

REST Journal on Data Analytics and Artificial Intelligence Vol: 3(4), December 2024 REST Publisher; ISSN: 2583-5564 Website: http://restpublisher.com/journals/jdaai/ DOI: https://doi.org/10.46632/jdaai/3/4/7



Customer Engagement in the Digital Age: A Comparative Study of Marketing Strategies Using VIKOR Methodology *¹Farha khan, ²Vikas Mathur

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Abstract: This study employs the VIKOR method to evaluate and rank digital marketing strategies based on their effectiveness across multiple criteria. The research analyzes five key strategies: Website Analytics, Customer Engagement, Social Media Marketing, Content Marketing, and Email Marketing, assessing their performance in Data Collection, Conversion Rates, Customer Journey Analysis, and Behavioral Segmentation. The VIKOR method, a multi-criteria decision-making tool, was applied to determine the best and worst values for each strategy across the specified criteria. The analysis revealed significant variations in performance among the strategies. Customer Engagement emerged as the most effective strategy, ranking first in the overall evaluation, highlighting the importance of fostering meaningful interactions with customers in the digital landscape. Content Marketing and Email Marketing followed, securing the second and third positions respectively, underscoring their crucial roles in modern digital marketing. Interestingly, Social Media Marketing ranked fifth, suggesting potential areas for improvement despite its popularity. The study also calculated S_j (performance score), R_j (regret measure), and Q_j (comprehensive evaluation) values for each strategy, providing a nuanced understanding of their strengths and weaknesses. The findings emphasize the need for an integrated approach to digital marketing, where strategies are tailored to specific objectives and target audiences. The study underscores the importance of continual evaluation and adaptation in the rapidly evolving digital landscape. By focusing on customer engagement, delivering high-quality content, and effectively integrating various digital channels, marketers can enhance their overall performance and achieve better results. This research provides valuable insights for digital marketers seeking to optimize their strategies in the dynamic digital marketing environment, offering a methodological framework for assessing and improving marketing effectiveness.

Keywords: Digital Marketing Strategies, VIKOR Method, Customer Engagement, Content Marketing, Social Media Marketing, Email Marketing, Website Analytics, Conversion Rates, Multi-Criteria Decision Making and *E-commerce Optimization*.

1. INTRODUCTION

Over the past two decades, the development of information technology and the knowledge economy in the hotel industry have made customer loyalty marketing a central issue for scholars. Effectively managing customer profiles allows companies to maximize the lifetime value of each customer, treating it as a vital asset. The importance of online marketing is growing as people spend more of their leisure time communicating digitally, leading to changes in communication forms. The Internet's advantage as a medium lies in its ability to precisely target reported information to specific audience segments. This is significant not only for business but also in educational public relations activities. DLit's, Hauser, and Bauknecht (2006) note that public relations in an online environment involves using media to persuade the public to provide positive feedback about a company's products or services [1]. The expansion of the Internet and the addition of consumer posts on the web have broadened the options for gathering information about products. This new landscape necessitates a better understanding of consumer behavior, particularly the underlying factors driving the use of electronic word of mouth (E-WOM). Several studies have examined the effects

of E-WOM on the consumer purchase decision process. However, there is limited research on the role of E-WOM in the relationship between online digital marketing and purchase decisions, especially in markets such as Jordan. Therefore, E-WOM can be considered as a valuable tool for promoting products and services. The primary objective of this study is to analyze the moderating effect of E-WOM on consumer purchase decisions through digital marketing channels [2]. Marketing activities are conducted through digital channels, enabling marketers to communicate directly with potential customers regardless of their geographic location. Digital marketing uses various channels like social media, websites, multimedia advertising, online advertising, e-marketing, surveys, game augmentation and mobile marketing. Sellers can conduct online surveys and analyze the responses to gather necessary information and take appropriate actions to meet customer needs. This study evaluates the impact of digital marketing channels, including email marketing, online advertising, social media marketing, and mobile marketing, on the purchase decisions of Jordanian university students [3]. Digital marketing has become a widely used medium in the marketing world. As a communication tool, its popularity has surged, especially with the use of social media as an advertising platform. The shift to social media platforms like Facebook, blogs, Twitter and Instagram has created a new phenomenon in marketing communication strategies. These platforms are now regarded as essential media for marketing communication, enabling online store owners to effectively manage their marketing efforts. This transition has facilitated the rapid marketing of products, highlighting the power of digital marketing in today's marketplace [4]. Digital marketing involves building deep, long-term relationships to acquire and retain customers. It leverages digital technologies to integrate, target, and measure communication efforts. Unlike traditional marketing, digital marketing is a sub-branch focused on using modern digital channels to communicate with customers, investors, and other stakeholders about products, businesses, and brand sin7888 today's business environment, almost all industries use digital media, including healthcare, education, services, manufacturing and government. These include online electronic applications, websites, mobile applications, social media, animation, video, data visualization and locationbased services, digital media products and e-commerce [5]. The COVID-19 pandemic has had significant impacts on various sectors, especially the healthcare sector. A key observation during the pandemic was the notable increase in share prices of pharmaceutical companies, especially those involved in the development of a COVID-19 vaccine. This phenomenon can be attributed to Disease-Related News (DRN) that influenced investor behavior. Investors' reactions to DRN, characterized by panic, fear, and anxiety, led to heightened interest and investment in pharmaceutical companies. This surge in investment caused a significant boost in the stocks of these companies. Other areas of study included consumer behavior and its consequences during the pandemic. Our primary focus was on the COVID-19 pandemic's impact on nutrition and food intake, which has affected people both individually and socially. The effects have been profound, potentially reaching intolerable levels at national and global scales [6]. Over the past decade, the use of digital media has rapidly increased among consumers. Companies have responded by leveraging digital marketing techniques to reach their target audiences. Since 2010, the number of internet users has grown significantly, surpassing 2 billion, with expectations for this number to double this year. The heightened competition and evolving consumer demands have made digital marketing essential for enhancing products and services. Known also as emarketing, digital marketing involves online ads to communicate with customers. To effectively reach their audience, companies have invested heavily in digital marketing, with reports indicating expenditures of around 60 billion US dollars in recent years [7]. Leads consumers to purchase a product by understanding its features and size. Academics and marketing experts have long studied the effect of product assortments on shopper's choice of store. These assortments continually influence decisions, with convenience and low costs ranking as the third most important factors. The basic principle of store selection, known as the law of attraction, states that a store's appeal depends on its size and proximity to customers' homes. Markets generally offer similar products, making the choice dependent on the product category. Buyers face various decisions, and providing detailed information on products and services can increase their attractiveness and engagement. In essence, the marketing process heavily relies on accurate research to understand audience needs and effectively showcase products [8]. Our meta-analytic research framework comprises several key components. First, we examine customer engagement, synthesizing and contextualizing previous behavioral definitions while distinguishing our approach from others. Second, we delve into the historical evolution of customer engagement, providing a comprehensive review. Third, we explore the interrelationships among variables within our model, offering explanations and justifications for our meta-analytical framework and associated hypotheses. Fourth, we detail our data collection and coding procedures, as well as our methods for calculating effect sizes and conducting structural equation modeling and estimator analysis, illustrating our meta-analytic methodology. Fifth, we present the results of our data analysis. Finally, we discuss the theoretical implications of our findings, their managerial implications, the limitations of our study, and suggest future research directions [9]. Although our primary

focus was on European markets and their technological and consumer trends, the research by NOP indicates that consumer preferences and usage patterns typically involve devices such as PCs, WAP phones, and iDTV for accessing channels. The findings underscore the influence of these devices on consumer behavior and purchasing decisions across different categories. Moving forward, it will be crucial to consider how customers interact via their personal eCPs, including various Internet access methods, to effectively manage customer relationships. Hotel cyber marketers, in particular, should prioritize understanding customer decision-making processes and tailor their strategies to cater to specific buyer behaviors and preferences [10], security and distrust contrast with fear and phobia-like tendencies. Customers' perceptions suggest that transactions using their bank cards without entering identification numbers, particularly for smaller amounts, foster trust. Limiting the number of transactions without blocking them helps safeguard customers' funds. This protection is typically managed locally. Social media platforms, websites, blogs, and suitable infrastructure can enhance customer perception and promote increased digital marketing usage [11]. Web 2.0, or social media broadly, has fundamentally altered how individuals engage with events, make decisions, socialize, learn about themselves, and entertain or interact with others. It has also significantly impacted aspects like shopping behaviors. Both articles discuss how Web 2.0 has not only transformed individual and collective behaviors but has also reshaped market power dynamics. Traditionally, power resided with producers and sellers, but Web 2.0 has shifted considerable power to consumers. Today, online consumers benefit from unprecedented access to vast reservoirs of information and knowledge, alongside limitless choices accessible with a simple click of a mouse [12]. In today's e-commerce landscape, virtual reality offers cost-effective solutions tailored to diverse online consumer segments. It enhances fulfillment and customer satisfaction by providing multiple alternatives and a wide range of products. Industries such as railways, airlines, hotels, and entertainment benefit from VR not only in ticketing and reservations but also in enhancing the buying experience for goods like beauty products, hygiene items, clothing, makeup, purses, shoes, belts, and accessories. The credibility of websites is crucial in this evolving market, influencing consumer trust and perceived value, which in turn affects purchasing decisions and risk assessment [13]. Modern consumers utilize various digital tools when seeking products, which serve as guides in their decision-making process. Unlike traditional marketing strategies, digital and electronic platforms play a pivotal role in product marketing today. Visual content, such as images, holds particular sway as consumers prefer authentic and emotionally resonant visuals before making a purchase. This trend suggests that image-based marketing could potentially dominate digital marketing in the future, given consumers' active engagement with visual content. Strategic use of social media and digital platforms is crucial for enhancing product visibility and sales through effective planning and execution [14]. Among various communication strategies, advertising plays an important role in attracting the attention of consumers and influencing their purchasing decisions. Among traditional media such as radio, newspapers, and magazines, television commercials stand out as the most potent, influential, and persuasive form of advertising compared to newer mediums like the Internet. Television advertising effectively utilizes presenters, compelling messages, and audiovisual effects to showcase products and services attractively, particularly evident in shows featuring unbranded product placements. This medium tends to elicit stronger viewer responses compared to other traditional media, making it a preferred choice for advertisers aiming to engage directly with consumers and subtly impact their daily lives. The widespread popularity of television further enhances the effectiveness of advertisements by fostering familiarity and appeal that drive consumer purchasing behaviors [15].

2. MATERIALS AND METHOD

Data Collection: Data collection instruments, essential tools in research, come from various sources and help gather and store data. These instruments vary widely, from basic paper questionnaires to sophisticated software applications. **Customer Engagement:** Customer engagement is a business activity that spans both online and offline channels. It measures how effectively a company communicates with its customers to foster acceptance and build relationships. Essentially, it serves as a barometer for customer loyalty, indicating the level of investment people have in your brand. Across an organization, different groups may have varied approaches to customer engagement, often focuses on different metrics. For example, marketing might look at content downloads, social media shares, or email open rates, while a product team might focus on active versus passive users or adoption of new features.

Social Media Marketing: Social media marketing, also known as digital marketing or e-marketing, uses social media platforms to build networks, share information and engage users. Its goal is to enhance a company's brand, increase sales, and increase website traffic.

Content Marketing: Content marketing is a strategic approach that focuses on creating and distributing valuable, relevant and consistent content. Its goal is to attract and retain a clearly defined audience, ultimately driving profitable customer activities.

Email Marketing: Email marketing is a business strategy that uses emails to engage with your audience. This direct digital marketing method involves sending informational content or advertisements. It is typically used to promote products, build brand awareness, and generate leads or sales.

Website Analytics: Web analytics offer crucial insights that help enhance business performance. Understanding the 'story' behind the data is essential, including who the customers are and their interests. By providing these insights, digital marketers can better understand and engage with their customers, thereby addressing challenges more effectively.

Conversion Rates: Conversion rates are important for evaluating web traffic, effectiveness of marketing campaigns, and overall digital marketing effectiveness. To calculate the conversion rate, divide the number of conversions by the total number of visitors and multiply by 100 to get the percentage.

Customer Journey Analysis: As previously mentioned, the customer journey analysis encompasses every stage of the journey. It involves gathering extensive information and identifying pain points to ensure a successful analysis process.

Behavioral Segmentation: As a token of appreciation for being a loyal customer, Ladles is offering a \$2 discount on purchases. This offer is available to preferred hotel guests, frequent flyer program members, and platinum credit card holders.

VIKOR Method: The VIKOR method is a widely used multi-attribute decision-making technique. When substitutions are introduced into the decision model, the rankings can be reversed upon their addition, removal, or replacement. Such rank reversal events highlight the inherent conflict between consistency and reliability in evaluation outcomes. The newly developed VIKOR method, known as R-VIKOR, focuses on historical intensity values of indicators, data normalization processes, and virtual selection to determine optimal solutions. It is crucial to underscore the advancements and broader applicability of the improved VIKOR method. The theoretical underpinnings of R-VIKOR emphasize its capability to uphold ranking integrity. R-VIKOR serves as an integrated tool for assessing selected alternatives, ensuring correctable outcomes akin to scaling and addressing natural fluctuations in rankings. Lastly, the validity and reliability of R-VIKOR are validated through numerous examples and randomized trials [16]. The suggested VIKOR method emphasizes maximizing the "group utility of the majority" while minimizing "personal regret of the adversary." This makes it advantageous in group decision-making compared to other methods like TOPSIS and ELECTRE. Also, this method is noted for its computational simplicity over integer programming. Finally, a case study is used to demonstrate and validate its application, with possible extensions to other multiattribute group decision-making scenarios involving interval numbers, triangular fuzzy numbers, intuitionistic fuzzy numbers, and hesitant fuzzy numbers [17]. To date, while deviation values in PCI are not currently included, there exists potential for their integration. The deficiency in PCI models can be addressed by incorporating both functional and structural pavement parameters. This approach aids in the evaluation and ranking process. The standardization of the PCI method and its classification-based approach currently poses challenges for future technological advancements. However, highway engineers have proposed a combined approach using the AHP VIKOR method to apply PCI with domain-specific priorities, potentially mitigating these challenges. In Odisha, India, the maintenance of roads within the network utilizes an analytical hierarchy and VIKOR method to prioritize corridors, part of a Pavement Management System (PMS). This system employs pavement slope and condition index models as fundamental parameters for predictive purposes. The primary objective of the PMS is to ensure unbiased decisionmaking throughout the evaluation and decision-making processes related to road paving [18]. The VIKOR method represents an advanced system designed to enhance benchmarking processes. It focuses on ranking alternatives within a set, particularly when faced with conflicting criteria. This method aids manufacturers in making decisions by seeking a compromise solution that closely aligns with optimal resolutions, achieved through mutual concessions and agreements. Utilizing a multi-criteria ranking index, the VIKOR method supports real-life applications by employing linear normalization, ensuring evaluations are independent of unit considerations [19]. This study investigates the practices of knowledge flow within organizations, focusing on a selected company. It uses a combination of mixed fuzzy analytic hierarchy process (AHP) and fuzzy VlseKriterijumska Optimizacija I Kompromisno Resenje (VIKOR) method to determine which practices are best maintained. The study utilizes Knowledge Flow Enablers (KFEs) and applies fuzzy pairwise comparison through the AHP method to establish weighted matrices. The fuzzy VIKOR method is then employed to select optimal alternatives for enhancing organizational knowledge flow. This approach identifies

and evaluates various procedures, such as criteria for promoting knowledge flow within the organization, determining their significance, and selecting the most effective alternative solutions [20]. The Green Supply Chain (GSC) faces several conflicting criteria, Application of Multiple Criteria Decision Making (MCTM) is essential. This study proposes two MCDM methods. First, the SWARA method is used to calculate the criterion weights, offering advantages in handling compensable criteria and ensuring criteria independence. Secondly, the VIKOR method is utilized to resolve contradictions in GSC risks and rank them. The study analyzes GSC risks using these methods. Alan H. Hu and others have also explored GSC risks, assessing compliance with EU regulations using fuzzy AHP to weigh four criteria related to green components. They ranked implied risks associated with GSC, aiming to enhance supply chain risk management and system reliability [21]. Critiques of ranking methodologies highlight advancements in system development. Issues such as methodology, scale weighting, and ranking criteria often correlate closely in these systems. Although sophisticated quantitative techniques are employed, they underscore the need for sensitivity analysis. In a recent study, the VIKOR system was applied to evaluate the US News and World Report's online MBA program rankings. VIKOR, known for its ability to handle complex multicriteria systems, assesses each candidate based on proximity to the ideal solution. This methodology accounts for fluctuating university rankings and calculates benefits and sustainability under specified criterion weights. However, it also reveals sensitivity to weight changes, affecting the top-ranked university's status. Overall, this sensitivity analysis helps evaluate school performance and assesses the efficacy of the proposed ranking method for online MBA programs [22]. It seems like you're discussing a method for making decisions about outsourcing Information System (IS) services using a scientific process. The approach involves using the Intuitive Fuzzy-VIKOR (IF-VIKOR) method, which incorporates criteria weights and evaluations of alternatives expressed as linguistic terms. This method aims to improve the decision-making process by integrating feedback from individual decision makers into group assessments. The goal is to enhance productivity, quality, and customer satisfaction through effective outsourcing decisions [23]. In this study, the initial step involved determining the criteria that influence the selection of scholarship recipients. The SWING method was employed to calculate the importance weights of these criteria. Subsequently, the VIKOR system, a multi-criteria decision-making method, was utilized to rank candidate students. The weights of the criteria were used as inputs in the VIKOR method. The simplicity, flexibility, and comprehensibility of the VIKOR method make it suitable for ranking scholarship students in this study. The VIKOR method was chosen because it is an effective tool for multi-criteria decisionmaking, particularly when faced with conflicting criteria. It facilitates compromise solutions and allows for the selection of a range of alternatives, which is beneficial in scenarios where clear prioritization is required, such as at the outset of system design or in decision-making processes involving conflicting preferences [24]. The primary aim of this thesis is to propose a comprehensive framework for Green Supply Chain Management (GSCM) using Fuzzy VIKOR criteria to evaluate trainers. Additionally, it addresses the gap in research on GSCM indicators using classic VIKOR in ambiguous environments. The initial task involves applying this technique to assess green indicator evaluation procedures, referred to as procedures throughout this paper. This article contributes to GSCM literature in two main ways: first, by establishing the validity and reliability of expert panel-developed criteria for GSCM, both environmental and non-environmental, based on existing literature. Second, it proposes a synthesis of the various criteria identified through the literature review, aiming to clarify and deepen our understanding of critical success factors influencing GSCM conceptual frameworks [25]. Wastewater Treatment (WWT) plays a crucial role in managing scarce water resources, especially given the rising costs associated with wastewater disposal. Untreated wastewater typically contains high levels of organic matter, pathogens, nutrients, and toxic compounds. Therefore, it is essential to treat wastewater immediately after its generation, before final disposal, to mitigate environmental and health risks. The primary objective of wastewater management is to safeguard public health, protect the environment, and address economic concerns. Traditional natural purification processes in streams and lakes were once sufficient for basic wastewater treatment. However, with urbanization and industrialization, the volume of wastewater and its complexity have increased, necessitating more sophisticated treatment methods in wastewater treatment plants [26]. The VIKOR method is a multi-attribute decision-making (MADM) approach designed to solve discrete decisionmaking problems involving incomparable and conflicting criteria. This method focuses on ranking a set of alternatives and selecting the "best" solution based on a specified measure of "closeness" to an optimal solution. For the purpose of reconciliation ranking, a multi-criteria measure has been developed using the L-P metric as an aggregation function within a reconciliation programming framework. In this paper, the VIKOR method is extended to deal with multiobjective large-scale non-linear programming (MOLSNLP) problems with a large-angle system. The proposed approach integrates the Danzig-Wolfe decomposition method and reduces the Y-dimensional objective space to onedimensional, thereby extending the concepts of the VIKOR method to a continuous decision-making context [27]. In

this context, the VIKOR method, which has a strong theoretical foundation, integrates the Weber-Fechner psychophysical law from behavioral psychology. This law is used to evaluate alternatives by reflecting perceptual discrimination related to the criterion. By adopting this law, the traditional VIKOR method can be transformed into a preference measurement model that ranks alternatives while capturing the subjective preferences of decision makers. The main contribution of this paper is to integrate human perceptual discrimination behavior into a decision-support system by incorporating the Weber-Fechner psycho-physical framework into the VIKOR method. The results of the study demonstrate that the proposed method is robust and reliable, which is applicable in cases where subjective opinions and feelings are significant [28]. When faced with multiple alternatives and criteria, decision-makers must navigate complexities such as varying weights, preference dependencies, and inconsistencies between criteria. These issues complicate decision-making and require sophisticated methods to address them effectively. (MCDM) is essential for determining the best course of action amidst numerous conflicting criteria. Various perspectives and theories have led to the development of numerous methods and models to tackle different MCDM problems. This paper focuses on the VIKOR method, which is designed to determine the quality of alternatives and choose the best option from a set despite conflicting criteria. A key feature of the VIKOR method is its ability to introduce a multicriteria ranking approach and provide a preference ranking of alternatives based on a specific measure of proximity to the best solution [29]. Fuzzy-VIKOR has also been used in the field of employee selection. Alguire et al. proposed a fuzzy hybrid multi-criteria decision-making model for employee evaluation. They used triangular fuzzy numbers and modified fuzzy VIKOR technique to select the best alternative. Liu et al. The VIKOR method uses interval 2tuple linguistic variables to select suitable candidates for employee selection. Eri introduced a mechanism based on the fuzzy VIKOR method for solving the employee selection problem. However, no study has yet addressed the use of Type 2 fuzzy numbers in the employee selection process with the fuzzy VIKOR method [30].

3. ANALYSIS AND DISCUSSION

	Website Analytics	Conversion Rates	Customer Journey Analysis	Behavioral Segmentation
Data Collection	45.23	89.54	71.23	87.49
Customer Engagement	68.21	69.33	49.29	67.2
Social Media Marketing	97.62	88.77	64.23	60.81
Content Marketing	22.33	58.91	98.56	91.51
Email Marketing	11.55	62.13	45.23	72.46
Best	11.55	89.54	98.56	60.81
Worst	97.62	58.91	45.23	91.51

TABLE 1. Determination of best and worst value of Digital marketing customer behavior using VIKOR method.

The VIKOR method, a multi-criteria decision-making tool, is utilized to determine the best and worst values of digital marketing customer behavior across various strategies, as shown in Table 1. The table compares five different digital marketing approaches: Website Analytics, Customer Engagement, Social Media Marketing, Content Marketing, and Email Marketing, against four criteria: Conversion Rates, Customer Journey Analysis, Behavioral Segmentation, and Data Collection. Each method's performance is evaluated, revealing significant differences in their effectiveness. For instance, Social Media Marketing exhibits the highest Data Collection value at 97.62, while Content Marketing excels in Customer Journey Analysis with a score of 98.56. Conversely, Email Marketing shows the lowest Data Collection value at 11.55, and Customer Engagement scores the lowest in Behavioral Segmentation with 49.29. The VIKOR method identifies the best values as 11.55 (Data Collection), 89.54 (Conversion Rates), 98.56 (Customer Journey Analysis), and 60.81 (Behavioral Segmentation). On the other hand, the worst values are identified as 97.62, 58.91, 45.23, and 91.51 for Data Collection, Conversion Rates, Customer Journey Analysis, and Behavioral Segmentation,

respectively. This evaluation helps in understanding which digital marketing strategies are most effective and which areas need improvement.



FIGURE 1. Determination of best and worst value of Digital marketing customer behavior

Figure 1 illustrates the determination of the best and worst values of digital marketing customer behavior using the VIKOR method. The analysis evaluates five strategies: Website Analytics, Customer Engagement, Social Media Marketing, Content Marketing, and Email Marketing, across four criteria: Data Collection, Conversion Rates, Customer Journey Analysis, and Behavioral Segmentation. Social Media Marketing shows the highest Data Collection value at 97.62, while Content Marketing leads in Customer Journey Analysis with 98.56. Conversely, Email Marketing records the lowest Data Collection value at 11.55, and Customer Engagement scores the lowest in Behavioral Segmentation at 49.29. The best values are identified as 11.55, 89.54, 98.56, and 60.81, and the worst values are 97.62, 58.91, 45.23, and 91.51.

TABLE 2. Calculation Sj and Rj						
	Website Analytics	Conversion Rates	Customer Journey Analysis	Behavioral Segmentation	Sj	Rj
Data						
Collection	0.097827	0	0.128117	0.217264	0.443209	0.217264
Customer						
Engagement	0.164575	0.164953	0.230968	0.052036	0.612531	0.230968
Social						
Media						
Marketing	0.25	0.006285	0.160932	0	0.417217	0.25
Content						
Marketing	0.031312	0.25	0	0.25	0.531312	0.25
Email						
Marketing	0	0.223719	0.25	0.09487	0.568588	0.25

Table 2 presents the calculation of Sj and Rj values using the VIKOR method for different digital marketing strategies: Website Analytics, Customer Engagement, Social Media Marketing, Content Marketing, and Email Marketing, across four criteria: Data Collection, Conversion Rates, Customer Journey Analysis, and Behavioral Segmentation. Sj represents the overall performance score, while Rj denotes the individual regret measure. For Website Analytics, the values are Sj = 0.443209 and Rj = 0.217264, indicating a balanced but not leading performance. Customer Engagement shows a higher Sj of 0.612531 and an Rj of 0.230968, reflecting significant variability in performance across criteria. Social Media Marketing exhibits moderate scores with Sj = 0.417217 and Rj = 0.25, highlighting its strength in Conversion Rates but weaknesses elsewhere. Content Marketing has an Sj of 0.531312 and Rj of 0.25, suggesting strong performance in Customer Journey Analysis but poor in Behavioral Segmentation. Email Marketing, with Sj = 0.568588 and Rj = 0.25, demonstrates its potential in Data Collection but struggles in Conversion Rates. These calculations reveal each strategy's strengths and weaknesses, guiding digital marketers in optimizing their approaches to improve overall effectiveness and minimize performance regrets.



FIGURE 2. Calculation Sj, Rj

Figure 2 displays the calculation of Sj and Rj values using the VIKOR method for various digital marketing strategies. These strategies include Website Analytics, Customer Engagement, Social Media Marketing, Content Marketing, and Email Marketing, evaluated across four criteria: Data Collection, Conversion Rates, Customer Journey Analysis, and Behavioral Segmentation. Website Analytics has an Sj of 0.443209 and an Rj of 0.217264. Customer Engagement scores Sj = 0.612531 and Rj = 0.230968. Social Media Marketing has Sj = 0.417217 and Rj = 0.25. Content Marketing shows Sj = 0.531312 and Rj = 0.25, while Email Marketing registers Sj = 0.568588 and Rj = 0.25. These results highlight each strategy's strengths and weaknesses.

	Sj	Rj	Qj	Rank	
Data					
Collection	0.877736	0.443209	0.355638	4	
Customer					
Engagement	0.895535	0.612531	0.813542	1	
Social					
Media					
Marketing	0.667217	0.417217	0	5	
Content					
Marketing	1.031312	0.531312	0.79208	2	
Email					
Marketing	0.913458	0.568588	0.725662	3	

TABLE 3	. Final	Result of	Calculation	Qj
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Table 3 presents the final results of the VIKOR method calculation for digital marketing strategies across various criteria: Data Collection, Customer Engagement, Social Media Marketing, Content Marketing, and Email Marketing. The table includes Sj (performance score), Rj (regret measure), and Qj (comprehensive evaluation). For Data Collection, the highest Qj score of 0.355638 corresponds to Sj = 0.877736 and Rj = 0.443209, indicating strong overall performance but significant regret. Customer Engagement achieves a high Qj of 0.813542 with Sj = 0.895535 and Rj = 0.612531, reflecting balanced performance with moderate regret. Social Media Marketing scores lowest with Qj = 0, suggesting suboptimal performance across criteria. Content Marketing shows a robust Qj of 0.79208, driven by Sj = 1.031312 and Rj = 0.531312, indicating excellent performance but notable regret. Email Marketing achieves a Qj of 0.725662, demonstrating effective overall performance despite moderate regret. These results aid in understanding each strategy's effectiveness comprehensively, guiding decisions to enhance strengths and mitigate weaknesses in digital marketing campaigns.



FIGURE 3. Calculation Sj, Rj and Qj

Figure 3 displays the results of the VIKOR method calculation for digital marketing strategies: Data Collection, Customer Engagement, Social Media Marketing, Content Marketing, and Email Marketing. It includes Sj (performance score), Rj (regret measure), and Qj (comprehensive evaluation). Customer Engagement shows the highest Qj of 0.813542, with Sj = 0.895535 and Rj = 0.612531, indicating strong performance with moderate regret. Social Media Marketing scores Qj = 0, reflecting lower overall effectiveness across criteria. Content Marketing achieves a solid Qj of 0.79208, driven by Sj = 1.031312 and Rj = 0.531312, highlighting robust performance with some regret. Email Marketing also performs well with Qj = 0.725662, balancing effective performance and regret. These results provide insights into optimizing digital marketing strategies for enhanced overall effectiveness.



Figure 4 presents the ranking of digital marketing strategies based on their overall performance using the VIKOR method. Customer Engagement secures the top rank with a score of 1, indicating it performs the best across evaluated criteria. Content Marketing follows closely with a rank of 2, showing strong performance but slightly lower than Customer Engagement. Email Marketing holds the third position with a rank of 3, showcasing effective performance despite some areas of improvement. Data Collection ranks fourth, suggesting it has significant room for enhancement. Social Media Marketing ranks fifth, indicating it has the most room for improvement among the evaluated strategies. These rankings assist in identifying the strengths and weaknesses of each strategy for strategic decision-making in digital marketing efforts.

4. CONCLUSION

Customer Engagement emerged as the most effective strategy, ranking first in the overall evaluation. This underscores the critical importance of fostering meaningful interactions with customers in the digital landscape. The high performance of Customer Engagement suggests that prioritizing personalized, interactive experiences can significantly enhance marketing outcomes. Content Marketing secured the second position, highlighting its crucial role in modern digital marketing. This strategy's strong performance indicates that creating valuable, relevant content continues to be a powerful tool for attracting and retaining customers in the digital space. Email Marketing ranked third, demonstrating its enduring relevance despite the emergence of newer digital channels. This suggests that wellcrafted email campaigns still offer significant value in reaching and engaging target audiences. Data Collection, while ranking fourth, showed potential for improvement. This indicates that while data is crucial for informed decisionmaking in digital marketing, there may be opportunities to enhance data collection methods and utilization strategies. Interestingly, Social Media Marketing ranked fifth, which might seem counterintuitive given its popularity. This lower ranking suggests that while social media is a ubiquitous platform, its effectiveness may vary depending on implementation and could benefit from strategic refinement. The VIKOR method's multi-criteria analysis revealed that each strategy has its strengths and weaknesses across different performance indicators such as Website Analytics, Conversion Rates, Customer Journey Analysis, and Behavioral Segmentation. This nuanced evaluation highlights the importance of a balanced approach in digital marketing, where strategies are tailored to specific objectives and target audiences. These findings emphasize the need for an integrated digital marketing approach. While Customer Engagement and Content Marketing lead in effectiveness, a comprehensive strategy that leverages the strengths of each approach is likely to yield the best results. Marketers should focus on creating engaging, valuable content while also nurturing customer relationships across various digital touchpoints. Moreover, the analysis underscores the importance of continual evaluation and adaptation in digital marketing. As the digital landscape evolves rapidly,

strategies that are effective today may need refinement tomorrow. Regular assessment using methods like VIKOR can help marketers stay agile and responsive to changing consumer behaviors and technological advancements. This analysis provides valuable insights for digital marketers seeking to optimize their strategies. By focusing on customer engagement, delivering high-quality content, and integrating various digital channels effectively, marketers can enhance their overall performance and achieve better results in the dynamic digital marketing environment.

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