Integrating AI into Entrepreneurial Marketing Strategies

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ABSTRACT

Purpose: Artificial intelligence (AI) has emerged as a transformative force in digital marketing, offering unprecedented opportunities for entrepreneurs to streamline operations and enhance customer engagement. This article explores the profound impact of AI adoption within entrepreneurial marketing contexts. It aims to present a conceptual framework delineating the integration of AI into entrepreneurial marketing strategies, highlighting its potential to revolutionize the field.

Methodology: The study employs a bibliometric analysis to provide a quantitative summary of the field. A total of 132 publications from the Web of Science database were analyzed using the Vosviewer program. These publications span topics such as management, business, computer science, economics, environmental studies, accommodation, and education. The bibliometric approach offers a structured overview of the current state of research in AI and entrepreneurial marketing.

Findings: The findings reveal the multifaceted impact of AI on entrepreneurial marketing. Key applications include customer insights, personalized marketing, predictive analysis, automation, optimized advertising, chatbots, competition analysis, and content optimization. These results underscore AI's transformative role in reshaping how entrepreneurial marketing strategies are developed and executed. Furthermore, AI is anticipated to assume an even more significant role in the field in the coming years.

Originality: This study contributes to the growing body of knowledge by offering one of the first comprehensive investigations into the integration of AI within entrepreneurial marketing. By combining a conceptual framework with bibliometric analysis, the research provides valuable insights into the interplay between AI and entrepreneurial marketing strategies, paving the way for future studies to build on these findings.

Keywords: Articifial Intelligence, Entrepreneurial Marketing, Digital Marketing, Machine Lear- ning, Big Data,

Jel Codes: M10, M31, M31, M13

Yapay Zekanın Girişimcilik Pazarlama Stratejilerine Entegrasyonu

ÖZ

Amaç: Yapay zeka (YZ), dijital pazarlama alanında dönüştürücü bir güç olarak ortaya çıkmış ve girişimciler için operasyonları kolaylaştırma ve müşteri etkileşimini artırma konusunda benzersiz fırsatlar sunmuştur. Bu makale, YZ'nin girişimcilik pazarlaması bağlamında benimsenmesinin derin etkilerini incelemektedir. Çalışma, YZ'nin girişimcilik pazarlama stratejilerine entegrasyonunu açıklayan kavramsal bir çerçeve sunmayı ve bu alanın dönüşüm potansiyelini vurgulamayı amaçlamaktadır.

Yöntem: Çalışmada, literatürü nicel bir şekilde özetlemek amacıyla bibliyometrik analiz yöntemi kullanılmıştır. Web of Science veri tabanında yer alan ve yönetim, işletme, bilgisayar bilimleri, ekonomi, çevre çalışmaları, konaklama ve eğitim gibi alanlarla ilgili toplam 132 yayın, Vosviewer programı ile analiz edilmiştir. Bu yöntem, YZ ile girişimcilik pazarlaması arasındaki ilişkinin mevcut durumu hakkında yapılandırılmış bir genel bakış sunmaktadır.

Bulgular: Bulgular, YZ'nin girişimcilik pazarlamasının çeşitli alanlarında çok yönlü etkileri olduğunu ortaya koymaktadır. Bu alanlar arasında müşteri içgörüleri, kişiselleştirilmiş pazarlama, öngörü analitiği, süreç otomasyonu, optimize edilmiş reklamcılık, sohbet robotları, rekabet analizi ve içerik optimizasyonu bulunmaktadır. Elde edilen sonuçlar, YZ'nin girişimcilik pazarlama stratejilerini yeniden şekillendirmedeki

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dönüştürücü rolüne işaret etmektedir. Ayrıca, YZ'nin bu alandaki öneminin önümüzdeki yıllarda daha da artacağı öngörülmektedir.

Orijinallik: Bu çalışma, yapay zekânın (YZ) girişimcilik pazarlama stratejilerine entegrasyonunu inceleyerek literatürde fark edilen bir boşluğu ele almaktadır. YZ'nin genel pazarlama uygulamaları ve girişimcilik yaklaşımları üzerindeki etkisi ayrı ayrı incelenmiş olsa da, bu iki alanı birleştiren kapsamlı araştırmaların eksik olduğu görülmektedir. Kavramsal bir çerçeve sunan ve bibliyometrik analiz yöntemini kullanan bu çalışma, YZ'nin girişimcilik pazarlamasındaki dönüştürücü rolüne dair öncü bir bakış açısı sağlamaktadır. Elde edilen bulgular, bu gelişmekte olan alanın gelecekteki araştırmalar için güçlü bir temel sunmaktadır.

Anahtar Kelimeler: Yapay Zeka, Girişimcilk Pazarlaması, Dijital Pazarlama, Makine Öğrenmesi, Büyük Veri

Jel Sınıflandırması: M10, M31, M31, M13

1. Introduction

Entrepreneurial marketing is defined by Morris, Schindehutte and LaForge (2002) as an approach to marketing that develops and implements innovative, opportunity-oriented, proactive, risk-taking and customer-oriented strategies with limited resources. It typically attempts to meet the need for businesses to reach large target audiences, often with limited resources, through innovative and flexible marketing strategies (Kotler & Keller, 2016). Entrepreneurial marketing is especially important for small businesses that need to reach large target audiences. This approach focuses on flexibility and innovation to adapt to rapidly changing market conditions, transforming traditional marketing strategies (Zott, Amit, & Massa, 2011).

The advent of the digital age has expanded marketing opportunities for small businesses. An important trend in entrepreneurial marketing today is digitalization. The widespread use of the internet and social media offers low-cost but effective marketing opportunities for entrepreneurs (Roberts & Zahay, 2003). In this context, new trends allow entrepreneurs to promote their brands to their target audiences in a more organic way (Malodia, 2022).

There are several important trends in the field of entrepreneurial marketing. These trends play an important role in shaping entrepreneurs' marketing strategies and capturing growth opportunities. For example, mobile marketing is becoming increasingly important. The widespread use of mobile devices changes consumers' shopping habits, which requires the development of mobile-oriented marketing strategies (Karjaluoto, Mustonen, & Ulkuniemi, 2015). Additionally, increased data analytics capabilities allow entrepreneurs to better understand customer behavior and develop personalized marketing strategies (Berthon et al., 2012).

Artificial intelligence (AI) integration in entrepreneurial marketing is becoming increasingly important. AI plays an important role in marketing processes such as big data analysis and prediction of customer behavior (Davenport et. al, 2020). By using AI-based tools, entrepreneurs can better understand customer needs and create more effective marketing strategies based on this information (Berthon et al., 2012). For instance, utilizing AI-based recommendation engines, entrepreneurial brands can provide personalized product recommendations to customers and enhance the shopping experience. Additionally, chatbots used in customer service can help entrepreneurs answer customer questions quickly and effectively (Ladhari, Souiden, & Ladhari, 2019).

Entrepreneurial marketing is constantly transforming with developing technologies. Entrepreneurs can gain competitive advantage by adopting and using these new technologies effectively. However, to integrate and use these technologies effectively, entrepreneurs need to develop a careful strategy. This study was prepared to deeply understand the use of Artificial Intelligence in Entrepreneurial Marketing Strategies and to make a quantitative analysis of the literature. In the study, entrepreneurial marketing definitions and entrepreneurial marketing strategies in the literature, artificial intelligence and artificial intelligence strategies in digital marketing are mentioned, and artificial intelligence strategies used in entrepreneurial marketing are explained, respectively. In the following section a bibliometric analysis is conducted on the use of artificial intelligence in entrepreneurial marketing with the purpose of presenting a quantitative view of the studies on the subject.

Entrepreneurial Marketing

Entrepreneurial marketing is defined as utilizing creative methods for risk management, resource leveraging, and value generation to proactively identify and seize possibilities for gaining and keeping profitable relationships by Morris et al. (2002). Furthermore, they defined entrepreneurial marketing as a structure for integrating emerging entrepreneurship and marketing perspectives. According to this definition, entrepreneurial marketing emphasizes how businesses integrate entrepreneurial spirit and innovation into their marketing strategies. Their research provides an important framework for understanding how this integration plays a role in the business world and how it shapes entrepreneurs' marketing strategies. Entrepreneurial marketing is a concept that takes a different approach from the traditional marketing paradigm and generally focuses on

the needs of small businesses and entrepreneurs. Researches on this subject has focused on the development and evolution of entrepreneurial marketing. Hills, Hultman and Miles (2008) examined the evolution of entrepreneurial marketing and investigated how entrepreneurial activities affect marketing processes. This study highlighted the key factors in the development of entrepreneurial marketing and revealed a guidance for marketing strategies.

Miles and Darroch (2006) examined how large companies adopted entrepreneurial marketing processes and how these processes affected the competitive advantage cycle. This study shows that entrepreneurial marketing is an important strategy not only for small businesses but also for large companies. Hansen et. al. (2020) emphasized how entrepreneurial marketing recognizes and cares about the entrepreneur and customer-oriented relationship. This study explains how entrepreneurial marketing helps businesses gain competitive advantage by focusing on customer needs and expectations. Collinson and Shaw (2001), Jones and Rowley (2011), Miles et al. (2015) and Carson (1995) have also examined different aspects of entrepreneurial marketing. These studies show how entrepreneurial marketing can be used to increase the competitiveness of businesses and help businesses adopt a customer-focused approach.

In conclusion, entrepreneurial marketing is an important strategy that can help businesses achieve and maintain a competitive advantage. This approach brings together the fields of entrepreneurship and marketing, allowing businesses to combine elements such as innovation, flexibility and customer focus. This concept appears to be valuable to a wide range of businesses, from small businesses to large corporations.

1.2. Entrepreneurial Marketing Strategies

Morris et al (2002) highlight seven key elements of Entrepreneurial Marketing (EM), namely opportunity-oriented strategy, proactiveness, innovative focus, customer concentration, risk management, resource utilization and value creation. Additionally, the "legitimacy" dimension suggested by Amjad et al. (2020) was also considered in this framework. Opportunity-oriented strategy emphasizes the ability of businesses to exploit market gaps and new opportunities, while proactivity places emphasis on anticipating and adapting to future market trends. Innovative focus encourages businesses to constantly develop new ideas and innovations to maintain competitive advantage. Customer density enables

businesses to establish close relationships with customers and understand and meet their needs. Risk management helps businesses identify and minimize the risks they may encounter. While sourcing increases efficiency by using limited resources effectively, value creation provides a competitive advantage by providing customers with a valuable experience. The legitimacy dimension refers to the process of businesses being accepted and gaining legitimacy by the stakeholders around them. These dimensions are critical for businesses to increase their competitive advantage, sustain their long-term success, and create marketing strategies effectively.

Morris et al. (2002) idenfied several entrepreneurial marketing strategies based on the extant literature that can be listed as follow:

Table 1. Entrepreneurial Marketing Strategies

Relationship Marketing:	Relationship marketing is the strategy of businesses to establish and maintain long-term, mutually beneficial relationships with customers.	Grönroos, 1994
Expeditionary marketing:	Expeditionary marketing is a marketing strategy in which businesses move aggressively and quickly to find new markets and opportunities.	(Pine & Gilmore, 1999)
Guerrilla marketing:	Guerrilla marketing is a strategy that involves conducting creative and effective marketing campaigns at lower costs than traditional marketing techniques.	(Levinson, 1984)
One-to-one marketing:	One-to-one marketing is a marketing strategy that aims to provide personalized products and services by establishing a one-on-one relationship with each customer.	(Peppers & Rogers, 1993)
Real-time marketing:	Real-time marketing is a strategy that involves making quick and measured marketing decisions based on instant data and responding to customer needs immediately.	(Pine, 1993)
Disruptive marketing:	Disruptive marketing is a strategy that aims to enter the market with innovative and radical approaches by overturning traditional marketing methods	(Christensen, 1997)

Viral marketing:	Viral marketing is a marketing strategy that allows customers to spread a product or brand organically by sharing it among themselves	(Wilson, 2000)
Digital marketing:	Digital marketing is a strategy used to promote, market and sell products and services. through digital technologies and platforms.	(Chaffey & Ellis-Chadwick, 2019)
Permission marketing:	Permission marketing is a marketing strategy that involves sending personalized messages based on the customer's interests, with permission, rather than sending marketing messages to customers without their permission.	(Godin, 1999)
Radical marketing:	Radical marketing is a strategy that involves executing innovative and bold marketing campaigns by rejecting traditional marketing norms and pushing the boundaries.	(Rosenbaum Elliott & Percy, 1990)
Buzz marketing:	Buzz marketing is a strategy that encourages talking about, sharing and spreading the product or brand.	(Hughes, 1997)
Customercentric marketing:	Customer-centric marketing is when businesses design and offer their products and services by focusing on customers' needs and preferences.	(Kumar, 2018)
Convergence marketing:	Convergence marketing is a strategy that aims to make the customer experience consistent and holistic by integrating various marketing channels.	(Pine&Gilmore, 1999)

Morris et al. (2002)

Entrepreneurial marketing strategies have evolved over the years, developing innovative and dynamic approaches. Starting with Guerrilla marketing in 1984, this process continued in the 1990s with personalized and bold methods such as Radical marketing and One-to-one marketing. Recently, digital and customer-centric strategies have enabled entrepreneurs to be more effective and flexible in the marketplace.

2. Artificial Intelligence

Intelligence is the human capacity to understand the world, think logically, and use resources effectively when faced with difficulties (Renner et al. 2021).

Intelligence includes acquisition (acquisition of information), automation (adapting procedures efficiently to a new situation), comprehension (recognizing and solving new problems), memory management (placing and retrieving information in memory), metacontrol (being able to control various processes in behavior). It is the combination of the elements of numerical ability (performing mathematical operations), reasoning (using problem-solving knowledge), social competence (interacting with and understanding the environment), verbal perception (recognizing natural language), visual perception (recognizing visual images) (Cook et al., 1988)

Artificial intelligence is the human-made effort to create a combination of intelligence elements. This effort is based on the desire to develop and improve human life, which is the main motivation of technological advances (Şahin and Kaya, 2019). Artificial intelligence systems are software-based algorithms. Algorithms are advanced programs that give commands that initiate the learning processes of computers (Pradeep et al., 2020). Artificial intelligence needs data to perform any action within the framework of the models created by the algorithms. The raw material of artificial intelligence algorithms and models is data. Raw data is transformed into knowledge to be used in decision processes (Agrawal, et al., 2018). In the development of artificial intelligence, machine learning (ML) and deep learning (DL) are important stages.

Machine Learning: It is the performance improvement of machines on their own, without human assistance, in order to successfully perform the tasks assigned to them (Brynjolfsson and McAfee, 2014). Machine learning serves to detect patterns and provide useful answers with the outputs by creating algorithms based on the data present in the input and running these algorithms repeatedly if necessary. That is why data is the fundamental element of machine learning (Agrawal, et al., 2028).

Deep Learning: The system learns from its own experiences. The human factor is eliminated, each concept is linked to many simpler concepts and learning takes place in a hierarchical structure. With deep learning, multi-layered artificial neural networks are used in voice recognition and image recognition (Pradeep et al., 2020).

2.1. Impact of AI on Digital Marketing Strategies

Artificial intelligence (AI) is making a significant impact on digital marketing strategies. Van Esch and Stewart Black(2021) examine the role that AI plays in

the field of digital marketing, while Varma et. al. (2021) discuss how AI is revolutionizing digital marketing. Grandinetti (2020) provide a summary and review of the use of AI in marketing. These studies show that the integration of AI into digital marketing strategies is increasing and represents a significant change in the industry (Bhuvaneswari, 2024).

The impact of AI on digital marketing strategies is examined from a number of aspects. For example, AI enables creating personalized marketing strategies by analyzing customer data in depth. This can increase conversion rates by providing customers with more relevant and engaging content (Hassan, 2021). Additionally, AI's predictive analytics capabilities allow businesses to predict future trends and adjust marketing strategies accordingly (Van Esch & Stewart Black, 2021).The impact of AI on digital marketing strategies also offers the potential to improve customer experience and make marketing processes more efficient. AI practices illustrating automation and optimized advertising allow businesses to automate repetitive tasks and make advertising campaigns more targeted (Davenport et.al., 2020). In this way, businesses can increase customer satisfaction while also using costs and resources more efficiently.

These studies demonstrate the impact of artificial intelligence on digital marketing strategies with its increasing importantance. The analytical power, personalization capabilities and automation opportunities provided by AI enable businesses to increase their competitive advantage and develop more effective marketing strategies.

3. AI Adoption Strategies for Entrepreneurial Digital Marketing

Entrepreneurial marketing is critical for businesses that want to succeed in today's dynamic business environment. Rapidly changing technology and consumer behavior require businesses to develop flexible and innovative marketing strategies. In this context, the adoption of artificial intelligence (AI) technologies has the potential to transform the entrepreneurial marketing practice of businesses. AI offers a range of applications such as in-depth analysis of customer data, personalized marketing strategies, predictive analytics, automation and optimized advertising. These technologies allow businesses to gain competitive advantage and activate marketing strategies by increasing customer focus.

Customer Insights: Artificial intelligence provides comprehensive customer insights by deeply analyzing customer data. This allows businesses to better

understand their target audience and provide them with customized experiences (Verma et al., 2021).

Personalized Marketing: Artificial intelligence allows developing personalized marketing strategies. Custom content and offers can be created based on customer data and behavior. This increases customer satisfaction and encourages loyalty (Rane, 2023).

Predictive Analytics: Predicts future trends using artificial intelligence, big data analysis and machine learning algorithms. This allows businesses to make more informed decisions in areas such as demand forecasting, inventory management and marketing strategies (Zhuang et al., 2021).

Automation: Artificial intelligence allows businesses to save time and resources by automating repetitive tasks. This saves labor and allows human resources to focus on more strategic tasks (Huang&Rust, 2022).

Optimized Advertising: Artificial intelligence may increase the effectiveness of advertising campaigns. Targeted advertising strategies can be created based on customer data and behavior. This allows for more efficient use of the advertising budget (Masnita et al., 2018).

Chatbots and Virtual Assistants: Chatbots and virtual assistants driven by AI have the ability to offer immediate customer service, respond to questions, and assist users with the sales process. In addition to improving client satisfaction, this enables business owners to grow their operations without raising overhead. (Kar, 2023)

Competitive Analysis: AI is capable of identifying opportunities, flaws, and strengths by examining the pricing methods, marketing plans, and consumer feedback of rival companies. This enables business owners to create unique selling propositions and differentiate their products. (Kar, 2023)

Content Optimization: In order to improve content development techniques, AI may evaluate user engagement data and content performance metrics. This comprises choosing the most appropriate forms and distribution methods for the information, as well as finding pertinent themes and optimizing keywords. (Lacárcel,2022)

As a result, the impact of artificial intelligence applications on entrepreneurial marketing strategies is becoming increasingly evident. Successful adoption

of AI technologies allows businesses to increase competitive advantage and strengthen customer-focused marketing strategies. However, ethical and privacy issues of these technologies should also be taken into account. Businesses must carefully manage and audit AI applications. Thus, they can maximize the benefits of AI while minimizing possible risks. Businesses that adapt to the changing needs of society and technological developments can achieve sustainable success by creating a competitive advantage.

Methodology

The study aims to reveal emerging themes, current developments at the intersection of artificial intelligence, big data and entrepreneurial marketing topics. For this purpose, bibliometric analysis and science mapping techinique are used as the research method in the study. Science mapping presents scientific knowledge in a structured and visual way, showing researchers the body of knowledge in a particular field and how this knowledge develops. (Cobo et. Al.,2011) Bibliometric analysis is a quantitative method that analyzes various aspects of academic literature with statistical methods (IGI Global, 2024). While science mapping focuses on understanding the structure of scientific literature by visualizing its thematic structures and relationships between research areas, bibliometric analysis is more concerned with quantitative measurements of scientific activities and evaluates the effectiveness of these activities. Both methods are important tools for understanding and evaluating scientific research. As a result of the analysises conducted on the concept of AI Adoption in Entrepreneurial Marketing Strategies with quantitative data and numerical measurement indicators, it is aimed to showcase studies on this subject to the attention of researchers with a holistic perspective.

The Web of Science database was chosen to obtain the data set of the study (Forliano et al., 2021). The following keywords were searched in the "Topic Search" field to obtain the dataset from the WoS database:

TS=(("Entrepreneurial Marketing" OR "Entrepreneurial Ventures" OR "Entrepreneurial Strategies" OR "entrepreneur*" OR "digital entrepreneur*" OR "*start up*" OR "*entrepreneurship" OR "*entrepreneurial*" OR "*venture*")) AND TS=(("marketing*" OR "digital marketing" OR "marketing strategies" OR " marketing skills" OR "Customer Engagement" OR "Market Segmentation" OR "Consumer Behavior Analysis" OR "Personalization " OR "Predictive Analytics" OR "Marketing Automation")) AND TS=(("artificial intelligence" OR "AI"

OR "AI Applications" OR "AI Implementation" OR "AI-Driven*" OR "AI-driven Marketing" or "machine learning" OR "deep learning" "natural language processing" OR "text mining" OR "big data*"))

It indicates that the specified search words must be included in the summary, title or keywords of the search research conducted on the subject of the document. As a result of the search, a total of 132 studies were obtained in the WoS database, covered between 2004 and 2024 April. VOSviewer program is used as the analysi tool and for visualization process of the data set.

Findings

Number of Publications by Years

The first publication within the framework of artificial intelligence in entrepreneurial marketing was revealed in 2004. This article examines market segmentation by analyzing automobile data using artificial neural networks and classifying consumer concentrations geographically (Polpinij, 2004). As a result of the analysis, a consumer segment in which Japanese cars are preferred was identified and it was stated that this data could be used to determine marketing plans. This study, published in 2004, shows that artificial neural networks were used as an innovative method in market segmentation at that time. Although the first study was conducted in 2004, the number of studies in this field increased in 2013 and later.
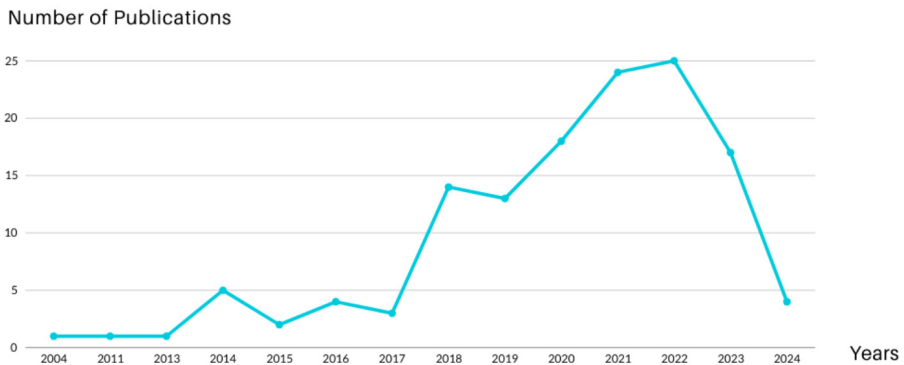

Figure 1. Number of Publications by Years

Publications by Document Types

The pie chart below (Figure 2) revealed that approximately 66% of the publications in the field are articles. This situation reveals the deficiency of conceptual and theoretical studies on the subject. Furthermore, 8 Reviews, 24 Proceeding papers, 4 Editorial Material, 6 Early Access,6 Book Chapters are published in this field.
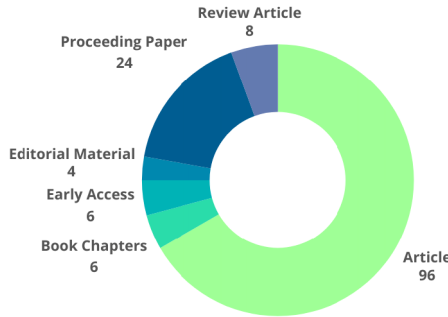

Figure 2. Publications by Document Types

Authors by Number of Publication

The authors who published the most at the intersection of entrepreneurial marketing and artificial intelligence are shown in Figure 3. Accordingly, Neubert and Michael are the authors with the most publications (5) on this subject.
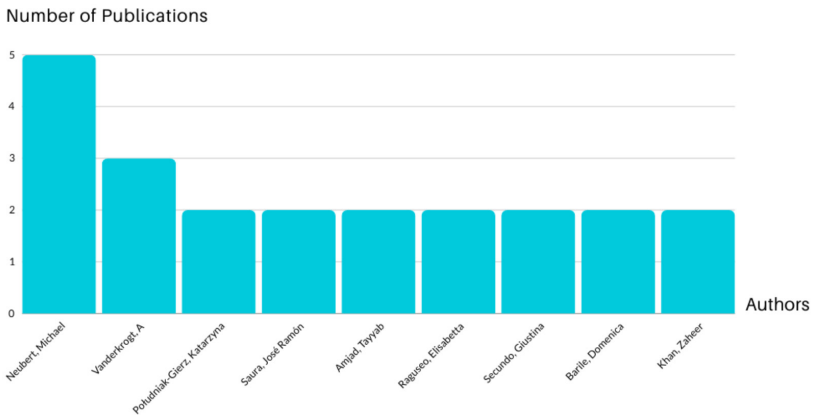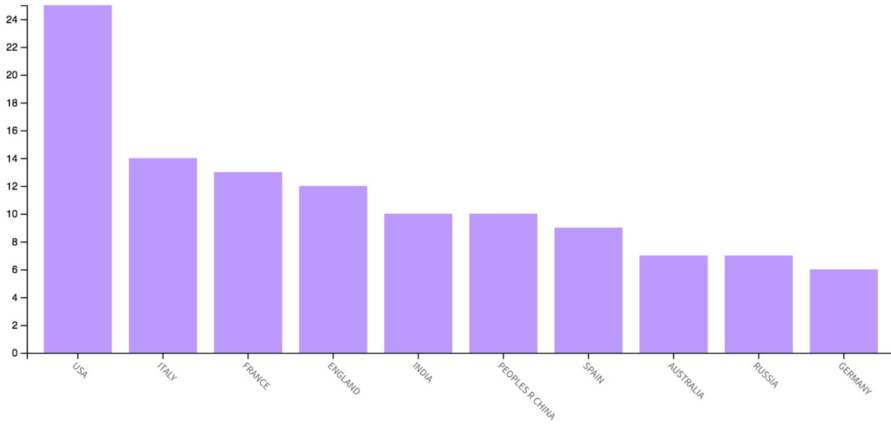

Figure 3. Authors by Number of Publication

Number of Publications by Countries

According to the distribution chart of publications by country (Figure 4), the USA ranks first and Italy ranks second in the ranking of publications with the highest number of publications. This may be due to the importance given to artificial intelligence and big data technologies in these countries and the size of the investments.

Figure 4. Number of Publications by Countries

Co-authorship of Authors

According to the authors' co-authorship analysis, a network map was created by determining at least 1 publication and at least 1 citation criteria to identify the most connected and collaborative authors. According to the analysis made among the authors names with the highest connections, there are 9 names combined in a single cluster and a total of 36 connections. Each of the 9 most connected authors in the cluster has a total of 8-unit connections. It seems that the authors who produced the most works (Neubert & Michael (5), Van der Krogt&Augustinus (3) and Raguseo&Elisabetta (2)) are not the most connected authors. It is observed that the most cited authors (Bryde David J. (266 Citations), Childe & Stephen, J (266 Citations)) are not the most connected authors either.
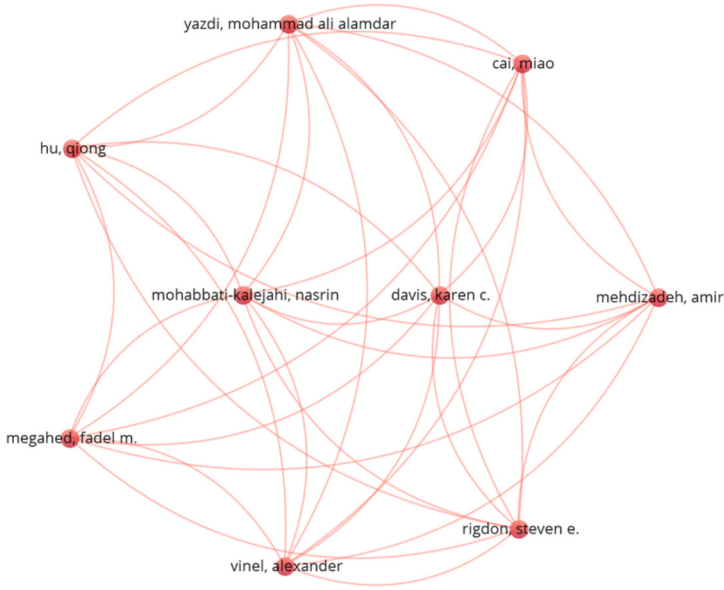
Figure 5. Co-authorship of Authors

Citation of Authors

To identify citation networks, a network map was created for author citation analysis with the criteria of at least 1 publication and at least 1 citation. In the analysis made on 18 units that were seen to be connected to each other, a total of 5 clusters and 29 connections were identified.


Figure 6. Citation of Authors

Co-occurance of Author Keywords

Keyword analysis demonstrate the density of keywords used in 132 studies in the data set and their relationships with each other. Keyword analysis and visualization was conducted by VOSviewer program and is shown in the figure below. As a result of the analysis, it was determined that 169 keywords were used and these words were clustered in 20 different groups,with 602 connections between them. The frequency of use of keywords is as follows; big data, machine learning, artificial intelligence, digital marketing, entrepreneurial marketing and entrepreneurship.
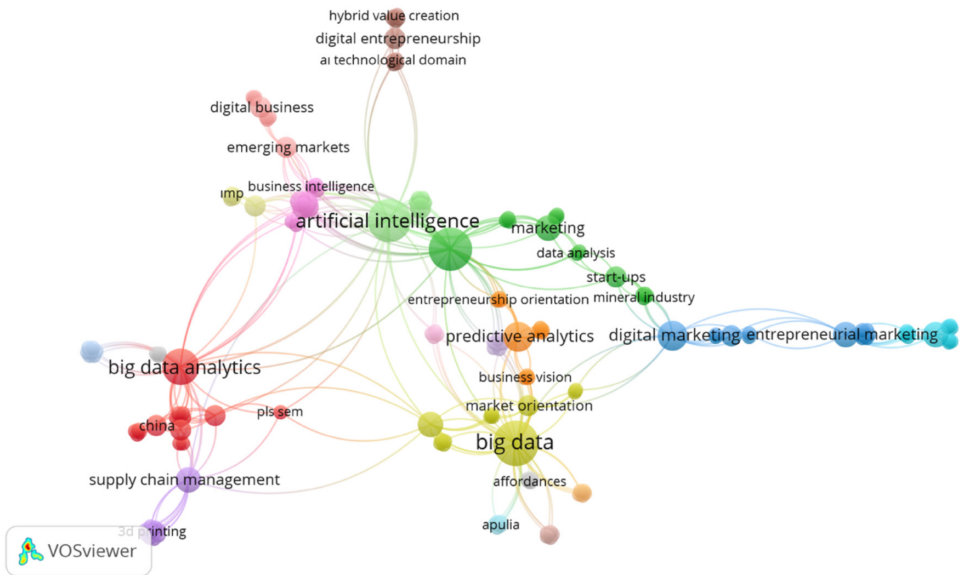
Figure 7. Co-occurance of Author Keywords

In addition, the usage intensity of keywords, which varied over the years, was determined. The network map of the changes in the keywords of the publications in the data set over the years is shown in Figure 8. As a result of this analysis, it was concluded that the words entrepreneurial marketing, digital marketing, deep learning and big data analytics are currently used intensively in 2022 and after.
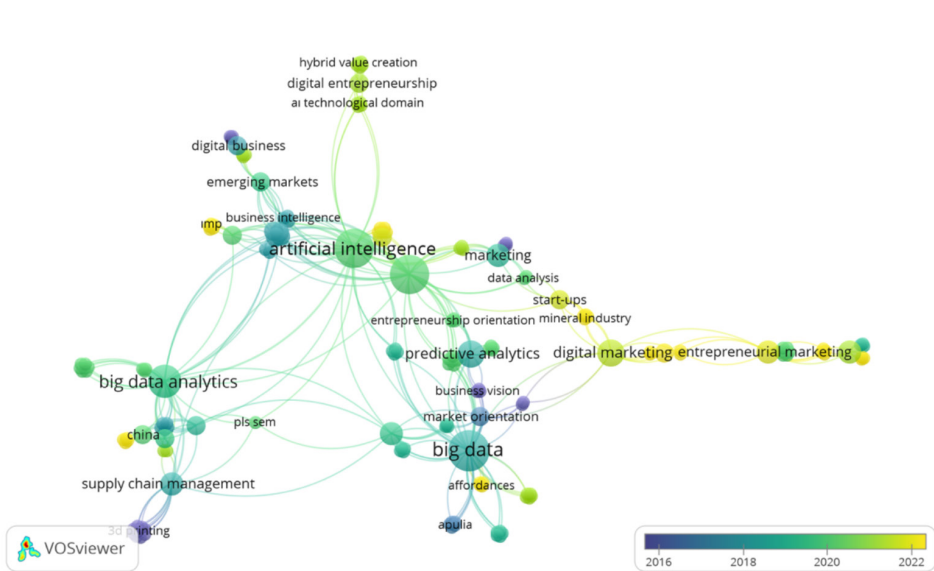
Figure 8. Changes in Keywords Over Time

Discussion

In the context of the conceptual framework and the bibliometric analysis, a conceptual and quantitative picture of the subject has been sought. The use of artificial intelligence in entrepreneurial marketing enables to make quick, data-based decisions, leading to a major transformation in marketing strategies. The customer insights provided by artificial intelligence enable to better understand their target audiences and personalize their marketing messages in this direction. In particular, big data analysis and machine learning algorithms help predict customer behaviour and adapt their strategies accordingly (Grewal, Roggeveen, & Nordfält, 2017).

In addition, AI-supported automation takes over recurring marketing tasks, increasing the efficiency of. This allows marketing teams to focus more on strategic and creative work. For example, artificial intelligence-based chatbots and virtual assistants automate customer service while increasing customer satisfaction while also reducing costs. (Kumar et al., 2019).

Artificial intelligence also offers significant advantages to entrepreneurs in areas such as competition analysis and content optimization. Competition

analysis artificial intelligence tools provide with strategic insights by analyzing competitors' marketing strategies and customer feedback. Content optimization increases the effectiveness of marketing campaigns, thanks to the ability of artificial intelligence to evaluate and improve content performance. (Chaffey & Ellis-Chadwick,2019).

According to the results of bibliometric analysis, the first publication in this area was made in 2004 by Polpinij, who analyzed market segmentation with artificial neural networks using automotive data. The most recent publication was in 2024, and 2022 was the year of the most research in the field, with 25 publications. These data demonstrate the growing importance of YP in entrepreneurial marketing and intensive research activities in this area. The most published authors include Neubert and Michael, Vanderkrogt, A., Potudniak Giertz, and Katarzyna, who have made significant contributions to the field.

In the bibliometric analysis of the use of artificial intelligence in entrepreneurial marketing, research areas were divided into several categories: 43 articles in management, 42 articles in business, 29 articles in computer science and systems, 6 articles in economics, 6 in environmental studies, 6 article in hosting and 5 articles in educational research. This diversity indicates that the impact and application of AI technologies on entrepreneurial marketing requires a multidisciplinary approach. There are several main reasons for this. The first is that the use of artificial intelligence in entrepreneurial marketing requires not only marketing and business knowledge, but also knowledge of computer science, system engineering, and data analysis. This interdisciplinary approach enables more comprehensive and innovative solutions to complex marketing problems. The integration of AI technologies into entrepreneurial marketing strategies in different industries and fields of application shows that these technologies have a wide range of potential applications. For example, in environmental studies and in the housing sectors, the use of artificial intelligence can play a major role in improving sustainability and customer experience. Looking at studies in educational research, it is understood that the use of artificial intelligence in entrepreneurial marketing should be integrated into academic programmes and educational curricula. This will enable the next generation of entrepreneurs and marketers to be equipped with the knowledge and skills they need to use AI technologies effectively. This wide scope in literature indicates the presence of areas that have not yet been explored or sufficiently explored at the intersection

of artificial intelligence and entrepreneurial marketing. This offers new opportunities for researchers and increases the interest in these topics in the academic world.

Conclussion

In conclusion, this study enabled a conceptual framework of the studies on artificial intelligence's application in entrepreneurial marketing strategies, as well as a bibliometric analysis research that provided a quantitative breakdown of the framework.The use of artificial intelligence in entrepreneurial marketing strategies allows businesses to be more flexible, adaptable and effective. AI technologies offer significant benefits in various areas such as customer insights, personalized marketing, predictive analytics, automation, optimized advertising, chatbots and virtual assistants, competitive analysis, and content optimization (Jarek & Mazurek, 2019). Adoption of these technologies allows entrepreneurs to gain competitive advantage by making their marketing strategies more efficient (Rust & Huang, 2022). AI applications should be used responsibly, with attention to data privacy and ethical issues. In the future, it is predicted that entrepreneurial marketing strategies will further evolve and create new opportunities with the development of AI technologies (Paschen, Pitt, & Kietzmann, 2020).

The future of AI in entrepreneurial marketing presents vast opportunities for exploration. Emerging areas such as the role of AI in promoting sustainability and addressing evolving consumer preferences offer promising research avenues. Over the next decade, we anticipate a deeper integration of AI technologies in personalizing consumer experiences, optimizing resource allocation, and enhancing decision-making processes. Future research should investigate how AI can drive ethical practices and long-term value creation in entrepreneurial ventures. Additionally, interdisciplinary studies that explore the intersection of AI with fields like sustainability, behavioral economics, and cultural dynamics could provide valuable insights for both academia and industry. By embracing these forward-looking perspectives, scholars and practitioners can better navigate the transformative potential of AI in entrepreneurial marketing.

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