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Digital Marketing Trends in Digital Entrepreneurship Education: A Literature Analysis of Opportunities and Challenges

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Abstract

Digitalization in entrepreneurship education has brought significant changes, especially with the integration of technologies such as Artificial Intelligence (AI), big data, and digital marketing. This research aims to analyze the main trends in digital marketing as well as the opportunities and challenges faced in the context of digital entrepreneurship education. The research method uses a qualitative literature study approach through thematic analysis of 9 relevant scientific articles. The results show that trends such as the use of AI and big data provide great opportunities for students to improve analytical competencies and business strategies. However, challenges remain, especially in terms of curriculum adaptation, faculty competence, and technological infrastructure. Strategies such as collaboration with industry, teacher training, and integration of technology in the learning process are needed for digital entrepreneurship education to produce competitive graduates in the era of globalization and digitalization.

Keyword: Digital marketing, digital entrepreneurship education, artificial intelligence, big data, curriculum, education technology

INTRODUCTION

The curriculum and educational conditions in senior high schools (SMA) or vocational high schools (SMK) today have a very high connection with business education followed by technological advances and digitalization. So it can be said that the relevance of the curriculum to future technological developments is very important. The Merdeka Belajar curriculum in Indonesia emphasizes critical thinking and practical skills, which are essential for adapting to technological change (Hanipah, 2023). Entrepreneurship education is being integrated into the national curriculum for secondary schools, aiming to foster an entrepreneurial spirit among

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students. These schools are actively participating in digital transformation initiatives to improve educational outcomes and social impact (Prasetyaningtys et al., 2022). Digitalization of entrepreneurship education can involve the integration of digital technologies into the curriculum, teaching methods and learning resources with the aim of improving the effectiveness, accessibility and attractiveness of education (Kusuma & Muharom, 2024).

Entrepreneurship education has been a compulsory subject since 2013 which was enacted in the 2013 curriculum learning edition (Idris, 2023). After that, it was developed again with an independent curriculum in schools that can provide flexibility for schools to create a Creative and Entrepreneurial Project (PKK) subject development program (Alam et al., 2024) tailored to the characteristics of each school and local potential in the school area. Meanwhile, with the advancement of technology, digitalization in entrepreneurship education offers many benefits, but it can also present new challenges that need to be addressed. First, ensuring that schools have fair access and facilities to digital resources that students will use for hands-on practice in using technology or digitalization. Second, maintaining the quality of education within schools so that there is no misuse of technology in negative or deviant ways. Third, always updating the curriculum and teaching methods to keep pace with technological advances (Redhana, 2024; Wang et al., 2023).

Most secondary schools in Indonesia face a lack of resources, including funding and qualified departments, which hinders the development and implementation of effective entrepreneurship programs. Entrepreneurship education plays an important role in driving innovation, creating jobs and enhancing economic growth in the digital era (Insani et al., 2024). In today's increasingly complex business environment, digitalization and entrepreneurship skills are needed and become an added value to success. Skills that must be possessed such as the ability to use social media as a form of marketing, analyze data such as current trends to make a decision, besides developing technological solutions to business problems as new innovations to compete (Hartatik et al., 2023). Entrepreneurship education that is implemented and provided by schools can help students develop the mentality of an entrepreneur who is needed to take calculated risks and adapt to change, this mentality can prepare students to learn from failures that occur.

The digitization trend in entrepreneurship education includes various initiatives and innovations, such as the use of online learning platforms, the development of business simulation applications and the integration of social media in the curriculum (Yusuf, 2023). Digitalization offers various opportunities to improve the quality and accessibility of entrepreneurship education. First, it can enable more personalized and adaptive learning

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through the use of online learning platforms and AI applications (Harini et al., 2023), allowing institutions or schools to customize their curriculum and teaching methods according to learners' individual needs and preferences. Second, digital technology can facilitate and assist with collaboration and networking between students, educators and entrepreneurship practitioners. An educator can utilize digital technology for collaboration with entrepreneurial practitioners and bring real-world experiences into learning (Arta et al., 2023) so that business-related knowledge can be well absorbed by students. In this context, digital marketing is one of the crucial aspects that young entrepreneurs must understand. The digital marketing trend in entrepreneurship education creates opportunities for students to utilize technology in going through and managing their business. Through the utilization of digital platforms, students can reach a wider market and increase product visibility without geographical or regional limitations.

This study aims to analyze the existing literature on digitalization trends in entrepreneurship education with a focus on identifying opportunities and challenges associated with the integration of digital technologies in entrepreneurship education. In addition, there is a gap in previous research related to digitalization in entrepreneurship education in that most studies use quantitative research methods, few use qualitative methods. This study will provide valuable insights for policy makers, educators and entrepreneurship practitioners on how to design and implement effective entrepreneurship education programs in today's digital era.

LITERATURE REVIEW

Digital Marketing

Digital marketing is a new way that can be used in entrepreneurship for business success in the current era of technological development and digitalization (Laksmono et al., 2024). Digital marketing, which in Indonesian is known as digital marketing, is a program to promote and introduce a brand using social media platforms or digital devices such as the internet (Setyaningsih & Sukardi, 2020). The use of digital marketing is the most effective and popular method of marketing today, this is because traditional marketing has decreased (Putri & Marlien, 2022) and the development of the current technological world cannot compete in this era. There are two benefits in using digital marketing in entrepreneurship today, namely the first, can reduce the budget or capital of entrepreneurs in promoting their business at the beginning of sales. Second, the next benefit is that it can reach a wider audience or consumers using social media (Chaffey et al., 2009). Finally, it can provide the information needed quickly and easily accessible without coming directly to the place.

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Digital Entrepreneurship Education

Digital entrepreneurship education can provide great opportunities for students to improve and pursue digital businesses (Choi & Markham, 2019). Through digital entrepreneurship education, students' knowledge related to digitalization combined with entrepreneurship is increasing, so that it can make it easier for them to enter and enter the world of digital business (Wibowo et al., 2023). Through entrepreneurship education that is transformed through digital technology developed and learned by students can help form the mindset of an entrepreneur and increase insight into the use of digital technology (Secundo et al., 2020). Digital entrepreneurship education is also increasingly recognized as an important factor to equip students to build and prepare themselves to open a business with the skills needed to thrive in the rapidly growing digital economy.

Meanwhile, the definition of digital entrepreneurship education itself is a form of education that aims to equip and prepare individuals with the knowledge, skills and mindset needed to start, manage and grow a business in this digital era. This education emphasizes the use of digital technology as the main tool in running a business (Farid, 2023). The goal of digital entrepreneurship education is to help businesses grow rapidly, which used to trade in traditional ways, now transforming to digital in accordance with the times (Juniantoro, 2021).

METHOD

This research uses a qualitative method with a literature study approach that is relevant to the research topic. Qualitative method is a research method that focuses on understanding meaning, concepts, and experiences (Fisher et al., 1995). The literature approach used in this research does not collect data directly in the field, but collects, reads, and analyzes various written sources from research articles (Bonfanti et al., 2024). The literature that needs to be read about digital marketing and entrepreneurship education, analysis of patterns of opportunities and challenges and conclusions from each relevant research article. The purpose of this qualitative method is to explore information, identify findings, find trends, opportunities and challenges of the research topic (Moha, 2015).

The research data collected in this study came from national and international scientific journals. National journals can be obtained from the Google Scholar database, while international scientific journals from various databases such as Elseivier, Emerald, and Sage Journal. The data collected from various databases are related to the themes of digital marketing, education, and digital entrepreneurship with publication years 2020 to 2025.

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Relevant research data was searched using keywords, such as: “digital marketing trends”, ‘entrepreneurship education’, ‘digital entrepreneurship’, ‘challenges and opportunities’, ‘challenges and opportunities in digital marketing’ in the various databases mentioned above. The results of the research data search will be selected using the inclusion and exclusion criteria (Mengist et al., 2020). The literature that meets the inclusion criteria is as follows, (1) literature related to the research topic, (2) literature that matches the year of publication, (3) literature from national and international reputable databases, and (4) literature written in English. Meanwhile, literature that meets the exclusion criteria, such as (1) literature from books, (2) literature that is not written in English, (3) literature that cannot be accessed, and (4), literature that is not part of the research topic. All literature will be subjected to a review process by the researcher starting from the title, abstract, results, discussion and conclusion. Documentation and recording of literature review results from various databases using analysis tables. The analysis table will contain the researcher's name, title and year, research focus, key findings, opportunities and challenges.

The data analysis technique used in this study uses thematic analysis. Thematic analysis is an analysis by reading all the literature collected according to the topic from various databases (Braun & Clarke, 2023). The results of the reading will collect the main themes related to trends, opportunities, and challenges. These themes will be grouped based on the research objectives for easy interpretation and synthesis of important information (Peel, 2020). This research thematic analysis uses manual coding techniques to categorize important findings from various literatures (Braun & Clarke, 2021). The determination of the research questions consisted of What are the main digital marketing trends used in digital entrepreneurship education? What are the opportunities that digital entrepreneurship education can utilize through digital marketing? What are the main challenges faced in implementing digital marketing in digital entrepreneurship education? What are the solutions or strategies to optimize digital marketing in the context of digital entrepreneurship education? Search and select relevant literature. Read and analyze the literature discussion. Categorize findings into themes of opportunities and challenges. Draw conclusions and suggestions based on the findings.

RESULTS AND DISCUSSION

Researchers collected scientific journals published from 2020 to 2025 as relevant literature to be included in the analysis. The scientific journals to be analyzed came from the Elseivier, Emerald, Sage Journal, and Google Scholar databases. The following table lists the relevant literature based on the results of the analysis based on keywords: digital marketing

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trends, entrepreneurship education, digital entrepreneurship, challenges and opportunities, challenges and opportunities in digital marketing. Searches of the Elseivier, Emerald, Sage Journal, and Google Scholar databases resulted in 120, but after identification that was in accordance with the research article there were 82 articles. 82 articles were filtered based on 4 criteria in the inclusion process, there were 43 research articles. The 43 research articles will be selected again based on the title and abstract and only 24 articles remain. In the last stage, 24 research articles will be selected based on relevant research objectives in accordance with the title. The results of this selection are 9 research articles that are very relevant to the researcher's objectives.

Table 1. Resume of Research Articles Relevant to this Study

No.	Researcher & Title	Research Focus	Finding	Opportunities	Challenge
1	(Sitaridis & Kitsios, 2024) Digital entrepreneurship and entrepreneurship education: a review of the literature	• Linkages between digital entrepreneurship and entrepreneurship education • Entrepreneurship education responds to the emerging digital world	Entrepreneurship education needs to adapt to the development of digital technology and new business models	• Guidance for educational institutions in developing digital entrepreneurship curricula that are relevant to industry demands. • New learning strategies that are more effective and adaptive to technology	• The development of digital entrepreneurship research is faster than the adaptation of the education curriculum • The gap between the need for digital skills in the real world and teaching materials in formal education
2	(Amjad, 2022)	- The problem of	-Many	-Development of	-

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	Digital entrepreneurial marketing: A bibliometric analysis reveals an inescapable need of business schools	the lack of digital marketing skills in business higher education graduates, especially those who want to be entrepreneurs in the SME sector -Digital entrepreneurial marketing as a new approach in entrepreneurship education that integrates digital marketing and entrepreneurial marketing.	business school graduates lack the digital marketing skills needed to survive and thrive in the digital SME era -The use of data and machine learning applications for advertising strategies as a form of digital marketing suitable for SMEs	new curricula such as digital entrepreneurial marketing -Business education institutions need to take the lead in reforming digital entrepreneurship curricula	Unpreparedness of higher education institutions to introduce new courses such as digital entrepreneurial marketing - Lack of recognition of digital skills as a core part of the entrepreneurship curriculum
3	(Razak et al., 2024) Exploring Digital Entrepreneurship: A Qualitative Study on New Business Models and Digital Marketing Strategies	Exploration of the dynamics of digital entrepreneurship and digital marketing, specifically on platform-based business models and digital marketing strategies..	Data-drive decision-making and marketing analytics to optimize digital marketing strategies	Value creation and innovation through platform ecosystem	Complex technology integration
4	(Cicilia Sriliasta Bangun et al., 2022) Analysis of New	Changes in learning models towards computer and	- Informal online learning process prioritizes	High flexibility, low cost, and wide access	- Reliance on digital devices and uneven internet

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	Business Opportunities from Online Informal Education Mediamorphosis Through Digital Platforms	internet-based e-learning. In addition, the integration of digital media in informal education through video, audio, and interactive text	efficiency and effectiveness through digital technology. - Web application-based e-learning allows 24-hour learning through gadgets		High bandwidth requirements to access multimedia content
5	(Modgil et al., 2022) Has Covid-19 accelerated opportunities for digital entrepreneurship? An Indian perspective	The Covid-19 pandemic is driving businesses to transition to digital. Exploration of emerging technologies and innovations in the context of entrepreneurship	• Pandemic accelerates business orientation to digital solutions • Adoption and utilization of digital technology during the pandemic	Four digital technologies that drive entrepreneurship, namely AI, Intech, Ed Tech, and e-commerce	Adaptation to new technologies requires knowledge and readiness from business people
6	(Peter & Dalla Vecchia, 2021)	The role of digital marketing in	Digital marketing has	The Toolkit can be an initial practical	Knowledge and skill gaps

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	The Digital Marketing Toolkit: A Literature Review for the Identification of Digital Marketing Channels and Platforms	digital transformation, specifically the utilization of digital tools	not been fully utilized by SMEs	guide to help SMEs choose and implement the right digital marketing strategy	in adopting digital marketing tools
7	(Fernández-Rovira et al., 2021) The digital transformation of business. Towards the ratification of the relationship with customers	The main trends of digital transformation in the business world, related to the use of big data and AI	Bid data and AI enable companies to improve service personalizatio n, efficiency, and customer loyalty	The use of big data and AI provides opportunities to offer high-value products or services at low cost	Technology capability gap, where only large companies are able to use data intensively
8	(Lv et al., 2021) How Entrepreneurs hip Education at Universities Influences Entrepreneuria l Intention: Mediating Effect Based on Entrepreneuria l Competence	Innovative technologies such as AI and social media can influence the effectiveness of entrepreneurship education	Integration of digital technologies such as AI and social media in the entrepreneurs hip curriculum can improve the relevance and effectiveness of learning	Deeper exploration of the role of AI, social media, and digital ecosystems in improving entrepreneurship teaching methods	Rapid changes in technology and markets require constant updates to the entrepreneurs hip curriculum

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9	(Elia et al., 2020) Digital entrepreneurship ecosystem: How digital technologies and collective intelligence are reshaping the entrepreneurial process	The digital entrepreneurship ecosystem, particularly digital technology and collective intelligence can transform the entrepreneurial process	Participation of various actors such as Up work, Kickstarter, or Linked can enable more inclusive business idea testing, fundraising and product development.	Digital technology enables large-scale utilization of human resources to create diverse entrepreneurial opportunities	The dynamics between different actors with different objectives in the digital ecosystem can pose coordination challenges and conflicts of interest

Source: processed by researcher, 2025

Digital Marketing Trends

Marketing media now does not only use social media such as YouTube, TikTok, Instagram, Facebook, etc. Marketing media can use the latest technology by utilizing Artificial Intelligent (AI) and machine learning as a digital marketing strategy (Peter & Dalla Vecchia, 2021). Amjad, (2022) said that AI as a marketing tool can be integrated in the entrepreneurship education curriculum in order to produce students who adapt to new technologies. According to Kazak, et al (2023) AI is very helpful for students to make data-based decisions and marketing analysis to become successful digital marketers. With that, students need to learn digital marketing trends now to find marketing opportunities with technology. AI and big data can be said to be an opportunity that can help students to improve skills and experience more efficiently in digital marketing (Fernández-Rovira et al., 2021). This is certainly a convenience in digital marketing, but it is a challenge for students to adapt to new technologies to remain competitive in digital business marketing. Students need to have skills in using AI and big data to run digital marketing to be competitive in business (Ghorbani et al., 2022).

Digital Entrepreneurship Education

Entrepreneurship education now needs to integrate AI, big data and other digital marketing tools into the formal and informal curriculum (Elia et al., 2020). Students learning about entrepreneurship are given several types of cases that occur in the digital marketing world now (Anabaraonye et al., 2024). From each case, students learn how to make data-driven

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decisions with the help of AI and big data (Lv et al., 2021). This is important so that students have experience in operating AI and big data in digital business. Entrepreneurship education should not only utilize e-learning to run digital marketing (Sitaridis & Kitsios, 2024). New technologies such as AI and big data need to be integrated into the entrepreneurship curriculum.

Competency in the use of new technologies such as AI and marketing becomes a measuring tool for student achievement in learning entrepreneurship (Al-Abdullatif & Alsubaie, 2024). In addition, educational institutions also need to collaborate with various industries that are already utilizing new technologies. Industry needs to be involved in designing the entrepreneurship education curriculum so that learning resources always adapt to changes in the increasingly digital industrial world (Fernández-Rovira et al., 2021). Digital entrepreneurship education becomes an obstacle if the entrepreneurship education curriculum is not ready to accept new technology due to limited teachers who are experts in this field. In addition, limited technological facilities can be an obstacle to realizing digital entrepreneurship education.

DISCUSSION

The major digital marketing trends in digital entrepreneurship education consist of artificial intelligence (AI), big data, digital platforms, and case-based learning. AI is used for data analysis, data-driven decision making, and more efficient marketing strategies (Kazak et al., 2023; Peter & Dalla Vecchia, 2021). Big data helps students understand customer behavior and market trends to make more accurate marketing decisions (Fernández-Rovira et al., 2021). Digital platforms such as YouTube, TikTok, Instagram, and Facebook remain relevant, but with new technology-based approaches (Amjad, 2022). Students are also provided with case-based learning to practice digital marketing skills with the help of AI and big data (Anabaraonye et al., 2024).

Digital marketing trends are opportunities that students can take advantage of to improve competencies in digital entrepreneurship education. Digital marketing trends help students to develop analytical skills and more efficient digital marketing (Iman et al., 2022). With new digital marketing tools, students can test and optimize marketing in real-time (Hu & Huang, 2021). According to Jagatheesaperumal, et al. (2022), the key to the success of entrepreneurship education is now the speed at which students adopt the new digitalization. Students must be more agile in the face of technological disruption, which depends not only on technological innovation, but the ability to adapt to the new technological environment (George et al., 2021). Collaboration with industries that already use new digital technologies can also enrich the learning curriculum for students (Özdemir & Hekim, 2018). Students can learn how industries

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work with technology to interpret and process orders and track product delivery to customers (Rathore et al., 2021). In addition, industries also use new technologies in analyzing potential failures of production processes by analyzing historical data through new technologies (Rane, 2024).

The development of digital marketing not only brings new opportunities, but also new challenges for digital entrepreneurship education now. Digital entrepreneurship education needs to adapt to new technologies to remain competitive in the midst of an increasingly advanced global situation. Entrepreneurship education becomes a challenge when the entrepreneurship curriculum is not ready to integrate new technologies such as AI and big data (Mikhaylov et al., 2018). According to Preuveneers & Ilie-Zudor, (2020), unpreparedness occurs in digital entrepreneurship learning due to the lack of teachers who are competent in new digital technologies. Students and teachers may struggle to adapt to new technologies (Luan et al., 2020). Akter, et al. (2022) found that digital entrepreneurship education has many difficulties for adaptation specifically for developing countries.

Madan & Rosca, (2022) say that entrepreneurship education should integrate AI, big data, and digital marketing tools into the formal and informal curriculum. This integration is very important so that students produced through entrepreneurship education can run businesses competitively with the global business world (Naukowy et al., 2020). Fernández-Rovira, (2021) said that teachers of digital entrepreneurship education need to improve their competencies by attending workshops and certifications in the field of digital technology. In addition, schools also need to develop technological infrastructure by providing educational institutions with access to digital tools such as AI and big data (Shevchenko et al., 2022). Such infrastructure is essential to support students' digital entrepreneurship practices with new digital technologies (Ghorbani et al., 2022). With this strategy, digital entrepreneurship education can be better prepared for technological developments and produce graduates who are competitive in the digital era.

CONCLUSION

Digital marketing trends, such as the use of artificial intelligence (AI), big data, digital platforms, and case-based learning, have brought about major changes in digital entrepreneurship education. These technologies not only improve students' analytical and decision-making abilities, but open up new opportunities for more relevant and efficient learning. However, major challenges remain, especially in terms of curriculum readiness and faculty competencies to adopt new technologies. Therefore, digital entrepreneurship education must be able to adapt to remain competitive in the era of globalization and digitalization.

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The practical implications of this research can encourage educational institutions to immediately revise the entrepreneurship curriculum to integrate digital marketing, AI, and big data formally and informally. In addition, training for teachers, industry collaboration, and certification are essential to improve competency in the latest digital technologies..

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