demonstrated by the response, as 25 (10%) strongly agreed with it, while 186 (74.4%) respondents agreed with 35 (12%) and 4 (1.6%) strongly disagreed. The result of AI is transforming traditional job roles tremendously to modern methods, it was agreed upon by the response of 180 (72%), both agree and strongly agree. But 70 (28%) responded that they strongly disagreed and disagreed with it. This means there is an improvement in the use of AI in our workforce. The result from AI has improved Job satisfaction and productivity in our workplaces, showing that only 4 (1.6%) strongly disagreed while 66 (26.4%) disagreed. But the bulk of the responses are in support of it as 122 (48.8%) agreed and 58 (23.3%) strongly agreed. Thus, AI technologies have improved job satisfaction and productivity in workplaces. The result of Employees adapting to new job roles created by AI showed that 53 (21.2%) disagreed with it while 197 (78.2%) agreed and strongly agreed with it. Looking at the result of AI-created jobs, offer better quality in terms of work-life balance, job security and compensation, 1 (0.4%) strongly disagreed with 25 (10%) disagreed. While 158 (63.2%) agreed and 66 (26.4%) strongly agreed. The result of AI could create social and economic disparity due to uneven adoption among

industries and regions as a result of cultural and religious orientations, which shows more disagreement with the notion, as they opined that it will not create social and economic disparity among the populace. This was demonstrated by the respondents as 32 (12.8%) strongly disagreed while 110 (44%) disagreed. On the other hand, 73 (29.2%) agreed and 35 (14%) strongly agreed. They argued that special training will be required, and it will favour mostly the more educated ones among them, further deepening the social and economic disparity among them. But this can only be reduced if training is organised for the less educated ones among them, then the social and economic disparity gap among them will be reduced. The results of AI will create more job opportunities and improve productivity, which shows that additional job opportunities will spring up to support the AI initiatives. Jobs like technicians, service providers and suppliers, among others, will spring up. This was demonstrated by the responses, as only 3 (1.2%) strongly disagreed, while 28 (11.2%) disagreed. But a total of 210 (84%) agreed and 9 (3.6%) strongly agreed,

	Observed Frequency (O)	Expected Frequency (E)	(O-E)	(O-E) ²	$\frac{(O - E)^2}{E}$
Strongly Disagree	32	62.5	-30.5	930.25	14.884
Disagree	110	62.5	47.5	2256.25	36.1
Agree	73	62.5	10.5	110.25	1.764
Strongly Agree	35	62.5	-27.5	756.25	12.1
	250				64.848

Table 3: Chi-Square Test Result for Impact of AI on Job Opportunities

Results

$$X^2_{Cal} = \sum \frac{(O - E)^2}{E}$$

$$X^2_{Cal} = 64.848$$

$X^2_{Expected} = 62.5$

From the above, since $X^2_{Cal} > X^2_{Expected}$ we rejected the Null Hypothesis (H_0):

Artificial Intelligence does not have a significant impact on creating job opportunities in Nigeria Brewery, and we accept the Alternative Hypothesis (H_1): Artificial Intelligence has a significant impact on creating job opportunities in Nigeria Brewery.

DISCUSSION AND FINDINGS

The chi-square calculated value is 64.848, while the chi-square expected value is 62.5. Since the chi-square calculated value is higher than the tabulated value, hence, the (H_1) alternative hypothesis which says that Artificial Intelligence has a significant impact on creating jobs opportunities in Nigeria Brewery is accepted while the (H_0) null hypothesis is rejected.

Table 4: Summary of Hypothetical Result

Hypothesis	Chi-Square	Df	Asymp. Sig.	Critical value	Decision	Conclusion
Artificial Intelligence has a significant impact on creating job opportunities in Nigeria Brewery.	64.848	3	0.000	7.185	significant	Accept the alternative hypothesis

The result of the hypothesis indicates that Artificial Intelligence has a significant impact on creating job opportunities in Nigeria

CONCLUSION

The rise of AI presents a transformative moment for the job market. While automation offers undeniable opportunities for enhanced productivity and the creation of entirely new roles, the potential for job displacement and the need for workforce adaptation cannot be ignored. To navigate this transition effectively, proactive measures are crucial. Upskilling initiatives, ethical considerations in AI development, and collaboration between governments, businesses, and educational institutions are all essential. By embracing responsible AI development and fostering a culture of lifelong learning, we can harness the power of AI to create a future of work that is not only productive but also inclusive and equitable. Further research into the human-AI relationship within the workplace will be vital in shaping this future. Let's work together to ensure AI becomes a tool for progress, not a source of disparity.

RECOMMENDATION

It is recommended that for proper integration of AI in the workplace and to mitigate Job displacement and support reskilling, there should be a focus on lifelong learning, whereby Governments can invest in educational programs that equip individuals with the skills needed for AI-driven jobs. The government can introduce Universal Basic Income (UBI), which serves as a guaranteed income for all citizens to provide a safety net for those displaced by automation, allowing them time to reskill. More so, human-centred AI should be adopted. AI should be designed to augment human capabilities, not replace them. Collaboration and human oversight are essential for responsible AI development. Furthermore, Governments can establish regulations and standards to ensure the ethical development and use of AI in the workplace. These regulations should balance innovation with responsible AI practices. In addition, Governments and businesses can co-invest in research on AI's impact on jobs and develop strategies to mitigate negative consequences. Lastly, creating public awareness and educating the citizens about the potential of AI and its impact on jobs can foster a more informed workforce.

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