EFFICACY OF ARTIFICIAL INTELLIGENCE (AI) THEORY AND EDUCATIONAL/VOCATIONAL TRAINING AT REDUCING RECIDIVISM IN SOUTH-WEST NIGERIA

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ABSTRACT

Recidivism which is a situation whereby individuals previously convicted of crime tend to return to crime again has been attributed to a lack of appropriate skills, interest and market demand for recidivists. This study therefore examines the efficacy of Artificial Intelligence (AI) theory in designing personalized educational/vocational training that matches the skills of inmates with market demand for the reduction of recidivism. The cross-sectional survey employed a descriptive research design and purposive sampling method. The study sample size is 89 based on a multistage sampling method in a correctional centre in South West, Nigeria (Oyo, Ondo and Osun State). Structured questionnaires were used to harvest information on recidivists and utilization of AI in the design of educational/vocational programmes for recidivists. Data generated were analyzed using Artificial Neutral Network and regression analysis. The study shows inappropriate educational/vocational programmes for recidivists that does not match inmates' skills and interest as some of the causative factors of recidivism in South West Nigeria. The study findings have theoretical and advocacy implications for policy makers and educators within the Nigerian correctional facilities system by emphasizing the need to adopt AI theory for predicting recidivists' behavior change in response to educational/vocational training. The study concluded that the adoption of AI theory in the design of appropriate training that matches skills, interest and market demand would facilitate the reduction of recidivism in the society. The study recommended that government, policymakers and educators need to adopt AI theory in designing appropriate personalized educational/vocational training that matches inmates' skills and interests with market driven demands as strategy for reducing recidivism in the society.

Keywords: AI, Behavioral theory, Education programme, Recidivism, Artificial Neutral Network

1.0 Introduction

One of the main causes of social discrimination among young people worldwide in the twenty-first century is their incapacity to succeed academically and in other occupational training. According to Ahmed[1], victims of social prejudice are

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categorized as second-class citizens. According to Xu et al.[2] and Conklin,[3] social discrimination is also defined as persistent imbalance based on training, educational attainment, or other diversity metrics.

Individual motivation and aptitude have a major role in obtaining training skills or educational level.[4] Research conducted in the twenty-first century has enabled sophisticated technology to forecast, based on consumer demand, the best educational program for a certain person.[5] This is due to the fact that education and career training are essential to any country's expansion and ongoing development. People are frequently not suited to the educational pattern that best fits their aptitudes, which is why they believe that certain educational systems are ultimately irrelevant to their abilities and skills. The pyramid that supports economic growth and development in developed nations is made up of educational institutions and centres for vocational training. Vocational training centres concentrated on practical skills that complemented individual talent and interest, whereas educational institutions concentrated more on ideas.

Forcible vocational training and educational systems have been identified as a violation of people's fundamental human right to education.[6] However, this has resulted in vices where many impacted have turned to crime instead of the available education or training. This flip is frequently noted as a result of training or schooling that does not align with a person's aptitude, interests, or talents.[7] It appears that the modern government is less dedicated to the necessity of education and training, which has a significant impact on social discrimination against individuals based on education and training. This has, in a sense, had a detrimental effect on a select few people and has repeatedly driven them into criminal activity. People who have been labelled recidivists have been linked to inadequate education and training. Recidivism is the act of a person repeating an

[1]A Ahmed, 'Social Discrimination as a Predictor of Criminal Recidivism: A Study of Ex-prisoners in Metropolitan Kano-Nigeria' (2023) <http://academia.edu/52895192/academia.edu/52895192/social-discrimination-as-a-predictor-of-criminal-ex-prisonsers-in-metropolitan-kano-Nigeira. /17/06/2023>
[2]T Xu, L Tang & X Lin, 'The Effect of Perceived Discrimination on Social Alienation of Probationers: Evidence from China' (2023) <Journals.Sagepub.com/doi/abs/10.1177/00328855231173148.20/06/2023.>
[3]A Conklin, 'What is Recidivism?' (2022) <study.com/learn/lesson/recidivism-causes rate.html. 24/06/2023.>
[4] Ahmed ibid n 1
[5]V Scheirs, 'Doing Reintegration: The Quest for Reintegration in Belgian Sentence Implementation' (2016) 8(2) *European Journal of Probation,* 82–101.
[6]LB Schaefer, 'Correcting the "Correctional Component of the Corrections Officers Role: How Offender Custodial Can Contribute to Rehabilitation and Reintegration' (2018), 3(1) *Journal of Corrections, Policy, Practice and Research,* 38-55.
[7]EM Oruta, 'Socio-economic Factors that Influence Recidivism in Kakamega County' (2016) 47 *Kenya Journal of Law, Policy and Globalization,* 117-125.

undesirable behavior after they have experienced negative consequences of that behavior, or have been trained to extinguish it.[8]

By providing various forms of education and vocational training to prisoners during their incarceration, Nigerian Correctional Centres significantly reduce the likelihood that they would commit crimes again. Through this education and vocational training, prisoners can acquire the skills necessary to be reintegrated into society once their imprisonment sentences are up. Nevertheless, despite the instruction and training they received in correctional facilities, several of these prisoners went back to committing crimes. According to many, the training and education they obtained did not align with their interests, making it unnecessary for recidivists to be reintegrated into society.[9] According to others, their skills were outdated and did not meet the demands of the market, which left them vulnerable to unemployment and a need for food, which in turn led them to revert back to crime.[10]

To ascertain the reasons behind recidivism in Nigeria, a few studies have been conducted. As a result, little is known about how education and vocational training relate to lowering recidivism in Nigeria. The effectiveness of artificial intelligence (AI) theory in creating individualized educational and vocational training that matches the skills of prisoners with market demand for reducing recidivism in Nigeria has also not received much attention, with the few studies on recidivism concentrating on the lack of facilities, traffic, and funding in correctional facilities. As a result, the impact of artificial intelligence (AI) in reducing recidivism in Nigeria is not well understood and there are not enough recent empirical investigations.

There are clearly gaps in identifying aspects that are crucial for the Nigerian correctional centre to reduce recidivism in Nigeria because the impact of applying Artificial Intelligence (AI) theory to designing individualized educational/vocational training that matches the skills of inmates with market demand has not been sufficiently explored.

2.0 Literature Review

Artificial Intelligence Theory has transformed the 21st century research in social sciences. In this section, we discussed our empirical literature on recidivism in the context of Artificial Intelligence (AI) theory propounded by John

[8]CC Orji, 'Recidivism: A Correlationship Between Social Discrimination And Challenges Of Socioeconomic Status In Families In Rivers State, Nigeria' (2023) 11(4) *Innovative Journal of Social Policy, Management and Administration*, 1-10.
[9]DG Thornton, 'The Effects of Institutional Discrimination on the Successful Re-entry of Ex-offenders' (2018) <uhcl-ir.tdl.org/handle/10657.1/1415/17/06/2023.>
[10] ibid

McCarthy.[11]Artificial Intelligence Theory refers to the study of principles and methods that underlie the development of AI systems, encompassing areas such as machine perception, learning, thinking, and decision-making.[12]

In the last 2 to decades, researchers failed to incorporate AI based theory in examining recidivism. In these decades, only few researchers conscript the power of AI in examining recidivism. Osagie and Emike's[13] study effective rehabilitation programmes in preventing inmate's recidivism in correctional centre and found out that the different rehabilitation programmes are channeled to reform inmates and make them marketable after the completion of sentence. However, they failed to account the relative impact of AI in forecasting the quality of rehabilitation programmes and their relative impacts on recidivism. Orji[14] studied social discrimination challenges and socioeconomic status within the family and found out that recidivism arise as a result of social discrimination. This discrimination may be in form of employment, education and training as a result of their conviction jail be a court of competent jurisdiction. This discrimination makes the society to be bias in their dealings with persons classified as ex-convicts. This perception of the public is harmful not only to the person(s) classified as ex-convicts but to the society in general.

Schneider[15] explained that ex-prisoners around the world are not free from stigma and discrimination upon release from prison in many areas of life. It is because of this discriminatory attitude of members of society towards ex-convicts that Hirschfield and Piquero[16] (2010) noted that how ex-prisoners are received and treated by society upon release critically influences reintegration success. It is clearly along this line that the result from the study conducted by Xu, et al[17] in China, entitled the Effect of Perceived Discrimination on Social Alienation of Probation revealed that perceived discrimination is positively correlated with social alienation. This result was made after age, gender, educational background, marital status and social support were controlled. This

[11]J McCarthy, ML Minsky, N Rochester & CE Shannon, 'A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence' (2006) 27(4) *AI Magazine*, 12
[12]SJ Russel & P Norvig, *Artificial Intelligence: A Modern Approach* (3rd ed., Pearson, 2016); DL Poole & AK Mackworth, *Artificial Intelligence: Foundations of Computational Agents* (Cambridge University Press, 2010); PH Winston, *Artificial Intelligence* (3rd ed., Addison-Wesley, 1992).
[13]LO Osagie & SAA Emike, 'Nature and Effectiveness of Rehabilitation Programmes in Preventing Inmates' Recidivism in Nigeria Correctional Service' (2024) 10(2) *NIU Journal of Social Sciences*, 217–227.
[14]Ibid n 8
[15]CR Schnieder, 'Reducing Discrimination and Fostering Personality Towards Ex-prisoners in Nigeria and the United States' (2020) 76(1) *Journal of Social Issues*, 172-199.

[16]PJ Hirschfield & AR Piquero, 'Normalization and legitimation: Modelling stigmatizing attitudes toward ex-offenders' (2010), 48(1) *Criminology: An Interdisciplinary Journal,* 27-55.
[17] Ibid n 2

study also revealed that the sense of shame plays a partial positive mediating role in the relationship between perceived discrimination and social alienation. Apart from these factors or predictors so far discussed, racial discrimination and other forms of discriminations have been found as predictors of recidivism in many parts of the world.

In line with this view, Folorunsho[18] in his study of Race as a Predictor of Recidivism Risk: An Epidemiological Analysis found that race is a significant risk factor in some kinds of recidivism, but not in others, and also that being African – American is not universally associated with higher recidivism risk. Also, in accord with the findings of Folorunsho,[19] Crime and Justice Research Alliance (CJRA)[20] also asserted or explained that the most potent predictor of recidivism was being a Black male, even though Black men had less contact with the criminal justice system and few of the risk factors traditionally associated with recidivism. Also, a study carried out by Jung et. al.,[21] entitled Recidivism and Survival Time: Racial Disparity among Jail Ex-inmates also showed a similar result. The study found that the overall three-year recidivism rate was 55.9%, and that Black men recidivated at a significantly higher rate than White men. Survival analysis also attested to racial disparity in recidivism, and it revealed that Black

Unhealthy socio-economic situation could engender criminal behaviour in the home, especially as it concerns the young members of the family. This could add up to explain why Gucwa-Porebska[22] averred that dysfunctionality of the family environment undoubtedly influences the emergence of criminal behaviour and, consequently, recidivism. Recidivism has been a serious issue as of concern to many scholars, and its occurrences have been tied to many factors including social as well as financial status of members of the families of the recidivists.

Baker et. al.[23] in their study, entitled "Childhood Family and Neighborhood Socioeconomic status, Psychopathy, and Adult Criminal Behaviour" found that:

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[18]F Folorunsho, 'Race as a Predictor of Recidivism Risk: An Epidemiological Analysis' (2019) <scholarwork.waldenu.edu/cgi/viewcontent-cgi?article=91398contect=dissertations. 21/06/2023.>

[19] Ibid

[20]CJRA, 'Black Men have Higher Rates of Recidivism Despite Lower Risk Factors: Study' (2018) <21/06/2023. phys.org/news/2018-10-black-men-higher-recidivism-factors.html.>

[21]H Jung, S Spjeldnes& H Yamatani, 'Recidivism and Survival Time: Racial Disparity among Jail Ex-inmates' (2010), 34(3) *Social Work Research,* 181-189

[22]K Gucwa-Porebska, 'Dysfunctionality of the Family Environment as One of the Reasons for Recidivism' (2019) <researchgate.net/publication/338341267-dys-functionlaity-of-the-family-environment-as-one-of-the-reason-for-recidivism.18/06/2023.>

[23]S Baker, M Javakhisshvili& CS Widom, 'Childhood Family and Neighborhood Socio-economic Status, Psychopathy, and Adult Criminal Behaviour' (2022) http://bpspsychub.onlinelibrary-wiley.com/doi/101111/icrp.12228? af=R.20/06/2023

Childhood family socioeconomic status and psychopathic trait scores each independently predicted the number of adult arrests. As expected, lower childhood family socioeconomic status and childhood family neighbourhood socioeconomic status predicted a larger number of adult arrests, and higher psychopathic trait scores were associated with a greater number of adult arrests. Childhood family socioeconomic status and childhood neighbourhood socioeconomic status also interacted with psychopathic trait scores to predict adult arrests. For individuals with low psychopathic trait scores, lower childhood family socioeconomic status each predicted a higher number of adult arrests, whereas this was not the case for individuals with high psychopathic trait scores.

3.0 Methodology

The study uses a multistage sampling technique and a cross-sectional research methodology. Since the number of recidivists was thought to be infinite, a snowballing strategy was used to reach the 115 desired recidivists. Regression analysis and the Artificial Neutral Network (ANN) were employed as data analysis techniques, and the data were examined for validity and reliability.

Table 1: Variables, Description, Measurement, and Sources

Variables	Description	Measurement	Source(s)
Recidivism (RAD)	This describes the factors that led to crime.	7-point Likert scale	Questionnaire administration
Education (EDU)	This describes the perception of inmates on the education received that meets market demands after serving jail term.	7-point Likert scale	Questionnaire administration
Vocational Training (VAT)	This describes the perception of inmates on the vocational training received that meets market demands after serving jail term.	7-point Likert scale	Questionnaire administration
Artificial Intelligence (AI)	This describes the impact of AI theory in predicting education and vocation that matches market demand.	7-point Likert scale	Questionnaire administration

Source: Researcher's Compilation, (2024)

As depicted in Table 1, the shows the sources of data and the instrument used in collecting the data.

Table 2: Summary of Respondents Selection and Questionnaire Distribution.

Target Population-Correctional Centre in Ogun State	Completed Copies	Unusable Response	Usable Response
Total	115	26	89
Percent Total (%)	100	22.61	77.39

Source: Field Survey (2024)

Table.2, shows that a total of one hundred and fifteen (115) questionnaires were completed and only 89 were valid for the study.

Table 3: Reliability Test

Constructs	Cronbach's Alpha	Composite Reliability

RAD	0.782	0.705
EDU	0.713	0.801
VAT	0.785	0.714
AI	0.777	0.739

Source: SPSS, (2024)

The effectiveness of the Artificial Intelligence (AI) hypothesis in creating individualized educational and vocational training that matches the talents of prisoners with market demand for the decrease of recidivism was tested against a 70% (0.7) criterion, as shown in Table 3. When measuring their individual constructs together, the variables are dependable, as indicated by the Cronbach Alpha and Composite values.

Table 4: Convergent Validity

Constructs	Average Variance Extracted (AVE)
RAD	0.719
EDU	0.744
VAT	0.815
AI	0.791

Source: SPSS, (2024)

To make sure that the measurement items of the constructs are connected, the Average Variance Extracted (AVE) was calculated to ascertain the convergent validity, as shown in Table 4. AVE was measured using a threshold of 70% (0.7). All of the construct's values are greater than the 0.7 cut-off, confirming the construct variables' convergent validity.

Table 5. – Heterotrait-Monotrait Discriminant Validity

	RAD	EDU	VAT	AI
RAD				
EDU	0.642	0.420		
VAT	0.644	0.460	0.511	
AI	0.683	0.715	0.489	0.117

Source: SPSS, (2024)

The HM discriminants validity is below the study's cutoff point of 0.7, as seen in Table 5. Consequently, it demonstrates that the concept variables lack discriminant validity.

3.1 Model Specification for Artificial Neural Network (ANN) and Traditional Regression

In order to investigate the effectiveness of Artificial Intelligence (AI) theory in creating individualized educational and vocational training that aligns the skills of prisoners with market demand and lowers recidivism in South West Nigeria, the study used Artificial Neural Networks (ANN) and Traditional Regression. The relevance and hypothesis of the independent factors on the dependent variable were tested using standard linear regression, whereas the study outcomes were explained using ANN regression.

The linear model for the study is hereby specified as follows:

$$\text{RAD} = \lambda_0 + \lambda_1 \text{EDU} + \beta_2 \text{VAT} + \Theta_3 \text{AI} + \mathcal{E}_t (1)$$

Where:
RAD= Recidivism
EDU= Education
VAT= Vocational Training
AI = Artificial Intelligence (AI)
ε = Error Term- this captured other variables for Economic instability not included in the model.

$$\text{RAD} = \lambda_0 + \lambda_1 \text{EDU} + \beta_2 \text{VAT} + \Theta_3 \text{AI} + \mathcal{E}_t \qquad (1)$$

Table 6: Data Training and Testing with Artificial Neural Network

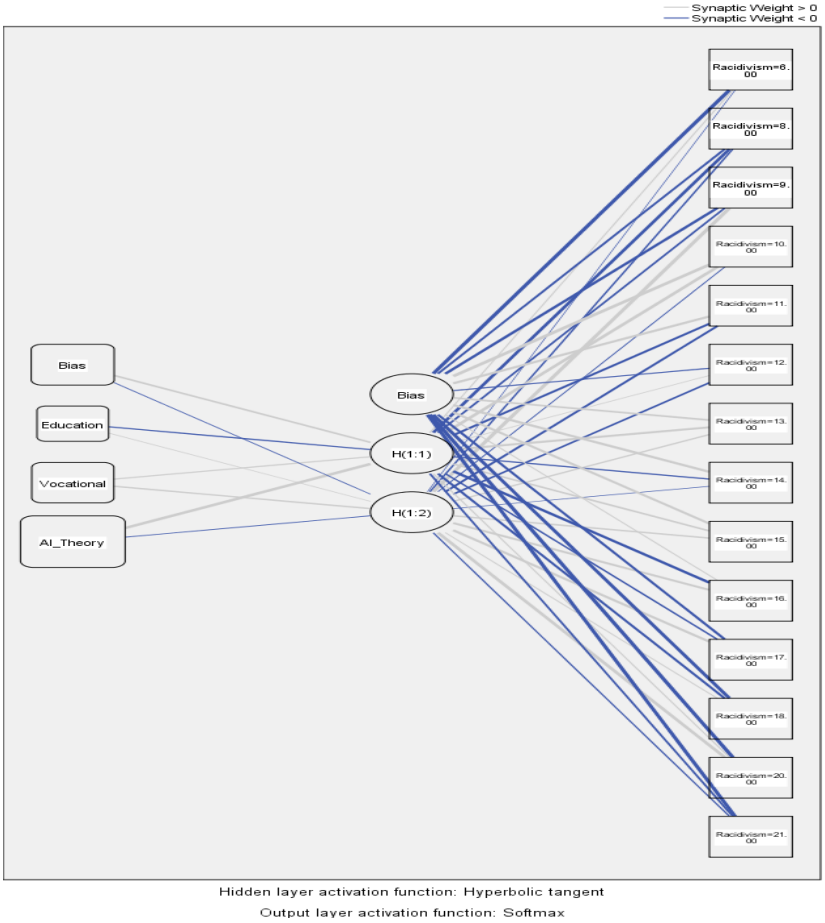
Case Processing Summary

		N	Percent
Sample	Training	68	81.0%
	Testing	16	19.0%
Valid		84	100.0%
Excluded		5	
Total		89	

Source: SPSS, Output, (2024)

As depicted in Table 6, the study adopts the standard rule of 70% and 30%. While 0.7 was used in training the data, 0.3 was used to test the data. The total observations comprised of 89. These observations are the valid questionnaire administered in the course of the study to harvest data.

Figure 1: Artificial Neutral Network Regression Architecture Output



Source: SPSS, Output, (2024)

The architecture display illustrates the relationship between the independent and dependent variables as well as one hidden layer (the neuron), as seen in Figure 1. While the independent variables were perceived as continuous variables, the dependent variable was perceived as a categorical variable. Along with a bias, there are three independent factors. Recidivism is the dependent variable. In South West Nigeria, the impact of education and vocational training on recidivism is thought to be moderated by artificial intelligence (AI).

Table 7: Summary of the Training and Testing Results
Model Summary

Training	Cross Entropy Error	17.320
	Percent Incorrect Predictions	9.4%
	Stopping Rule Used	1 consecutive step(s) with no decrease in error[a]
	Training Time	0:00:00.09
Testing	Cross Entropy Error	14.410
	Percent Incorrect Predictions	4.0%

Dependent Variable: RAD
a. Error computations are based on the testing sample.
Source: SPSS, Output, (2024)

As depicted in Table 7, the training and testing results shows the processing of the ANN Architecture with less than 10% prediction errors. These prediction errors arise as a result of training the model, testing for validity and reliability, and also testing the data that gives an appropriate output

Table 8: Summary of the Estimates of the Independent Variables
Independent Variable Importance

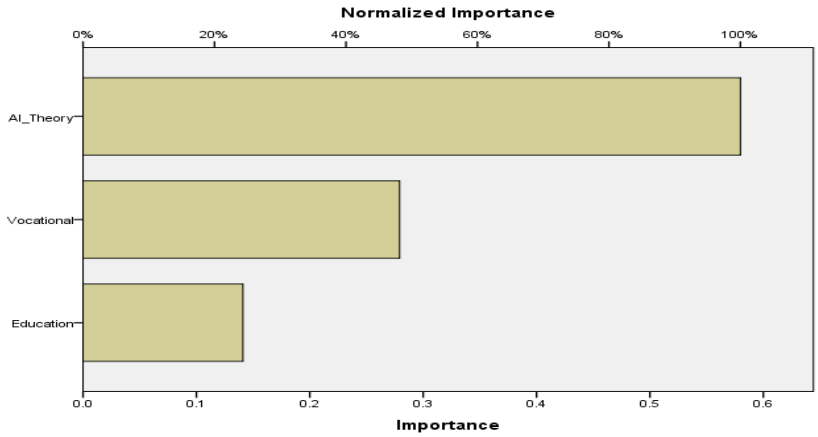
	Importance	Normalized Importance
EDU	.141	24.3%
VAT	.279	48.1%
AI	.580	100.0%

Source: SPSS, Output, (2024)

In order to reduce recidivism in South-West Nigeria, the estimates of the independent variables, as shown in Table 8, demonstrate the beneficial effects of Artificial Intelligence (AI) theory in creating individualized educational and vocational training that aligns the abilities of prisoners with market need. Normalized importance is 100% according to AI theory, 48.1% according to occupational training, and 24.3% according to educational training. While education and vocational training are important for ex-offenders, the AI theory demonstrates that appropriate vocational training using AI would yield better results regarding the skills, interests, and vocational training that each inmate needed to meet market demand after serving jail terms. Recidivism's detrimental effects on society would be lessened as a result.

By this result, it is concluded that AI predicts appropriate skills for ex-convicts that matches market demand for the sampled ex-convicts by 48.1% in South-West Nigeria.

Figure 2: Bar Charts of Artificial Neutral Network Regression Architecture Output



As depicted in Figure 2, the Bar Chart display the independence variable importance as displayed by the ANN Architecture design that link the independent variables to the dependent variable alongside the hidden layer (Neuron). While, AI takes superiority, vocational and education follows sequentially in examining recidivism in South-West Nigeria.

Table 9: Model Summary using Traditional Regression Model
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	-.855[a]	.731	.718	2.91695

a. Predictors: (Constant), AI, VAT, EDU
Source: SPSS, Output, 2024

As depicted in Table 9, there is a negative correlation of 0.855 between education, vocational training and the use of AI on recidivism. The more the use of AI to moderates education and vocational training selection for recidivists for bridges about optimal reduction in crime. The coefficient of determination of 73.1% appropriately explained that AI theory drives education and vocational training selection for optimal reduction of recidivism in the society.

Table 10: Summary of Estimates using Traditional Regression
Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		

1	(Constant)	12.226	1.810		6.754	.000
	EDU	.108	.110	.118	.977	.031
	VAT	.048	.106	.054	.453	.022
	AI	.123	.125	.125	.983	.029

a. Dependent Variable: RAD
Source: SPSS, Output, 2024

As depicted in Table 10, We further test the significant of the variables used to examine recidivism in South-West Nigeria by testing the significance of the selected variables as well as testing the hypotheses. We used the traditional regression method to extract this information.

Education has a coefficient (0.118), Vocational Training (0.054) and AI (0.125). Their significant values are 0.031, 0.022 and 0.029. These values are significant 5% level of sig.

To test the hypotheses on the efficacy of Artificial Intelligence (AI) theory in designing personalized educational/vocational training that matches the skills of inmates with market demand for the reduction of recidivism. While the variables showed positive relationship aligning with the results of the Artificial Neural Network regression results, the sig. value shows that EDU, VAT and AI are significant at 5% level. The test of hypotheses using the sig. value also corroborates with the results of the ANN regression that vocational training has a stronger relationship in reducing recidivism than academic education for ex-convicts in South West Nigeria.

4.0 Discussion of Findings

Many variables have been used to account for the reduction of recidivism in any society but this study focused on the efficacy of Artificial Intelligence (AI) theory in designing personalized educational/vocational training that matches the skills of inmates with market demand for the reduction of recidivism.

According to the study, educational and vocational programs are offered in correctional facilities to assist recidivists; however, these programs have not been suitably adapted to meet the needs of the market and the interests of the participants. Therefore, the results of this study corroborate the findings of Osagie and Emike[24], who assert that the government can reduce recidivism in society by providing offenders with academic and vocational training as a kind of rehabilitation. This study fills the vacuum left by Osagie and Emike,[25] who neglected to take into consideration the use of AI theory in choosing suitable

[24] Ibid n 13
[25] ibid

vocational training and education during the rehabilitation of prisoners in correctional facilities.

This study further confirms Orji's[26] findings that recidivism is caused by a variety of discriminatory variables, including social discrimination, such as discrimination based on marketable abilities. For example, a person convicted of a minor offense may feel oppressed by their family's socioeconomic standing. and discovered that social prejudice is the root cause of recidivism. This research complements studies that examined socioeconomic discrimination in society, such as Orji[27] and Xu et al.,[28] because discrimination causes society to be biased in its interactions with those who are classed as ex-convicts. This is due to the fact that the public's perspective is detrimental to society as a whole as well as to the person or people who are considered ex-offenders.

This study also backs up Schneider's[29] research, which highlights the global problem that recidivists face stigma and discrimination in many facets of life after being released from jail. People in society's prejudice against ex-offenders is what caused them to commit crimes again in order to make ends meet. Hirschfield and Piquero[30] came to the conclusion that treating recidivists with affection and matching them with talents that are in demand for employment is a polite method of reintegrating them into society. This study does, however, somewhat corroborate the findings of Xu et al.[31] in China, who found a positive link between social alienation and felt discrimination.

This is because sociodemographic characteristics like age, gender, marital status, educational background, and social support are thought to have an impact on recidivism, according to Xu et al.[32] According to Folorunsho,[33] recidivism risk is predicted by race because societal discrimination provides a platform for recidivism to flourish. Therefore, our study backs up the findings of Xu et al.[34] and Folorunsho,[35] who suggested that AI-induced theory would be beneficial in reducing the likelihood of recidivism in any community, regardless of what may have caused it to rise. The findings of Jung et al.[36] and the Crime and Justice Research Alliance (CFRA),[37] which concluded that black males are the most powerful predictors of recidivism, are partially supported by this study. Just as

[26] Ibid n 8
[27] ibid
[28] Ibid n 8
[29]Ibid n 15
[30]Ibid n 16
[31]Ibid n 2
[32] ibid
[33]Ibid n 18
[34]Ibid n 2
[35]Ibid n 18
[36]Ibid n 21
[37]Ibid n 20

recidivism is not restricted to black people, neither is the study of recidivism restricted to Africa. Given that the recidivism rate for black men was 55.9% higher than that of white men, recidivism is a mental health issue rather than a colour-related one.

According to Gucwa-Porebska,[38] recidivism was caused by an unhealthful socioeconomic environment in the home. Thus, this analysis backs up Gucwa-Porebska's[39] findings. Criminal behaviour would not be present in their children if their parents had properly trained them by keeping an eye on their abilities and enrolling them in the relevant educational or vocational programs. Families in the southwest region of Nigeria who have children should be concerned about this. This study thus confirms the findings of Baker et al.[40] that trait scores that predict recidivism in a society include neighbourhood, socioeconomic position, psychopathy, and adult criminal behaviour. This is because a high concentration of families with high socioeconomic position in a neighbourhood may lead to social discrimination against families with lower socioeconomic status. This is because socioeconomic status has been shown to predict recidivism in adulthood for children living in socio-discriminatory neighbourhoods and to interact with psychopathic personality scores.

5.0 Recommendations

Based on the findings of the study identified above, the following recommendations are made:

The Nigerian Correctional Service should adopt the use of AI-driven training allocation tools to assess the interests, behavioural patterns, skills and market demand of inmates before assigning them to educational or vocational programs. This will ensure that rehabilitative and reintegration programmes are data-driven rather than random, thereby increasing their chances of being employed after release and reducing the rate of recidivism.

The Nigerian Correctional Service should prioritize vocational/ educational programmes/ training that meet the current labour market demand within the region; so as to enhance economic reintegration.

Policymakers should integrate AI-based rehabilitation frameworks into correctional and criminal justice policies, so as to enhance evidence-based decision-making and predict rehabilitative and reintegration outcomes.

There is need for correctional officers, educators and vocational instructors in correctional centres to receive periodic training and capacity-building on the use

[38]Ibid n 22
[39]Ibid
[40]Ibid n 23

of AI tools in rehabilitation programmes. This will assist in improving their capacity to interpret AI outputs and effectively implement personalized training interventions within correctional facilities.

Government and non-governmental organizations should make use of AI-generated skills assessment on inmates' competencies on market-relevant skills and employability to advocate against social discrimination against ex-offenders. This can help improve societal acceptance and facilitate a skill-based reintegration process of ex-offenders.

There should be periodic evaluation and updating of educational and vocational programmes using AI predictive analytics within correctional facilities to reflect changing market trends, technological advancements, and evolving inmate profiles. This will aid in prevent skill redundancy and improve long-term rehabilitative outcomes.

6.0 Conclusion

In order to make ex-offenders relevant to society and able to meet market demands after serving jail sentences, the study aims to quantitatively evaluate the applicability of using Artificial Intelligence (AI) theory to predict their educational and vocational training needs. The study examined a wide range of literature, including a theoretical framework, empirical review, and a review of important concepts related to reducing recidivism in society. The artificial intelligence-based strategy employing artificial neural network regression ensured that the interests and skills of recidivists are prioritized in the allocation of vocational training and education that meets their interests and skills, whereas traditional methods failed to accurately allocate funds for vocational training and education for persons classified as ex-convicts with respect to interest and skills. Recidivism is less about encouraging crime and more about helping society grow and flourish thanks to this AI technology.

This is because the desire to return to crime decreases when recidivists' talents satisfy market demand and enable them to earn incomes that are in line with their basic necessities. Thus, it can be said that factors like education and vocational training are important in improving the lives of recidivists, and the use of AI makes it simpler for the government to match their interests with the right skills so they can function in society. In the long run, this vocational training and education eliminates the desire to turn back to crime as a means of surviving in society by making them better, more responsible citizens with a sense of independence from the skills they have learned.

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