AI-DRIVEN MARKETING THROUGH MOOC-BASED LEARNING

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Abstract

In the rapidly advancing digital era, the role of Artificial Intelligence (AI) in digital marketing is becoming significant. According to the Kominfo survey in 2024, it indicates that merely 18% of MSME actors have fundamental digital competencies. Additionally, McKinsey's (2024) study shows that the integration of data-driven management technology can enhance productivity by as much as 25% and reduce operational costs by up to 20%. The lack of AI utilization literacy creates a gap and hinders digital equity among business actors in Indonesia, are serving as the background for the Massive Open Online Courses (MOOCs) program about Utilization of AI in Optimizing Digital Marketing Strategies. To guarantee eligibility of the program, the ADDIE (Analyse, Design, Development, Implementation, and Evaluation) development was employed to examine the program. This program covering seven thematic sessions, ranging from an introduction to AI, marketing data analysis, to ethics and privacy in AI use. With a self-paced learning approach, this MOOCs provides flexible access and promoting beneficial marketing literacy by the utilisation of artificial intelligence. This program is suitable for students, digital marketing specialists, business owners, and managers to understand the integration of AI into marketing to boost the competitiveness of business actors in the digital era. The program's output is a systematically organised module with a self-paced learning model that responds to the learning styles of the students. Topics range from introducing the fundamentals of marketing to integrating AI in marketing. At each session, assessments are given to assess students' comprehension.

Keywords: Massive Open Online Courses (MOOCs), Artificial Intelligence (AI), Digital Marketing, Self Paced Learning

1   INTRODUCTION

In the rapidly evolving digital era, digital marketing has become an essential component of business strategies. However, the increasing digital complexity and the extremely rapid data changes pose significant challenges for marketing teams in optimizing their strategies. Therefore, the role of Artificial Intelligence (AI) becomes crucial in optimizing digital marketing strategies (McHale, 2024).

The implementation of AI in digital marketing today cannot be ignored. AI has assisted marketing teams in various ways, such as data collection and content creation, which has had a positive long-term effect on companies or brands (Tauheed et al., 2024). AI's ability to analyze

large amounts of data significantly increases the likelihood of marketing teams delivering highly relevant content that aligns with their consumer segmentation (Wilson et al., 2024). AI has the potential to drive innovation in digital marketing. A business that can navigate the developments in AI technology and use AI responsibly will be able to maintain consumer trust and achieve sustainable success (Wilson et al., 2024).

Over time, AI has been able to personalize customer experiences by analyzing consumer behavior and preferences. This assists businesses in developing marketing strategies that can increase customer engagement and return on investment (ROI) (Gungunawat et al., 2024). Subsequently, tools such as chatbots and virtual assistants can enhance user experience and brand engagement (Bhattacharya, 2025). AI-assisted personalization is also evident in content creation, as AI generate customized messages for each audience, thereby boosting the productivity of marketing strategies. The predictive analysis performed by AI can help anticipate consumer behavior, thus assisting businesses in making informed decisions and optimizing marketing campaigns (Ahuja, 2024).

According to a survey by the Ministry of Communication and Information (Kominfo) in 2024, only 18% of MSMEs possess basic digital skills, such as using e-commerce applications and social media for product marketing. In addition, MSMEs encounter challenges in adopting more advanced business management technologies, such as accounting software and data analytics systems. However, according to a study conducted by McKinsey in 2024, integrating data-driven management technology into businesses can enhance productivity by up to 25% and reduce operational costs of up to 20%. However, the majority of MSMEs are unaware of the potential benefits of adopting this technology, which can significantly improve their efficiency and competitiveness in the market (Aryo R, 2024).

Ai-Driven Marketing Through Mooc-Based Learning provides opportunities, especially for Business Administration students at Universitas Terbuka (UT), to acquire highly skills in digital marketing activities. Through the Open University's approach, students can access this learning material, which is relevant for preparing them to become competent and competitive digital marketing professionals. Additionally, these MOOCs are also designed to reach digital marketing team professionals, business owners, and managers who want to improve their skills in using AI will benefit from this learning.

1.1 Digital Marketing Strategy

Digital marketing is a strategy for promoting products and services utilising digital technology, largely via the internet, as well as through mobile devices, display advertisements, and other digital platforms. This has become a crucial element of business strategy, allowing organisations to engage a broader audience, communicate with consumers instantaneously, and assess marketing efficacy (Siregar, 2024). The progression of digital marketing has been propelled by technology innovations and a growing inclination towards digital interactions rather than conventional methods.

The elements of digital marketing:

1. Online advertising and search engine optimisation (SEO); are essential for enhancing visibility and recruiting prospective clients. Both can assist enterprises in enhancing their search engine rankings, hence increasing accessibility to their target audience.

2. Social Media and Social Commerce serve as vital channels for engaging with consumers and fostering brand loyalty. These two platforms enable organisations to engage directly with their audience, cultivating trust and credibility through pertinent and interesting content.

3. Email and mobile marketing are excellent methods for delivering personalised messages and offers to consumers. This approach enables enterprises to sustain ongoing communication with their clientele, enhancing customer satisfaction and loyalty. (Kumari, 2024)

Digital marketing can enhance a business's market reach and augment consumer engagement. This improves the capacity to target particular groups and assess marketing efficacy, enabling corporations to modify strategies to align with consumer demands (Siregar, 2024). Integrated digital marketing techniques foster enduring customer relationships, enhance trust, and bolster the company's market image. This is essential for sustaining competitiveness and guaranteeing corporate success in the digital era (Siregar, 2024). Digital marketing techniques can be enhanced by the ethical and responsible application of AI.

1.2 The Application of Artificial Intelligence in Digital Marketing Strategies

Adding AI to digital marketing makes businesses more personalised, efficient, and engaging for customers. Artificial intelligence technologies, such as machine learning, natural language processing, and predictive analytics, are used to automate and improve marketing methods so that they better meet the needs of customers. This change is clear in many areas of digital

marketing, such as creating content, getting customers involved, and running campaigns (Bhattacharya, 2025).

By looking at a lot of client data, artificial intelligence can help create personalised content by changing messages and campaigns to fit each person's preferences. This is very important for getting people to interact with your business and increasing your conversion rates (Bhattacharya, 2025) (Kanezaki et al., 2024). Tools like ChatGPT have shown that they can make personalised content for different groups, which leads to better marketing strategies (Kanezaki et al., 2024).

Moreover, AI-powered digital marketing strategies include using machine learning to automate content creation, find relevant SEO keywords, and improve campaign success in real time (Elkhatibi & Benabdelouhed, 2024). In SMEs, the implementation of AI technologies, including chatbots, has shown an improvement in customer engagement; however, there is a gap between awareness and actual utilisation within these organisations (Juriah & Susilastuty, 2024). AI is very important for improving social media strategy and digital marketing, which leads to higher conversion rates and more engaged customers (Bhattacharya, 2025).

Even though there are many benefits to using AI in digital marketing, there are also some problems that can come up, such as worries about data privacy, algorithmic bias, and high costs of adoption (Elkhatibi & Benabdelouhed, 2024). So, for customers to trust AI and for technology to be used responsibly, it is important to use it ethically, which includes being open about how it works (Elkhatibi & Benabdelouhed, 2024). MOOCs: The Implementation of AI in Digital Marketing Strategies teaches students about the moral and technical aspects of using AI.

1.3   Program Development for Utilising AI to Optimise Digital Marketing Strategies

The creation of AI programs for optimising digital marketing tactics relies on the proficiency of the development team, the sufficiency of technological infrastructure, and accessibility. Effective achievement necessitates the execution of development management through both internal and external collaboration. The strategy for developing AI program usage in optimizing marketing strategies can be implemented across various platforms, one of which is MOOCs. The dissemination of literacy through MOOCs is expected to have wide reach, thus having a broad impact on business owners in Indonesia.

2   METHODOLOGY

This research is designed with a delivery system based on distance learning platform, adopting the concept of self-paced learning. Strengthening the capacity of this program on the Massive Open Online Courses (MOOCs) platform refers to the administration system, management, delivery strategy, learning materials, and learning outcomes evaluation system that have been developed and will be modified according to the specific needs of the MOOCs platform.

This study employs various methodologies, including:

a. Focus Group Discussion (FGD), aimed at obtaining comprehensive insights into the content to be presented in MOOCs. This method helps look at different parts of MOOCs, such as the students and teachers (Zhu et al., 2018).

b. Content analysis, which is used to look at the multimedia data in MOOCs. This approach aids in the assessment of developed MOOCs (Zhu et al., 2018).

c. Gathering information about the demographics and needs of potential participants by giving out questionnaires (Lu et al., 2021).

People will be able to access the results of the program's research and development through a MOOCs platform that is open to everyone.

This study employs the ADDIE Model (Analysis, Design, Development, Implementation, Evaluation), which facilitates the creation of effective and engaging learning experiences for participants. Many people have used the ADDIE model to make MOOCs, and it has worked well. Using the ADDIE model in MOOCs meets the different needs of students and makes online learning better (Dilaines et al., 2024). There are five steps in the ADDIE model, and they all build on each other. These steps are Analyse, Design, Develop, Implement, and Evaluate.

3   FINDINGS AND DISCUSSION

3.1   Demographic Data

The demographic information gathered from 120 respondents offers a thorough summary of the participant profile in the study concerning AI-driven marketing via MOOCs. There are more women than men in the sample, with women making up 64.2% of the total and men making up 35.8%. Most of the people who answered (46.7%) are between 26 and 35 years old, followed by those who are between 18 and 25 years old (33.3%). This shows that the group is mostly young people who are probably just starting their careers or going to school. Only 17.5% of the people who took part are between the ages of 36 and 45, and only 2.5% are over 45 years old. Geographically, the respondents are spread across several provinces in Indonesia,

with the highest representation from West Java (23.3%), followed by DKI Jakarta (20.8%), East Java (17.5%), Central Java (15.8%), Banten (11.7%), and Yogyakarta (10.8%). Regarding occupation, the largest group consists of business owners (37.5%), followed by students (28.3%), digital marketers (20.0%), and marketing/sales managers (14.2%). This diverse demographic composition reflects a broad interest in AI-based marketing education, particularly among entrepreneurial and academic communities.

3.2   Analyze Stage

The Analyze stage is the foundational phase in the ADDIE instructional design model, where the needs, characteristics, and contexts of the target learners are identified. In the AI-Driven MarketingThrough MOOC-Based Learning program, this stage involved a thorough examination of the digital competency levels among Indonesian MSME actors. According to the Kominfo (2024) survey, only 18% of MSMEs possess basic digital skills, highlighting a significant gap in AI literacy and digital marketing capabilities. This insight guided the instructional team to tailor the MOOC content to address these deficiencies.

Demographic data collected from 120 respondents further informed the analysis. The majority of participants were female (64.2%) and aged between 26–35 years (46.7%), with a substantial portion being business owners (37.5%) and students (28.3%). These findings indicated a strong demand for flexible, practical, and foundational learning in AI marketing. The geographic distribution such as West Java, Jakarta, and East Java, also emphasized the need for accessible, online learning solutions that could reach learners beyond urban centers.

Research by Wulandari et al. (2024) and Hussain & Rizwan (2024) indicates that MSMEs frequently regard digitalisation as an expense rather than an investment, resulting in minimal emphasis on AI adoption. AI-driven marketing through MOOCs present a scalable option to address this disparity by delivering structured, self-directed learning customised for the requirements of MSMEs. These programs can improve digital literacy and promote fair access to AI tools, particularly in underprivileged areas.

By identifying learner profiles, motivations, and barriers, the Analyze stage ensured that the MOOC was designed to be relevant, inclusive, and responsive to the real-world challenges faced by MSMEs in adopting AI for marketing. This strategic groundwork laid the path for the subsequent design and development of a self-paced, thematic learning program that aligns with the learners' needs and the broader goal of digital equity.

Studies by Ziakis & Vlachopoulou (2023) shows that AI integration in MOOCs can personalize learning, predict learner outcomes, and improve retention. The thematic structure of the program—from AI fundamentals to ethics—ensures comprehensive coverage. This approach not only democratizes access to AI knowledge but also empowers MSMEs to apply data-driven marketing strategies that enhance productivity and reduce costs.

3.3 Design and Develop of Stage

At this stage, a learning framework is being developed based on the seven thematic sessions designed by experts, namely: (1) Introduction to AI in the world of digital marketing, (2) AI-based digital marketing strategies, (3) AI-based data analysis, (4) Programmatic digital advertising, (5) Optimizing SEO content with AI, (6) Dynamic content creation, and (7) Ethics and laws regarding the use of AI for digital marketing.

Each session is analyzed to establish specific learning outcomes that are relevant to the participants' needs, especially for MSME and marketing professionals. This design considers the principles of modularity and flexibility, as suggested by Buchem and Okatan (2021), who emphasize the importance of adaptive learning structures in MOOC development. With this approach, the learning materials are designed to address digital literacy challenges and provide practical understanding of AI application in marketing strategies.

The development stage is the process of realizing the design that has been prepared. Based on the material, learning content was produced in various formats:

(1) presentations (PPT) review by experts

(2) Learning videos (Multimedia)

Each thematic session is developed into a module that participants can access independently, in line with the self-paced learning approach promoted by this program. Multimedia production is carried out with consideration for visual, pedagogical, and technical quality to ensure the material is delivered effectively and engagingly.

3.4 Implementation and Evaluation of Stage

Following the design and development process, the implementation phase involved the validation of all instructional materials and learning films by a team of professionals in digital marketing and online education. All teaching materials and instructional videos confirmed by the digital marketing and instructional design expert team were incorporated into Universitas Terbuka's MOOCs platform. Validation is conducted to confirm the congruence between the content and learning outcomes, as well as to ascertain that the material delivery is suitable for

the previously analysed characteristics of the participants. The integration into the Open University's Learning Management System (LMS) was seamless, yielding seven thematic sessions available for independent access by participants. Each session includes text materials, presentations, and instructional videos customised to the participants' learning preferences. This implementation method corresponds with the conclusions of Guedes et al. (2022), who asserted that the incorporation of MOOCs into higher education necessitates a well-defined blended learning framework to successfully enhance in-person instruction.

The evaluation phase occurs post-implementation to analyse the program's efficacy and pinpoint areas for enhancement. Evaluation was performed through participant questionnaires, measurement of platform participation, and comments from discussion forums. The evaluation results indicate that most participants deemed the material comprehensible and pertinent to their requirements.

This assessment underscores the significance of data-driven and feedback-oriented methodologies in the advancement of MOOCs. Chang and Sun (2025) highlighted that ongoing and competency-oriented assessment can enhance the quality of open learning and bolster participants' competency attainmentThe findings from the implementation and evaluation phases demonstrate that this MOOC program effectively delivered pertinent, adaptable, and high-caliber education for MSME participants and digital marketing specialists. The evaluation performed provides a crucial foundation for enhancing content and pedagogical approaches moving forward.

4   CONCLUSION

The AI-Driven Marketing Program thru MOOC-Based Learning was successfully designed and systematically implemented using the ADDIE approach, starting from the analysis phase to evaluation. Based on demographic data from 120 respondents, the majority of participants were women aged 26–35, with backgrounds as business owners and students. The geographical distribution covering various provinces in Indonesia indicates that the need for digital literacy and understanding of AI-based marketing is widespread and evenly distributed. This finding reinforces the urgency of developing inclusive and flexible online learning programs.

The analysis phase identified digital competency gaps among MSME actors. Based on these findings, MOOC content was designed to address these needs thru seven thematic sessions developed by experts. The design and development phase produced teaching materials in

presentations and learning videos, which were structured modularly and could be accessed independently by participants.

Implementation is carried out thru a validation process by an expert team and integration into the Open University's MOOCs platform. Post-implementation evaluation showed that participants found the material presented relevant and easy to understand, although there was feedback for improving the technical quality and contextualization of the case studies.

Overall, this program demonstrates that MOOCs can be an effective and scalable solution for improving AI-based digital marketing literacy, particularly for MSME actors and young professionals. The evaluation conducted provides an important foundation for refining content and learning strategies in the future, in order to support inclusive and sustainable digital transformation.

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