

Social Media Sentiment Analysis: Customer Perception of Digital Marketing

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ABSTRACT

This study aims to identify customer sentiment towards the implementation of digital marketing through social media analysis. This study uses word cloud analysis and Sankey diagrams using the Natural Language Processing (NLP) approach. This study processed 1195 sentence expression from YouTube, X, TikTok, Facebook, and Instagram, over the past year. The results show that there is a high level of customer appreciation for digital marketing issues. YouTube and TikTok have the most significant involvement in the flow of customer sentiment expression. Sentiment analysis showed the dominance of positive sentiment, with a proportion of 38.33%, negative sentiment of 36.40%, and neutral sentiment of 25.27%. This implies that business actors must strengthen interactive and verified content to take advantage of positive sentiment and minimize negative sentiment. The limitation of the study lies in the generalization of comment data that are not specific to a particular product, so that it does not describe the sentiment per product in detail.

INTRODUCTION

The development of digital marketing has become a catalyst for various businesses to increase their visibility and sales efficiently. Digital marketing strategies significantly contribute to building brand and product awareness among consumers (Makrides et al., 2020). In addition, effective digital marketing can ensure that competitive business competition is maintained (Aman et al., 2024). Moreover, the use of Search Engine Optimization (SEO) in marketing can affect customer satisfaction when buying a product (Purnawati, 2024; Vuttichat & Patchara, 2023; Wan, 2023). In addition, the current application of social media platforms in marketing strategies can impact the expansion of product marketing (Asante et al., 2022; Caraballo-Payares et al., 2024).

The adoption of digital marketing serves to map market share and petrify users in the face of complex business competition (Catacutan et al., 2024; Khan et al., 2024). Digital marketing offers a process of integrating data analysis as a marketing instrument by evaluating target achievement and budget efficiency (Murti et al., 2023; Nurlan et al., 2024). Digital marketing can convert customer data into personalized marketing to increase customer satisfaction and loyalty (Atika, 2023; Khaerani & Sudarmiatin, 2022). The development of digital marketing is inseparable from the process of transitioning customer behavior during COVID-19 (Dash & Chakraborty, 2021; Surmanidze et al., 2024), because most customers tend to avoid direct contact. Thus, digital marketing is an attractive option for businesses to market their products (Deb et al., 2022). In addition, an integrated digital marketing approach can increase business effectiveness by understanding customer behavior data (Murti et al., 2023; Sayudin et al., 2023), so that business actors can achieve better performance than traditional marketing users (Chowdhury, 2024).

Digital marketing has become an essential instrument in modern businesses. However, its application has the potential to present excessive information on a product, which can harm customers. Because, excessive information actually makes it difficult for customers to make purchase decisions (Alwidawi & Khemakhem, 2024; Salim & Isaa, 2024). In addition, the issue of privacy and security of customer data is a challenge for the implementation of digital marketing (Bleier et al., 2020). Unethical marketing practices in data collection can undermine customer (Hawlitschek et al., 2018), as customers feel exploited when their personal information is used without consent (Mandal, 2019). Then, the implementation of digital marketing through intense direct communication can create discomfort for customers (Genaro & Rifiyanti, 2023). Moreover, digital marketing tends to increase the potential for dissatisfaction with a product, due to the lack of direct customer involvement in the product (Andersson et al., 2024).

Digital marketing also has the potential to present overselling messages, causing disappointment when products do not meet customer expectations. Then, there are misleading advertisements in various digital marketing so that they can increase complaints and complicate the browsing experience. The implementation of digital marketing is not only profitable, but also presents the

digital divide as a problem (Herhausen et al., 2020). Because, customers with low socioeconomic classes tend not to have access to information or product offerings digitally. The digital divide can override potential customers, limiting market reach, marketing inclusivity and customer perception. However, digital marketing has a strong dependence on customer perception of brands, products and services offered by business actor (Yang et al., 2024).

Digital marketing plays an important role in creating customer perception, as perception can influence customer behavior and preferences that keep up with technological developments. Customer perception is greatly influenced by perceived value in digital marketing strategies (Blut et al., 2024). This is because digital marketing plays a role in creating purchase intent. In addition, customer perception is oriented towards how consumers interpret, evaluate, and form impressions of offers based on digital interactions (Yang et al., 2024). Customer perception on social media is an important indicator of marketing strategy. Customer behavior has changed in response to a product by expressing an open view through narrative comments and reviews on social media (Pradhan et al., 2023). Social media has become a space for interaction between sellers and customers. However, businesses must implement marketing strategies that create positive perceptions to influence customer decisions. In addition, customer perception of a product on social media has contributed significantly to building customer intent to buy (Irshad & Ahmad, 2019). Nevertheless, most businesses use the services of social media influencers to form a positive perception of their products (Shrivastava & Jain, 2022).

Informative digital marketing strategies without exaggeration have been proven to bring trust that forms a positive perception in customers. Digital marketing also makes it possible to provide a two-way communication space, thus creating a better perception of customers (Singh & Selvasundaram, 2024). Moreover, good interactive services and online experiences have shaped good customer perceptions, which can affect satisfaction with the product as a whole. In addition, effective digital marketing not only meets the demands of customer tastes, but also encourages the creation of a greater potential customer reach (Alfonsius, 2023). Then, the implementation of digital marketing is also able to bring conversion marketing efficiency by increasing product purchases (Srivastava, 2022). However, digital marketing can also provide a negative perception when customers perceive digital marketing messages as fraudulent, which has a long-term negative impact on the brand (Yang et al., 2024). Moreover, customers consider online advertising annoying (Sailaja, 2024). In addition, digital marketing involving dishonest influencers can spread misinformation to customers, so that when customer expectations do not match reality, it will affect customer perception.

Most researchers analyze customer perception based on product quality, pricing strategies, and trust as a shaping of the perception of a product (Yu, 2023). Islam et al. (2024) implemented a psychological perspective by integrating cognitive, emotional, and social factors to decipher customer perceptions. Meanwhile, this study aims to reveal customer perception of digital marketing by analyzing sentiment on social media through the Natural

Language Processing (NLP) approach, so that it can map customer responses to the implementation of digital marketing.

LITERATURE REVIEW

Digital marketing is a fundamental aspect in shaping interactions between consumers and business actors. Additionally, digital marketing can change customer perceptions through dynamic communication, which builds customer trust. Social media platforms through search engines, interactive emails, and representative social media can not only increase brand visibility but also increase the credibility of business actors for customers (Enehasse, 2020; Krishen et al., 2021). Additionally, the ability of digital advertising to offer customized content by highlighting product quality and brand reputation has been proven to significantly influence customer decision-making processes (Antczak, 2024; Purnamasari et al., 2024), because the interactive nature of digital marketing can bring direct feedback to strengthen positive perceptions in customers (Pütter, 2017; Sheng, 2024).

Digital marketing is not only redefining business marketing channels but also reshaping passive consumer behavior into active participation (P. Wang & Huang, 2023). In addition, the integration of digital marketing media can evaluate the extent to which the brand positions itself in customer perception (Agarwal & Alami, 2024). Invocation and creativity in interface design and content presentation strategies allow marketers to capture customers' attention, thereby increasing positive perceptions of customers in purchasing decisions (Islam et al., 2024; Lamichhane, 2022). Digital marketing not only affects customer interest but can also increase sustainable digital customer interaction engagement in building long-term relationships (Guan, 2023; Yadav et al., 2024).

The main instrument for building positive perception is to present digital marketing that can provide a personalized experience of a brand. Business actors are now also accommodating the Business Intelligent approach to create content and interactions that suit customer needs (Humnekar et al., 2024). In addition, digital marketing techniques that provide gifts or discounts can provide an understanding of how customers behave when receiving information related to a product (Salah & Alzghoul, 2024). In addition, when digital marketing campaigns are considered informative, interactive, and entertaining, they can significantly increase customer engagement and reach an understanding of a product (Yang et al., 2024).

An understanding of customer perceptions on social media is essential for businesses to improve their marketing strategy, customer service, and overall brand reputation (Bozkurt et al., 2021). Most companies are increasingly relying on social media to improve their customer experience (Ayoub & Balawi, 2022). Social media is increasingly playing a role in the marketing process, because it provides unlimited space for customers to give their opinions on a product (Tao, 2023), so that it can be feedback for business actors (Naeem, 2019). Customer behavior can significantly contribute to the development of innovative services, thereby maintaining competitiveness in the market (Moghadamzadeh et al., 2020). In addition, currently social media is not only a

tool for interaction but also a medium for business actors to improve services (Cheraghalizadeh et al., 2022), so understanding customer perception on social media is an important instrument in supporting the sustainability of a product.

METHODOLOGY

This study aims to reveal customer sentiment on social media towards digital marketing. In the first stage, this study uses word cloud analysis to present the dominant issue in the theme of digital marketing in social media (McNaught & Lam, 2014). The second stage is to analyze the Sankey diagram to visualize the flow of expression data from various social media on each type of sentiment (Otto et al., 2022), thus allowing researchers to identify patterns and insights related to the relationship between the responses of various social media to each type of sentiment (de-Córdoba & Molinari, 2022). In the last stage, this study uses the NLP approach to map sentiment scores into several categories including positive, neutral and negative sentiment (Medhat et al., 2014). NLP has emerged as an important method that combines computational linguistics, machine learning, and domain-specific applications to extract subjective opinions from content created by social media users (Rahmawati et al., 2024; Veluswamy et al., 2025). Social media platforms provide textual data containing opinions, emotions, and attitudes in comments that can be systematically analyzed by NLP algorithms as decision-making material (Lee et al., 2020; Umar et al., 2024). In addition, NLP is also an analysis that can turn textual data into insights and information that is quantitative (Kanungo, 2024). This study conducted sentiment analysis using data sources derived from customer comments on social media platforms YouTube, X, TikTok, Facebook and Instagram about digital marketing over the past year. The process of social media sentiment analysis framework in digital marketing can be shown as follows:

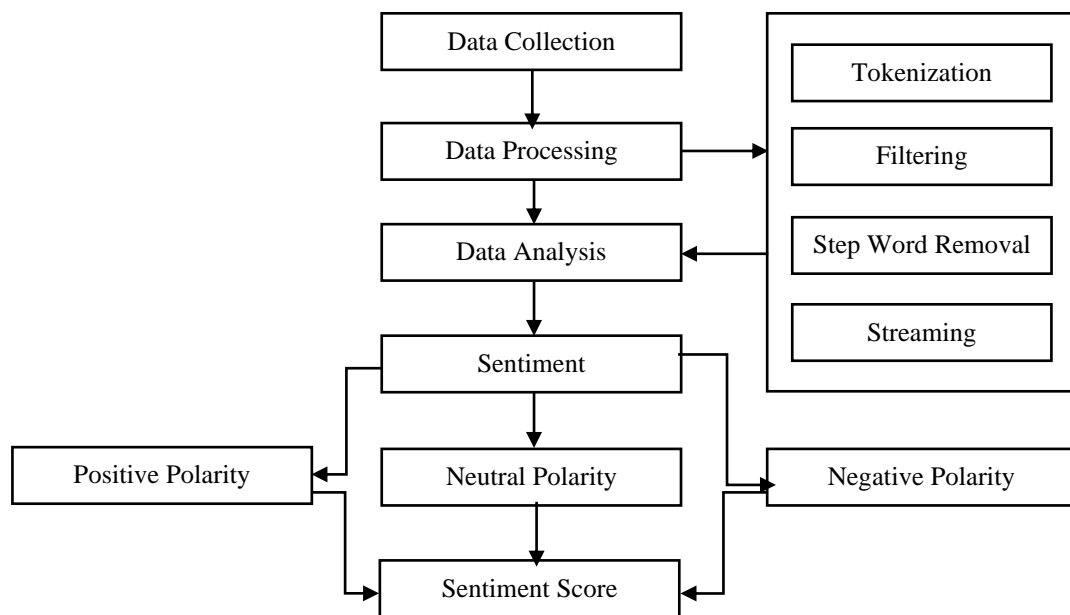


Figure 1. Analysis Sentiment Frameworks

Source: (Verma & Thakur, 2018)

The sentiment analysis process consists of a series of analysis processes that aim to transform raw text into a structured clash that can be classified. Data processing is carried out through tokenization, filtering, step word removal and streaming mechanisms. Tokenization is a basic step in which raw text is segmented into individual tokens or words (Nehal et al., 2023). This process establishes the structure of the text and facilitates the next stage of filtering and classification. Meanwhile, filtering is the process of cleaning text data by removing foreign elements such as punctuation, numbers, and other non-informative symbols (Saini & Bajwa, 2021). Then, stop word removal is the process of excluding words that offer little or no contribution to sentiment discrimination such as "the", "and", "is" to focus on sentiment in the narrative text (Wakchaure, 2025). Furthermore, the streaming process is used to ensure that the flow of data processes is carried out in real time, quickly, accurately, and efficiently (Wei, 2023). Then, the data is classified as positive, neutral or negative sentiment.

RESEARCH RESULT

In the first stage, this study conducted a word cloud analysis to identify the main issues in digital marketing on social media. This study accommodated 1195 expressions from various social media platforms, including YouTube, X, TikTok, Facebook, and Instagram over the past year as follows:



Figure 2. Word Cloud Analysis

Source: Data is processed in ATLAS.ti

The results of the analysis showed that sentiment analysis conducted on social media posts related to digital marketing visualised through Cloud Word revealed that positive sentiment became the dominant issue. The most prominent terms include "digital", "marketing", and "million" indicating a strong issue on the scale and impact of digital marketing strategies. Positive

sentiments are also proven to be present through words that often appear such as "great", "love", "awesome", "excellent", "nice", and "thanks", thus showing that customers in general view digital marketing efforts as profitable, practical, effective and simple. In addition, words such as "strategy", "content", "social", "media", "SEO", and "ads" reveal another interesting side by reflecting discussions about technical approaches to marketing. Then, words like "learn", "knowledge", "tips", and "courses" indicate that there is an interest among customers to gain insights and skills in digital marketing. However, the existence of negative words such as "fraud" and "scam" indicates underlying concerns about authenticity and trust in some digital marketing practices. Overall, the word cloud describes a complex landscape of sentiments in which enthusiasm for and appreciation of digital marketing are rampant. However, keep an eye out of potential fraudulent practices. Furthermore, this study conducted an analysis based on the Sankey diagram, as follows:



Figure 3. Diagram Sankey Analysis

Source: Data is processed in ATLAS.ti

The results of the analysis on the Sankey diagram show that Instagram, YouTube and TikTok have the most significant flow of sentiment expression with high customer engagement through digital marketing content on these platforms. The findings show that the Instagram social media platform is dominated by positive sentiment on digital marketing. Then, YouTube also shows a dominance of positive sentiment. Meanwhile, TikTok shows the dominance of negative sentiment on digital marketing issues. In addition, X shows a relatively balanced distribution of sentiment expression between the three positives, neutral and negative. However, negative sentiment still outperforms others. Then, Facebook showed the smallest pattern with an even

distribution of sentiment. However, there is an emphasis on neutral sentiment. This shows the lack of involvement of Facebook users in digital marketing issues. Analysis of the Sankey chart as a whole reveals a dominance pattern in positive sentiment trends across various platforms. Meanwhile, the presence of the dominance of negative sentiment patterns is only found on TikTok and X. Furthermore, this study reveals sentiment analysis scores through the NLP approach, as follows:

Table 1. Sentiment Analysis Score

Social Media Platform	Indicator	Sentiment			Totals
		Negative	Neutral	Positive	
Facebook	Absolute	15	24	17	56
	Table-relative	1.26%	2.01%	1.42%	4.69%
Instagram	Absolute	63	93	123	279
	Table-relative	5.27%	7.78%	10.29%	23.35%
TikTok	Absolute	188	57	88	333
	Table-relative	15.73%	4.77%	7.36%	27.87%
X	Absolute	87	64	82	233
	Table-relative	7.28%	5.36%	6.86%	19.50%
YouTube	Absolute	82	64	148	294
	Table-relative	6.86%	5.36%	12.39%	24.60%
Totals	Absolute	435	302	458	1195
	Table-relative	36.40%	25.27%	38.33%	100.00%

Source: Data is processed in ATLAS.ti

The results of sentiment analysis on social media platforms related to digital marketing were based on 1195 sentence expression data. The findings show that customers who use Facebook have low engagement in the issue of digital marketing on all social media platforms with 56 sentiment phrases (4.69%) through the dominance of 24 neutral sentiments (2.01%), 17 positive sentiments (1.42%), and 15 negative sentiments (1.26%). Instagram had a greater range of issue engagement with 279 sentiment sentence expressions (23.35%) through dominance with 123 positive sentiments (10.29%), 93 neutral sentiments (7.78%), and 63 negative sentiments (5.27%). Meanwhile, TikTok emerged as the platform with the highest engagement, with 333 sentiment sentence expressions (27.87%) through the dominance of 188 negative sentiments (15.73%), 88 positive sentiments (7.36%), and 57 neutral sentiments (4.77%). In addition, X also contributed to 233 sentiment sentence expressions (19.50%), with 87 negative sentiments (7.28%), 82 positive sentiments (6.86%), and 64 neutral sentiments (5.36%). Finally, YouTube showed its involvement with 294 sentiment sentence expressions (24.60%) based on the dominance of 148 positive sentiments (12.39%), 82 negative sentiments (6.86%), and 64 neutral sentiments (5.36%). Overall, this analysis shows the dominance of positive sentiment with 458-word executions (38.33%), 435 negative sentiments (36.40%), and 302 neutral sentiments (25.27%). Overall, positive sentiment slightly dominates the issue of digital marketing implementation in customers.

DISCUSSION

The findings of the word cloud analysis reveal various perspectives regarding the implementation of digital marketing. Various words emerge in reflecting the great concern for the need for equality between marketers and customers in terms of scalability, reach and engagement through the words "digital", "marketing", and "million". In addition, the appearance of the words "great", "love", "awesome", "excellent", "nice", and "thanks" indicates that most customers appreciate the educational and practical value of digital marketing content (Knihová, 2021). In addition, customers point to how to implement digital marketing with awareness of the delivery mechanism through the words "strategy", "content", "social", "media", "SEO", and "ads" (Hollebeek & Macky, 2019). Then, there is attention to a transparent approach and knowledge sharing through tutorials, videos, or content received by customers that generates a sense of trust through the presence of the words "learn", "knowledge", "tips", and "courses" (Li et al., 2024; Veltri et al., 2023). Meanwhile, there is a recurring appearance of the words "fraud" and "scam" which shows that some customers have a sceptical attitude towards the presence of digital marketing (Bae, 2020), because of the number of lies, exaggerated advertising, and fraudulent actions on behalf of a brand, so there is a need for ethical standards in implementing digital marketing.

The results of the analysis of the Sankey diagram provide an understanding of the distribution of sentiment related to the implementation of digital marketing across all social media platforms in real time. The flow of negative sentiment has a large portion on the TikTok and X platforms, indicating that customers can easily express their views without filters or prohibitions on the issue of digital marketing implementation (Konovalova et al., 2023). The problem of lies, exaggeration, and fraudulent actions on behalf of a brand is the main concern of platform users (König & Sumpf, 2021), thus most customers have negative sentiments. Marketers on both platforms must prioritise transparency and active responses to reduce negative customer perceptions. Meanwhile, the dominance of positive sentiments on YouTube and Instagram suggests that video content with a function- and usability-based approach, such as tutorials, reviews, or case studies, can captivate customers' attention (Steils, 2023), so marketers can capitalise on this trend by providing education on product marketing. Facebook dominates the flow of neutral sentiment because most users tend to fall into the category of baby boomers who feel less involved in digital marketing (Sheldon et al., 2021). The sentiment patterns on each social media platform should be the basis for marketers to develop and implement digital marketing strategies because each platform has its own cultural and behavioural dynamics. For example, users of X and TikTok are very oriented towards the original attitude of users in responding to changes and developments. YouTube and Instagram then offer informative content and maintain visuals to stay oriented with the creativity of delivering the material.

The sentiment analysis findings revealed a complex landscape of user perceptions of digital marketing across social media platforms. The overall

dominance of positive sentiment shows that digital marketing is generally viewed as being supported by delivery that offers value (Hollebeek & Macky, 2019). Positive sentiment dominates YouTube by strengthening its role as a platform that presents content such as tutorials and success stories of business actors in utilising digital marketing. Positive sentiment also dominates Instagram, with the effectiveness of campaigns based on attractive visuals. Meanwhile, the distribution of sentiment on TikTok and X tends to be dominated by significantly negative sentiments from users who are critical of raising concerns about fraudulent practices (Choi et al., 2024). Meanwhile, the dominance of neutral sentiments on Facebook suggests that customers who use the platform are less engaged with digital marketing because the platform focuses on personal connections rather than commercial content.

CONCLUSION AND RECOMMENDATIONS

This study aims to raise the dominant issues and visualise the flow of customer expression data to express customer sentiment in the implementation of digital marketing. This study conducted sentiment analysis on social media by involving word cloud analysis and Sankey diagrams through an NLP approach based on data sources derived from customer comments on social media platforms such as YouTube, X, TikTok, Facebook, and Instagram over the past year. The results of the study show that word cloud analysis depicts a complex landscape with the emergence of customer enthusiasm and appreciation for the implementation of digital marketing through the presence of the terms "digital", "marketing", "million", "great", "love", "awesome", "excellent", "nice", "thanks", "strategy", "content", "social", "media", "SEO", "ads", "learn", "knowledge", "tips", and "courses". However, customers are still aware of potential fraud with the emergence of the term's "fraud" and "scam". In addition, the results of the Sankey chart analysis show that YouTube and TikTok have the most significant involvement in the flow of customer sentiment expression through digital marketing content. Meanwhile, this analysis reveals the dominance pattern of positive sentiment trends on YouTube and negative trends on TikTok. Then, the results of the sentiment analysis show that overall, this analysis shows the dominance of positive sentiment with a portion of 38.33%, negative sentiment of 36.40%, and neutral sentiment of 25.27%, so that overall positive sentiment slightly dominates the issue of digital marketing implementation in customers.

This study implies that business actors need to strengthen digital marketing on social media through the delivery of interactive, personal content in accordance with customer needs, so that they can take advantage of the momentum of positive sentiment in the implementation of digital marketing. In addition, business actors also need to conduct an in-depth analysis related to the presence of negative sentiments in digital marketing by avoiding the delivery of disruptive advertisements and inappropriate content to minimise the potential for fraud by having verified social media accounts. In addition, business actors need to emphasise the benefits of computerised products in creating content in order to change a neutral customer perception to a positive

one in digital marketing, so as to expand customer reach and increase sales. Meanwhile, the government also needs to anticipate various forms of fraud on behalf of a certain product brand, so that business actors can build positive sentiments that increase loyalty and sales of their products.

ADVANCED RESEARCH

In addition, this study also has limitations regarding certain product specifications that implement digital marketing. This is because the resources are limited to general comments on social media, so they are not able to describe sentiments on certain products. However, it only describes the sentiment regarding the implementation of digital marketing for all products.

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