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The Role of Social Media and Artificial Intelligence (AI) in Enhancing Digital Marketing Resilience During Crises

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Abstract: In an increasingly interconnected world, businesses may face the challenge of managing crises, whether they are economic downturns, natural disasters, or global pandemics. During such times, building strong and sustainable marketing resilience becomes crucial for businesses aiming to survive and thrive. Digital technologies—particularly social media platforms and artificial intelligence (AI)—can play a vital role in enhancing marketing resilience. This research seeks to answer the core question: "How can social media and AI technologies help businesses build marketing resilience during crises"? Drawing from a literature review, this study analyzes a wide range of relevant research. The findings indicate that AI and social media together contribute to enhancing marketing resilience during crises by enabling real-time engagement, data-driven decision-making, and personalized communication. However, these technologies also present challenges, such as privacy concerns, algorithmic bias, and potential risks to brand reputation. This research contributes to the field by analyzing how AI and social media technologies enable companies to remain agile, reduce the impact of crises, and maintain sustainability objectives in their marketing practices.

Keywords: digital marketing; marketing resilience; social media; artificial intelligence (AI); crisis management

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1. Introduction

Digital marketing refers to the promotion and sale of products and services through the internet and other digital communication channels [1]. In today's increasingly volatile business environment, particularly during times of crisis, digital marketing may encounter distinct challenges, despite its reliance on the internet and other digital communication channels for maintaining business continuity and growth. Therefore, effective crisis management is essential to mitigate risks, maintain operational stability, and prepare organizations to respond to such challenges. Crisis management involves a series of interconnected assessments and audits that organizations conduct to prevent crises that pose serious threats to their core products, services, production processes, personnel, environment, and society [2]. In this context, resilience has become a priority for crisis management agencies. The American Psychological Association defines resilience as "the process of adapting to adversities, traumas, tragedies, threats, and intense stressors", highlighting the importance of timely and effective adaptation [3]. Resilience is the capacity to adapt in ways that enable positive or typical development despite evident threats and challenges [4]. Resilience is the ability to overcome adversity and succeed even in high-risk situations [5]. Marketing resilience emerges as a critical component for businesses to navigate crises successfully. Marketing resilience is based on five elements: mindfulness, self-awareness, purpose,

positive relationships, and self-care [6]. These principles contribute to a company's ability to adapt to changing conditions, sustain its operations, and preserve customer trust during turbulent times.

However, traditional marketing approaches may struggle to address the rapidly evolving needs of both consumers and markets during a crisis. In this context, digital technologies—particularly social media platforms and artificial intelligence (AI)—can play a vital role in enhancing marketing resilience. AI-powered digital marketing is revolutionizing how organizations create campaign content, generate leads, lower customer acquisition costs, enhance customer experiences, attract talent, and engage target audiences on social media [7]. AI has the potential to transform industries and address critical societal challenges, including sustainability [8]. Sustainable marketing emphasizes that marketing should be environmentally sustainable, socially equitable, and economically viable [9]. Social media and AI technologies can offer significant advantages to help businesses refine their digital marketing strategies and focus on sustainable goals. This highlights the critical role of these technologies in shaping marketing strategies during crises, leading to the central research question: "How can social media and AI technologies help businesses build marketing resilience during crises"? This article examines the role of social media and AI in crises for enhancing digital marketing resilience.

The following sections are organized to cover the topic comprehensively. The second section details the research methodology. The third section presents the findings. The fourth section provides a discussion, and the final section offers conclusions and recommendations.

2. Materials and Methods

The main objective of this research is to explore how social media and AI technologies can enhance marketing resilience during crises. To achieve this, a literature review was conducted to provide a structured and transparent approach to identifying and analyzing relevant studies. This methodology allowed for a thorough examination of articles related to AI in marketing, social media strategies, and crisis management. A key research question that guided the review was: "How can social media and AI technologies help businesses build marketing resilience during crises"?

To answer this question, the literature review was conducted using various academic databases, such as Google Scholar, Scopus, and Web of Science. Key search terms included "Social Media", "Artificial Intelligence", "Digital Marketing", and "Crisis Resilience". The final results included 14 articles from ScienceDirect, 219 articles from Google Scholar, and no records from Web of Science. The selected articles were evaluated based on their methodological quality, relevance to the research questions, and their contribution to understanding the role of social media and AI in enhancing marketing resilience. In total, 67 articles were identified across these databases. During this process, studies not relevant to the research topic were excluded, and duplicates were removed. To maintain the reliability and quality of the review, only peer-reviewed articles were included. The review targeted articles published between January 2000 and March 2025, focusing on peer-reviewed journal articles and review papers written in English.

The findings were synthesized and presented in this study, offering valuable insights into how AI and social media technologies can assist businesses in navigating crises and strengthening their marketing strategies. The selection process ensured that only the most relevant and high-quality articles were included, allowing for a comprehensive analysis of the relationship between digital technologies and marketing resilience. Figure 1 illustrates the flow diagram outlining this process. It shows the steps of selecting, evaluating, and finalizing the 67 relevant articles for the study.

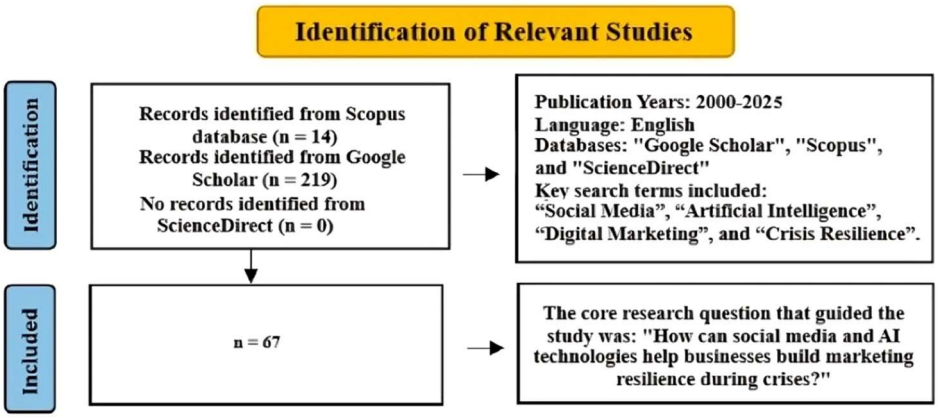


Figure 1. Proposed research model.

3. Findings

3.1. The Impact of Social Media on Marketing Strategies and Its Role During Crisis Periods

With the rise of information manipulation, technological advancements, and the "post-truth" phenomenon driven by the internet, the world has become more complex, rapidly changing, becoming interconnected and uncertain [10]. These interdependencies and uncertainties contribute to and complicate multiple crises, including climate change, pandemics, and socio-economic challenges. For instance, climate change has emerged as a significant global and national issue that directly affects both nature and human life [11]. Similarly, the COVID-19 crisis has proven to be a multidimensional crisis, impacting society not only physically but also psychologically and sociologically, with its effects likely to continue. The potential consequences of these crises for humanity and how they can be effectively addressed remain subjects of ongoing discussion [12].

In today's rapidly evolving business landscape, AI technologies have become pivotal in enhancing operational efficiency and resilience across various industries. Carayannis et al. [13] highlight that AI technologies have significantly impacted various industries, showcasing their potential to enhance operational efficiency and resilience through the following examples: For example, AT&T's use of AI as a service (AIaaS) through H_2O.ai led to an 80% reduction in fraud and USD 7 million in annual savings, enabling the company to enhance fraud detection and optimize routes. Migrato leveraged IBM's Watson NLP to improve data processing for regulatory compliance, enabling the company to develop a solution in just five days and scale its operations for 400 potential government clients. In retail, Tchibo used Google's AI-powered demand forecasting tool to optimize logistics and reduce overstock, strengthening its supply chain resilience and operational efficiency. Finally, Zavarovalnica Triglav employed AIaaS to improve customer service by integrating AI tools across multiple channels, reducing fraud by over 80% and achieving significant savings in predictive maintenance and route optimization. These case studies illustrate the tangible benefits of AI in enhancing organizational resilience and efficiency across various industries.

Social media eliminates geographic and demographic barriers, enabling people to communicate and companies to innovate through collaboration, while customers have increasingly started seeking advice and comments from their social circles—such as friends, family, fans, and followers—rather than from brand communications [14]. Social media platforms also provide marketers with real-time data on consumer behaviors, preferences, and emotions, helping to shape marketing strategies more effectively [15]. In addition to its impact on marketing and communication strategies, social media has also become an essential tool for investors and businesses in assessing real-time data, including ESG

(Environmental, Social, and Governance)-related information, offering authenticity and transparency that traditional media cannot provide [16].

Cultural context significantly impacts the effectiveness of resilience strategies, with different cultures favoring distinct approaches. In a study by Blessin et al. [17], resilience interventions in Western and Eastern cultures were compared. The findings showed that Western countries typically favored individual-focused, low-intensity interventions, while Eastern countries found community-based, high-intensity strategies to be more effective. This highlights the role of cultural context, with collectivist societies emphasizing group-oriented approaches and individualist societies focusing on personal support. Similarly, Raghavan and Sandanapitchai [18] explored cultural predictors of resilience in trauma survivors across multiple cultures, finding that collectivist societies prioritize family and community support, while individualist cultures emphasize personal autonomy. These studies underscore the importance of tailoring resilience strategies to cultural values for greater effectiveness. In the context of brands adopting AI-driven social media strategies during crises, cultural factors similarly influence how brands adjust their approaches to align with either collective or individual needs, depending on the societal values of the target audience. This cultural alignment can significantly impact the success and perception of these strategies during crises.

Akter et al. [19] explores how to manage algorithmic bias in an AI-driven marketing analysis, identifying its three main sources and analyzing their impact on marketing strategies and customer behavior, while emphasizing the need for AI to be used within transparent and ethical frameworks. Saura et al. [20] examine the ethical implications of AI-driven marketing, focusing on the paradox between personalized advertising and privacy concerns. They propose a framework for ensuring ethical data usage and compliance with privacy standards. Their research highlights that while AI can improve marketing effectiveness, it also presents significant privacy risks. They emphasize the need for stricter regulations and more transparent data practices to safeguard consumer rights. Bukar [21] systematically reviews the application of advanced technologies, such as machine learning, big data, and social network analysis, in reshaping social media crisis management and communication, finding that these technologies improve organizations' ability to respond swiftly, disseminate accurate information, and engage effectively with the public, thereby supporting more sustainable and resilient crisis communication strategies. Ofli et al. [22] highlight that social media enables brands to quickly disseminate information and communicate effectively with communities during crises, while AI helps analyze customer data to develop targeted marketing strategies, and these technologies support brands in creating more flexible and sustainable marketing strategies, allowing them to adapt to current situations and become more resilient to future crises.

However, it is important to note that while these frameworks provide valuable guidelines, the practical implementation of these solutions may face challenges that can hinder organizations from fully utilizing these technologies to boost marketing resilience in crises. Zannettou et al. [23] highlight how misinformation, fake news, and hoaxes spread rapidly on social media during crises, complicating crisis communication and damaging brand reputation. The study emphasizes the risks associated with social media, particularly the spread of misinformation, which should be more critically addressed in the context of crisis management. Ferrara [24] investigates the potential for manipulation and abuse on social media platforms during crises, revealing that misinformation, cyberbullying, and unethical practices undermine trust and weaken communication efforts. The study stresses the ethical risks associated with social media and AI technologies in crisis management and calls for further examination of these risks.

For SMEs, resilience involves anticipating disruptions, responding effectively, and ensuring business continuity [25]. Effective resilience for SMEs includes anticipating and preparing for disruptions proactively, as well as having the ability to respond and recover when disruptions occur [13]. Scenario planning helps SMEs prepare for market disruptions, regulatory changes, or emerging technologies by developing narratives around potential future events [26]. AI provides powerful tools that enhance SMEs' resilience by helping identify risks, improve efficiency, and conduct predictive analysis [27]. Integrating AI and strategic foresight to enhance SME resilience offers key theoretical insights into organizational resilience, adaptive strategies, and digital transformation, especially in resource-limited environments [28].

3.2. Leveraging AI for Marketing Resilience During Crisis Periods

Table 1 highlights the AI tools that SMEs with limited budgets can use to enhance their operations through cost-effective solutions [13]. For instance, tools like Google AI and Tableau can be used for demand forecasting and market trend analysis, while ManyChat and Zendesk AI help improve customer engagement. More affordable tools, such as Jasper AI and IBM Watson NLP, are useful for innovation and analyzing consumer behavior. Additionally, AI-driven tools like SAS Visual Analytics 8.5 and Microsoft Azure assist SMEs in detecting anomalies and managing risks, providing early warnings to improve operational efficiency. By utilizing these low-cost AI tools, SMEs can make data-driven decisions and remain competitive in a rapidly evolving market. As seen, these AI tools not only support operational improvements but can also enhance marketing resilience, helping SMEs adapt quickly to market disruptions and navigate uncertain environments. This demonstrates that even with limited resources, SMEs can leverage AI technologies to enhance their resilience and agility in the face of challenges.

Table 1. AI tools in the context of SMEs [13].

AI Tool	Example Tools	Function and Purpose
Predictive Analytics	Google AI, Tableau	Forecasts demand and market changes.
Natural Language Processing (NLP)	IBM Watson NLP, Brandwatch	Detects early shifts in consumer behavior.
Anomaly Detection	SAS Visual Analytics, Azure	Identifies risks and warns of potential issues.
Decision-Support Systems	Power BI, Looker	Provides data insights for forecasting and scenario planning.
Automated Horizon Scanning	Meltwater, NetBase Quid	Tracks emerging risks and regulatory changes.
Generative AI	Jasper AI, OpenAI API	Aids in innovation and future product planning.
Computer Vision	Amazon Rekognition, Google Vision AI	Predicts quality control and inventory needs.
AI-Driven Customer Engagement	ManyChat, Zendesk AI	Forecasts consumer behavior for better strategic decisions.
Fraud Detection Systems	FICO, SAS Fraud Management	Prevents financial fraud and enhances risk planning.

AI technologies like machine learning, predictive analytics, natural language processing, and computer vision provide SMEs with powerful tools for building resilience [29]. Natural language processing (NLP) allows machines to interpret and generate human language, helping SMEs gain insights into customer sentiment and market trends [30]. As demonstrated, AI tools can enhance operational efficiency in the context of marketing resilience, enabling SMEs to adapt to disruptions and navigate uncertain environments.

Table 2 highlights various AI tools that SMEs can use to enhance their operations, even with limited resources. Google AI, for instance, helps SMEs like Tchibo forecast demand and optimize supply chain management, while tools like Brandwatch and IBM Watson NLP enable businesses to track consumer preferences and adapt to market changes. Additionally, tools such as Microsoft Power BI and Tableau offer accessible AI solutions for detecting operational disruptions, without requiring extensive technical expertise. These tools provide cost-effective ways for SMEs to innovate, improve efficiency, and remain competitive. Beyond operational efficiency, the use of AI tools in SMEs can play a key role in building marketing resilience during uncertain times. Just as AI-powered tools help predict market trends and consumer behavior, they enable brands to stay agile and responsive, much like social media helps brands engage with consumers during crises. This illustrates how integrating AI into business strategies supports both short-term adaptability and long-term sustainability, reinforcing the idea that AI-driven tools can enhance resilience in times of crisis.

Table 2. AI tools and their applications in SMEs.

Example/Tool	Application
Google AI (Demand Forecasting)	Helped Tchibo reduce overstock and improve supply chain management [31].
Brandwatch, IBM Watson NLP	Helped SMEs detect evolving consumer preferences and adapt to market changes [32].
AI-based Monitoring Systems	Flagged supplier delays and cost spikes, allowing SMEs to take pre-emptive action ([33]).
Microsoft Power BI, Tableau	Provided easy-to-use tools for SMEs to implement AI-based systems [34].
AI Tools in Food Industry	Helped identify early shifts in consumer dietary preferences, fostering innovation [33].

Huang and Rust [35] state that AI is gaining significant importance in marketing due to advancements in computing power, lower costs, and the availability of big data. They highlight various applications of AI, such as Amazon's Prime Air, which uses drones to automate the shipping and delivery process, and Domino's experimentation with autonomous cars and delivery robots to bring pizza directly to customers' doors. Additionally, RedBalloon leverages Albert's AI marketing platform to discover and engage new customers, while Macy's On Call uses natural language processing to offer an in-store personal assistant to help customers find products. All of these examples highlight AI's potential to enhance efficiency in marketing, improve customer experiences, and optimize business operations. It has been argued that AI will profoundly reshape the future of marketing [36]. This suggests that AI will play a pivotal role in transforming marketing strategies, making them more data-driven, personalized, and efficient in the years to come.

Technologies such as chatbots, virtual influencers, and augmented reality enable brands to build stronger, more meaningful relationships with consumers [37]. These technologies make digital marketing faster, more personal, and more immersive, enhancing customer interactions. AI-powered tools allow brands to communicate with consumers in real-time, providing quick feedback and solutions during crises, which leads to increased customer satisfaction [38]. AI's big data analysis capabilities help brands analyze consumer behaviors in more detail, enabling them to develop more relevant and effective campaigns for their target audiences. AI improves marketing, visual recognition, and job recommendations on platforms like Facebook, Instagram, and LinkedIn, facilitating daily interactions between organizations, digital marketers, and individuals for both social and commercial

purposes [39]. It is evident that AI enables businesses to quickly adapt marketing strategies during crises by analyzing consumer behavior and effectively engaging with their target audience. Shore et al. [40] states that combining Gen AI and entrepreneurial orientation (EO) has a positive and constructive impact on entrepreneurial resilience (ER), and that market turbulence (MT) moderates the relationship between EO and ER. This underscores the importance of AI in strengthening marketing resilience and adapting quickly during times of crisis. Machine learning algorithms and lexicon-based text classification techniques can be applied to analyze diverse social media datasets [41]. Additionally, big data marketing analytics has become a standard method for deriving valuable marketing insights [42]. This highlights the growing reliance on advanced technologies and data-driven approaches to extract meaningful insights from social media, underscoring their crucial role in shaping modern marketing strategies. While AI offers numerous benefits for corporate social networks, its implementation also presents several challenges and risks that must be addressed. The implementation of AI in corporate social networks faces significant challenges, including privacy and data security concerns, algorithmic bias, and lack of transparency, which can undermine user trust and perpetuate discrimination [43]. In this context, addressing these challenges is crucial to ensure the responsible use of AI technologies and promote a safer and more equitable digital environment for both users and institutions.

3.3. The Role of Social Media in Crisis Communication and Brand Strategy

Social media is an essential tool for combining traditional and digital approaches in marketing strategies, enabling brands to form more interactive connections with their audiences. For instance, Facebook allows brands to directly engage with their audience, building meaningful relationships. By encouraging real-time communication and content production, Facebook helps brands establish strong, personalized connections with consumers [44]. This capability enables brands to respond faster during crises and reach consumers effectively. Facebook's vast user base also allows brands to personalize their marketing strategies and gain valuable insights into consumer preferences [45]. Similarly, Twitter's short, quick, and instantaneous communication makes it an effective tool for brands to inform consumers in real-time during crises [46]. Instagram, through visual content, helps shape consumer behavior and serves as an effective interaction tool during crisis periods [47]. YouTube amplifies brand messages through video content, helping brands build stronger connections with consumers [48].

Beck [49] suggests that, given the concerns about government security promises and media exaggerating disasters, managing fear arising from uncertainty will be challenging, and using it intentionally can be dangerous. In this sense, during multiple crises, social media can help brands adapt to rapidly changing conditions while enabling them to manage emotional responses shaped by consumers' fears and uncertainties, thereby fostering stronger relationships. In addition, social media offers a unique opportunity for brands to humanize their responses and connect with consumers on a more personal level. Kaplan and Haenlein [46] argue that the integration of social media into marketing strategies brings about a paradigm shift in consumer engagement. They emphasize that traditional marketing methods are increasingly being complemented by digital channels, creating a more dynamic and interactive approach to connecting with audiences. In terms of consumer behavior, Mangold and Faulds [50] examined how social media integrates with traditional marketing strategies and influences consumer decisions. Their findings indicate that social media acts as a bridge between conventional advertising and consumer-driven content, thus affecting purchasing behaviors.

He et al. [51] emphasize that the systematic analysis of social media data provides valuable insights for shaping marketing strategies. These insights help brands optimize their interactions with target audiences, particularly during crises. Moreover, such data can assist in identifying emerging trends and consumer sentiments that may not be immediately apparent through traditional market research methods. Tuten and Solomon [52] point out that social media significantly contributes to brands by increasing visibility and strengthening customer loyalty through personalized interactions. These interactions help brands build trust and loyalty, particularly during crises. Such personalization fosters deeper emotional connections, making consumers feel heard and understood, which is critical in times of uncertainty. Beck [49] questions the uncertainties around risk management in the modern world, ironically questioning how we can trust conflicting messages such as politicians denying risks and media exaggerating risks for viewership. In light of this, crises require brands to develop more careful and flexible strategies to address both exaggerated risk narratives from the media and the uncertainty and fears of consumers. Kaplan and Haenlein [46] state that social media platforms allow brands to build more meaningful and interactive relationships with consumers. Some advantages that can enhance the role of social media in marketing are presented as examples in Table 3.

Table 3. Advantages of Social Media Marketing for Businesses.

Advantage	Description
Cost Reduction	Social media marketing can be conducted at a lower cost compared to traditional methods, offering businesses the opportunity to run effective campaigns with a limited budget [53,54].
Improved Accessibility	Social media can help businesses reach customer segments that were previously inaccessible, removing temporal and local limitations [53–55].
Unlimited Information	Companies can provide more comprehensive information without human intervention, offering more content than other forms of communication [53,54].
Customizable Interactions	Social media can personalize products and services, enhancing the user experience [54].
Facilitated Transactions	Social media platforms can simplify transactions that require human interaction, such as companies like Dell and Amazon [55].
Social Interaction	Social media can create new forms of social interaction that influence consumer behavior [56].
Interactivity	Users can actively participate by making changes to content [57,58].
Targeted Market	Social media can enable the identification of the right target audience based on personal interests [59,60].
Customer Service	Social media can offer quick responses and multiple delivery options, enhancing customer satisfaction [61].

The opportunities mentioned above highlight the importance of social media in interactive marketing efforts. Social media can lead to profound changes in marketing strategies with its ability to engage directly with consumers, provide instant feedback, and customize interactions. However, during crisis periods, social media can become a powerful tool that helps brands quickly create crisis responses and maintain their reputation. Despite these

opportunities, there are challenges businesses face when integrating social media into their marketing strategies. These challenges are summarized in Table 4.

Table 4. Opportunities offered by social media platforms.

Disadvantage	Description
Time-Consuming	Social media marketing may require a significant time investment to manage interactions and respond to comments [62].
Brand and Copyright Issues	Protecting brand and copyright on social media can be challenging due to potential third-party misuse [63].
Trust, Privacy, and Security Concerns	Social media marketing can raise concerns regarding trust and data security, requiring businesses to comply with privacy policies [64,65].
User-Generated Content (UGC)	Integrating UGC can be beneficial but may carry legal risks, and companies may need to manage the reliability of user-generated content [66].

Table 5 presents examples of social media crises, illustrating how companies like Onur Air and BP faced backlash due to poorly managed social media campaigns and delayed responses to crises.

Table 5. Examples of social media crises [67].

Advantage	Description
Onur Air Social Media Crisis	Onur Air announced that it would donate TRY 0.5 for each new Facebook subscriber in response to the Van earthquake. Social media users criticized the donation for being conditioned on subscribing. The reactions intensified when Onur Air deleted negative comments and abruptly ended the campaign.
BP Mexico Gulf Crisis	A well operated by BP exploded, resulting in a large oil spill. The company responded too late, and the statements made by its executives drew criticism. BP, which accepted responsibility late, attempted to rectify the situation with detailed cleaning reports and live broadcasts.

These examples are important for understanding the role of social media in marketing strategies during multiple crises. The crises featured in these examples demonstrate the impact of social media on crisis management and brand perception. While social media provides brands with the ability to respond quickly and directly to the public during crises, its misuse can lead to negative outcomes. These examples highlight the need for quick responses and careful communication strategies during crisis periods. Social media is not only a critical tool for providing information about a crisis, but also for managing societal perception and rebuilding brand reputation. In this context, the effective use of social media plays a key role in managing crises and reshaping marketing strategies.

4. Discussion

4.1. The Role and Importance of Social Media During Crises

Social media has become an indispensable tool for brands during crises, offering a unique platform for immediate, real-time communication with consumers. During crisis periods, platforms like Facebook, Twitter, Instagram, and YouTube play a crucial role in disseminating information, shaping consumer perceptions, and maintaining brand loyalty. As highlighted by Beck [49], social media allows brands to address consumer fears and uncertainties by providing a direct line of communication, enabling brands to humanize their responses and offer personalized support. This ability to engage with consumers on a deeper, more emotional level is vital during times of crisis. Moreover, the vast reach of social media platforms provides brands with the opportunity to target diverse audiences quickly and cost-effectively, making them a powerful tool for crisis communication [44,45]. In this way, social media helps brands navigate complex situations, manage their reputation, and keep consumers informed, building trust and maintaining consumer relationships during turbulent times.

4.2. Flexible Marketing Strategies and Social Media Contributions

Social media offers brands the flexibility to rapidly adapt their marketing strategies during crises. By allowing real-time interactions, social media platforms enable businesses to quickly alter their messaging based on consumer sentiment and emerging trends. The integration of social media into marketing strategies, as noted by Kaplan and Haenlein [46], represents a paradigm shift from traditional marketing, where consumer-driven content and direct engagement take precedence. For instance, platforms like Twitter allow businesses to update their audience instantly, while Instagram and YouTube provide brands with visually compelling ways to communicate their messages and updates. Additionally, the customizable interactions provided by social media foster stronger emotional connections, as consumers feel more involved and heard during a crisis [52]. By leveraging these dynamic platforms, brands can stay agile and responsive, tailoring their communications to suit the evolving needs of their audience, which is crucial in managing crises effectively.

4.3. Challenges and Barriers: Complexities in Social Media Marketing

Despite its advantages, social media marketing during crises presents several challenges. One of the main issues highlighted by Mangold and Faulds [50] is the potential for brand and copyright issues, as well as the complexity of managing user-generated content (UGC). While UGC can be a valuable asset in promoting authentic brand engagement, it also poses legal risks and requires careful monitoring to ensure reliability. Furthermore, the time-consuming nature of social media management during a crisis is a significant barrier for many brands. As pointed out by Tuten and Solomon [52], effectively managing consumer interactions on multiple platforms requires dedicated resources, which can be a challenge for smaller companies. Additionally, concerns regarding privacy and security on social media platforms, as noted by Beck [49], can undermine consumer trust. Brands must navigate these challenges by implementing robust data security measures and adhering to privacy policies to maintain a positive brand image and consumer confidence.

4.4. Artificial Intelligence and Social Media Marketing: Collaborative Opportunities

The integration of artificial intelligence (AI) with social media marketing provides significant collaborative opportunities for brands during crises. AI tools, such as predictive analytics, natural language processing, and sentiment analysis, enable brands to gain valuable insights into consumer behavior and emotions, allowing them to tailor their responses more effectively. For example, AI-driven sentiment analysis can optimize social

media responsiveness by interpreting and reacting to real-time consumer emotions and feedback. As highlighted in the previous sections, AI-driven platforms, like IBM Watson NLP and Google AI, help businesses predict market trends, detect early shifts in consumer behavior, and optimize customer engagement [13,29]. During a crisis, these AI technologies can enhance the speed and accuracy of responses, providing businesses with the agility needed to manage consumer concerns in real-time. Furthermore, AI can help brands navigate the complexities of social media by identifying emerging trends and allowing for more personalized, data-driven marketing strategies. The combination of AI and social media presents an opportunity for brands to strengthen their resilience and adaptability during challenging periods.

4.5. The Future Potential of Social Media: New Opportunities During Crisis Periods

Looking to the future, social media continues to present new opportunities for brands to innovate and adapt during crises. The ongoing advancement of technologies such as AI, machine learning, and augmented reality will provide brands with even more tools to enhance their marketing strategies. AI, in particular, will play a pivotal role in analyzing big data from social media platforms, enabling brands to craft highly personalized and effective crisis communication strategies [36]. As discussed by Huang and Rust [35], the growing importance of AI in marketing, combined with the power of social media, will likely reshape how brands interact with consumers in the future, making marketing efforts more data-driven and responsive. Additionally, social media platforms will continue to evolve, offering businesses new ways to engage with consumers in real-time, create immersive experiences, and build long-lasting customer loyalty. The future of social media, with its endless potential for innovation, will undoubtedly provide brands with even more robust opportunities to strengthen their marketing strategies during crises and ensure their long-term resilience.

5. Conclusions

This study explored the critical role that social media and artificial intelligence (AI) play in enhancing marketing strategies, particularly during crisis periods. It is clear that social media serves as an essential tool for brands to engage with consumers in real time, allowing them to build meaningful connections and respond quickly to changing circumstances. This interaction is invaluable during crises when uncertainty and fear can heighten, and brands must manage both consumer sentiment and their own reputation effectively.

AI-driven technologies, such as predictive analytics, natural language processing, and machine learning, offer powerful solutions that help companies adapt to market disruptions. These technologies enable brands to analyze consumer behavior, optimize supply chains, and personalize marketing campaigns in a way that improves operational resilience. AI's role in enhancing marketing strategies is becoming increasingly significant, as it provides brands with the ability to forecast trends, detect risks, and improve overall efficiency.

However, despite the benefits, challenges persist in integrating social media and AI into crisis communication strategies. Issues such as misinformation, the ethical use of AI, and the complexities of managing customer data must be addressed to ensure that brands can maintain trust and transparency. In particular, the speed at which social media spreads information requires brands to be agile and responsive, while also managing potential risks, such as algorithmic bias and security concerns.

Looking ahead, the potential for social media and AI to transform marketing strategies during crises remains substantial. These tools provide new opportunities for brands to engage with audiences more deeply, respond to emerging trends, and build stronger, more resilient marketing strategies. Moving forward, brands must continue to evolve and

refine their use of these technologies to stay competitive in an increasingly digital and interconnected world.

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References

1. Deiss, R.; Henneberry, R. *Digital Marketing for Dummies*; John Wiley & Sons: Hoboken, NJ, USA, 2020.
2. Bartl, G.; Hardt, J.N.; Suttner, S.; Linden, M.; Ventura, R.A.; Vogler, A.; Stanley, A.; Herms, K.; Zeigermann, U.; Zimmermann, T.; et al. Rethinking Governance in Times of Multiple Crises. *Vigoni Pap.* **2024**, *5*, 1–37.
3. American Psychological Association (APA). Building Your Resilience. 2012. Available online: https://www.apa.org/topics/resilience (accessed on 18 February 2025).
4. Yates, T.M.F.A.; Tyrell, A.S.M. Resilience theory and the practice of positive psychology from individuals to societies. In *Positive Psychology in Practice: Promoting Human Flourishing in Work, Health, Education, and Everyday Life*; John Wiley & Sons, Inc.: Hoboken, NJ, USA, 2015.
5. Fraser, M.W.; Richman, J.M.; Galinsky, M.J. Risk, protection, and resilience: Toward a conceptual framework for social work practice. *Soc. Work Res.* **1999**, *23*, 131–143. [CrossRef]
6. Kumar, A.; Gawande, A.; Brar, V. Features of marketing resilience. *Vidyabharati Int. Interdiscip. Res. J.* **2020**, *11*, 250–253.
7. Van Esch, P.; Stewart Black, J. Artificial intelligence (AI): Revolutionizing digital marketing. *Australas. Mark. J.* **2021**, *29*, 199–203. [CrossRef]
8. Nishant, R.; Kennedy, M.; Corbett, J. Artificial intelligence for sustainability: Challenges, opportunities, and a research agenda. *Int. J. Inf. Manag.* **2020**, *53*, 102104. [CrossRef]
9. Martin, D.M.; Schouten, J.W. Consumption-driven market emergence. *J. Consum. Res.* **2014**, *40*, 855–870. [CrossRef]
10. Montuori, A. Crisis of the future. In *The Palgrave Encyclopedia of the Possible*; Glăveanu, V.P., Ed.; Springer International Publishing: Berlin/Heidelberg, Germany, 2022; pp. 325–333. [CrossRef]
11. Intergovernmental Panel on Climate Change (IPCC). *Climate Change 2022—Impacts, Adaptation and Vulnerability: Working Group II Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, 1st ed.; Cambridge University Press: Cambridge, UK, 2023. [CrossRef]
12. Montuori, A. Planetary culture and the crisis of the future. *World Futures* **1999**, *54*, 297–311. [CrossRef]
13. Carayannis, E.G.; Dumitrescu, R.; Falkowski, T.; Papamichail, G.; Zota, N.R. Enhancing SME Resilience through Artificial Intelligence and Strategic Foresight: A Framework for Sustainable Competitiveness. *Technol. Soc.* **2025**, *81*, 102835. [CrossRef]
14. Kotler, P.; Hermawan, K.; Iwan, S. *Marketing 4.0: Moving from Traditional to Digital*; Wiley: Hoboken, NJ, USA, 2017; p. 45.
15. Luo, Z.; Guo, J.; Benitez, J.; Scaringella, L.; Lin, J. How do organizations leverage social media to enhance marketing performance? Unveiling the power of social CRM capability and guanxi. *Decis. Support Syst.* **2024**, *178*, 114123. [CrossRef]
16. Nicolas, M.L.; Desroziers, A.; Caccioli, F.; Aste, T. ESG reputation risk matters: An event study based on social media data. *Financ. Res. Lett.* **2024**, *59*, 104712. [CrossRef]
17. Blessin, M.; Lehmann, S.; Kunzler, A.M.; van Dick, R.; Lieb, K. Resilience interventions conducted in western and eastern countries—A systematic review. *Int. J. Environ. Res. Public Health* **2022**, *19*, 6913. [CrossRef] [PubMed]
18. Raghavan, S.S.; Sandanapitchai, P. Cultural predictors of resilience in a multinational sample of trauma survivors. *Front. Psychol.* **2019**, *10*, 131.
19. Akter, S.; Sultana, S.; Mariani, M.; Wamba, S.F.; Spanaki, K.; Dwivedi, Y.K. Advancing algorithmic bias management capabilities in AI-driven marketing analytics research. *Ind. Mark. Manag.* **2023**, *114*, 243–261.
20. Saura, J.R.; Škare, V.; Dosen, D.O. Is AI-based digital marketing ethical? Assessing a new data privacy paradox. *J. Innov. Knowl.* **2024**, *9*, 100597.

21. Bukar, U.A.; Sidi, F.; Jabar, M.A.; Nor, R.N.H.; Abdullah, S.; Ishak, I.; Alkhalifah, A. How advanced technological approaches are reshaping sustainable social media crisis management and communication: A systematic review. *Sustainability* **2022**, *14*, 5854. [CrossRef]
22. Ofli, F.; Imran, M.; Alam, F. Using artificial intelligence and social media for disaster response and management: An overview. In *AI and Robotics in Disaster Studies*; Palgrave Macmillan: Singapore, 2020; pp. 63–81.
23. Zannettou, S.; Sirivianos, M.; Blackburn, J.; Kourtellis, N. The web of false information: Rumors, fake news, hoaxes, clickbait, and various other shenanigans. *J. Data Inf. Qual.* **2019**, *11*, 1–37.
24. Ferrara, E. Manipulation and abuse on social media" by Emilio Ferrara with Ching-man Au Yeung as coordinator. *ACM SIGWEB Newsl.* **2015**, *2015*, 1–9.
25. Zhou, H.; Chamba, L.T.; Zondo, R.W. Application of explainable artificial intelligence technique to model the predictors of South African SMMEs resilient performance during the COVID-19 pandemic. *Int. J. Res. Bus. Soc. Sci.* **2024**, *13*, 64–74.
26. Fergnani, A.; Hines, A.; Lanteri, A.; Esposito, M. Corporate foresight in an ever-turbulent era. *Eur. Bus. Rev.* **2020**, *25*, 26–33.
27. Sotamaa, T.; Reiman, A.; Kauppila, O. Manufacturing SME risk management in the era of digitalisation and artificial intelligence: A systematic literature review. *Contin. Resil. Rev.* 2024, *ahead-of-print*. [CrossRef]
28. Hızarcı, A.K.; Tarier, A.; Özgen, Ö.; Gümüş, G.K. Understanding the role of artificial intelligence in the context of SMEs. *Uluslararası Anadolu Sos. Bilim. Derg.* **2024**, *8*, 970–995. [CrossRef]
29. Belk, R.W.; Belanche, D.; Flavián, C. Key concepts in artificial intelligence and technologies 4.0 in services. *Serv. Bus.* **2023**, *17*, 1–9. [CrossRef]
30. Bahja, M. Natural language processing applications in business. In *E-Business—Higher Education and Intelligence Applications*; Wu, R.M.X., Mircea, M., Eds.; IntechOpen: London, UK, 2020. [CrossRef]
31. Punia, S.; Shankar, S. Predictive analytics for demand forecasting: A deep learning-based decision support system. *Knowl.-Based Syst.* **2022**, *258*, 109956. [CrossRef]
32. Joseph, T. Natural Language Processing (NLP) for Sentiment Analysis in Social Media. *Int. J. Comput. Eng.* **2024**, *6*, 35–48. [CrossRef]
33. Tambouratzis, G.; Cortês, M.; Liddle, A.R. AI Horizon Scanning--White Paper p3395, IEEE-SA. Part III: Technology Watch: A selection of key developments, emerging technologies, and industry trends in Artificial Intelligence. *arXiv* **2024**, arXiv:2411.03449.
34. Alabi, M.; Ang, A.W. AI-Driven Financial Risk Management: Detecting Anomalies and Predicting Market Trends. ResearchGate. 2024. Available online: https://www.researchgate.net/publication/383276974 (accessed on 18 February 2025).
35. Huang, P.; Lurie, N.H.; Mitra, S. Searching for experience on the web: An empirical examination of consumer behavior for search and experience goods. *J. Mark.* **2009**, *73*, 55–69. [CrossRef]
36. Davenport, T.; Guha, A.; Grewal, D.; Bressgott, T. How artificial intelligence will change the future of marketing. *J. Acad. Mark. Sci.* **2020**, *48*, 24–42. [CrossRef]
37. Omeish, F.; Al Khasawneh, M.; Khair, N. Investigating the impact of AI on improving customer experience through social media marketing: An analysis of Jordanian Millennials. *Comput. Hum. Behav. Rep.* **2024**, *15*, 100464. [CrossRef]
38. Chen, S.C.; Lin, C.P. Understanding the effect of social media marketing activities: The mediation of social identification, perceived value, and satisfaction. *Technol. Forecast. Soc. Chang.* **2019**, *140*, 22–32. [CrossRef]
39. Al-Ghamdi, L.M. Towards adopting AI techniques for monitoring social media activities. *Sustain. Eng. Innov.* **2021**, *3*, 15–22. [CrossRef]
40. Shore, A.; Tiwari, M.; Tandon, P.; Foropon, C. Building entrepreneurial resilience during crisis using generative AI: An empirical study on SMEs. *Technovation* **2024**, *135*, 103063. [CrossRef]
41. Hartmann, J.; Huppertz, J.; Schamp, C.; Heitmann, M. Comparing automated text classification methods. *Int. J. Res. Mark.* **2019**, *36*, 20–38. [CrossRef]
42. Berger, J.; Humphreys, A.; Ludwig, S.; Moe, W.W.; Netzer, O.; Schweidel, D.A. Uniting the tribes: Using text for marketing insight. *J. Mark.* **2020**, *84*, 1–25.
43. Maldonado-Canca, L.A.; Casado-Molina, A.M.; Cabrera-Sánchez, J.P.; Bermúdez-González, G. Beyond the post: An SLR of enterprise artificial intelligence in social media. *Soc. Netw. Anal. Min.* **2024**, *14*, 219.
44. Brodie, R.J.; Ilic, A.; Juric, B.; Hollebeek, L. Consumer engagement in a virtual brand community: An exploratory analysis. *J. Bus. Res.* **2013**, *66*, 105–114.
45. Casteleyn, J.; Mottart, A.; Rutten, K. How to use data from Facebook in your market research. *Int. J. Mark. Res.* **2009**, *51*, 439–447.
46. Kaplan, A.M.; Haenlein, M. Users of the world, unite! The challenges and opportunities of social media. *Bus. Horiz.* **2010**, *53*, 59–68.
47. Koay, K.Y.; Teoh, C.W.; Soh, P.C.H. Instagram influencer marketing: Perceived social media marketing activities and online impulse buying. *First Monday* **2021**, *26*, 11598. [CrossRef]
48. Agnew, J.; Sindhav, B. An e-commerce business model of peer-to-peer interactions among consumers. *J. Cases Inf. Technol. (JCIT)* **2009**, *11*, 12–21.

49. Beck, U. Living in the world risk society: A Hobhouse Memorial Public Lecture given on Wednesday 15 February 2006 at the London School of Economics. *Econ. Soc.* **2006**, *35*, 329–345.
50. Mangold, W.G.; Faulds, D.J. Social media: The new hybrid element of the promotion mix. *Bus. Horiz.* **2009**, *52*, 357–365. [CrossRef]
51. He, W.; Zha, S.; Li, L. Social media competitive analysis and text mining: A case study in the pizza industry. *Int. J. Inf. Manag.* **2013**, *33*, 464–472. [CrossRef]
52. Tuten, T.; Solomon, M.; Ladik, D. The teaching of social media marketing. In *Marketing Dynamism & Sustainability: Things Change, Things Stay the Same, Proceedings of the 2012 Academy of Marketing Science (AMS) Annual Conference, Monterey, CA, USA, 14–18 May 2012*; Springer International Publishing: Berlin/Heidelberg, Germany, 2015; p. 475.
53. Watson, R.T.; Pitt, L.F.; Berthon, P.; Zinkhan, G.M. U-commerce: Expanding the universe of marketing. *J. Acad. Mark. Sci.* **2002**, *30*, 333–347. [CrossRef]
54. Sheth, J.N.; Sharma, A. International e-marketing: Opportunities and issues. *Int. Mark. Rev.* **2005**, *22*, 611–622. [CrossRef]
55. Kohli, G.S.; Melewar, T.C.; Yen, D. Investigating the strategic marketing significance of brand love in developing and nurturing consumer-brand relationships via film branding: A brandscape perspective. *Mark. Rev.* **2014**, *14*, 382–404. [CrossRef]
56. Riegner, C. Word of mouth on the web: The impact of Web 2.0 on consumer purchase decisions. *J. Advert. Res.* **2007**, *47*, 436–447. [CrossRef]
57. Steuer, J. Defining virtual reality: Dimensions determining telepresence. *Commun. Age Virtual Real./Lawrence Erlbaum Assoc.* **1995**, *33*, 1. [CrossRef]
58. Fiore, A.M.; Kim, J.; Lee, H.H. Effect of image interactivity technology on consumer responses toward the online retailer. *J. Interact. Mark.* **2005**, *19*, 38–53. [CrossRef]
59. Hill, R.P.; Moran, N. Social marketing meets interactive media: Lessons for the advertising community. *Int. J. Advert.* **2011**, *30*, 815–838. [CrossRef]
60. Montgomery, A.L. Applying quantitative marketing techniques to the internet. *Interfaces* **2001**, *31*, 90–108. [CrossRef]
61. Helmsley, S. Keeping Custom. *Mark. Week* **2000**, *23*, 39–42.
62. Barefoot, D.; Szabo, J. *Friends with Benefits: A Social Media Marketing Handbook*; No Starch Press: San Francisco, CA, USA, 2009.
63. Steinman, M.L.; Hawkins, M. When marketing through social media, legal risks can go viral. *Intellect. Prop. Technol. Law J.* **2010**, *22*, 1.
64. Hoffmann, T. The meanings of competency. *J. Eur. Ind. Train.* **1999**, *23*, 275–286.
65. Ratnasingham, P. Internet-based EDI trust and security. *Inf. Manag. Comput. Secur.* **1998**, *6*, 33–39.
66. Mendes-Filho, L.; Tan, F.B. User-Generated Content and Consumer Empowerment in the Travel Industry: A Uses & Gratifications and Dual-Process Conceptualization. PACIS 2009 Proceedings, 28. Available online: https://aisel.aisnet.org/pacis2009/28 (accessed on 18 February 2025).
67. Civelek, M.E.; Çemberci, M.; Eralp, N.E. The role of social media in crisis communication and crisis management. *Int. J. Res. Bus. Soc. Sci.* **2016**, *5*, 111–120. [CrossRef]

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