DIGITAL COMPETENCE AND INDUSTRY READINESS THROUGH EMERGING TECHNOLOGIES IN MARKETING EDUCATION CURRICULUM AMONG BUSINESS EDUCATION STUDENTS IN UNIVERSITIES IN CROSS RIVER

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The study investigated digital competence and industry readiness through emerging technologies in marketing education curriculum among business education students in universities in Cross River State, Nigeria. Two research questions and two hypotheses guided the study. A descriptive survey research design was adopted, with 328 undergraduate students selected using stratified random sampling. Data were collected using a structured questionnaire titled "Digital Competence and Emerging Technologies in Marketing Education Curriculum Questionnaire (DCETMECQ)". The instrument was validated by 3 experts, 2 in marketing education and 1 in measurement and evaluation both from university of cross river state. The reliability was tested using Cronbach's alpha, and analyzed using mean, standard deviation, and independent samples t-test at a 0.05 significance level. Findings revealed that automated content creation skills and AI-driven customer segmentation are effectively incorporated into the marketing curriculum, as evidenced by high ratings for positive items and low ratings for negative items. Hypotheses testing showed no significant differences between male and female students in their perceptions of skill integration, indicating equitable access and engagement with emerging technologies. The study underscores the importance of embedding AI-related skills in marketing education to enhance students' employability and adaptability in the evolving marketing industry. Based on the findings, the study recommends increasing practical exposure through hands-on projects, regularly updating the curriculum to reflect current AI trends, building faculty capacity in emerging technologies, and fostering industry collaboration to provide real-world applications of AI-driven marketing skills. These measures aim to strengthen students' digital competence and ensure their readiness for industry demands.

Keywords: Digital Competence, Industry Readiness, Emerging Technologies, Marketing Education Curriculum, Business Education Students

Introduction.

The proliferation of emerging technologies within a digitally disrupted environment has fundamentally transformed the marketing environment. To ensure graduates remain competitive in today's dynamic marketplace, it is essential to equip them with strong digital and analytical competencies. This makes it imperative for business education programs to leverage emerging technologies in updating marketing education curricula, aligning them with employer needs and industry expectations, and thereby enhancing the digital competencies and industry readiness of undergraduate students.

The integration of emerging technologies into the marketing education curriculum has become essential for equipping students with digital competence and preparing them for industry demands in today's knowledge-driven economy. Uzuagu, Etoma and Adie, (2023), asserted that Marketing education is a subset of business education which fall under the spectrum of vocational education. Etoma Adie, Ukam, and Patrick (2025), described marketing education as a specialized area in business education that prepare leaners or marketing education graduates with the knowledge, skills, attitude, ability, values, training, digital competencies and practices to

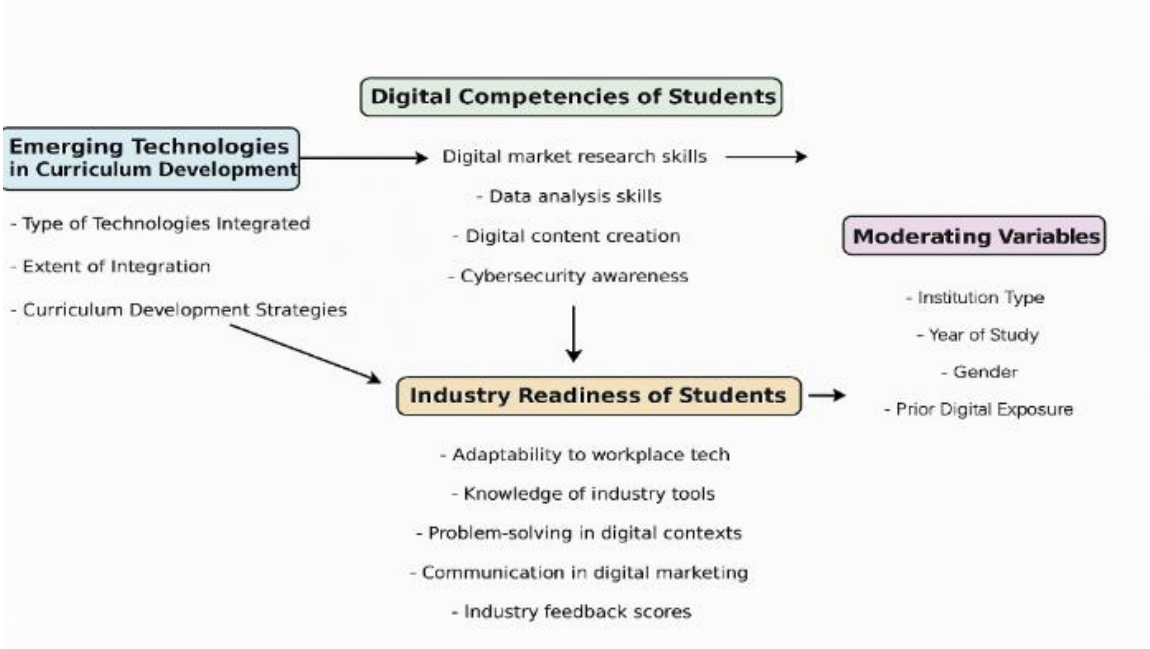
function in the employment world haven passed through a degree programme in the university or institution of higher learning. In this context, marketing education refers to a component of business education curriculum that equips undergraduate students with theoretical knowledge, practical skills, digital competencies, and innovative strategies for analyzing, promoting, and delivering products and services in a technology-driven economy, thereby preparing them for industry readiness.

Emerging technologies are innovative tools and systems that are reshaping teaching and learning processes, including artificial intelligence (AI), virtual and augmented reality, big data analytics, and cloud-based collaboration platforms (Al Emran & Shaalan, 2022). In Business Education, their integration into curriculum development provides opportunities for more interactive, personalised, and industry-aligned learning experiences. Incorporating these technologies not only modernises pedagogy but also enables students to develop digital skills required in rapidly evolving workplaces (Nguyen et al., 2023). Evidence from Nigerian Business Education further highlights the growing importance of communication technologies and emerging digital skills for professional performance and workforce readiness (Okute & Etoma, 2024; Etoma & Ukah, 2026). A structured curriculum that aligns learning outcomes with industry demands can expose learners to real-world marketing practices, thereby enhancing their adaptability and employability (Sangrà & González Sanmamed, 2021). In Cross River State, where Business and Marketing Education contributes to preparing graduates for competitive labour markets, technology-enabled curricula could help bridge the gap between academic preparation and industry expectations.

Digital competence refers to the knowledge, skills, and attitudes required to use digital technologies effectively and appropriately in professional and learning contexts (Redecker, 2020). Within Marketing Education, these competencies encompass proficiency in specialised software, digital content creation, data-driven decision-making, online communication, digital market analysis, and the application of technology-enabled marketing tools. Students with strong digital competencies are better positioned to implement marketing strategies that leverage digital platforms and analytics tools (López Meneses et al., 2022). The relevance of these competencies is increasingly evident in Nigerian Business Education, where artificial intelligence has been identified as an emerging influence on the marketing competence expected of graduates (Etoma, Okute, & Adie, 2025). Similarly, emerging digital skills have been associated with workforce readiness among Business Education students in tertiary institutions in Cross River State (Etoma & Ukah, 2026). The integration of emerging technologies into the curriculum can therefore strengthen students' capacity to interpret data, generate digital content, solve marketing problems, and develop evidence-based strategies.

Industry readiness reflects the extent to which graduates possess the skills, attitudes, adaptability, and professional behaviours required for effective participation in their chosen careers (González López et al., 2022). For Business Education students, such readiness extends beyond theoretical knowledge to include creativity, problem-solving, adaptability, digital competence, and the ability to use industry-specific technologies. Employers increasingly expect graduates to navigate dynamic digital environments confidently and apply contemporary technologies to workplace tasks. Evidence from Business Education in Cross River State indicates that emerging digital skills are increasingly important for strengthening workforce readiness (Etoma & Ukah, 2026). In addition, research on artificial intelligence and marketing competence suggests that Business Education graduates are increasingly expected to possess technology-related capabilities relevant to contemporary marketing practice (Etoma, Okute, & Adie, 2025). Embedding emerging technologies into the curriculum can therefore provide students with practical exposure to digital tools that increasingly shape professional marketing environments.

The integration of emerging technologies into curriculum development provides a strategic pathway for strengthening students' digital competence and industry readiness. Embedding industry-relevant digital tools within curricula can create authentic learning experiences that approximate professional contexts and develop students' practical, problem-solving, collaborative, and analytical capabilities (Joo et al., 2021; Marinoni et al., 2022). However, the benefits of technology-enhanced learning are not necessarily uniform, as students' experiences and competencies may differ by institution type, year of study, prior digital exposure, and gender (Soomro et al., 2020). Accounting for these differences is therefore critical to designing inclusive curricula that build meaningful and equitable technological competence. Building on this rationale, Figure 1 presents the study's conceptual framework, positioning emerging technologies as



curriculum-integrated resources for developing digital competence and strengthening students' preparedness for contemporary industry demands.

Figure 1 conceptualises emerging technologies as curriculum-integrated resources that connect educational experiences with the evolving competency requirements of marketing practice.

The marketing profession has been reshaped by advances in automated content creation, AI-driven customer segmentation, social media listening, sentiment analysis, personalisation, recommendation systems, marketing analytics, social platforms, and immersive media. These technologies are transforming core entry-level functions—including market insight generation, content development, customer targeting, and performance optimisation—and consequently raising the digital and analytical competencies expected of new graduates. Evidence from Nigerian marketing and Business Education research reinforces the growing importance of artificial intelligence, digital influencer marketing, and technology-enabled marketing practices to contemporary professional expectations (Etoma & Adie, 2025a; Etoma, Okute, & Adie, 2025). Correspondingly, recent marketing education scholarship calls for curricula to move beyond basic technology awareness towards stronger capabilities in digital marketing, analytics, data-driven decision-making, experimentation, and platform fluency (Ye, Kim, & Cho, 2024).

The expansion of digital marketing practice is also evident in the growing use of visual search, short-form ephemeral content, and social media marketing. Evidence from Calabar Metropolis demonstrates the relevance of visual search image recognition and short-form ephemeral content marketing mechanisms to the sales of graphic artworks (Etoma & Adie, 2025b). Similarly, evidence from entrepreneurial ventures in Calabar South indicates increasing adoption of social media marketing within a developing-economy context (Etoma, Adie, & Ukah, 2026). These developments demonstrate that contemporary marketing practice increasingly requires graduates to understand and apply technology-enabled marketing mechanisms. Consequently, Marketing Education curricula need to expose students to current digital marketing practices rather than relying predominantly on conventional marketing concepts and techniques.

Across economies, evidence continues to point to persistent digital skills gaps among early-career entrants (Pažur Aničić, Divjak, & Arbanas, 2023). Research connecting employer expectations with graduate preparation identifies gaps in competencies such as automated content creation, analytics, digital communication, and AI-driven customer segmentation, which are increasingly relevant to modern marketing functions (Pažur Aničić et al., 2023; Tee et al., 2024). Automated content creation involves the use of digital and AI-enabled tools to generate materials such as text, graphics, videos, and other media for targeted audiences, whereas AI-driven customer segmentation involves the use of computational techniques to analyse consumer data and classify customers into meaningful groups for targeted marketing. These capabilities can enhance personalisation, marketing efficiency, customer targeting, and data-driven decision-making, making them increasingly relevant to graduate employability and workplace performance. In higher education, digital competence is increasingly conceptualised as a multidimensional construct encompassing technical, information, communication, safety and ethical, and problem-solving capabilities. Recent research has developed and validated instruments for assessing undergraduate digital competence, providing institutions with mechanisms for benchmarking students' capabilities before and after curricular interventions (Mejías-Acosta et al., 2024). Systematic reviews have similarly demonstrated the expanding scope of digital competence research in higher education while identifying continuing gaps in discipline-specific applications and authentic assessment (Zhao et al., 2021). For Marketing Education, these developments suggest the need to move beyond general digital literacy towards curriculum designs that deliberately develop technology-specific competencies relevant to contemporary marketing practice.

Pedagogically, evidence from Business and Marketing Education highlights the value of experiential approaches, including client-based projects, simulations, social media laboratories, and analytics-oriented learning environments, for developing job-ready competencies. Etoma and Patrick (2020) observed that computerisation, automation, and mechanisation are transforming both teaching and workplace environments, reinforcing the role of Business Education in preparing learners for technology-driven professional contexts. Similarly, technology-supported learning experiences can provide opportunities for students to develop practical capabilities in content creation, platform configuration, data interpretation, experimentation, and digital storytelling (Beachum et al., 2024; Rohm, Stefl, & Ward, 2021). Such approaches are particularly relevant to Marketing Education because they enable students to connect theoretical concepts with authentic digital marketing tasks.

The importance of contemporary marketing competence is also evident within small and medium enterprises, where effective marketing strategies are essential for responding to service challenges and sustaining business performance (Agbo, Ekere, Etoma, & Nwonye, 2024). This evidence reinforces the importance of equipping Business Education students with adaptable marketing competencies that reflect actual business environments. Likewise, the utilisation of communication technologies has been examined in relation to the job performance of business

educators in tertiary institutions in Cross River State, highlighting the broader significance of technology utilisation within Business Education (Okute & Etoma, 2024). Taken together, these studies demonstrate that technological competence is becoming increasingly important across both educational and business settings.

Within Nigeria, national discussions on education and graduate employability underscore the need to embed emerging technologies and contemporary pedagogies into Business and Marketing Education programmes. Existing evidence identifies challenges associated with infrastructure, staff development, governance, and industry collaboration, while emphasising the need for research-informed curriculum renewal that strengthens digital competencies and improves work readiness (Ebekozien et al., 2024; Etoma, & Bassey, 2024). However, the existing literature provides limited state-level evidence on the extent to which specific emerging technologies—particularly automated content creation and AI-driven customer segmentation—are integrated into Marketing Education curricula and their implications for students' digital competence and industry readiness.

Against this backdrop, there is a clear rationale for focusing on Marketing Education in Cross River State. Existing studies in the state and related Nigerian contexts have examined communication technology utilisation among business educators (Okute & Etoma, 2024), AI and marketing competence (Etoma, Okute, & Adie, 2025), visual search and short-form ephemeral content marketing (Etoma & Adie, 2025b), social media marketing adoption among entrepreneurial ventures (Etoma, Adie, & Ukah, 2026), and emerging digital skills for workforce readiness in Business Education (Etoma & Ukah, 2026). However, these studies do not directly establish the extent to which emerging technologies are integrated into Marketing Education curricula or how such integration relates simultaneously to students' digital competence and industry readiness. The present study therefore addresses this gap by examining digital competence and industry readiness through emerging technologies in the Marketing Education curriculum among Business Education students.

Statement of the problem

The global shift toward digital economies has transformed marketing practices, with employers now expecting graduates to possess not only theoretical knowledge but also strong digital competencies and industry readiness. In Cross River State, however, business and marketing education curricula remain largely traditional, with limited integration of emerging technologies such as artificial intelligence, big data analytics, and digital collaboration platforms. This gap between classroom learning and industry expectations leaves many graduates ill-prepared to adapt to workplace technologies, apply industry-specific tools, and solve problems in digital contexts, thereby reducing their employability and competitiveness.

Although students may have informal exposure to digital tools, structured opportunities to acquire critical competencies such as digital market research, data analysis, content creation, AI-driven customer segmentation skills and cybersecurity awareness are often lacking in the curriculum. Moreover, factors such as institution type, year of study, prior digital exposure, and gender may further influence how well students develop these skills. Without intentional curriculum reform that embeds emerging technologies into marketing education, universities in Cross River State risk producing graduates who are underprepared for the demands of modern business environments. This study therefore investigates how emerging technologies can foster digital competence and industry readiness among business education students in the state.

Research Questions

The study will be guided by the following research questions:

1. To what extent are automated content creation skills integrated into the marketing education curriculum of universities in Cross River State?

2. To what extent is AI-driven customer segmentation integrated into the marketing education curriculum of universities in Cross River State?

Research Hypotheses

The following null hypotheses will be tested at the 0.05 level of significance:

- **H_{01}:** There is no significant difference between the mean responses of male and female students regarding the extent to which automated content creation skills are integrated into the marketing education curriculum of universities in Cross River State.
- **H_{02}:** There is no significant difference between the mean responses of male and female students regarding the extent to which AI-driven customer segmentation is integrated into the marketing education curriculum of universities in Cross River State.

Method

The study adopted a **descriptive survey research design** to examine undergraduate Business Education students in **public universities offering Business Education programmes in Cross River State, Nigeria**. The population comprised **2,893 undergraduate Business Education students**, from which **328 students** were selected through **stratified random sampling**, with the sample size determined using **Krejcie and Morgan's sample size determination table** to ensure adequate representation across universities and gender. Data were collected using a structured questionnaire titled **Digital Competence and Emerging Technologies in Marketing Education Curriculum Questionnaire (DCETMECQ)**, comprising sections on respondents' demographic characteristics, integration of automated content creation skills, and integration of AI-driven customer segmentation in the Marketing Education curriculum. Items were rated on a four-point Likert scale ranging from **Very High Extent (4) to Very Low Extent (1)**. The instrument was validated by experts in Business Education and Measurement and Evaluation, while its reliability was established through a pilot test using **Cronbach's alpha**, with coefficients of **0.70 or higher** considered acceptable. Data were collected through direct questionnaire administration with trained research assistants and analysed using **mean, standard deviation, and independent-samples *t*-test**. A criterion mean of **2.50** was used to answer the research questions, while the hypotheses were tested at the **0.05 significance level**. A *p*-value ≤ 0.05 indicated a significant difference and warranted rejection of the null hypothesis; otherwise, the null hypothesis was **not rejected**.

Results

Research question One.

1. To what extent are automated content creation skills integrated into the marketing education curriculum of universities in Cross River State?

Table 1:

Mean Ratings and Standard Deviation of Responses on the Extent to which Automated Content Creation Skills are Integrated into the Marketing Education Curriculum of Universities in Cross River State (n = 328)

S/N	Item Statement	Mean ($\bar{x}$)	SD	Remark
1	The curriculum exposes students to hands-on training in automated content creation tools.	3.44	0.62	Very High Extent
2	Automated content creation is rarely emphasized in marketing courses.	2.12	0.79	Low Extent
3	Students are taught to use AI-powered platforms for creating marketing content.	3.38	0.66	High Extent
4	The curriculum fails to integrate practical sessions on automated	1.96	0.81	Very Low Extent

S/N	Item Statement	Mean (x̄)	SD	Remark
	content development.			
5	Course assessments encourage students to apply automated tools in real-life projects.	3.57	0.58	Very High Extent
6	Automated content creation is viewed as unnecessary in the current marketing curriculum.	2.05	0.83	Low Extent
7	**Cluster Mean/SD**	**2.85**	**0.71**	High Extent

Table 1 shows that the positive items such as exposure to hands-on training in automated content creation tools (x̄ = 3.44), use of AI-powered platforms (x̄ = 3.38), course assessments encouraging application of automated tools (x̄ = 3.57), and lecturers' incorporation of emerging technologies (x̄ = 3.42) were rated to a high and very high extent. Conversely, the negative items such as lack of emphasis on automated content creation (x̄ = 2.12), failure to integrate practical sessions (x̄ = 1.96), and perceiving such skills as unnecessary (x̄ = 2.05) were rated low to very low extent. This indicates that automated content creation skills are integrated to a considerable extent in the marketing education curriculum of universities in Cross River State.

Hypothesis One

H_0: There is no significant difference between the mean responses of male and female students regarding the extent to which automated content creation skills are integrated into the marketing education curriculum of universities in Cross River State.

Table 2: Independent t-test Analysis of Male and Female Students' Mean Responses on the Extent of Integration of Automated Content Creation Skills into the Marketing Education Curriculum (N = 328)

Gender	N	Mean (x̄)	SD	df	t-cal	t-crit (0.05)	p-value	Decision
Male	158	3.32	0.71	326	1.47	1.96	0.14	Not Significant
Female	170	3.21	0.68					

Table 2 shows that male students had a mean score of 3.32 (SD = 0.71), while their female counterparts had a mean score of 3.21 (SD = 0.68). The calculated t-value of 1.47 is less than the critical t-value of 1.96 at 0.05 level of significance with 326 degrees of freedom. Similarly, the p-value (0.14) is greater than 0.05. This means the null hypothesis is **retained**. Therefore, there is no significant difference between the mean responses of male and female students regarding the extent to which automated content creation skills are integrated into the marketing education curriculum of universities in Cross River State.

Table 3:
Mean Ratings and Standard Deviation of Responses on the Extent to which AI-driven Customer Segmentation is Integrated into the Marketing Education Curriculum of Universities in Cross River State (n = 328)

S/N	Item Statement	Mean (x̄)	SD	Remark
1	The curriculum teaches students to use AI tools for segmenting customers based on behavior.	3.41	0.63	Very High Extent
2	Students are rarely exposed to AI-driven customer segmentation techniques. (Negative)	2.08	0.79	Low Extent
3	Assignments encourage the application of AI algorithms for customer segmentation.	3.35	0.67	High Extent
4	Practical exercises on AI-based segmentation are missing from the marketing curriculum.	1.95	0.82	Very Low Extent
5	Lecturers incorporate case studies on AI-driven customer segmentation in class discussions.	3.49	0.59	Very High Extent
6	AI-driven segmentation is considered unnecessary by some courses.	2.11	0.81	Low Extent
	Cluster Mean/SD	**2.83**	**0.71**	High Extent

Table 3 shows that positive items such as hands-on use of AI tools for customer segmentation (x̄ = 3.41), assignments applying AI algorithms (x̄ = 3.35), case studies incorporation (x̄ = 3.49), and equipping students for targeted marketing strategies (x̄ = 3.43) were rated to a high and very high extent. Conversely, negative items such as lack of exposure (x̄ = 2.08), missing practical exercises (x̄ = 1.95), and perception of AI-driven segmentation as unnecessary (x̄ = 2.11) were rated low to very low extent. Overall, this indicates that AI-driven customer segmentation is integrated into the marketing education curriculum to a considerable extent.

Hypothesis Two

H_{02}: There is no significant difference between the mean responses of male and female students regarding the extent to which AI-driven customer segmentation is integrated into the marketing education curriculum of universities in Cross River State.

Table 4: Independent t-test Analysis of Male and Female Students' Mean Responses on the Integration of AI-driven Customer Segmentation into the Marketing Education Curriculum (N = 328)

Gender	N	Mean (x̄)	SD	df	t-cal	t-crit (0.05)	p-value	Decision
Male	158	3.36	0.68	326	1.32	1.96	0.19	Not Significant
Female	170	3.29	0.66					

Table 4 shows that male students had a mean score of 3.36 (SD = 0.68), while female students had a mean score of 3.29 (SD = 0.66) on the extent of AI-driven customer segmentation integration in the curriculum. The calculated t-value of 1.32 is less than the critical t-value of 1.96 at the 0.05 level of significance with 326 degrees of freedom. Additionally, the p-value (0.19) is greater than 0.05. This indicates that the null hypothesis is **retained**, meaning there is no significant difference between male and female students' perceptions regarding the integration of AI-driven customer segmentation into the marketing education curriculum of universities in Cross River State.

Discussion of Findings

The study revealed that the Marketing Education curriculum in universities in Cross River State effectively integrates automated content creation skills. Positive items such as exposure to hands-on training in AI tools (mean = 3.44), use of AI-powered platforms (mean = 3.38), and course assessments encouraging application of automated tools (mean = 3.57) received high ratings. Conversely, negative items such as lack of emphasis on automated content creation (mean = 2.12) and perception of such skills as unnecessary (mean = 2.05) received low ratings. This suggests that the curriculum effectively incorporates these skills. These findings align with Singh and Pathania (2024), who emphasised the relevance of AI-driven content creation and curation in digital marketing education. The finding also supports Etoma, Okute, and Adie (2025), who reported the growing influence of artificial intelligence on marketing competence among Business Education graduates.

Regarding AI-driven customer segmentation, positive items such as teaching students to use AI tools for segmenting customers based on behaviour (mean = 3.41) and incorporating case studies on AI-driven segmentation (mean = 3.49) received high ratings. Negative items such as lack of exposure to AI-driven segmentation techniques (mean = 2.08) and perception of such skills as unnecessary (mean = 2.11) received low ratings. This indicates that the curriculum integrates AI-driven customer segmentation to a considerable extent. The finding is consistent with Kasem et al. (2024), who demonstrated the application of AI to customer profiling and segmentation for more targeted marketing decisions. It also aligns with Etoma and Adie (2025), who highlighted the increasing relevance of AI-enabled marketing practices and technology-related competencies in Marketing Education.

The hypothesis testing revealed no significant difference between male and female students regarding the integration of automated content creation skills (p = 0.14) and AI-driven customer segmentation (p = 0.19) into the curriculum. This suggests that both male and female students perceive the integration of these skills similarly.

This finding contrasts with some studies suggesting gender differences in technology adoption and usage. However, the absence of significant gender differences in this study could reflect relatively equitable exposure to AI-related curriculum content and learning resources across male and female students in the participating universities. It may also suggest that **curriculum-based exposure to emerging technologies can provide comparable learning opportunities irrespective of gender**.

Conclusion

The study found that **automated content creation** and **AI-driven customer segmentation** are integrated to a considerable extent into the marketing education curriculum of universities in Cross River State. Positive items received high ratings, while negative items received low ratings, indicating effective curriculum coverage. Hypothesis testing showed **no significant gender differences**, suggesting equal access and perception of these AI-related skills among male and female students. Overall, the study concludes that universities are making meaningful progress in preparing students with relevant AI skills for modern marketing, though further enhancement is possible to ensure uniform practical exposure across all courses.

Recommendations

1. **Increase Practical Exposure:** Universities should provide more hands-on training and projects using automated content creation tools and AI-driven customer segmentation platforms to enhance students' practical skills.
2. **Regular Curriculum Updates:** The marketing education curriculum should be continuously updated to integrate the latest AI technologies and industry practices, ensuring students remain competitive in the evolving marketing field.

3. **Faculty Capacity Building:** Lecturers should undergo regular training on emerging AI tools and digital marketing technologies to effectively teach and guide students in applying these skills.
4. **Industry Collaboration:** Universities should establish partnerships with marketing firms and tech companies to offer internships, workshops, and case studies that allow students to apply AI-driven skills in real-world marketing contexts.

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