AI Chatbot as Prompt Generator: A Solution for Digital Marketing Campaign Productivity

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Abstract

In this case, this research discusses the impact analysis of using artificial intelligence (AI)-based chatbots to automatically generate digital marketing prompts to increase productivity.. The interesting results of the study revealed through qualitative methods are that, besides tremendously speeding up the content creation process, chatbots attract a much larger audience. As AI understands the natural language and is processed, the chatbots can help with generating relevant and content ideas in compliance with user needs. This is an alarming discovery that emphasizes how required AI is as a part of modern marketing strategies as personalization and efficiency are essential for a successful marketing campaign and part of the marketing technology stack. The paper further discusses potential challenges like data privacy and algorithmic bias that should be taken into account when using AI. So the created chatbot system will be a sustainable solution.

Keywords: AI Chatbot, Prompt Generator, Digital Marketing, Productivity, Engagement.

1. Introduction

The development of information and communication technology has reached its peak in the last few decades. There is a chance that AI chatbots can provide in-depth responses beyond human capacity (Balcombe, 2023). With the advancement of technology, various aspects of human life have been affected, such as business, communication, and social interaction (Kaperonis, 2023). One very prominent example is the use of chatbots in various applications, especially in the context of social media marketing (Adamopoulou et al, 2020).

There is a use of AI chatbots to bring significant progress to various areas of life and human interaction (Adamopoulou et al, 2020) especially in places where human interaction is not preferred or not possible (Haque et al, 2023). AI chatbots can provide customer service and support, health and mental health support, learning and e-learning, productivity and individual encouragement, translation, and language communication, and social companionship and entertainment (Denecke, 2021, Rizvi, 2023). Indicated as conversational agents or Generative AI, they are the result of advances over the last 15 years in robotics, ML, AI models, and NLP. Since the release of ChatGPT in November 2022, AI Chatbots have begun to spread widely (Bryant, 2023).

Artificial intelligence is one of the key driving forces shaping the marketing landscape in the digital age. AI enables large-scale customization and allows industries to process market information quickly to make better marketing decisions. Capable of digesting big data, with its analytical skills, AI paves the way for more innovative marketing strategies to be more responsive to rapidly changing market dynamics (Kumar et al, 2021).

Marketing in today's information technology era faces unique challenges. Consumers who are increasingly digitally connected demand more personalized and relevant experiences. This is where AI plays a significant role by enabling industries to deliver tailored messages to the right audience in real time. AI technologies such as search engines and natural language processing have revolutionized the way industries engage with their customers, enabling more dynamic, two-way communication that focuses on customer needs (Tong et al, 2020).

AI applications are very prominent in marketing in market segmentation and personalization. AI helps the industry recognize customer behavior patterns and unique preferences, making it easier for marketers to design more focused and structured campaigns (Apriani et al, 2024). Machine Learning algorithms can analyze historical information about online purchases and interactions to determine which products or services are likely to attract the attention of certain customers (Teixeira et al., 2021). This approach increases customer

satisfaction and marketing productivity and eliminates waste of energy on further or less relevant campaigns (Miao et al., 2022).

Not only that, AI also increases the productivity of marketing campaigns in real time. AI algorithms can continuously monitor campaign performance over time and adjust themselves to increase efficiency independently. For example, AI can decide the allocation of advertising budgets on various media platforms based on their performance or the type of profit obtained based on direct input from customers (X. Chen et al., 2021). In this case, AI makes decision-making faster and more accurate.

The growth of technology in marketing also raises ethical issues. For example, the use of AI on AI customer information means that personal data security is an ongoing issue. The industry must sort out one branch from another: whether to use information to improve consumer experience and their lifestyle or to protect buyer confidence and protect their personal data (Dubey et al, 2020). In this case, a good balance is needed, especially in Europe and other regions, this is regulated in laws and regulations such as GDPR (Young & Jin, 2021).

Not only that, there are also issues about accuracy and bias in Machine Learning. If the information is biased or incomplete, the decisions made by AI can be unfair or irrelevant. That is why the industry must regularly check and evaluate their AI models to ensure that the AI models are working as they should. Not only that, this feature requires the industry to make investments when they need energy resources and expertise. The AI system included in marketing surgery requires a total cost of purchasing hardware and software and training costs and procurement of human resources (Huang & Rust, 2021). This feature can make small and medium industries unable to access the feature due to resource issues.

The purpose of this study is to analyze the impact of using AI chatbots as prompt generators in increasing the productivity of digital marketing campaigns. This study is expected to be able to answer the need for optimal and personalized marketing strategies by utilizing AI chatbot technology. In addition to increasing productivity, this can also answer the research gap related to the use of AI that specifically focuses on optimizing prompts in social media campaigns. Through the findings of this study, it is hoped that AI chatbots can be recognized as a practical solution that supports the smoothness and success of digital marketing that is relevant to current market demands.

2. Methods

2.1 Research Design

Qualitative research produces findings that cannot be achieved through statistical or other quantification techniques. Straus and Corbin (2008) explain that qualitative research can be used to investigate history, behavior, community life, organizational function, social movements, kinship relationships, or organizational function. Creswell (1998) said that a qualitative approach is a method of research and understanding based on a methodology that studies social problems and phenomena.

This method involves conducting research in natural conditions, creating complex images, examining vocabulary, and making comprehensive reports on respondents' perspectives. According to Bogdan and Taylor (Moleong, 2007), qualitative methodology is a research method that produces descriptive data on the behavior and written and spoken words of research subjects. Qualitative research is conducted in a natural environment. Researchers are an important tool in qualitative research.

The following is the research design described in this study:

A. Introduction:

This section covers the background, problems, and objectives of the study. This study aims to analyze the impact of using AI-based chatbots as prompt generators in increasing the productivity of digital marketing campaigns.

B. Research Design):

This study uses a qualitative approach. This method is used to investigate social phenomena through observation. The qualitative approach was chosen for an in-depth analysis of the effectiveness of AI chatbots, because it focuses on the behavior and perception of the subject, in accordance with the techniques of Straus and Corbin and Creswell's research.

C. Data Collection Methods):

Data was collected through an extensive literature review of academic sources, industry publications, and case studies related to AI in marketing. This aims to understand the concepts, trends, and gaps in AI research related to marketing.

D. Data Analysis Techniques:

The data was analyzed using thematic analysis. The main objective was to identify patterns, themes, and insights related to the integration of AI in marketing strategies, as well as its challenges and opportunities. Through thematic analysis, the data was analyzed to identify patterns, themes, and insights related to the impact of AI in marketing strategies. This included analyzing AI components such as NLP, machine learning, and tokenization to understand the chatbot's ability to understand and generate prompts.

E. Results and Discussion

This section focuses on several key points:

- Role of AI in Digital Marketing
- NLP and ML Technology in Chatbot
- Implementation of Chatbots in Digital Marketing
- Digital Marketing Explained

F. Conclusion

Summarizing the positive impact of AI-based chatbots on marketing productivity. The final output is expected to outline the contribution of AI to the productivity of digital marketing campaigns by providing innovative and responsive solutions as per the demands of today's digital market.

2.2 Data Collection Methods

Literature Review: The initial phase of data collection involved an extensive review of academic literature, industry publications, and case studies related to AI in marketing. This comprehensive review established a theoretical foundation, allowing for the identification of key concepts, trends, and gaps in existing knowledge.

2.3 Data Analysis Techniques

Qualitative data collected from the literature review will undergo thematic analysis. This involves identifying recurring themes, patterns, and insights related to the impact of AI on marketing strategies. Qualitative analysis will provide a rich and nuanced understanding of the challenges, opportunities, and best practices in integrating AI in the marketing domain.

3. Results and Discussion

3.1 Artificial Intelligence

Artificial Intelligence, also known as AI, is a field of computer science that studies systems and algorithms to complete tasks that normally require human intelligence. Machines or computers can process data, make decisions, and solve problems with AI that uses reasoning, experimentation, and pattern recognition (Russell & Norvig, 2021). In this case, chatbots are primarily driven by AI.

Chatbots can get automated content ideas for marketing with the help of artificial intelligence technology. Here, the main role of AI is natural language processing (NLP) and machine learning (ML). NLP allows chatbots to understand the meaningful framework of the text entered by users. In contrast, ML allows chatbots to become "fixed" intelligent over time, especially in terms of the content patterns preferred by users and how relevant the selected content is. Over time, chatbots become more intelligent and accurate (Goodfellow et al., 2016).

3.2 Natural Language Programming (NLP)

One of the subfields of artificial intelligence is Natural Language Programming. This field investigates the potential and limitations of computing capabilities to understand natural human language. Natural language processing (NLP) processes allow computers to interpret, disassemble, and even reproduce text using human input. According to Jurafsky & Martin (2020), computers can gain a better understanding of human text through a number of natural language processing (NLP) techniques, including tokenization, syntactic parsing, sentiment analysis, NLP task dimensions, and semantic modeling. Tokenization is the simplest, but important, NLP process, where sentences are divided into small parts such as words or phrases. Syntactic analysis is a part of the NLP process that aims to understand grammar, which allows computers to understand the position of words in a sentence and depends on the order of the words. Sentiment analysis allows the system to identify the emotions or reactions of users.

This technology is essential for businesses. For example, chatbots need prompts to make them seem more friendly, professional, or personal. This tool can change thoughts and understand feelings (Manning et al., 2008). Chatbot capabilities have been enhanced by contemporary NLP models such as Transformers, such as BERT and GPT. These models can create more relevant responses by considering the broader context of the sentence using a mechanical attention-based approach. This method is used to provide users with a variety of choices for automated prompts. Chatbots that use NLP can also interact more naturally and responsively. The system can provide more accurate content suggestions by learning word usage patterns using data from previous interactions. This makes chatbots easier to understand and more similar to human interactions.

3.3 Machine Learning (ML)

Machine Learning (ML) is a branch of artificial intelligence that allows computers to make predictions and decisions without explicit programming and learn from data. ML systems are trained to recognize patterns and make decisions using historical datasets (Goodfellow et al., 2016). ML is used in this project to improve the chatbot's ability to create relevant and successful prompts.

There are three types of learning in ML: supervised learning, unsupervised learning, and reinforcement learning. In this chatbot, supervised learning is used to train the model using labeled prompt and response data. This method allows the chatbot to learn the pattern of prompts that are most appropriate to use in a given situation. ML can also learn user preferences by analyzing historical data. Previous interaction data, such as the most frequently used prompts or those with high engagement rates, is used to update and customize the chatbot's responses. This allows the chatbot to provide suggestions that are more relevant to the user.

Then, unsupervised learning tries to help chatbots by letting them identify new patterns of interaction with users without directly supervising them. For example, the system can identify new content categories or trends based on frequently viewed input. In this way, the chatbot can deliver content ideas while following social media trends. Finally, chatbots can evolve through experience with reinforcement learning. In this case, the system learns from user feedback and gradually improves the quality of prompts. For example, the chatbot will tell the user a certain type of command in the future.

3.4 Natural Language Programming (NLP) in Chatbots

Natural language processing (NLP) is a branch of artificial intelligence, where computers can "understand" and "create" human language. Understanding user intent and responding appropriately with text input is an important part of NLP practice in conversations with chatbots. This technology uses tokenization, sentiment analysis, and automatic text to interact with users. (Jurafsky & Martin, 2020). As mentioned by Ding, Dong, and Grewal (2024), Generative AI offers solutions to problems such as content creation, data processing, and simulation. It also has practical applications for social media marketing, which will help companies become more productive. In addition, it is possible to apply natural language processing processes in chatbots to make user understanding easy and contextual, even if the user provides ambiguous or complex text input. Chatbots can generate more personalized and contextual responses by dividing sentences into smaller parts (tokenization) and analyzing user sentiment (sentiment analysis). In addition, chatbots can provide additional value by providing content ideas and creative suggestions instantly (Manning et al., 2008).

NLP also allows chatbots to adapt to changes in user language styles and preferences over time. In social media marketing, natural language (NLP) helps marketers make quick recommendations that are in line with trends and target audiences. Therefore, natural language is an essential component in creating intelligent and responsive chatbots to increase social media marketing productivity (Goodfellow et al., 2016).

3.4.1 Tokenization

Tokenization is the process of breaking down text or sentences into smaller parts such as words or phrases. This process is the first step in natural language processing because it makes it easier for computers to understand the sentence structure and meaning of each part of the text entered. Chatbots can identify relevant keywords by dividing sentences into tokens (Jurafsky & Martin, 2020). Word and phrase tokenization are two different types of tokenization. Word-level tokenization breaks text into individual words, while phrase-level tokenization breaks paragraphs into sentences. Word-level tokenization is especially useful for chatbots because it allows the system to find words like "promo" or "discount", which are very important for the marketing industry (Manning et al., 2008).

When the system has to break down text containing contractions or compound words, tokenization becomes difficult. For example, in English, the word "bisa" must be broken down into "bisa" and "tidak bisa", and in Indonesian, the word "pelanggan setia" must be interpreted simultaneously. Therefore, an algorithm that can accurately identify the context of words is needed (Manning et al., 2008).

In addition, some languages such as Mandarin or Japanese do not have clear word separators such as spaces. For these languages, tokenization becomes more complicated and requires special techniques such as character separation models or machine learning-based segmentation models (Goodfellow et al., 2016). In chatbot development, popular NLP libraries such as NLTK or SpaCy provide tools to perform tokenization automatically. This technology also allows developers to customize tokenization based on specific contexts. For example, a chatbot can be set to recognize specific terms in the marketing industry such as “brand awareness” as a single meaningful token (Jurafsky & Martin, 2020). By using proper tokenization, the chatbot can identify relevant keywords to generate responses or prompt recommendations that are appropriate to the marketing context. This helps speed up the content creation process and ensures the relevance of the generated prompts.

3.4.2 Sentiment Analysis

Sentiment analysis is the analysis of emotions or opinions found in user texts known as emotion analysis. This is very important for chatbots to adjust their responses to the user's feelings. Chatbots can use emotion analysis

to act more empathetically, such as offering support when the user is frustrated or suggesting promotions in a cheerful tone when the user is excited (Manning et al., 2008).

In the process of emotion analysis, an emotion dictionary or Machine Learning algorithm is used to categorize text into categories such as positive, negative, or neutral. In marketing, sentiment analysis can help chatbots understand user requests and provide appropriate commands. Chatbots, for example, can respond to bad user comments by providing solutions or promotions (Jurafsky & Martin, 2020).

In addition, sentiment analysis helps marketers understand how audiences react to certain content. By looking at the emotional reactions of the audience, marketers can change their content strategy on social media to be more relevant. Chatbots that understand the emotions of the target audience can provide appropriate content suggestions.

3.4.3 Text Generation

Text generation is an automated process for creating text or content recommendations based on user input. This technology allows chatbot systems to create innovative commands that are tailored to the user's situation and desires. Chatbots can help marketers generate unique content ideas with text generation (Goodfellow et al., 2016).

To generate coherent and relevant texts, deep learning models such as GPT or BERT are used, which are trained on large datasets. Chatbots can understand user input well thanks to this technology. For example, a chatbot can offer quick choices about holiday themes and discounts if a customer asks for ideas for end-of year promotional content (Radford et al., 2019).

Ensuring that the generated content is consistent and relevant is a challenge in text generation. It is possible that an AI model can generate text that is grammatically correct but not relevant to the context. Therefore, chatbot text generation systems usually have filters and quality control algorithms to ensure that the generated text is of high quality.

In addition, text creation can be customized to a specific language style to better match the company's brand identity. For example, chatbots can be configured to speak in a more formal or informal manner according to marketing needs (Radford et al., 2019). The ability to generate text is very useful for increasing the productivity and creativity of marketing teams. Chatbots allow marketers to focus on strategy and implementation without thinking about content from scratch by offering a variety of automated prompt options.

3.5 Social Media Marketing

Social Media Marketing involves the strategic use of social media platforms to promote goods and services, connect with audiences, and increase brand awareness. This strategy has transformed traditional marketing methods from one-way communication to interactive interactions, allowing businesses to interact with customers directly and increase customer loyalty to the brand (Hewett et al, 2016).

Word of mouth and user-generated content can be achieved very well through social media marketing. In terms of highlighting customers or asking for customer results, organizational flexibility increases due to the speed of these platforms and their ease of use (Labrecque et al., 2013). Marketers can also gather insights from customers in real-time through social media analytics, which is crucial for creating strategies and serving targeted campaigns (Moe & Schweidel, 2017). Different types of social media, such as Instagram, TikTok, and Facebook, are a new horizon for communication between companies and users. Advertising campaigns of these brands can be tailored to different demographics. These platforms allow for customer support and promotional communications, which allows for relationship building (Hajli et al., 2017). Social media marketing has become essential in crisis management due to the speed of communication today. It allows businesses to monitor brand image, mitigate risks, and manage interactions with the public. According to (Borah et al., 2020)

Businesses must continually change their social marketing strategies to stay relevant and maintain customer engagement as online behavior changes rapidly. Chatbots and other types of automation tools have the ability to handle basic questions and distribute content, indicating that the integration of these automation tools is highly beneficial (Timoshenko & Hauser, 2019). AI has already had a major impact on the marketing process and will continue to increase in the future. AI can replace many manual tasks performed by marketers, and the use of machines working in conjunction with humans is essential for better marketing results. The main challenge to AI adoption is human trust in the technology and readiness for cultural change. Chatbots that follow social media trends and generate relevant content will fit into the best practices in modern Social Media Marketing(Ribeiro & José Luis Reis, 2020).

Table 1. Marketing Evolution

Era	Period	Focus
Technology-Augmented Marketing Era	2000+	Technology augments all aspects of strategic and tactical marketing efforts
Value Based Marketing Era	1980-2000	Focus on relationship marketing, customer-centric strategies
Marketing Era	1950-1980	Focus on tactical marketing: product, place, price and promotion (4Ps)
Sales Era	1920-1950	Focus on competition for customers, prospecting, lead generation
Production Era	1900-1920	Focus on product manufacturing efficiency
Simple Trade Era	Pre-1900	Focus on basic exchange

Source: Dhruv Grewal and Michael Levy (2024)

3.5.1 Consistency

In social media marketing, consistency is maintaining high-quality, regular content to create audience expectations. Because audiences are comfortable with repeated, unchanging experiences, consistent brands are more memorable and trustworthy (De Vries et al., 2017). A consistent strategy includes consistent posts tailored to each platform, such as visual content on Instagram or short messages on Twitter.

Table 2. Marketing Elements Added to Marketing Edition

Edition	Year	Key Changes & Features
Marketing 1e	2008	First marketing principles textbook to integrate new AMA definition of value emphasizing value creation, capture (added), communication, delivery, analysis, and assessment
Marketing 2e	2010	Consideration of conscious CSR, greater emphasis on marketing metrics, introduction of "value-based marketing" orientation in first chapter
Marketing 3e	2012	Emphasis on the power of the internet (illustrations and examples)
Marketing 4e	2014	New chapter on social and mobile marketing with 4E framework and social media strategy framework (listen, analyze, and do)
Marketing 5e	2016	Further emphasis on social and mobile marketing throughout the book
Marketing 6e	2018	Additional emphasis on marketing analytics
Marketing 7e	2020	Increased discussion of sustainability and advanced consumer behavior topics (choice architecture, nudges, opt-ins/opt-outs), introduction of AI role, new technology framework in service chapter
Marketing 8e	2022	Greater emphasis on digital marketing (online, social, mobile), introduced 4R framework for influencer marketing (relevance, reach, response, ROI), added 5Vs of big data (volume, value, variety, velocity, veracity)
Marketing 2024	2024	Chapter 1 introduces technology-augmented era, Chapter 3 explores AI in digital marketing, Chapter 20 covers digital sales process (generating leads, acquiring customers, closing), added UN SDGs discussion

M version 2025	2025	Major emphasis on generative AI

Source: (Grewal et al 2024)

To enhance brand identity and improve customer experience, consistency also involves aligning messages across media. By using a cohesive approach, businesses can enhance cross-platform campaigns and deliver a unified customer experience (Dwivedi et al., 2019). Loyalty and positive engagement are more likely to result from consistent brands, especially as customers build expectations and attachments to content patterns. Consistency doesn't have to be monotonous. It's important to try new things in content presentation while maintaining the brand's core values and messages. Companies should follow trends but stick to their communication standards and approaches. Chatbots and other automation tools can help provide consistent feedback to users and reduce the number of posts, especially at scale (Carlson et al., 2018). Chatbots can support campaign continuity by generating prompts that match the brand's style and theme. Even when the social media team is facing problems, these algorithms will ensure that the business continues to run. This will increase organic engagement and achieve a wider reach.

3.5.2 Relevance

To make campaigns more engaging and meaningful to the audience, relevance is essential. Following audience trends, interests, or preferences with relevant content allows brands to stay connected with the audience emotionally and informatively (Holliman & Rowley, 2014). To find the best topics or formats, an approach that takes into account customer data and social media analytics. Trend prediction can also be done with data, which helps businesses anticipate customer needs. AI-based chatbots in this case can make communications more relevant and personalized based on user input (Timoshenko & Hauser, 2019). This makes brands appear more responsive and in line with customer demands. In addition, AI greatly influences the personalization of marketing content: AI capabilities greatly influence the personalization of marketing content, and the integration of AI channels greatly influences the personalization of marketing content(Alqurashi et al, 2023). Relevant content not only increases engagement but also increases the chances of conversion or specific actions such as purchases. With chatbot integration, businesses can offer relevant content or promotions at the right time. Relevant content increases engagement and the chances of conversion or specific actions, such as purchases. By integrating chatbots, businesses can provide the right promotions or content to their audience when they need it. This improves overall marketing results.

3.5.3 Productivity

(Kaperonis, 2023)argue that the user experience in digital marketing is transformed by Artificial Intelligence Technology (Assistive IT or AI). The main focus in the field of digital marketing is the ability of AI to perform predictive analysis and increase the productivity of manual tasks. In social media marketing (SMM), productivity means utilizing resources such as time, effort, and costs productively to achieve the best results. Chatbots in such situations automatically speed up content creation and distribution, allowing teams to concentrate on strategic work that requires deeper engagement (Drummond et al., 2018). Therefore, companies can maintain production levels without sacrificing campaign consistency and quality. In addition, chatbot automation speeds up responses to customer inquiries or complaints. This improves customer experience and service quality, especially on platforms that require fast interaction such as Instagram and Twitter (Timoshenko & Hauser, 2019). By shortening response times, businesses can maintain customer engagement and reduce the risk of losing customers due to slowness.

3.6 Productivity in Social Media Marketing

(Gao, Arava, et al, 2023)highlights the use of ChatGPT in increasing productivity in social media marketing.(Heitmann, 2024)Using GenAI to increase promotional content productivity can produce high quality content, both text and images, so marketers can create more content without losing quality. GenAI also helps with ideation, adapting messages to specific audiences, and developing multiple product concepts. In social media marketing, productivity refers to how effectively content is created, published, and measured to meet marketing goals. Chatbots and other technologies can help teams focus on key strategies by reducing the amount of time and effort required to develop content ideas (Holliman & Rowley, 2014). Higher production increases a company's ability to adapt to trends and respond to market demand.

To implement AI to improve digital marketing productivity, companies need to understand the specific steps that can be taken. First, AI can be used for more comprehensive market analysis and audience segmentation. Cai et al's (2023) study revealed that AI is able to analyze consumer behavior patterns and preferences on social media, making it easier for marketers to create more relevant and targeted campaigns. To get started, the marketing team needs to use AI tools that are able to collect data from various social media platforms, such as interaction patterns or product preferences, which are then processed into information about the latest market trends, this step will shorten the research process and allow the marketing team to respond to consumer needs faster. Therefore,

prompts can be generated relevantly according to the commands desired by the user, if the user understands what data must be processed, what commands must be written so that the prompt really shows what it can do.

Next, in the content production stage, GenAI such as ChatGPT, Claude, Gemini and DAAL-E can be utilized to automatically generate text and visual content. Heitman (2024) points out that GenAI allows marketers to increase content volume without sacrificing quality. To implement it, the team can set parameters such as style, tone, or content format that suit the platform, according to the product and audience demographics. By utilizing GenAI's ability to adjust content characteristics, the marketing team can immediately focus on planning and strategy without having to be too involved in manual production, making it more productive.

At the workflow management stage, AI provides solutions to automate administrative tasks and team collaboration. Chatbots designed as digital assistants can help team members schedule uploads, provide deadline reminders, and provide content templates (Wu et al., 2023). This step speeds up communication between teams and ensures that each member understands their respective tasks in real time. By utilizing chatbots, teams can minimize the time spent on operational tasks and allocate more energy to developing marketing strategies.

The use of AI in tracking and analyzing campaign performance is also very important. Chen and Liu (2024) explain that AI equipped with intelligent analytics allows marketers to monitor content engagement in real-time. For its implementation, the team can use an analytics dashboard integrated with a chatbot to track metrics such as the number of interactions, engagement time, and other content performance. This data provides direct insight into the effectiveness of the campaign and helps the team make faster and more informed decisions. Chatbots that can track content performance in real-time help marketing teams develop further strategies. Chatbots can increase ROI and find the most profitable posts with accurate engagement data (Timoshenko & Hauser, 2019).

Finally, the integration of AI into marketing strategies has been shown to significantly increase ROI. Research by Tashtemirovich et al. (2024) shows that AI can accelerate the time to achieve ROI by 33.33%. The use of artificial intelligence increases the productivity of digital marketing campaigns by 26.53% compared to conventional methods and increases the likelihood of campaign success by 50%. By developing strategies supported by real-time data and relevant automation, companies can ensure that each campaign is in line with market needs and remains competitive. This application makes it clear that AI is not only a tool to accelerate production, but also to optimize the entire digital marketing strategy.

3.6.1 Content Creation Time

In Social Media Marketing (SMM), time is of the essence, and the content creation process can often be time-consuming, especially when it comes to brainstorming and compiling content. In this project, the Prompt Generator on a chatbot aims to shorten the process by suggesting relevant and automated content based on trends and user input. Social media teams can move from idea to action faster thanks to this algorithm. Chatbots can help companies reduce the number of posts without disrupting team efforts (Huang & Rust, 2021)

3.6.2 Number of Contents

The amount of content created greatly influences audience engagement and reach. The chances of capturing audience attention increase with the amount of content published regularly. Chatbots with the right prompts help increase quantity by providing templates or content ideas, which speeds up the process of content creation and publication (Hewett et al., 2016). However, more content must be accompanied by relevance and quality. Chatbots with AI-based analytics can suggest trending content. This increases the chances of audience interest and engagement with each post. Engagement increases when content is distributed in a timely and relevant manner. Chatbot systems allow companies to change the number of posts according to audience behavior.

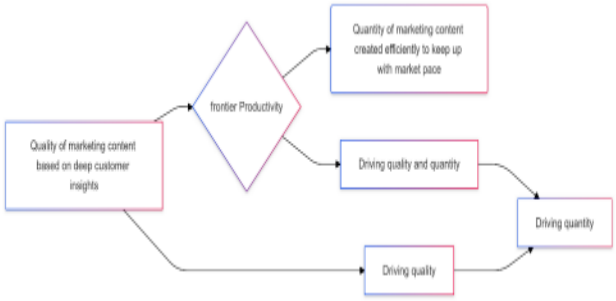

Figure 1. Shifting the productivity frontier of marketing
Source: (Heitmann,2024)

3.6.3 Engagement Rate

Social media marketing with AI has been shown to increase audience engagement and productivity. Analytical algorithms and chatbots are examples of AI that help companies deliver more personalized and responsive customer experiences in real-time. If the audience feels valued with a quick response, they are more

likely to continue interacting, which in turn leads to higher engagement levels. A better user experience emerges as a result of this quick response, which in turn makes the audience feel closer to the brand (Carlson et al., 2018). A study by Fountaine et al. (2019) shows that AI can improve the overall customer experience by incorporating highly efficient personalized interactions.

In addition, chatbots that use AI can provide relevant content recommendations for each user. This feature relies on data from previous interactions and audience preferences. By understanding audience behavior patterns and interests, AI is able to recommend more preferred content, thereby increasing the likelihood of further interaction (Huang & Rust, 2020). These targeted recommendations make the audience feel that the content presented is more personal, creating a positive impression and increasing brand loyalty.

AI has the ability to track and analyze content performance holistically in terms of analytics. To create a more efficient marketing strategy, each post can be assessed based on engagement metrics such as likes, shares, and comments. For example, organizations can optimize their future content strategies by knowing which types of content get the highest engagement (Chaffey & Ellis-Chadwick, 2019).

Marketing teams are also more efficient with the help of AI. In other words, teams can allocate their time to more strategic work, such as product development or campaign planning, with automation done by chatbots and AI algorithms (Bose, 2020). AI does repetitive things. With this automation, companies can use the same or even fewer resources to achieve higher levels of productivity.

A business can increase customer loyalty and brand awareness with AI in marketing. With relevant and appropriate prompts that can create more engaging campaigns, companies can find opportunities to continuously improve performance using quartile-based metrics. In contemporary digital marketing, AI has become an irreplaceable asset, especially for companies that want to achieve maximum productivity levels (Rust, 2020).

Table 3. Comprehensive Metrics for ROI, Time, and Effectiveness

Metrics	Q1 (Lowest Quartile)	Q2 (Lower-Mid Quartile)	Q3 (Upper-Mid Quartile)	Q4 (Highest Quartile)	Overall Average
ROI (Traditional)	0.98	1.12	1.2	1.35	1.16
ROI (AI-Enabled)	1.22	1.4	1.5	1.66	1.48
Time (Traditional, hours)	90	86	82	78	84
Time (AI, hours)	64	60	56	50	56
Effectiveness (Traditional)	0.42	0.48	0.52	0.58	0.49
Effectiveness (AI Enabled)	0.54	0.59	0.63	0.7	0.62

Source: (Tashtemirovich,2024)

Examining the quartile-based metrics in figure 5, it becomes clear that AI's superiority is not only consistent but also has the potential to increase in higher performing campaigns. This shows how important it is to incorporate AI into organizations seeking to achieve the highest levels of a company's digital marketing strategy.

Conclusion

This study focuses on the analysis impact of an artificial intelligence (AI)-based chatbot that functions as a prompt generator to increase productivity in digital marketing campaigns. Using qualitative methods, this study found that the implementation of chatbots can significantly increase time productivity in content creation and interaction with audiences. These findings indicate that AI technology, especially in the form of chatbots, has the potential to optimize digital marketing strategies by providing more innovative and responsive solutions to evolving market needs.

The use of AI chatbots in marketing can create more relevant and targeted campaigns by looking at customer behavior and preferences. Chatbots also give companies a competitive advantage because they can adjust marketing strategies based on real-time user feedback. However, issues such as data privacy and possible

algorithmic bias that companies need to be aware of are other issues that AI faces.

Overall, this study confirms the importance of adopting AI technology in digital marketing to increase campaign productivity and effectiveness. By utilizing chatbots as a tool, companies can achieve higher levels of engagement with their audiences while reducing resource waste. This study is expected to be a reference for marketing practitioners in integrating AI technology into their strategies to achieve better results in today's digital era.

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