



Testing the Digital Marketing Model for Customer Attraction in the Medical Equipment Industry

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Received: 2024-11-15

Reviewed: 2024-12-05

Revised: 2025-01-02

Accepted: 2025-02-04

Published: 2025-03-30

Abstract

An effective digital marketing model for the medical equipment industry can not only contribute to increased sales and market share but also enhance customer trust and loyalty. Therefore, the aim of this study is to examine and test the digital marketing model in the context of customer attraction in the medical equipment industry. This study is applied in nature and, based on data collection methods, follows a descriptive-survey design. Data were collected using a standardized researcher-developed questionnaire. The statistical population consisted of medical equipment customers (physicians) in Mazandaran Province, totaling 16,802 individuals, whose opinions were utilized. The sample size was estimated to be 376 participants and was selected using a stratified sampling method. The composite reliability and reliability of each research component were subsequently calculated, with results indicating the reliability of the measurement instrument. Additionally, the questionnaire's discriminant and convergent validity demonstrated its adequacy. Data analysis was conducted using structural equation modeling with the Smart PLS4 software. The results indicated a significant positive impact of the main digital marketing themes (digital marketing tools, digital advertising, digital sales development, digital marketing content, and digital customer relationship management) on customer attraction in the medical equipment industry. The sub-themes of customer attraction in this industry included enhancing purchase intention, changing customer attitudes, and strengthening the brand.

Keywords: *Digital marketing model, customer attraction, medical equipment.*

How to cite this article:

Serajpour S, Fattahi M, Eghbal M. (2025). Testing the Digital Marketing Model for Customer Attraction in the Medical Equipment Industry. *Management Strategies and Engineering Sciences*, 7(2), 83-89.



1. Introduction

Digital marketing has witnessed rapid growth, with millions of dollars invested in digital marketing tools. The increasing investment in this field is driven by its impact on boosting sales, enhancing brand image, improving customer perception, and reducing overall marketing costs for companies. Despite these advancements and positive effects, these phenomena are not clearly observed in small and medium-sized enterprises in developing and less-developed countries. This issue has served as a motivation for conducting this study [1].

The medical equipment industry, as one of the critical and specialized sectors in healthcare, faces unique challenges in marketing and customer acquisition. This industry not only encounters intense competition but also requires the provision of precise, technical, and reliable information to its target audience [2]. Customers in this industry include hospitals, clinics, physicians, research and treatment centers, and even governmental organizations, whose decision-making processes are based on specialized criteria, product quality, and brand credibility [3, 4].

Given the complex and sensitive nature of medical equipment, customers in this field require comprehensive, transparent, and up-to-date information about products. They seek solutions that can effectively address their clinical, diagnostic, or therapeutic needs. Therefore, traditional marketing alone cannot meet the demands of this market [5]. Instead, digital marketing, utilizing tools such as Search Engine Optimization (SEO), content marketing, social media, email marketing, online advertising, and data analytics, can strategically and effectively engage with the target audience [1, 6].

However, testing an effective digital marketing model for the medical equipment industry comes with multiple challenges. First, this industry is highly specialized and requires the production of technical and scientific content that can earn customers' trust. Second, decision-making in this field is typically conducted by multiple stakeholders (such as physicians, technical managers, and financial managers), each with different needs and priorities. Third, strict regulations govern the advertising and marketing of medical equipment, which must be adhered to. These factors make designing an effective digital marketing strategy a process that demands precision, expertise, and innovation [7-9]. The key question is how to design a comprehensive and effective digital marketing model for the medical equipment industry that simultaneously addresses customers' informational, technical, and trust-building

needs. This model should be able to integrate digital tools in a coordinated and strategic manner to guide the target audience through various stages of the purchase cycle (from awareness to final decision-making). Moreover, it should be capable of producing appropriate and engaging content that complies with the specific laws and regulations of this industry and delivering it through the right channels to reach customers.

An effective digital marketing model for the medical equipment industry can not only contribute to increased sales and market share but also enhance customer trust and loyalty. This is particularly important in an industry with intense competition, where customers seek reliable and efficient solutions. Additionally, with the rapid advancement of digital technologies, companies that can effectively utilize these tools will be in a better position to succeed in the market [7].

Therefore, the aim is to test a comprehensive and practical digital marketing model that enables companies operating in the medical equipment sector to effectively engage with their target audience, understand their needs, and ultimately attract new customers, increase sales, and strengthen their brand. This model must be flexible enough to adapt to market changes and emerging technologies. Given the growing importance of digital marketing, the increasing attention and need for companies and organizations to leverage this field, and the crucial role of digital marketing managers in achieving business success, the present study aims to test a digital marketing model for customer attraction in the medical equipment industry.

1. Methodology

This study is applied in nature in terms of its objective and follows a descriptive-survey design based on data collection methods. The data collection method in this research is quantitative. Quantitative data were collected using a standardized researcher-developed questionnaire. The statistical population consists of all physicians in Mazandaran Province, totaling 16,802 individuals, according to statistics from Mazandaran University of Medical Sciences. Their opinions were utilized in the quantitative phase of the study. Based on Cochran's formula, with a 95% confidence level and a margin of error of $\alpha = 5\%$, a sample of 376 participants was selected. Given the nature of the subject and the geographical distribution, the stratified random sampling method was employed.

To collect data related to the variables, a researcher-developed questionnaire adapted from the doctoral dissertation of Serajpour et al. (2024) was used. Cronbach’s alpha coefficient was applied to determine the reliability coefficient. The composite reliability and the reliability of each research component were calculated, and the results confirmed the reliability of the measurement instrument. Additionally, both discriminant and convergent validity of the questionnaire were assessed, confirming its adequacy.

To analyze the causal relationships between variables, structural equation modeling (SEM) was employed using Smart PLS4 software. Unlike variance-based SEM, which evaluates the model fit and aims to explain, test, and validate theories, the PLS method is prediction-oriented and can serve as a theoretical explanation tool.

2. Findings

To better understand the studied population, it is necessary to describe the data before conducting statistical analyses. Based on responses from the 376 participants in the sample, 237 were male, and 139 were female. A total of

114 participants had less than 10 years of work experience, 139 had between 10 and 20 years, 79 had between 21 and 30 years, and 44 had over 30 years of work experience. Additionally, 133 participants were between the ages of 31 and 40, 141 were between 41 and 50, and 102 were over 50 years old.

To assess the model fit, measurement model fit, structural model fit, and overall model fit were examined. To evaluate the reliability of the measurement model, factor loadings, Cronbach’s alpha coefficients, and composite reliability were assessed. The threshold for acceptable factor loadings is 0.4; All factor loadings exceed 0.4, confirming the appropriateness of this criterion.

According to the SmartPLS4 data analysis algorithm, after assessing the factor loadings, Cronbach’s alpha coefficients and composite reliability values were calculated and reported. The second criterion for evaluating measurement model fit is convergent validity, which examines the correlation of each construct with its associated items (indicators). The results are presented in Table 1.

Table 1. Cronbach’s Alpha and Composite Reliability Results for the Study’s Latent Variables

Latent Variables	Cronbach’s Alpha (Alpha > 0.7)	Composite Reliability (CR > 0.7)	Average Variance Extracted (AVE > 0.5)
Digital Marketing Tools	0.858	0.914	0.779
Digital Advertising	0.878	0.925	0.804
Digital Sales Development	0.860	0.935	0.877
Medical Equipment Customer Acquisition	0.726	0.760	0.514
Digital Marketing Content	0.753	0.859	0.673
Digital Customer Relationship Management	0.746	0.914	0.797

Since the acceptable threshold for Cronbach’s alpha and composite reliability is 0.7, and according to the above table, these criteria meet the required threshold for all latent variables, the reliability of the study is confirmed. Furthermore, given that the acceptable threshold for AVE is 0.5, and the values in Table 1 meet this criterion, the study’s convergent validity is also confirmed.

To assess discriminant validity, the Fornell-Larcker criterion was used, and the results are presented in Table 2. Since the diagonal values (\sqrt{AVE}) for each latent variable exceed their correlations with other latent variables in the model, discriminant validity is confirmed.

Table 2. Discriminant Validity Calculation

Latent Variables	Digital Marketing Tools	Digital Advertising	Digital Sales Development	Digital Marketing Content	Digital Customer Relationship Management
Digital Marketing Tools	0.883				
Digital Advertising	0.405	0.897			
Digital Sales Development	0.470	0.112	0.937		
Digital Marketing Content	0.255	0.171	0.393	0.821	
Digital Customer Relationship Management	0.314	0.307	0.155	0.268	0.893

According to Figures 1 and 2, since the t-values exceed 1.96, the research hypotheses are confirmed at a 95% confidence level.

terms of R².

Chen (1998) introduced R² values of 0.19, 0.33, and 0.67 as benchmarks for weak, moderate, and strong explanatory power, respectively. Based on these criteria, the structural model in this study exhibits acceptable fit in

Table 3. R² Values

Variable	R ² Value	Adjusted R ²	Q ²
Medical Equipment Customer Acquisition	0.979	0.979	0.484

The second criterion for structural model fit is the Q² index, which assesses the model's predictive power. If Q² values for an endogenous construct are 0.02, 0.15, and 0.35, they indicate weak, moderate, and strong predictive power, respectively. The findings confirm the predictive strength of the structural model.

According to Henseler et al. (2014), the standardized root mean square residual (SRMR) value should be below 0.1 and, in a more conservative approach, below 0.08. In this study, the overall model fit was evaluated as appropriate.

Table 4. Overall Model Fit Results Using the Standardized Root Mean Square Residual (SRMR) and NFI Criterion

Latent Variables	Saturated Model	Estimated Model
SRMR	0.088	0.086
NFI	0.908	0.908
d_ULS	2.218	2.218
d_G	1.254	1.254

The NFI index, also known as the Bentler-Bonett Index, is an incremental fit index that evaluates the model by comparing the chi-square values of the independent model and the saturated model. NFI values above 0.90 are considered acceptable and indicate good model fit. The bootstrap confidence intervals provide information on the differences in these values.

For the d_ULS (Euclidean distance squared) and d_G (geodesic distance) criteria, values greater than 0.05 indicate an appropriate model fit. Since the values of d_ULS and d_G in the table exceed 0.05, they confirm the model's goodness-of-fit.

SmartPLS4 software tests relationships at a 95% confidence level by default. Since the t-value for this confidence level is 1.96, any relationship with a t-value outside the range of -1.96 to +1.96 is statistically significant at the 95% confidence level.

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confidence level is 1.96, any relationship with a t-value outside the range of -1.96 to +1.96 is statistically significant at the 95% confidence level.

It is important to note that the T-statistic indicates the significance of the effect of variables on one another. If T is greater than 1.96, the effect is positive and significant. If T falls within the range of -1.96 to +1.96, the effect is not significant. If T is less than -1.96, the effect is negative but significant.

Furthermore, path coefficients (β values) are interpreted as follows:

- If β is greater than 0.6, it indicates a strong relationship between two variables.
- If β is between 0.3 and 0.6, it indicates a moderate relationship.
- If β is below 0.4, it suggests a weak relationship.

Table 5. Results of Direct Relationships and Significance Coefficients for Research Hypotheses

Pathway	Path Coefficient (β)	T-Value	Significance Level	Path Outcome
Digital Marketing Tools → Medical Equipment Customer Acquisition	0.323	16.738	0.000	Accepted
Digital Advertising → Medical Equipment Customer Acquisition	0.292	10.572	0.000	Accepted
Digital Sales Development → Medical Equipment Customer Acquisition	0.258	14.988	0.000	Accepted

Digital Marketing Content → Medical Equipment Customer Acquisition	0.451	16.912	0.000	Accepted
Digital Customer Relationship Management → Medical Equipment Customer Acquisition	0.229	10.615	0.000	Accepted

This confirms the statistical significance of all pathways and relationships between variables at the 95% confidence level.

As illustrated in Figures 1 and 2, all model pathways are confirmed, with t-values exceeding the defined threshold.

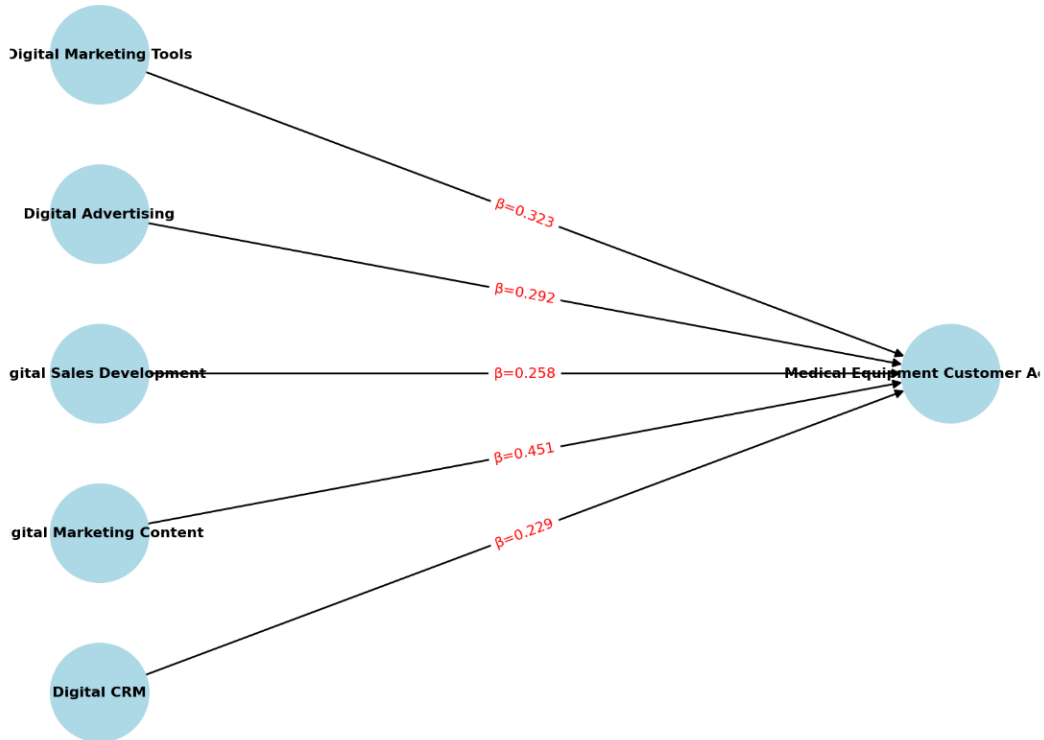


Figure 1. Model with Beta Values

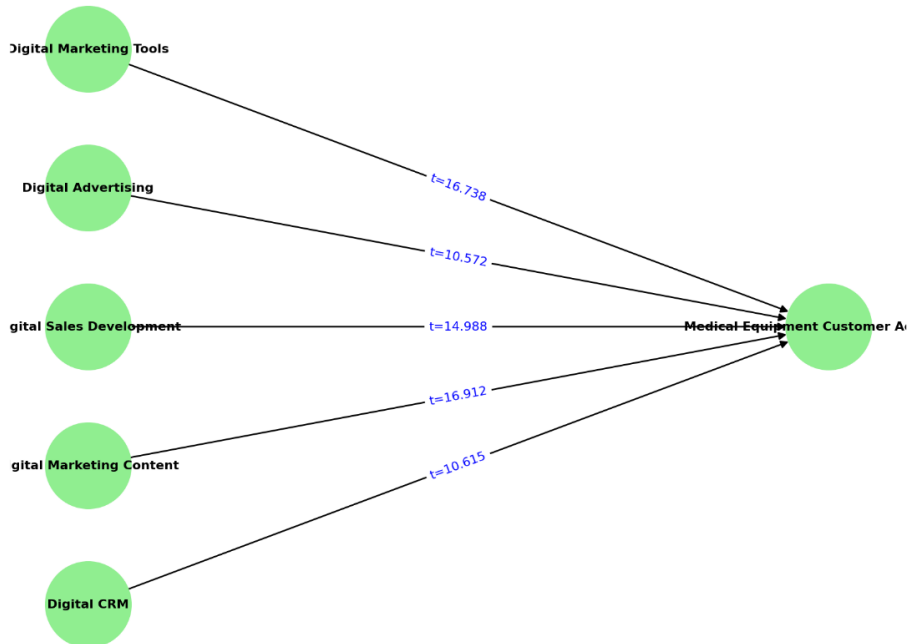


Figure 2. Model with T-Values

3. Discussion and Conclusion

The results indicate a positive and significant impact of the main digital marketing themes (digital marketing tools, digital advertising, digital sales development, digital marketing content, and digital customer relationship management) on customer acquisition in the medical equipment industry. The sub-themes influencing customer acquisition include enhancing purchase intention, changing customer attitudes, and strengthening brand perception. These findings are partially consistent with the results of previous studies [1, 2, 4, 6-17].

In explaining these findings, it can be stated that digital marketing themes influence customer acquisition in the medical equipment sector. The process of acquiring customers for medical equipment is driven by digital elements, positive experiences, customer satisfaction, and overall customer experience, which is also supported by the literature. Digital marketing, through the use of smart technology-based communication in the medical equipment industry, plays a crucial role in altering customer perceptions. This experience can ultimately lead to repeat purchasing behavior, customer loyalty, and ultimately, customer acquisition and brand strengthening [11, 15].

Therefore, it is essential for decision-makers in the medical equipment industry to develop precise strategies for managing customer relationships effectively. This management process encompasses everything from employee behavior to the technological tools utilized. Thus, medical equipment companies should strategically plan their customer engagement efforts based on these themes and their related components. For instance, by creating content, optimizing search engines, managing customer relationships, and leveraging digital marketing strategies, companies can establish interactive, two-way engagement with customers, enhance store efficiency, and successfully attract medical equipment customers.

Practical Recommendations:

- Develop a dedicated online sales platform for medical equipment that allows product display, feature comparison, and online purchasing.
- Utilize intelligent chatbots for quick responses to customer inquiries and to provide customer support.
- Leverage targeted advertisements on platforms such as Google, LinkedIn, and social networks relevant to the medical industry.
- Implement affiliate marketing campaigns in collaboration with health-related websites and influencers.

- Use video advertisements to showcase the features and benefits of medical equipment.
- Produce educational and professional content (e.g., webinars, articles, and instructional videos) on the applications of medical equipment.
- Utilize data analytics platforms such as Google Analytics to track user behavior and optimize marketing strategies.
- Participate in virtual exhibitions and medical industry events to increase brand awareness.
- Offer free demos or trial periods for medical equipment to potential customers.

By implementing these recommendations, the effectiveness of digital marketing strategies in acquiring customers for medical equipment can be significantly enhanced.

Finally, due to time constraints, this study focused only on the medical equipment industry, as it was easily accessible as the statistical population. Therefore, future research should extend to multiple industries to compare findings and validate results across different sectors.

Authors' Contributions

Authors equally contributed to this article.

Ethical Considerations

All procedures performed in this study were under the ethical standards.

Acknowledgments

Authors thank all participants who participate in this study.

Conflict of Interest

The authors report no conflict of interest.

Funding/Financial Support

According to the authors, this article has no financial support.

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