

INFLUENCE OF ARTIFICIAL INTELLIGENCE ON MARKETING COMPETENCE OF BUSINESS EDUCATION GRADUATES AS EXPRESSED BY MACRO ENTREPRENEURS

Etoma, Moses George Ph.D

*Department of Vocational and Technical Education
University of Cross River State, Calabar.*

mosesetoma@gmail.com mosesetom@unicross.edu.ng

Okute, Agnes Lawrence. Ph.D

*Department of Vocational Education,
University of Calabar, Calabar.*

agnesokute@unical.edu.ng

Adie, Anthonia Ugiebeme

*Department of Fine and Applied Art
University of Calabar*

adieanthonia@gmail.com

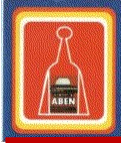
Abstract

The main purpose of the study was to ascertain the Perceived influence of Artificial intelligence practices on marketing competences among business education graduates as expected by employers of labour in macro enterprises in Calabar Metropolis. The study employs descriptive survey design. Two research questions guided the study and two hypotheses were tested using one way analysis of variance (ANOVA) at 0.05 level of significance and the mean and standard deviation were used to analyze the research. The population for the study comprised all 67 human resource managers of macro enterprises in Calabar Metropolis. There was no sampling, the study adopted census approach such that all members of the population were involved in the study. Data were collected using a structured questionnaire titled "Artificial Intelligence Practices and Marketing Competences Questionnaire (AIPMCQ)", which was validated by 3 experts, two in Business Education and one in Measurement and evaluation both from University of Cross River State. The questionnaire featured 20 items with Cronbach Alpha coefficients of 0.71 for cluster C1 and 0.77 for cluster C2, and an overall reliability of 0.74. Based on the findings and conclusion of the study it was recommended among others that Businesses should integrate Cognitive Computing into their marketing strategies to evaluate business models, improve competitive positioning, and personalize customer interactions. Cognitive Computing should be used to analyze global market data and break down geographical barriers for expansion.

Key Words: Artificial Intelligence, Marketing Competence, Cognitive Computing, Machine Learning, Macro Enterprises

introduction

In today's global economy, integrating cutting-edge technologies is imperative for enterprises striving to remain competitive in a dynamic marketplace. Among these technologies, Artificial Intelligence (AI) has emerged as a game-changer, influencing various facets of industries, and reshaping traditional paradigms. AI offers unique opportunities to enhance entrepreneurial and marketing competencies (Abrokwah-Larbi, & Awuku-Larbi, 2023). In particular, the knowledge of AI in entrepreneurial and marketing competencies has garnered



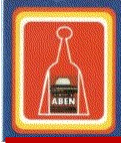
significant attention, with employers recognizing its potential to revolutionize how they engage with customers and drive results (Giuggioli, & Pellegrini, 2023).

The evolution of AI in marketing and entrepreneurship can be traced back to the increasing availability of vast datasets and the computational power required to process them (Nwachukwu,, & Affen, 2023) As businesses grapple with overwhelming amount of consumer data generated through online interactions, AI has become the linchpin for extracting meaningful insights and translating them into actionable strategies. From predictive analytics to how marketing campaigns are conceptualized, executed, and optimized (George, Sasikala, Gowthami, Sopna, Umamaheswari, & Dhinakaran, 2024) in the same vein Chukwuka, and Igweh,. (2024) opined that AI is taking all aspect of works from humans, it will lead to lack of creativity and redundancy on the part of humans while on the other hand it will inspire more creativity and innovation on some humans in their quest to keep their jobs

The proliferation of big data and advanced analytic solutions have made it possible for marketers to build a clearer picture of their target audiences than ever before; and in this hotbed of advancement lies artificial intelligence (AI) marketing. Using data and customer profiles, AI tools learn how to communicate with customers, and deliver personalized messaging at the right time without the need of human intervention or assistance from marketing team members. Chaitanya, Saha, Saha, Acharya, and Singla, (2023) described Artificial Intelligence as a broader concept of creating machines or systems that exhibit intelligence higher than human intelligence. Kangiwa, et al (2024) conceptualized ten levels of artificial intelligence: narrow or weak, general or strong, super-intelligence, artificial general intelligence, cognitive computing machine learning, deep learning, natural language computing, robotics and hybrid intelligence. In this study, the artificial intelligence practice in marketing required by business education graduates are cognitive computing and machine learning. Cognitive computing mimicks human thoughts process using self-learning algorithms to analyze data and make decisions. Machine learning enables AI system to learn from data, identify patterns and make predictions or decisions.

AI is the general term for the science of artificial intelligence, advancement in (AI) technology currently opened up new opportunities for progress in critical areas such as entrepreneurship, marketing, health, economic, environment, education, energy, and social welfare (Kangiwa, Oludare, Nassarawa, Abubakar, Efeoma, & Enefola, 2024). Marketing competencies equip learners with the skills, knowledge, and abilities that an organization or individual possesses to effectively design, implement, and manage marketing strategies. Abrokwah-Larbi, & Awuku-Larbi, (2023) posited that these competencies are critical for understanding customer needs, developing products or services, communicating value, and ultimately achieving business objectives. Rahman¹, Fauzi, Husain, Hassan, Kamaruzaman, and Hanis. (2020), postulated that AI offers tremendous potential in improving current marketing tactics, as well as entirely new approaches of presenting and distributing value to customers.

In the words of Nwachukwu, Affen, and Miebi (2023) AI marketing has the potential to revolutionize customer experience management in Nigeria which has a population of over 200 million people and a rapidly growing digital economy; and that, there is a huge market for businesses that can provide personalized and efficient customer experiences. One of the severe problems facing the universe is a large number of unemployed, comprising high school graduates who do not continue their tertiary education and university graduates. The curriculum requires competency content to prepare graduates who are ready to work (Djubaedi, Rohadi, & Kodama, 2023). One alternative is implementing marketing curriculum so that graduates can decide on a career after graduation. This study aims to identify what core competencies are needed to start/start-up, manage and develop an enterprise. Djubaedi, Rohadi, and Kodama, (2023) asserted



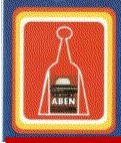
that the ten core marketing competencies expected of graduates are channel management, data-driven decision making, understanding market dynamics, customer segmentation, identifying business opportunities and exploiting businesses, implementing managerial activities, implementing human resource management, implementing commercial and marketing activities, implementing financial management, actualizing attitudes and behavior. George, Sasikala, Gowthami, Sopna, Umamaheswari, and Dhinakaran, (2024) asserted that AI empowers marketers with tools that drive efficiency, enhance personalization, and facilitate data-driven decision-making, ultimately improving marketing performance and return on investment. Chukwuka, and Igweh, (2024) stated that by utilizing AI in marketing strategies, an entrepreneur may increase audience reaction and establish a strong competitive advantage over other online firms. In addition to marketing, it may revitalize businesses through creative ideas. Additionally, it provides solutions for challenging jobs, which aids in the rapid expansion of businesses

Students must be encouraged to prepare themselves, choosing marketing as an alternative career. Aqil, Hudaya, and Wulansari, (2020) opined that marketing competence has the content to shift the paradigm of students from job seekers to job creators and increase the number of marketers. It is of utmost importance to increase student's awareness and understanding of marketing as an alternative career choice (Liu, Lin, Zhao, & Zhao, 2019). Therefore, to prepare for marketing extensification, the initial efforts should focus on exploring AI in conjunction with marketing and entrepreneurial resources.

The high poverty rate in Calabar metropolis is largely attributed to the significant unemployment rate, particularly among university graduates who lack alternative skills for self-employment (Adenike, 2021). This issue is reflective of a broader national problem in Nigeria, where a substantial number of graduates are unemployed, and many others have not been able to further their education (Suharno et al., 2020). The lack of employment opportunities, coupled with inadequate skills, has severe implications for national development, affecting both individual and societal productivity (Ningrum, Hukom, & Adiwijaya, 2020). Recent data from the Central Statistics Agency indicates that unemployment in Calabar has been on the rise over the past decade. (Ningrum et al., 2020)

Notably, a large portion of the unemployed population is composed of educated individuals, including university graduates and diploma holders. Moeis, (2022) noted that this trend highlights a critical issue: graduates are leaving school without the necessary skills to pursue alternative careers, particularly in emerging fields like artificial intelligence (AI) in marketing and entrepreneurship. Dwivedi et al., (2019) noted AI systems help marketers with one-to-one segmentation and targeting, ultimately engaging and appealing to every customer with individually customized messages. Again, Giuggioli, and Pellegrini, (2023) postulated that AI has profound implications when it comes to entrepreneurship and marketing, in particular, positively impacts entrepreneurs in five ways: through opportunity, decision-making, performance, education and research and good employment decision.

Employers in macro enterprises are increasingly seeking graduates who not only have academic qualifications but also possess practical skills in modern marketing practices. Moganadas and Goh, (2022), perceived Employer of labour as human resource managers that employs, train hire and fire workers. Quek, (2021) posited that the demand has shifted from theoretical knowledge to non-cognitive skills and practical competencies that can drive business success. The ability to adapt to new industry trends, particularly those involving AI, has become a crucial criterion for employment. According to Vimala and Sudhakar (2023), freshers at workplace especially macro enterprise need to be adaptive enough to build their mindset with current trends of the industry. Gawell, (2017), described macro enterprises by Combining these terms, "macro



and enterprise" which is interpreted as a large-scale business or organization operating at a broad level. A macro enterprise is a large-scale business with 50 or more employees and an average asset value of 5.5 billion naira. These companies, often with branches across multiple states, are characterized by their large size, complex structures, and significant impact on the global economy. They play a crucial role in global GDP and employment.

These businesses, which are characterized by their large size, complex structures, and broad market reach, require employees who can contribute to their competitive advantage in a rapidly changing global market (Okolie, Nwosu, & Mlanga, 2019). The 21st-century marketing landscape is driven by technology, requiring marketers and entrepreneurs to engage with tech-savvy customers through modern, AI-enhanced strategies. However, the current state of university education in Nigeria is not adequately preparing marketing graduates for these demands. The education system faces numerous challenges, including outdated curricula, a lack of practical exposure, and limited collaboration with industry. Consequently, marketing education remains heavily theoretical, leaving graduates ill-equipped for the realities of the modern business environment. This gap between academic preparation and industry expectations presents a significant challenge for macro entrepreneurs. They struggle to find fresh graduates with the necessary practical skills and often resort to hiring and training candidates themselves. This situation not only hinders the professional growth of graduates but also limits their potential contributions to the economy and society.

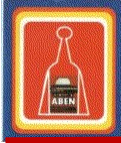
Given these challenges, there is an urgent need to reevaluate and update the marketing education curriculum in Nigerian universities. Emphasizing practical skills, particularly in AI and other emerging technologies, is essential to bridge the gap between academic training and the competencies required in the modern workplace. Doing so will enhance the employability of graduates and ensure that they can contribute meaningfully to the economic and market growth of the society. Giuggioli, and Pellegrini, (2023) postulated that AI has profound implications when it comes to entrepreneurship and marketing, in particular, a positively impacts entrepreneurs in four ways: through opportunity, decision-making, performance, and education and research.

This research is therefore focused on understanding the influence of AI practices on marketing competencies of business education graduates as expressed by macro entrepreneurs in Calabar metropolis. The study aims to assess how these competencies align with the expectations of employers in macro enterprises, offering insights into how marketing education can be reformed to better serve both graduates and the broader economy.

Statement of the problem

Despite the growing importance of Artificial Intelligence (AI) in modern business practices, most business education graduates are inadequately prepared to leverage AI in these fields due to outdated curricula and a lack of practical exposure during their education. This mismatch between educational outcomes and industry demands has resulted in a workforce that struggles to meet the evolving expectations of employers, thereby limiting the employability and effectiveness of graduates in driving business growth and innovation in the competitive landscape of macro enterprises. This study seeks to investigate the influence of AI practices on marketing competencies of these graduates and to explore how education systems can be reformed to better align with industry needs.

The problem addressed in this study is the significant gap between the competencies that business education graduates in Calabar metropolis require and the skills that employers of macro enterprises expect, particularly in the areas of e marketing.



Purpose of the study

The main purpose of the study is to determine the Perceived influence of Artificial Intelligence Practices on entrepreneurial and marketing competences among business education graduates as expected by employers of labour in macro enterprises in Calabar metropolis. Specifically, the study sought to:

1. Examine perceived influence of cognitive computing on marketing competences
2. Determine the perceived influence of machine learning on marketing competencies

Research Questions

1. To what extent does cognitive computing influence marketing competencies?
2. To what extent does machine learning influence marketing competencies?

Research Hypotheses

- H₁. There is no significant difference between the mean responses of human resource managers on the extent of the influence of cognitive computing on competences
- H₂. There is no significant difference between the mean responses of human resource managers on the extent of the influence of machine learning on marketing competences

Method

The study adopted the descriptive survey design. The population of this study comprised all human resource managers of macro enterprise in Calabar metropolis numbering 67. There was no sampling, the study adopted census approach such that all members of the population were involved in the study. This was possible because human resource managers in Calabar metropolis are relatively few, hence the size of the population for the study is manageable. The main instrument used for data collection in this study was a structured questionnaire developed by the researcher titled "Artificial Intelligence Practices and Marketing Competencies Questionnaire" (AIPMCQ). The questionnaire consisted of 20 items in two clusters (C₁ and C₂) based on the purpose of the study. The instrument was validated by three experts two from business education and one from measurement and evaluation all from University of Calabar. The items of the research questions were placed on a modified four-point Likert scale of; Very High Extent (VHE), High Extent (HE), Low Extent (LE), Very Low Extent (VLE). The scale was scored with 4 points, 3 points, 2 points and 1 point respectively. Internal consistency of the research instruments was tested using Cronbach Alpha reliability analysis and the reliability coefficients of 0.71 for cluster C₁ and 0.77 for cluster C₂. And an overall reliability of 0.74. A total number of 73 questionnaire were administered on the respondent with 95% returned rate. Data collected were analyzed using mean and standard deviation for the research questions while the stated hypotheses were tested using one way analysis of variance (ANOVA) at 0.05 level of significance.

Results

Research Question One

To what extent does cognitive computing influence marketing competencies?

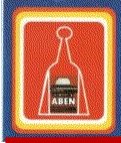


Table 1: Mean and Standard Deviation of Respondents on the extent cognitive computing influence marketing competencies

S/N Item Statement		N= 67		
		Mean (\bar{x})	SD	Dec.
1	Ability to Use cognitive computing (CC) to evaluate business models and competitive positioning.	2.56	0.75	HE
2	Ability to understand customer behavior, preferences, and market dynamics	2.82	0.81	HE
3	Ability to use CC to predict potential risks and develop mitigation strategies	2.24	0.70	LE
4	Ability to use CC personalize customer interactions and improve satisfaction	2.51	0.78	HE
5	Ability to use CC for customer segmentation, targeting, and engagement	2.80	0.72	HE
6	Ability to use CC to manage and analyze global market data, helping them expand into	2.56	0.80	HE
7	Ability to use CC to breaks down geographical barriers	2.83	1.00	HE
8	Ability to use CC to Keep up with emerging AI trends, technologies, and best practices	2.20	0.88	LE
9	Ability to use CC to provides real-time feedback, enabling continuous learning	2.34	1.00	LE
10	Ability to use CC to Build Competence in Marketing Forecasting	2.44	0.90	LE

HE = High Extent, LE = Low Extent

Table 1 shows the mean and standard deviations of respondents on the extent cognitive computing influence marketing competences. The results show that items 1, 2, and 4 to 7 had mean ratings ranging from 2.56 to 2.83 with standard deviations from 0.72 to 0.81. These mean values are above the benchmark value of 2.50, which implies high extent. This indicates that; Ability to Use cognitive computing (CC) to evaluate business models and competitive positioning, Ability to understand customer behavior, preferences, and market dynamics, Ability to use CC personalize customer interactions and improve satisfaction, Ability to use CC for customer segmentation, targeting, and engagement, Ability to use CC to manage and analyze global market data, helping them expand into, and Ability to use CC to breaks down geographical barriers were in high extent. However, Ability to use CC to predict potential risks and develop mitigation strategies, Ability to use CC to Keep up with emerging AI trends, technologies, and best practices, Ability to use CC to provides real-time feedback, enabling continuous learning, and Ability to use CC to Build Competence in Marketing Forecasting were low extent; this is because their mean values are below the benchmark value of 2.50 and implies low extent.

Hypothesis One:

There is no significant difference between the mean responses of human resource managers on the influence of cognitive computing on marketing competences .

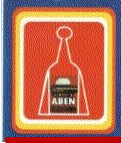


Table 2: One way ANOVA of the influence of cognitive computing on marketing competences

Model	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.828	2	.414	14.276	0.041
Within Groups	1.882	64	.029		
Total	2.709	66			

$\alpha = 0.05$, df = Degree of freedom, F= F-ratio

The results in table 2 show that an F-ratio of 14.276 with a degree of freedom of 66 and an associated exact probability value of 0.04 was obtained. This exact probability value of 0.04 is less than 0.05 level of significance set as bench mark for testing the hypothesis ($P < 0.05$) and it was found to be significant. The null hypothesis which states that there is no significant difference between the mean responses of human resource managers on the influence of cognitive computing on marketing competences is therefore rejected and inference drawn is that, cognitive computing significantly influence marketing competences .

Research Question Two

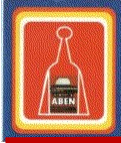
What is the extent to which machine learning influences marketing competencies?

Table 3: Mean and Standard Deviation of Respondents on the extent to which machine learning influences marketing competencies

		N=67		
S/N	Item Statement	Mean (\bar{x})	SD	Dec.
11	Ability to use machine learning (ML) to create personalized marketing experiences	2.60	0.68	HE
12	Ability to use ML to personalized content recommendations and product suggestions	2.19	0.73	LE
13	Ability to use ML for visual content creation and adaptive marketing strategies	2.92	0.75	HE
14	Ability to use ML to Implementing AI-driven targeted advertising and campaign	2.35	0.81	LE
15	Ability to use ML chat bots for customer service and lead generation	2.66	0.62	HE
16	Ability to use ML to predict future customer actions and preferences	2.15	0.92	LE
17	Ability optimize dynamic Pricing Models base on real time	2.81	0.87	HE
18	Ability to analyze customer interactions across different channels	2.74	0.96	HE
19	Ability to improve the timing, personalization	2.65	0.73	HE
20	Ability to identify cross-sell and up sell opportunities	2.81	0.88	HE

HE = High Extent, LE = Low Extent

Table 3 shows the mean and standard deviations of respondents on the extent to which machine learning influences marketing competencies. The results obtained show that items 11, 13, 15, 17 to 20 had mean ratings ranging from 2.60 to 2.92 with standard deviations from 0.62 to 0.96. These mean values are above the benchmark value of 2.50, indicating high extent. This implies that; Ability to use machine learning (ML) to create personalized marketing experiences, Ability to use ML for visual content creation and adaptive marketing strategies, **Ability** to use ML chat bots



for customer service and lead generation, **Ability** to analyze customer interactions across different channels, **Ability** to improve the timing, personalization, and **Ability** to identify cross-sell and up sell opportunities were in high extent. However, Ability to use ML to personalized content recommendations and product suggestions, Ability to use ML to Implementing AI-driven targeted advertising and campaign, and **Ability** to use ML to predict future customer actions and preferences were low extent; this is because their mean values are below the bench mark value of 2.50 and implies low extent.

Hypothesis Two:

There is no significant difference between the mean responses of human resource managers on the influence of machine learning on marketing competencies

Table 4: One way ANOVA of the influence of machine learning on marketing competences

Model	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	0.219	2	0.111	3.700	0.032
Within Groups	1.904	64	0.030		
Total	2.123	66			

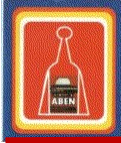
$\alpha = 0.05$, df = Degree of freedom, F= F-ratio

The results in table 4 show that an F-ratio of 3.700 with a degree of freedom of 66 and an associated exact probability value of 0.03 was obtained. This exact probability value of 0.03 is less than 0.05 level of significance set as bench mark for testing the hypothesis ($P < 0.05$) and it was found to be significant. The null hypothesis which states that there is no significant difference between the mean responses of human resource managers on the influence of machine learning on marketing competences is therefore not retained and inference drawn is that, machine learning significant difference marketing competences

Discussion of Findings

On the answers to research questions and tested null hypotheses, the results obtained from table 1 shows that; Ability to Use cognitive computing (CC) to evaluate business models and competitive positioning, Ability to understand customer behavior, preferences, and market dynamics, Ability to use CC personalize customer interactions and improve satisfaction, Ability to use CC for customer segmentation, targeting, and engagement, Ability to use CC to manage and analyze global market data, helping them expand into, and Ability to use CC to breaks down geographical barriers were in high extent. Also result from table 2 showed that cognitive computing significantly influence marketing competences. This finding is in line with the finding of Mikalef et al. (2019) that cognitive computing enhances businesses' ability to analyze customer behavior, segment markets, and personalize customer experiences, leading to improved marketing outcomes. Also, Davenport and Ronanki (2018) in their research highlighted how cognitive technologies, including CC, significantly improve firms' competitive positioning by enabling data-driven decision-making, customer interaction personalization, and global market expansion through data analysis.

The results obtained from table 3 show that Ability to use machine learning (ML) to create personalized marketing experiences, Ability to use ML for visual content creation and adaptive marketing strategies, **Ability** to use ML chat bots for customer service and lead generation, **Ability** to analyze customer interactions across different channels, **Ability** to improve the timing,



personalization, and **Ability** to identify cross-sell and up sell opportunities were in high extent. Also result from table 4 showed that machine learning significant difference marketing competences. This finding agreed with the work of Chaffey and Ellis-Chadwick (2020) this study found that ML significantly enhances personalized marketing experiences, adaptive strategies, and chatbots for customer service, resulting in improved customer satisfaction and marketing outcomes. Also, Kietzmann et al. (2018) in their research highlighted that ML plays a crucial role in analyzing customer interactions, improving personalization, timing, and identifying cross-sell and upsell opportunities, leading to significant improvements in marketing competences.

Conclusion

Based on the findings and discussion of this study, it is concluded that CC significantly enhances marketing competences by enabling businesses to evaluate models, understand customer behavior, personalize interactions, segment markets, and break down geographical barriers. ML significantly improves personalized marketing experiences, content creation, and customer service through chatbots. It also enhances cross-sell, upsell opportunities, and marketing outcomes.

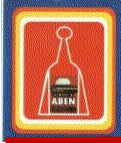
Recommendations

Based on the findings of the study, the following recommendations were made:

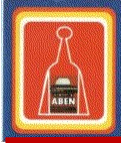
1. Businesses should integrate CC into their marketing strategies to evaluate business models, improve competitive positioning, and personalize customer interactions. CC should be used to analyze global market data and break down geographical barriers for expansion.
2. Companies should utilize ML for personalized marketing experiences, adaptive content creation, chatbots for customer service, and analyzing customer interactions across channels. ML should also be employed to optimize timing, personalization, and identify cross-sell and upsell opportunities to enhance marketing competences.
3. Organizations should invest in training employees to use CC and ML technologies effectively. This will maximize their potential in decision-making, customer segmentation, and engagement strategies.
4. Businesses should continuously monitor the impact of these technologies on marketing performance to make data-driven improvements and stay competitive.

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