

UDC 378.175.046.4:004.451.2

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Artificial intelligence for marketing product strategy in the online education market

■ Abstract. The online education market has experienced tremendous growth, creating a competitive landscape where effective marketing solutions are crucial for success. Artificial intelligence (AI) has emerged as a powerful tool, offering innovative ways to enhance product marketing strategy. The purpose of the article was to highlight the integration of artificial intelligence into marketing product strategies in the online education market and to evaluate the chances of success for launching a new training course implemented through AI algorithms. A systematic review of advanced technologies and products in the AI market was carried out, along with a comparative analysis based on data from

Article's History: Received: 17.04.2024; Revised: 14.08.2024; Accepted: 30.09.2024

Suggested Citation:

Bilovodska, O., Kravchuk, T., Ponomarenko, I., Bliumska-Danko, K., & Kononenko, A. (2024). Artificial intelligence for marketing product strategy in the online education market. *Economics of Development*, 23(3), 18-31. doi: 10.57111/econ/3.2024.18. *Corresponding author



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DOI: 10.57111/econ/3.2024.18

Vol. 23, No. 3 2024 various authors and reports from organisations, considering the aspects of interpreting qualitative and quantitative market characteristics. Leaders in the global and Ukrainian online education market were analysed, and research was conducted on the marketing product strategy measures of successful players, indicating qualitative and quantitative data using SimilarWeb and Semrush online services. These results allowed for an analysis of the connection between the identified market segments and influencing factors to make practical recommendations for improving elements of marketing based on the identified issues of products and the online education market. To demonstrate the relevance and effectiveness of the proposals, an approach was applied to test if a product with enhanced AI marketing would fit into the market using the example of the Projector Institute company. The assessment obtained from the calculations showed that AI can strengthen the marketing of online education products, as they will fully meet the interests of interested economic counterparts. The results of the study could be used by marketing, AI experts, product experts, business owners in marketing, etc. to enhance marketing solutions

Keywords: e-learning market; digital technologies; product development; AI-driven marketing; AI-based courses

INTRODUCTION

Over 2022-2023, the development of artificial intelligence (AI) technologies has reached a new level: scientists have started talking about the possibility of a complete revolution in the general perception of the modern world if this breakthrough is implemented in an increasing number of developments. AI is penetrating deeper and deeper into various areas of life, including marketing, and its main advantages are speed, the ability to analyse databases in seconds, and to perform almost any manual and repetitive work, which allows optimising work that would take a human much longer but not necessarily better. There are wide-spread concerns about AI, from the ethics of its use to the potential dangers of these technologies, which can manifest themselves in minor errors and inaccuracies, as well as in more threatening failures, monitoring, falsification, etc. These concerns are also evident in marketing, as the lack of legal regulation of the sector, even at the international level, is already causing conflicts. With this in mind, it is important to understand how AI will strengthen the marketing product strategy of the online education market in such a way that it works efficiently, correctly, and enhances products rather than making them generalised and non-unique for the consumer. The potential of AI in the area is almost endless: it allows personalising communication with customers, forming detailed proposals based on preliminary analysis, and generating accurate text elements, both for advertising messages and for assortment items and their descriptions.

The report by W. Holmes et al. (2022) critically examines the role of AI in education from the perspective of human rights, democracy, and the rule of law. It highlights the dual nature of AI, which offers both significant opportunities and challenges. The report emphasises the importance of empowering educators and learners without overempowering AI tools. It calls for a balanced approach to AI adoption in education, especially in the online education market, advocating for both AI literacy and a nuanced understanding of AI's impact on privacy, agency, and human dignity. The article by D.R.G. Cardosa & G.G. Brustenga (2023) highlights six key trends in generative AI for education, emphasising opportunities and risks. These trends include the use of multilingual videos with avatars to enhance accessibility and personalisation, AI tools supporting teaching staff in course design, and innovations in Ed-Tech start-ups leveraging AI APIs. Additionally, AI's role in arts education, adaptive learning experiences customised for students, and simplified content creation are discussed. The study underscores the need for responsible AI integration in education.

A.K. Pradeep et al. (2018) explore how AI is revolutionising marketing and product development. They discuss AI's capabilities in predicting trends, enhancing customer connections, and boosting sales. They provide insights into various AI applications, such as data analysis, customer segmentation, dynamic pricing, and creative storytelling. The study serves as a non-technical guide for enhancing products with AI, emphasising practical tools and strategies for leveraging AI to drive innovation and efficiency in marketing efforts. Also, the studies by M. Jabeen (2022) and R. Naeem et al. (2024) examine the utilisation of AI in product marketing. The studies provide a conceptual analysis of the past, present, and future of marketing through the lens of AI and the role of AI in product-service innovation. The article by A.L. Privanka et al. (2023) delves into the concept of AI in marketing, examining its role in contemporary marketing, its advantages and challenges, best practices for implementation, and ethical considerations. The objective of the study by Y. Masnita et al. (2024) is to explore the overall utilisation of AI in marketing by practitioners, as the existing literature frequently concentrates on specific goals such as branding, innovation, and analysing competitors' weaknesses. A. Haleem et al. (2022) investigate the specific applications of AI across various marketing segments and their transformative impacts on marketing sectors. It identifies and critically analyses the essential applications of AI in the field of marketing.

AI and its elements are an organic part of the innovations that have been taking place in marketing since its inception. Potential examples could be recognised in digitalisation, the increase in communication channels, and the emergence of new techniques, which will possibly lead to the next stage of total automation, accessibility, the emergence of tools and practices, and, of course, a fundamental renewal of the products and services that are offered on the market. However, questions regarding the systematisation of information contribute towards providing insights that may assist in the strategic planning of the marketing executive in the sector of online education while leveraging AI for a competitive advantage. Understanding if such products would be successful in the online education market is a way of proving said hypothesis true. Thus, the aim of the article was to explore the integration of AI into marketing strategies for the products in the online education market and to assess the prospects for the successful launch of a new course, marketing frameworks of which were developed using AI algorithms.

MATERIALS AND METHODS

The research used the method of comparative analysis in a set way of defining features of markets of AI and online education. The chosen methodology of comparative analysis that was used in the given research implied diverse data collection and synthesis from scientific publications, besides credible reports of organisations. As such, there is an extensive search for scholarly databases and publishers to capture relevant studies and reports that may enlighten market dynamics and AI innovations in online education. The selection of these sources was guided by their recency, relevance to research questions, and the scientific rigour of the methodologies used. The systematic analysis approach provided a strong framework to interpret complex data through the market in a complex way. The results extracted the findings from predefined classifications based on the data collection matrix. The classification criteria consisted of market growth, technological advancement, user demographic pattern, and educational outcomes. This categorisation structured the overview of the findings but in a different way, and emphasised areas of consensus and disparity in the literature. Analytical matrices have been developed so that they can be juxtaposed with the identified features and implications for a greater appreciation of the subtleties of the market landscapes.

The analysis of the product array of products within the e-learning market adopted the use of longitudinal and content analysis. Methodological approach that consists of data collection and scrutiny about the various educational products in a systematic way, resulting in the extraction of general patterns and principles informing the market behaviour and trends of product development. The first step in this direction was comprehensive data collection, wherein information about the various products in online education was collected from all available sources: academic literature, market reports, industry whitepapers, and user reviews. Each of them was analysed, and every factor of the particular set of criteria was taken into account to know how criteria were satisfied, for instance, user engagement metrics, technological innovation, content quality, or market reception. Methodologies applied in identifying the relevant market segments and the AI technologies that might be integrated into marketing strategies were expert and abstract-logical methods. These kinds of methods use systematic abstract reasoning with the help of expert analysis that dissects the understanding of complex structures of markets and ability potentials from different AI applications.

The study focused on the assessment with a detailed approach for launching a new product into the market with a special reference to the improved marketing frameworks through the use of AI in an effort to enhance chances for success. It is a systematic approach to reviewing both internal and external scenarios that may affect the product's marketplace performance. The approach for assessing the chances of success in launching a new product involved the following steps. Outlining the interested market stakeholders (economic counterparts of the company). The analysis conducted showed that the interests of such market stakeholders should be considered: the commodity producer (companies), consumers, employers, the Ministry of Education and Science of Ukraine, and the military sector. Determining the level of interest of the company, as well as its economic counterparts, in the new product. The list of characteristics for assessment has been determined by an expert method with a generalised approach. All characteristics are estimated by an assessment for all market stakeholders.

The survey was conducted in February 2024 online through the Google Forms platform in compliance with the American Sociological Association's code of ethics (1997). Each question offered the respondent four options: disagree, rather disagree than agree, rather agree than disagree, and agree. The following scale is used when evaluating these responses accordingly: 1 point – the low level of the characteristics' compliance of product to the requirements of market participant; 2 points – the level of the characteristics' compliance of product to the requirements of market participant is below the average; 3 points – the level of the characteristics' compliance of product to the requirements of market participant is above the average; 4 points – the high level of the characteristics' compliance of product to the requirements of market participant.

According to the study by M. Basha (2023), a list of questions was made that was addressed universally to each stakeholder: the educational IT course, enhanced with AI-driven marketing strategies, is expected to generate significant interest among the stakeholder; the AI-enhanced marketing approach will effectively communicate the unique value proposition of the educational IT course to potential students; the marketing strategies employed for this course are likely to increase its visibility and attractiveness in the educational market; the course content and marketing messages align well with the needs and expectations of the target audience; the AI-enhanced marketing will likely lead to a higher enrolment rate for the educational IT course; the course's marketing strategy effectively highlights its compliance with national and international educational standards; the marketing campaign for the course will successfully engage key stakeholders and encourage their endorsement; the AI-enhanced marketing efforts will significantly enhance the course's brand perception among potential students and employers; the course's marketing strategy is expected to effectively address and highlight the skill gaps it aims to fill; the overall marketing plan for the educational IT course is likely to position it as a leading option in the educational market. Through expert survey, key evaluation characteristics were identified, and then the weights of these characteristics were determined. The weighted characteristics were estimated based on studies by B. Hrabovetskyi (2010) and O. Bilovodska et al. (2019) using following equations:

$$W_{i} = \frac{\sum_{j=1}^{m} W_{ij}}{\sum_{i=1}^{n} (\sum_{j=1}^{m} W_{ij})};$$
(1)

$$W_{ij} = \frac{C_{ij}}{\sum_{i=1}^{n} C_{ij}},\tag{2}$$

where W_i represents the total weight assigned by experts to indicator *i*; *m* is the number of experts; *n* is the number of indicators; W_{ii} denotes the rank given by expert *j* for indicator *i*; C_{ij} signifies the relative weight estimation (in points) set by expert *j* for indicator *i*. Statistical tools were utilised to assess the consistency of expert opinions (Yashkina, 2013). The obtained results were used to construct tables for assessment. This approach could comprise market acceptance, competitive response, and operational abilities. Integral calculating for the assessment of new product compliance with the interests for each market stakeholders using equation:

$$0 = \sum_{i=1}^{n} P_i \times W_i, \tag{3}$$

where P_i is the point of the characteristic *i*; W_i is the weight of the characteristic *i*.

RESULTS

The AI market is complex and divergent, which is visible in the research conducted by the leading data analytical organisations (Precedence Research, Grand View Research, McKinsey & Company, Forrester Research, etc.). The online education market keeps on growing with strong players on the market, which is the reason new innovative products appear more often. Such changes lead to an extended use of AI in marketing online education products. AI has become a transformative force across various industries, and its impact on the online education market is particularly noteworthy. The online education sector has witnessed exponential growth, leading to increased competition and the need for innovative marketing strategies. AI offers a plethora of opportunities to enhance marketing product policies in the online education market. It is not easy to estimate the AI market, as the data from officially conducted reports by organisations and commercial institutions often differ. The difference in data happens since the concept of AI in the reports differs, as well as the difference in the concept of what to include in the AI market itself. The dynamics also show a market decline in 2022 as a result of Russia's full-scale invasion of Ukraine. If the study was conducted in 2022 or at the beginning of it, this moment would not have been noticed. A comparative analysis of the description of the AI market was conducted (Table 1).

Table 1. Comparative analysis of the AI market (based on various sources)

Dovomotov	Precedence Research	Grand View Research	Statista data
Parameter	data for 2022	data for 2023	for 2023
Market estimate, billion \$	454.12	196.63	241.8
Compound annual growth rate (CAGR), %	12	37.3	17
Largest share of revenue, sector	BFSI	BFSI	BFSI
Largest geographical market, region	North America	Asia	North America
Estimate of largest geographical market, million \$	167.3	62.9	84.7

Note: BFSI - banking, finance services, insurance

Source: created by the authors based on Artificial intelligence (AI) market size, share, and trends (2023), Artificial intelligence market size & trends (2024), Artificial intelligence – worldwide (2024)

AI in marketing works on the principle of three "D", according to J. Sterne (2017). Detect: AI has the ability to identify the most predictable elements or attributes in a huge amount of diverse data, highlighting the key characteristics to focus on while ignoring the rest. Deliberate: AI is able to derive rules from data, evaluate the most influential attributes against each other, and use this information to answer queries or make suggestions. AI can also reason about the importance of each attribute and ultimately draw conclusions. Develop: AI can evolve and become more sophisticated with each iteration. It can change its view of the environment and how it evaluates that environment by incorporating new information or the results of experiments. Its algorithms are capable of self-programming. When it comes to marketing combined with AI, automation is the first thing that comes to mind. Most working models fall under the category of mathematical algorithms that can be "sewn" into a set of rules that a robotic system will execute while learning from each experience of repeating these algorithms, analysing errors and possible areas for improvement, and implementing changes in subsequent iterations. This approach may seem too general, but the advantage of AI is the ability to implement such processes at the level of personalised marketing, looking for the best solution and forming an offer not for the target audience or even for its segments, but for each consumer individually. AI can be used at every stage and in every component of marketing, and in the modern world, it serves, among other things, as an element of attracting attention if it is part of or accompanies the sale of a particular product. A comparative characterisation of the global and Ukrainian online education markets is systematised and proposed (Table 2; Fig. 1).

Table 2. Comparative analysis of the global and Ukrainian online education markets

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Parameter	World	Ukraine
Market volume of online education, billion \$	3.993	0.15
CAGR, %	14	26
Projected market volume of online education for 2032, billion \$	10.00	~ 0.5
Revenue of online education market, million \$ including:	156	3.4
 distance higher education 	100	0.3
 online learning platforms 	50.5	2.5

Table 2. Continued

Parameter	World	Ukraine	
 professional certification courses 	5.5	0.408	
Number of users of platforms for online learning as of 2023, million	73.3	1.3	
Projected number of users of platforms for online learning as of 2028, million	1,000	-	
Market penetration rate of online learning platforms as of 2023, %	9	3	
Key players in the market (including holdings), Figure 1	LinkedIn, Udemy, Coursera, Blackboard Inc., Aptara Inc., Cisco Systems, Centerpoint Systems Inc	Coersera, Prometheus, Laba Group, Projector Institute, EdEra, GoIT, Lingva.Skills	
Factors contributing to market growth	Internet penetration and mobile learning in hard-to-reach world regions; the rise in demand for continuous learning (life-long learning) and professional development in various sectors including the corporate sector and healthcare; innovations in educational technologies including learning management systems (LMS) and cloud solutions	Internet penetration and mobile learning in remote regions of the country; the war and occupation factor – lack of access to traditional forms of education; the opening of new businesses in the field of online education in Ukraine, digitalisation of education (as a government initiative)	
Market issues	Lack of peer-to-peer interaction in the online environment affecting the le process and student engagement; slow internet connection and poor networ infrastructure in some regions limit the effectiveness and accessibility of or education, especially in rural and underdeveloped areas; digital divide; con the quality and effectiveness of online learning, especially for subjects that practical or real-world experience that is hard to replicate in a virtual envir ensuring academic integrity and preventing fraud		
Market trends	Integration of AI and machine learning; gamification, interactive content, virtual reality, and augmented reality applications; development of B2B alliances between online education providers and businesses; increasing digitalisation of education and growing demand for digital devices; government initiatives towards digitalisation of education; growing recognition of online certificates and degrees as legitimate qualifications	Microlearning – shortening and intensification of content (simplification of learning); gamification, interactive content; automation and engagement of neural networks; increasing digitalisation of education and growing demand for digital devices; government initiatives towards digitalisation of education; the popularity of this learning format in the IT sector	
Market demand characteristics	Steadily growing, noticeable increase during the COVID-19 pandemic in 2020	Unstable demand: rapid growth during the COVID-19 pandemic in 2020 and at the beginning of Russia's full-scale invasion in 2022; demand drop during blackouts at the end of 2022 and beginning of 2023	

Source: created by the authors based on Online education market in Ukraine – analytical overview (2020), Global online education market – industry dynamics, market size, and opportunity forecast to 2031 (2022), Online education market (2023), Revolutionary growth projected for online education market expanding to USD 475 billion by 2030 with a striking CAGR of 9.1% unveiled in technology industry report by facts and factors (2023), P. Wadhwani (2023), O. Kovtun (2023), O. Melnichuk (2023), Online education – worldwide (2024)



Figure 1. Online education market share of key players, 2022 **Source:** created by the authors based on Online education market (2023)

Based on a study of the online education market leaders and an analysis of their platforms, the five most significant products of the online education market were identified. Coursera offers a variety of courses, diplomas, professional certificates, and tutorials in a wide range of disciplines, partnering with more than 275 world-class institutions and 2,300 companies (We envision a world..., n.d.). This extensive network allows Coursera to serve a diverse learning audience of more than 113 million learners worldwide. The platform's business model has evolved over the years, initially generating revenue from the sale of certified products and later expanded to include various paid course options. In terms of financial performance, Coursera's revenue grew substantially from \$184 million in 2019 to \$294 million in 2020, largely as a result of the COVID-19 pandemic. However, the company operated at a loss, and its net loss in 2020 was only USD 66 million, mainly due to increased marketing and advertising costs.

Udemy, founded in 2010, is an online learning platform that offers a wide range of courses in various subjects (Udemy report..., 2023). It is known for its affordability, and frequent sales and discounts make courses available to a wide audience. Prices for Udemy courses typically range from \$14 to \$200, although various bonuses are often applied, which is why the course will rarely be sold at the original price (Bento, 2022). In terms of their business model, Udemy has a unique approach in the market. They have found that lower rates attract more students who stay engaged and loyal to the platform. The platform's success is evident in its ability to continuously attract new users and launch new courses. As a result, 10 million new students have registered on Udemy in a 12-month period, and more than 134 million courses have been made available.

Skillshare, founded in 2010 by M. Karnjanaprakorn and M. Ohn, is a well-known online learning platform that primarily focuses on creative industries (Cooke, 2024). It has gained considerable popularity, attracting more than 600,000 learners from around the world. Skillshare offers an extensive library of over 34,000 courses covering a wide range of subjects such as animation, illustration, music, photography, and more. The platform operates on a subscription model, with a monthly plan costing about \$29 and an annual plan costing about \$99 (equivalent to about \$8.25 per month). Pluralsight (n.d.), founded in 2004, is an online education platform specialising in technology and creative skills. It stands out for its focus on the IT field, offering more than 7,000 courses in a wide range of technical disciplines such as Python, C#, Java, JavaScript, web development, mobile development, IT networking, internet security, and database administration, among others. Pluralsight offers different tariff plans. For individual users, there is a standard option costing about \$9.50 per month with a limited library, as well as a premium option costing about \$119.00 per year that provides access to the entire library of courses, including coding projects and certification exam preparation. For group subscriptions, Pluralsight offers customised plans with pricing that depends on team size and features required.

Preply is an online platform that connects learners with private tutors for one-on-one lessons, including language learning (Patiño, 2024). It offers a variety of learning methods, such as the direct method, total physical response, and engage-study-activate, providing a flexible and practical approach to language learning. Preply's key features include personalised real-time learning, direct contact with native speakers for immersive learning, and a flexible learning structure with no annual subscription requirement. The platform also offers a free blog and Q&A community for additional learning support. Lessons typically last 50 minutes, and the platform offers a variety of languages, with prices starting at around \$15 per hour. Using SimilarWeb (n.d.) and Semrush (n.d.) online services, it was identified that Udemy occupied more than 50% of the market share relative to other competitors, Coursera had another 32%, and the other platforms had less than 10% each (Fig. 2). Geographically, the main countries of origin of platform users were India, USA, Brazil, Turkey, and the UK; due to the lack of access to these platforms, there were no users from China, which on many platforms in other markets could account for up to 50% of total traffic (Fig. 3).

Global rank 🛈		1	udemy.com 🗹		55.44%
🛗 Sep 2023 🔇 Worldwide			View details	Total 111.9M	
Domain	Rank				
preply.com	#3,988	2	coursera.o 🗹		32.05%
coursera.org	#499	3	preply.com	6.97%	
udemy.com	#377		1 1 2 1 2		
skillshare.com	#10,292	4	skillshare 🗹	3.09%	
pluralsight.com	#11,204	5	pluralsight 🗹	2.44%	

Figure 2. The positions of competitors in the market

of web products for online learning and the market share distribution of companies **Source:** created by the authors based on SimilarWeb (n.d.), Semrush (n.d.)

Top Countries	Top Changes		
Countries	Market Share \Xi	Traffic	Changes
India	19.51%	26.8M	-8.02%
United States	18.47%	25.4M	+1.84%
Brazil	6.34%	8.7M	+16.05%
Turkey	3.74%	5.1M	-8.58%
United Kingdom	a 2.87%	3.9M	+7.81%

Figure 3. Geographical distribution of users of selected companies in the market of web products for online learning **Source:** created by the authors based on Semrush (n.d.)

Based on SimilarWeb online service, a market growth matrix was built. As a result, in the first quarter of the matrix, Udemy and Preply were in the category of "market leaders" (the latter lags behind in terms of traffic but is a leader in its specialisation in remote language learning through tutoring). In the second quarter, Pluralsight was among the "transformers" since it became the first learning platform for IT professionals. The third quarter, "niche players", was occupied by Coursera, which, having created a unique niche, has remained the only company in it due to a stable level of trust and a unique number of high-profile contracts with the world's leading universities and companies. Skillshare, a "long-time player" that, despite few changes, remains unchanged by competitors in its area of focus, is in the fourth quarter. As for the amount of traffic, the ranking is similar to the market shares held by competitors. The largest number of users visit the Udemy platform, with more than 100 million accounts per month. The marketing channels for attracting users are homogeneous: paid acquisition (mainly through Google advertising), organic promotion (search engine optimisation, app store optimisation, web page optimisation), social media, email newsletters, and referral programmes. Direct links stand out in the engagement section, as most regular users save links to the course, website page, or material they need and open them directly, creating a disproportionate number of engagements through this channel that must be considered when analysing.

The approach to assessment of launching a new product into the market was applied with a special reference to the improved marketing frameworks through the use of AI as an effort to enhance its chances for success. An online learning company in Ukraine was chosen to conduct the study: Projector Institute. The type of product for which the chances of being accepted by the market were assessed: a new training course implemented by integrating AI algorithms into the strategies of marketing, which are AI target audience segmentation, AI offer and product customisation for each user, AI pricing adjustments depending on the user fit, and targeted advertising with AI enhanced media and text. To make the study objective, the characteristics of existing courses offered by Projector Institute and its competitors ITHillel and Beetroot Academy were analysed. The results are presented in Table 3.

Product	Price UAH/ course	Duration (months)	Number of teachers	Number of covered topics	Presence and checking of homework	Presence of a certificate upon completion
Internet marketing course, Projector Institute	27,000.00 UAH	3	2	40	Yes	Yes
Digital marketing course, Beetroot Academy	21,000.00 UAH	4	1	43	Yes	Yes
Online marketing course, ITHillel	13,100.00 UAH	4	1	38	No	Yes
Weighted characteristics of indicators	0.2	0.25	0.1	0.1	0.2	0.15

Table 3. Characteristics of online learning marketing courses

Source: created by the authors based on Online education market in Ukraine – analytical overview (2020)

The analysis shows that the company's top priorities are the interests of the following market stakeholders – the company's economic counterparties: consumers, employers (who hire course graduates), the Ministry of Education and Science of Ukraine, and the military sector. To determine the degree of interest of the commodity producer in the new product, it is necessary to assess the relevance of the new product to the interests of the commodity producer. The results are presented in Table 4. The assessment was influenced, among other things, by the fact that, if introduced, such a product would be unique in the market and could potentially increase the platform's profits. Enhanced marketing frameworks elevate a company's market positioning by showcasing innovation and adaptability. AI-driven marketing strategies leverage data analytics to create targeted, impactful campaigns. According to a report by McKinsey & Company, companies utilising AI in marketing see a 20-30% increase in marketing ROI (Deveau *et al.*, 2023). By adopting advanced marketing techniques, the company positions itself as a forward-thinking leader in education technology, attracting interest from potential partners and investors who value innovation.

Table 4. Assessment of compliance of a new product with the interests of the commodity producer

Product characteristic (weight)	Fully corresponds (4 points)	Sufficiently corresponds (3 points)	Partially corresponds (2 points)	Practically does not correspond (1 point)	Does not correspond at all (0 point)
Profitability (0.5)	+				
Expansion of product range (0.1)		+			
Automation (0.3)	+				
Increase in the number of consumers (0.1)	+				

Source: created by the authors

To determine the degree of consumer interest in the new product, whether the product meets the interests of consumers was assessed. The results are presented in Table 5. In this case, the personalisation of the experience played a significant role, distinguishing the potential product from competitors. Enhanced marketing frameworks enable a high degree of personalisation, ensuring that promotional content is tailored to the specific interests and needs of potential students. AI-driven marketing tools analyse vast amounts of data to understand consumer behaviour and preferences. According to a study by Q. Abbas (2024), personalised marketing messages can increase engagement rates by up to 20% compared to generic promotions. For students, this means receiving information that directly resonates with their career aspirations and learning preferences. Personalised marketing not only captures their attention but also helps them make informed decisions about their education, increasing the likelihood of enrolment in courses that are a perfect fit for their goals. Consumers also benefit from the transparency and detailed information provided through enhanced marketing frameworks, which aid in the decision-making process. AI-enhanced marketing frameworks can present detailed, customised content, such as course outlines, success stories, and potential career paths, through interactive platforms. Research by Y.E. Hofmann & M. Strobel (2020) indicates that comprehensive and transparent information significantly influences students' educational choices.

Table 5. Assessment of the comp	liance of a new pro	duct with the interests o	f consumers
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Product characteristic (weight)	Fully corresponds (4 points)	Sufficiently corresponds (3 points)	Partially corresponds (2 points)	Practically does not correspond (1 point)	Does not correspond at all (0 point)
Price (0.3)		+			
Quality of the product (0.3)	+				
Personalisation of					
approach (0.2)	Ŧ				
Guarantee of result (0.2)			+		
	-				

Source: created by the authors

To determine the degree of interest of employers in new products, the relevance of the product to the interests of employers was assessed. The results are presented in Table 6. An individualised approach to training will mean more qualified personnel. AI-driven marketing frameworks improve the visibility and attractiveness of educational courses, aiding employers in acquiring top talent. Employers benefit from a wider and more engaged talent pool. By promoting educational courses that are visible and appealing to potential employees, companies can attract individuals with the latest skills and knowledge, thus enhancing their workforce quality. Enhanced marketing frameworks ensure that educational courses align closely with industry needs, producing graduates with relevant skills. A study by the World Economic Forum (2020) indicates that AI-driven market analysis helps tailor educational content to current job market demands. This ensures that the courses produce graduates with skills that are directly applicable to employer needs.

Table 6. Assessment of	of compliance	e of a new proc	luct with the in	terests of employers
				1 7

Product characteristic (weight)	Fully corresponds (4 points)	Sufficiently corresponds (3 points)	Partially corresponds (2 points)	Practically does not correspond (1 point)	Does not correspond at all (0 point)
Availability of new trained	-				
personnel (0.5)	т				
Quality of training (0.5)	+				
Common on and the disc the owner	41				

Source: created by the authors

To determine the degree of interest of the Ministry of Education and Science of Ukraine in new products, the relevance of the new product to the interests of the ministry was assessed. The results are presented in Table 7. In the case of cooperation with non-profit initiatives, which the company regularly does, this is a chance for the ministry to get a high-quality way to ensure the inclusiveness of professional educational platforms, increase employment and the standard of education as such.

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Digital marketing strategies, supported by AI, optimise the distribution of promotional materials across various platforms, making educational opportunities more visible and accessible. Research by Y.E. Hofmann & M. Strobel (2020) shows that countries that integrate advanced technologies in education are better positioned to compete globally. AI-enhanced marketing not only promotes courses domestically but also internationally, attracting foreign students and collaborations.

Table 7. Assessment of t	he new product's compliance
ith the interests of the Ministry	of Education and Science of Ukraine

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Product characteristic (weight)	Fully	Sufficiently	Partially	Practically does	Does not
	corresponds	corresponds	corresponds	not correspond	correspond at all
	(4 points)	(3 points)	(2 points)	(1 point)	(0 point)
Creation of new educational opportunities (0.4)	+				

					Table 7. Continued
	Fully	Sufficiently	Partially	Practically does	Does not
Product characteristic (weight)	corresponds	corresponds	corresponds	not correspond	correspond at all
	(4 points)	(3 points)	(2 points)	(1 point)	(0 point)
Increasing the employment level of the population (0.4)	+				
Inclusiveness (0.2)	+				

Source: created by the authors

To determine the degree of interest of the military sector in new products, the relevance of the new product to the interests of the military sector was assessed. The results are presented in Table 8. The military sector, with which the platform has also repeatedly cooperated, can benefit from innovative training technologies, which will positively affect the quality of education in the military. AI-enhanced marketing frameworks improve the visibility and attractiveness of educational courses, aiding military recruitment efforts. Enhanced marketing frameworks ensure that the military reaches a broader and more targeted audience. This can lead to an increase in the number of recruits with the necessary technical skills and interests aligned with the military's evolving needs.

Table 8. Assessing the relevance of a new	product to the interests of the military	secto
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	Fully	Sufficiently	Partially	Practically does	Does not
Product characteristic (weight)	corresponds	corresponds	corresponds	not correspond	correspond at all
	(4 points)	(3 points)	(2 points)	(1 point)	(0 point)
Support of military infrastructure			1		
(0.5)			+		
Military education	+				

Source: created by the authors

The weight of economic counterparties is as follows: producer -0.3; consumers -0.3; employers -0.2; MES of Ukraine -0.1; military sector -0.1. The calculations of the assessment of the new product's relevance to the interests of each market subject are as follows.

Commodity producer:

$$O1 = 0.5 \times 4 + 0.1 \times 3 + 0.3 \times 4 + 0.1 \times 4 = 3.9.$$

Consumers:

$$O2 = 0.3 \times 3 + 0.3 \times 4 + 0.2 \times 4 + 0.2 \times 2 = 3.3$$

Employers:

$$O3 = 0.5 \times 4 + 0.5 \times 4 = 4.$$

Ministry of Education and Science of Ukraine:

$$O4 = 0.4 \times 4 + 0.4 \times 4 + 0.2 \times 4 = 4.$$

Military sector:

$$O5 = 0.5 \times 2 + 0.5 \times 4 = 3.$$

The calculation of the integral assessment of the new product's compliance with the interests of all the market subjects under consideration:

$$I = 0.3 \times 3.9 + 0.3 \times 3.3 + 0.2 \times 4 + 0.1 \times 4 + 0.1 \times 3 = 3.66.$$

Using the Table 9 for assessing the chances of a new product's market success, conclusions about the potential success of a new product on the market from the integrated assessment was drawn.

Evolution	Correspondence to market	Level of expected	Level of expected	Colution	
Evaluation	stakeholders' interests	total expenses	total revenues	Solution	
3.0 <i>≤I</i> ≤4	Complete	Low	High	All chances for success	
2.5≤ <i>I</i> ≤3.0	Sufficiently complete	Moderate	Moderate	There are chances for success, but	
				more scrutinised analysis is needed	
2.0≤ <i>I</i> ≤2.5	Partial	High	Low	Chances for success are problematic.	
				Perform detailed analysis	

Table 9. Assessing the chances of a new product for market success

Source: created by the authors

I = 3.66, which means that the introduction of a new product (AI-assisted exchange rate) to the market is fully in the interests of economic counterparties. The total costs of the enterprise will potentially not be too high, as the company already has experience in assortment expansion, and the direction of writing AI algorithms is already being worked on the main learning platform (LMS and content management system). To minimise the risks, it is recommended to launch AI elements gradually in the A/B test format. The marketing product strategy in the online education market is complex; measures to improve it should be taken with attention and understanding of the sensitivity of this market, as well as responsibility to consumers. An important aspect of the online education market is product management. The Ukrainian market is rich in offers of various topics, but their structure on individual platforms is often not adapted to the needs of the user. Properly organised product nomenclature provides a logical user flow for the consumer, which creates a learning need and increases the likelihood of purchase.

An example of a successful product nomenclature is offered; this is the method used by Coursera: offering the most popular courses first, the platform recommends similar courses with a lower rating based on the AI principle, thus balancing demand. Many AI technologies use the concept of design thinking to optimise the visual experience of products. Maximising the integration of consumer-generated content into the tools already available on a website would make more people spend longer on the site and increase the likelihood of a purchase. AI in this area can help to build the right "hooks" that would hold the user's attention and build interest in the product; this applies to internal content, platform menus, descriptions of learning elements, etc. As for the reputation that is formed through hidden marketing influences, a good solution would be to work with the internal marketing of the product and create a unique user experience for the consumer. AI can design and implement a personalised onboarding funnel for almost any product, as well as provide round-the-clock feedback on possible questions. Customisation of the educational programme at the registration stage is essentially the creation of an individual product offer, the value of which is almost priceless for the consumer, and for the AI algorithm, just a set of built-in rules.

DISCUSSION

The integration of AI into marketing strategies within the online education market has shown significant promise, as evidenced by the results of this study. The findings indicate that AI enhances marketing efforts by offering personalised and optimised solutions, improving targeting and engagement with diverse customer segments. These conclusions align with various recent studies, which further substantiate the transformative potential of AI in education and marketing. AI's ability to adapt and innovate further substantiates its growing influence in reshaping how content is marketed and consumed online. The global AI market analysis by Grand View Research projects substantial growth driven by continuous R&D and increasing adoption across industries (Artificial intelligence market..., 2024). This growth is mirrored in the findings of the current study, which indicate that the online education market is poised for significant expansion due to the integration of AI technologies. The report highlights the importance of AI in driving efficiency and scalability, which supports the authors' conclusion that AI can enhance marketing strategies by making them more efficient and targeted. The report covers various aspects, including solutions (hardware, software, services), technologies (deep learning, machine learning, NLP), functions, and end-uses. The report highlights the significant market size growth driven by continuous R&D by tech giants, increasing adoption across industries, and advancements in AI technologies like deep learning and NLP. It also discusses regional trends, key players, and the impact of regulatory scrutiny on the AI market. The report by P. Wadhwani (2023) from Global Market Insights Inc. analyses the e-learning market, projecting its growth from 2023 to 2032. It covers technologies such as online e-learning, LMS, mobile e-learning, and virtual classrooms, and segments by provider (service, content) and application (corporate, academic, government). The report highlights the market's significant growth driven by increasing internet penetration, corporate training demands, and advancements in e-learning technologies. Key regions include Asia Pacific, North America, and Europe.

K. Sudhir & O. Toubia (2023) provide a comprehensive overview of AI in marketing, focusing on its ability to analyse large datasets, predict trends, and optimise customer interactions. Their findings resonate with conducted research, which demonstrates that AI can enhance marketing effectiveness in the online education sector by leveraging data-driven insights to improve targeting and engagement. The studies by A. Murgai (2018), N. Thilagavathy & P. Kumar (2021) and A. Mani (2024) investigate the roles and factors that influence the interaction between marketing and AI, the evolving responsibilities of marketers in the digital age, and the impact of AI on the marketing process. These researchers examine the potential sectors within digital marketing where AI has established its presence. They focus on the comprehensive overview of the transition of marketing to the digital sphere, the role of AI in this transformation, and the dynamic and emerging relationship between digital marketing and AI. These studies confirm the authors' conclusions about how AI-driven tools can streamline communication channels, and predict market trends effectively.

A comparative analysis with the work of D. Raiko et al. (2023) on the motivation systems for marketing employees highlights the importance of AI in enhancing marketing effectiveness. Their study demonstrates that AI tools can significantly improve employee performance and customer engagement, which aligns with current study findings that AI-driven marketing strategies can lead to better targeting and higher engagement rates. The study by P. Wadhwani (2023) on the e-learning market emphasises the significant growth driven by technological advancements and increasing internet penetration. This growth trajectory supports the authors' findings, which indicate that the integration of AI in marketing strategies is essential for capturing and retaining a diverse learner base in a rapidly expanding market. The research by S. Mahendra (2024) on the Turing test and AI's capabilities further substantiates the potential of AI in creating intelligent marketing solutions. The study's emphasis on AI's ability to understand and respond to human behaviour supports the conclusion that AI can provide personalised marketing experiences that resonate with individual learners.

The future of learning: Generative AI's role in education in 2024 (n.d.) also discusses the future of AI in education, emphasising the importance of generative AI in creating dynamic and interactive learning environments. This perspective aligns with the authors' findings, which highlight AI's role in developing innovative marketing strategies that cater to the evolving needs of online learners. Additionally, the report by Statista on the global AI market highlights the significant investments being made in AI technologies across various sectors (Artificial intelligence – worldwide, 2024). This aligns with authors' the findings that AI-driven marketing strategies are becoming increasingly important in the online education market, driven by continuous technological advancements and growing market demand. The analysis by O. Melnichuk (2023) on EdTech trends in Ukraine provides insights into the regional specificities influencing the adoption of AI in education. Their findings underscore the importance of tailoring AI solutions to local contexts, which supports the conclusion that AI can drive growth and innovation in specific markets by addressing the unique needs and challenges of local learners.

The studies by B. Namatherdhala et al. (2022), M.R. Ahmed & B.E. Ahmed (2023), and R.G. Cooper (2024) explore the new product development process in a rapidly expanding industry, analyse firm and supplier engagement, and devise a strategic model incorporating firm-supplier dynamics, AI, growth, and business models to foster longterm product development strategies amidst advancements in AI capabilities and competitive pressures, thereby offering managerial insights for achieving competitive advantage in the marketplace. These researches uncover the involvement of AI and its various branches in the product management paradigm, including the roles and responsibilities of AI product managers, and outline the broad and impactful applications of AI in new product development, which adduce with the authors' findings that an important aspect of the Ukrainian online education market is product management and the launching of a new product into the market, with particular emphasis on the enhanced marketing frameworks achieved through the utilisation of AI, aiming to increase the likelihood of success.

In conclusion, the integration of AI into marketing strategies for the online education market offers substantial benefits, including enhanced personalisation, operational efficiency, and scalability. The findings of this study align with the broader literature, underscoring the transformative potential of AI while highlighting the need for ethical considerations and balanced adoption strategies. Future research should continue to explore the evolving role of AI in marketing, particularly in response to emerging trends and technological advancements. While this study provides a comprehensive overview of the integration of AI in marketing strategies within the online education market, further research is needed to explore the ethical implications of AI, including data privacy and algorithmic bias. Longitudinal studies assessing the longterm impact of AI-driven marketing on learner outcomes, cross-cultural comparisons of AI performance, and investigations into AI's role in content creation and economic impact are essential. Additionally, examining the balance between AI-driven personalisation and learner autonomy, the potential of AI-enhanced learning analytics, the integration of AI with other emerging technologies, and the role of policy and regulation in AI deployment will provide deeper insights. Research on user experience and acceptance of AI tools can also offer valuable perspectives for maximising the benefits of AI in marketing.

CONCLUSIONS

This article explored the integration of AI into marketing product strategies within the online education market, highlighting its significant potential for enhancing personalisation, optimising marketing efforts, and improving customer engagement. By analysing various aspects of AI applications in marketing, the research underscored how AI-driven tools can tailor content to individual learners, streamline communication channels, and predict market trends effectively. The findings are consistent with existing literature, which emphasises AI's transformative impact across different sectors, including education. The research demonstrated that AI can support the development of innovative educational products and improve the efficiency of marketing strategies. The study also highlighted the importance of AI in driving market growth, as evidenced by substantial investments and advancements in AI technologies.

A comparative analysis of global and regional AI market trends, such as market size, CAGR, generated revenue, etc., revealed that the online education market is poised for significant expansion, driven by technological advancements and increasing demand for flexible learning solutions. This aligns with the broader market projections indicating robust growth in AI applications. Overall, the article provides valuable insights into the potential of AI to revolutionise marketing strategies in the online education market, offering practical recommendations for leveraging AI to enhance product marketing and meet the evolving needs of learners and educators. The findings contribute to a deeper understanding of the opportunities and challenges associated with AI integration, paving the way for future research and innovation in this dynamic field. Furthermore, the article identified several areas for future research, including ethical considerations, long-term impact assessments, cross-cultural comparisons, and the integration of AI with other emerging technologies. These areas are crucial for ensuring the responsible and effective deployment of AI in education and marketing.

ACKNOWLEDGEMENTS None.

CONFLICT OF INTEREST None.

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Штучний інтелект у маркетинговій продуктовій стратегії на ринку онлайн-освіти

Анотація. Ринок онлайн-освіти переживає стрімке зростання, що створює конкурентне середовище, де ефективні маркетингові рішення мають вирішальне значення для досягнення успіху. Штучний інтелект (ШІ) став потужним інструментом, який пропонує інноваційні методи покращення продуктових стратегій. Мета статті – висвітлити інтеграцію штучного інтелекту в маркетингові продуктові стратегії на ринку онлайносвіти та оцінити шанси на успіх нового навчального курсу, реалізованого шляхом впровадження алгоритмів ШІ. Проведено системний огляд передових технологій і продуктів на ринку ШІ, а також порівняльний аналіз на основі даних різних авторів і звітів організацій з урахуванням аспектів інтерпретації якісних і кількісних характеристик ринку. Проаналізовано лідерів світового та українського ринку онлайн-освіти, а також проведено дослідження заходів маркетингової продуктової політики успішних гравців зі зазначенням якісних та кількісних даних за допомогою онлайн-сервісів SimilarWeb та Semrush. Результати дозволили проаналізувати зв'язок між виявленими сегментами ринку та факторами впливу, запропонувати практичні рекомендації щодо вдосконалення елементів маркетингу на основі виявлених проблем продуктів та ринку онлайн-освіти. Для демонстрації актуальності та ефективності пропозицій було застосовано підхід до перевірки того, чи зможе продукт із посиленим ШІ-маркетингом мати успіх на ринку на прикладі компанії Projector Institute. Отримана в результаті розрахунків оцінка показала, що ШІ може посилити маркетинг продуктів онлайн-освіти, оскільки вони будуть повністю відповідати інтересам зацікавлених економічних контрагентів. Результати дослідження можуть бути використані маркетологами, фахівцями з ШІ, експертами з продукту, власниками бізнесу у сфері маркетингу тощо для вдосконалення маркетингових рішень

Ключові слова: ринок е-навчання; цифрові технології; розробка продуктів; маркетинг на основі ШІ; курси на основі ШІ

