

Power of Sustainable Marketing: How Social Media Mediates the Impact on Marketing Efficiency?

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ABSTRACT

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The research aims to explore the impact of sustainable marketing on marketing efficiency. In addition, investing the potential mediating impact of social media on the relationship between sustainable marketing and marketing efficiency in Saudi healthcare sector. In order to test the relationship among research variables (SM, SMMA, and ME), a questionnaire was developed to marketing employees in Saudi hospitals. The findings of the study were tested in the Smart PLS V. 4.0.8.7 analysis program and confirmed the significant direct and indirect effects (via social media activities) of sustainable marketing on marketing efficiency in Saudi hospitals. Furthermore, the study assured that sustainable marketing by enhancing social media activities significantly contributes to improve marketing efficiency in Saudi hospitals. In order to marketing efficiency in Saudi hospitals, a number of recommendations were developed based on the data that were taken into consideration.

Keywords: Sustainable Marketing; Social Media; Marketing Efficiency; Healthcare Sector.

1. Introduction

Nowadays, sustainability has brought changes that have imposed certain considerations on marketing (Sheth and Parvatiyar, 2021). Sustainable marketing has shifted toward achieving long-term goals and building appropriate relationships with customers and the surrounding environment, both socially and naturally, in an attempt to achieve sustainable development goals. (Lim, 2016; Lucic, 2020). The 4Ps (product, price, promotion, place) are developed with sustainable marketing into the 4Cs (customer value, customer cost, customer convenience, customer communication) with sustainable marketing concept (Winston, A. 2019).

Furthermore, Service establishments that want to retain the market are seen as having to focus on customers in their marketing policies, follow the change in customer demands and maintain this in a stable manner (Neugebauer et al., 2016). Thus, service institutions must also fulfill some economic, environmental and social responsibilities. In this context, the health sector has also been affected by this situation.

Recently, the increase in the number of private health institutions and the fierce competitive environment make it necessary to experiment with sustainability in the health sector (Siminica et al., 2019). In today's market, healthcare organizations have become a more competitive sector as competition has become more intense, with rising costs and more conscious consumers, and thus the concept of sustainable marketing in healthcare services has become an important issue that needs to be addressed (Khan, et al., 2020). Therefore, this research focuses on highlights the impact of sustainable marketing on marketing efficiency in Saudi hospitals by focusing on social media activities.

2. Literature Review

2.1 Sustainable Marketing

The resource-advantage theory of competition examines performance heterogeneity by comparing a firm's comparative advantage in resources to its competitive advantage in the marketplace. When the same companies compete against one another in several marketplaces, this is referred to as multimarket competition (Griffith and Yalcinkaya, 2015). According to Hunt (2016), R-A theory places the use of business resources for comparative advantage in the broader social environment, which includes consumers, rivals, public policy, and society resources

and institutions. Sustainability is a macro-oriented idea, hence the cornerstone of sustainable marketing's transformative role is the premise that society and marketing can encourage people and organisations to incorporate this element into their thinking. (Helfaya, A. and Moussa, T. 2017). Literature demonstrate the increased interest in tying different strategic principles to sustainable marketing. Simultaneously, there is a lot of noise in the literature, in part because the terminology is not used clearly. Green marketing, corporate social responsibility of marketing, sustainability strategy, sustainability orientation, and sustainable marketing are frequently used interchangeably (Huber and Hirsch, 2017; Danso et al., 2019; Heikkurinen, 2019; Peterson, 2021).

Furthermore, sustainable marketing has also been referred to as the modern evolution of marketing's social duty or as revolutionary, all-encompassing green marketing. Fundamentally, it is characterized in terms of sustainable economic development, by balancing the three aspects of sustainability, by creating and enhancing enduring relationships with customers, the natural and social environment, and by delivering ecologically conscious, practical, and morally sound customer solutions (Noorman and Uiterkamp, 2014). (Martin et al., 2019), refers to delivering sustainable value to customers is the aim of sustainable marketing, which also caters to the demands of owners and other stakeholders. Additionally, resources-based theory emphasis to , company's resources can include specific knowledge or skills, tangible assets, human resources, organizational assets, intangible assets, competing abilities, accomplishments, or special attributes that offer the company a competitive advantage in the marketplace (Claudy et al., 2016). As a result, it is believed that a company that incorporates sustainability into its marketing strategy may have an edge over rivals due to intangible benefits like core values and exciting prospects brought about by sustainability (Villena and Dennis, 2020).

Hunt (2016) asserts that there are definite overlaps between RA theory's positive nature and sustainable marketing strategy's normative character. The RA theory's competitive process is consistent with the strategy of emphasizing the "sustainability" segment, which is supported by self-interested motivation. Businesses are self-interested as well, but they are also bound by their own moral principles and are prepared to forgo immediate gains in favor of long-term, desired results (Lunde, 2018). The RA theory supports both the strategy of creating offerings through "green" methods as well as the strategy of creating offerings that are intrinsically "green." As the primary goal, RA theory's greater financial performance frees organizations to focus on other goals, such as social and environmental dimensions . (Nikolaou et al., 2019; Peterson, 2021).

2.2 Sustainable Marketing Dimensions

Crittenden et al., (2011) have suggested an underlying framework for integrating sustainable development into market orientation, in accordance with RA theory. The model provides the most comprehensive theoretical and normative rationale for the integration of strategic sustainability. Strategic Incorporation, societal involvement, and ethical capacities are the three components that make up the formative multidimensional measure of sustainable marketing, which builds on the theoretical underpinnings that have been provided (Griffith and Yalcinkaya, 2015; Hoffman, 2018).

Therefore, strategic integration is the actual incorporation of sustainability principles and moral values within the company's approach, which includes a purpose, shared values, and standards. Instead of merely selling sustainable products or employing such activities as a means of enhancing one's image, it points to the method of embedding a culture of sustainability and maintaining an approach that aligns with sustainable practices. (Nikolaou et al., 2019). The value system must incorporate sustainability, and it must have a sophisticated, integrated system for tracking sustainability metrics in relation to the triple bottom line. The extent to which sustainability principles are integrated into corporate strategy is one of the biggest problems of strategic integration because companies often handle sustainability-related issues as distinct, stand-alone strategic issues (Vatan and Yilmaz, 2020). Although the company's set of guiding principles can serve as a formal means of communicating the purpose of sustainable marketing, it must be fully incorporated into corporate culture and decision-making (Hult et al., 2018).

According to (Noorman and Uiterkamp ,2014) , the important of defining the sustainability plan outside of the purview of consistent guidelines that enable the company to monitor its impact on the environment and society in addition to profit generation or customer happiness, which are stronger indicators of economic success.. The

fundamental culture of sustainable marketing is essentially represented by strategic integration. Furthermore, according to Rodriguez and Bharadwaj (2019), "Active formulation of approaches that serve both stakeholders and the organization is what public involvement or climate refers to. It is built around public issues and opportunities that could serve as sources of resources for businesses.

Additionally, one aspect of a sustainable business is the active participation of its stakeholders (Marcelo, 2019). Relationship marketing is defined as "Any marketing efforts aimed at establishing, nurturing, and sustaining effective exchange relationships "by Bhattacharya (2020).

According to (Chattopadhyay, 2019), for resource and labor-intensive industries, but not all, measuring the effects of businesses' operations, processes, and products on the environment and human health is essential. As a result, ethical marketing capabilities refer to marketing activity patterns that, according to their definition, have their roots in morality and are focused on accomplishing " "The ethical and beneficial" within each of the three pillars of sustainability (economic, social, and environmental). This entails that all aspect of the product, price, marketing, and sales process adhere to the strictest sustainability ethics guidelines.

2.3 Social Media Marketing Activities (SMMAs)

Social media has become a potent instrument for companies and customers. Content creation, sharing, and exchange are made possible via a variety of online platforms (Seo et al., 2020). Businesses utilize social media to engage with their customers. Keep up to date on product feedback, and increase brand recognition (Önder and Çakıroğlu, 2021). As a continuation of traditional marketing, social media marketing enables businesses to build enduring relationships with customers, boost brand awareness, and cut expenses associated with marketing (Bushara et al., 2023). A collection of online tools, platforms, or media that promote communication, teamwork, or content sharing is referred to as social media (Cheung et al., 2021). Virtual social worlds, blogs, and social networking sites (SNSs) are examples of social media platforms. Additionally, it might involve integrating with a range of websites through forums, user-generated content, user ratings and reviews, referrals, recommendations, and communities (Seo et al., 2020). Because social media marketing (SMM) is thought to increase income, most of these platforms are used extensively (Chrisniyanti and Fah, 2022).

(Önder and Çakıroğlu, 2021) The Social Media Marketing (SMM) is described as "The process that enables individuals to advertise their websites, products, or services through online social platforms, reaching a broader audience that may not have been accessible through conventional methods." SMM was defined by (Bazrkar et al. 2021) as the use of blogs and other collaborative online media by online communities for the purposes of marketing, selling, publicizing, and customer service. Some have defined it as the methods that use social media platforms to develop, convey, provide, and trade goods and services that benefit the organization's stakeholders (Bushara, 2023). The studies explored the elements of Social Media Marketing (SMM) across various contexts, such as (Kim and Ko, 2012) in the context of luxury brands, while (Seo, et al., 2020) in the airline industry context, social media marketing (SMM) activities were classified into five categories: E-WOM, trendiness, entertainment, engagement, and personalization. Additionally, (Sano, 2015) used trendiness, perceived risk, engagement, and customization as SMM aspects in the assurance services context. In their empirical investigation on the impact of social media marketing (SMM) on customer loyalty to the e-commerce sector, (Yadav and Rahman, 2018) divided SMM activities into five categories: trendiness, personalization, WOM, instructiveness, and in formativeness. (Cheung et al., 2021) characterized social media marketing (SMM) as a multifaceted variable that encompasses four elements: trendiness, entertainment, personalization, and interaction in the context of luxury cosmetic brands.

2.4 Marketing Efficiency Measures in Organizations

A key step toward reaffirming marketing's position in organizations and, more importantly, improving overall business performance is the development of trustworthy methods for evaluating marketing productivity (Krukowska-Miler, 2017). As highlighted by Chattopadhyay (2019), a major barrier to integrating marketing into corporate development strategies is the challenge of demonstrating its effectiveness. To evaluate marketing outcomes, companies may rely on indicators such as sales figures, market share, and brand awareness (Luci´c,

2020). Rodriguez and Bharadwaj (2019) categorized marketing performance evaluation into three primary areas: i) assessing marketing productivity, ii) identifying the metrics utilized, and iii) evaluating brand equity.

Marcelo, (2019), proposed that marketing performance metrics follow three evolving directions: i) shifting from financial to non-financial output indicators, ii) transitioning from outcome-focused to input-oriented measures, and iii) expanding from single-dimensional to multidimensional frameworks. Geiger et al. (2018) pointed out that customer satisfaction serves as a non-financial performance indicator, while profit, return on investment, and return on assets represent financial outcomes. In addition, Vardarjan (2019) explored alternative performance evaluation criteria, emphasizing market-based, non-financial, and financial assessments.

2.5 Sustainable Marketing in Healthcare Sector

Sustainable marketing activities balance the relationship between companies and the ecological environment. The main elements of sustainable marketing are sustainability and consumer behavior (Meng, 2015). Thus the implementation of sustainable marketing strategies, consumer-oriented marketing (customer value, customer cost, customer convenience, and customer communication) should be taken as the basis. The important point here is to implement sustainable marketing strategies in line with consumer requirements and needs without disturbing the social and environmental balance (Szalavetz, 2018). Additionally, Sustainable marketing strategies can be listed as innovation, market segmentation, and target market selection and positioning. In order to implement sustainable marketing strategies, a sustainable marketing mix should be developed (Kramer, 2020).

As in other sectors, the concept of marketing has entered the health sector economy and has become an important issue in providing quality services (Maletic et al., 2018). The fact that the health sector has a complex structure in its essence, the cost elements in itself are high, the idle capacity is considered a significant loss and the increasing demands and needs of consumers in health services have led to the intensive adoption of the sustainable marketing understanding in the health sector (Rodriguez et al., 2020).

Today, healthcare sector have become “patient-oriented” organizational structures. The needs and requirements of patients are at the center of services. For this reason, the value element in health services has been attributed to patients (Furkan, 2024). Health care organizations that aim to create value in their relationship with patients must have a value-based management approach and maintain patient relationships in the long term. In order to maintain this position in the long term, it is necessary to know the requirements of the competitive market and have the ability to implement these requirements. It is in the hands of management to implement this (Rahman et al., 2018). Because proper marketing management allows the organization to increase its competitive advantages as a medical service and better adapt to the needs of patients and the rapid development of the health sector at the overall level (Krukowska- Miler, 2017).

Indeed, the main issue behind sustainable marketing is to ensure that healthcare organizations use their tools and materials more efficiently from a holistic perspective, to ensure that water consumption in the organization is limited, and to ensure that services can be provided with a certain quality and safety (Rosário Cabrita and Cabrita, 2015). Healthcare organization(s) are increasingly concerned with additional factors such as purchasing personnel, product components or materials, packaging, and efficient use of energy or water in services other than treatment, while healthcare products are always safe and of high quality (Furkan, 2024).

According to Anderson et al., (2019), the implementation of sustainable marketing in healthcare is determined by the design of eco-friendly hospitals and making it an organizational culture that affects the health of patients and can make them more aware. Thus, The main purpose of healthcare organizations is to detect, treat, prevent and promote health-related problems. Diseases can be prevented through many prevention activities. For example, many chronic diseases are prevented by following healthy diets or creating and implementing sustainable food policies to address epidemics. Healthcare organizations also aim to reduce costs and maximize profits without compromising customer satisfaction. For example, the costs of these activities are reduced by extending the service life of medical devices with periodic intermittent maintenance, increasing efficiency, preventing waste and errors, and using less energy (Mahadewi, et al., 2022).

2.6 Hypothesis Development

Marketing and sustainability have become closely related concepts. In this regard, growing concern for the environment and changing consumer needs have changed marketing activities. In this context, sustainable marketing aims to develop a long-term understanding of customer engagement rather than focusing on consumer needs, which are the basis of traditional marketing, and to provide maximum benefit not only to the company but also to society and the environment (Mittelstaedt et al., 2014). According to Borland et al. (2016), sustainable marketing is the process of organizing, coordinating, carrying out, and keeping an eye on all market transactions. It ensures that the needs of both present and potential customers are continuously met in order to accomplish business goals while also assisting in the restoration of social and environmental health and minimizing the negative effects on the environment. Planning, developing, and monitoring the creation, pricing, promotion, and distribution of goods in a way that satisfies customer needs and wants, accomplishes organizational goals, and makes sure that operations are environmentally friendly is known as sustainable marketing (Rosmarin, 2020).

Additionally, the goal of sustainable marketing is to ensure sustainable development in all management and marketing procedures while fostering sustainable partnerships with the natural and social environments. When social media marketing activities are used in accordance with sustainability, they encourage the promotion of beneficial policies such as recycling, healthy eating, using limited resources more consciously and saving (Vardarjan, 2019).

Additionally, Sustainability in marketing is not only a tool for competitive advantage but also a driving force for cost savings and innovative approaches. This difference is possible only if sustainability can be achieved effectively in the marketing environment (Russo et al., 2019). It is suggested that today's businesses seeking to create value for customers, stakeholders and society need to expand the marketing mix to include social, ecological and physical environmental factors (Soelton, et al., 2020).

In this regard, the competition is an important factor in the long-term decisions that companies will make for the future. Healthcare organizations that provide unique experiences to their patients will be the ones that patients will choose to use the service repeatedly and gain a significant competitive advantage (Pomeroy, 2017). In addition, providing high-quality, long-term healthcare services will contribute significantly to public health. In the light of the previous arguments the following hypothesis is developed:

H.1. SM has a significant positive impact on ME.

According to (Sheth and Parvatiyar, 2021) sustainability has begun to bring about some changes in the field of marketing as it has in all fields, and in this regard it should shape consumption behaviors well by linking it to marketing and social media activates, so SM has a significant positive influence on SMMAS. Furthermore, Social media has developed into a potent instrument for long-term marketing and fostering relationships between organizations and customers. Through innovative content and influencer marketing, it encourages consumers to engage in sustainable consumption patterns (Bryła et al., 2022). Furthermore, The organizations can co-create value with stakeholders using social media platforms, which improves customer experiences and humanizes brands (Abeza et al., 2018). The organizations are embracing social media to expand into new markets by emphasizing marketing techniques that are sustainability-focused and in line with web climate like security, ethics, and visuals (Khan et al., 2019). By reducing environmental effect and supporting sustainable growth policies, sustainable marketing goes beyond relationships with consumers to include social responsibility and environmental considerations, supporting the larger idea of sustainable development (Meler & Maga, 2014). Therefore, The integration of the economic, social, and environmental facets of sustainability is supported by this holistic approach to social media marketing for sustainability. In the light of the previous arguments the following hypothesis is developed: **H.2.** SM has a significant positive impact on SMMAS

Unlike traditional marketing, sustainable marketing seeks to achieve long-term goals to achieve sustainable development by establishing appropriate relationships with social and natural environments and using the most effective management and marketing processes in the most effective way (Lim, 2016; Lucic, 2020). By discussing the result of the effect of the mediating variable SMMAS on the dependent variable ME, it became clear that there is a strong effect, and this result is consistent with what was mentioned by (Bushara, 2023). Further research is

necessary to completely understand the mechanisms underlying this relationship in the context of the healthcare industry. In the light of the previous arguments the following hypothesis is developed:

H.3. SMMAS has a significant positive impact on ME.

Social media has become a crucial component of marketing strategies (Enyioko & Nwokah, 2019; Al-Mohammadi & Gazzaz, 2020). Research has shown that social media marketing can improve brand image, increase sales performance, and increase brand awareness (Enyioko & Nwokah, 2019; Al-Mohammadi & Gazzaz, 2020). For examples, In the hotel industry, platforms such as Facebook and Twitter have shown similar marketing effectiveness, influencing customers' attitudes toward brands and intentions to book. It also helps with customer relationship management and electronic word-of-mouth (Leung et al., 2013). To make the most of social media marketing, businesses must invest in qualified human resources and create strategies that are specific to their target audience and promotional content (Alalwan et al., 2017).

In the healthcare industry, sustainable marketing seeks to strike a balance between environmental effect, financial accountability, and high-quality patient care (Jameton & McGuire, 2002). It entails using health education and awareness programs to promote preventive care and healthy lifestyles (Ignjatović et al., 2023). Additionally, change from micro to macro-level interventions is necessary, nonetheless, because the basis and course of sustainability initiatives in healthcare organizations are not uniform (Rodriguez et al., 2020). The idea that nature is an enemy and the conventional rescue philosophy in healthcare ethics are obstacles (Jameton & McGuire, 2002). The models for promoting health and preventing disease have changed throughout several generations. Instead of trying to intimidate people into being healthy, we now reward them for their health, educate them self-control to manage their health-related behaviors, and provide reliable social networks to help them break bad habits. A comprehensive strategy that tackles the mutual interaction between environmental and self-regulatory factors that influence health behavior has emerged as a result of these changes. Both the personal and social structural determinants of health are addressed by social cognitive theory (Di, X., Ismail;et al,2023) Instead of focusing only on altering individual habits, a complete strategy to health promotion must also change the practices of social institutions that have pervasive negative effects on health. Therefore, the policy and public health approach to health promotion and illness prevention heavily relies on people's confidence in their collective ability to effect social change. In the light of the previous arguments the following hypothesis is developed:

H.4. SMMAS has a significant positive mediating impact on the relationship between SM and ME.

Figure 1 displays the study's theoretical framework and hypotheses.

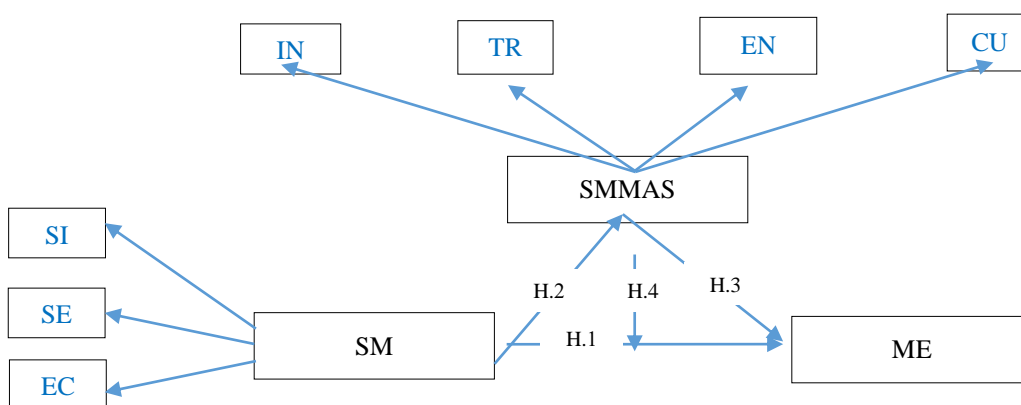


Figure 1: The research conceptual model

Note: SM: Sustainable Marketing, SI: Strategic Integrations, SE: Societal Engagement, EC: Ethical Capabilities. SMMAS: Social media marketing activities; CU: Customization; EN: Entertainment; TR: Trendiness; IN: Interaction; and ME: Marketing Efficiency.

3. Methods

3.1. Metrics and the Development of Instruments

the proposed study aims to investigate the relationship between the impact of applying sustainable marketing (SM) on marketing efficiency (ME), with the mediating role social media marketing. This was accomplished by creating an online survey and sending it via an electronic Google form to hospital staff in the Riyadh health sector in order to gather pertinent data. Online questionnaires have grown in popularity for data collection recently due to their many advantages, which include cost-effectiveness, time savings, access to a more extensive and varied population, enhanced accuracy and dependability in managing data security and storage, in addition to the ability to incorporate multimedia. Videos or images that help explain the concepts being discussed (Wright, 2005).

By reviewing the literature, we found dependable and frequently used scales. We developed a standard four-section questionnaire using these scales. The first part of the questionnaire concern demographic factors such as age, gender, and educational attainment. Additionally, a five-point Likert scale were developed, where 1 represents "strongly disagree" and 5 represents "strongly agree,"

The second variable relates to the participants' answers to the independent variable "Sustainable Marketing" (SM), which includes the following dimensions: the first sub-dimension "Strategic integration" (SI) (SI1); The success of my department is evaluated using a mix of social, environmental, and financial metrics.. (SI2); the culture of our department is rooted in sustainable development. (SI3); Employees in my department are encouraged to meet social and environmental objectives in addition to financial ones. (SI4); we keep an eye on how our goods and services affect the environment. (SI5); we keep an eye on how our goods and services affect the community. These measures were adapted from (Noorman and Uiterkamp, 2014; Hult et al., 2018; Nikolaou et al., 2019; Vatan and Yilmaz, 2020). The second sub-dimension, "Societal engagement" (SE) (SE1), we collaborate with a range of stakeholders to comprehend the expectations they have set for us. (SE2); we choose our suppliers using a set of economic, social, and environmental standards. (SE3); through career planning, training, and other initiatives, we support our employees' professional and personal growth. (SE4); we contribute to the growth and conservation of the regional historical and cultural legacy. (SE5); we favor using and purchasing ecologically friendly goods and services. Five items to measure the societal engagement were adopted from (Griffith and Yalcinkaya, 2015; Hoffman, 2018; Rodriguez and Bharadwaj, 2019; Marcelo, 2019). The third sub-dimension, "Ethical capabilities" (EC) (EC1), we price our goods and services in an ethical and responsible manner. (EC2); our clients and customers are always fully informed about our offerings. (EC3); Patients are given clear, accurate, and truthful information about the features of our services. (EC4); In order to create enduring relationships, we conduct our sales activities in an ethical and truthful manner. Four items to measure Ethical capabilities were adopted from (Geiger, et al., 2018; Hoffman, 2018; Chattopadhyay, 2019).

The third variable relates to the participants' answers to the dependent variable "Marketing Efficiency" (ME), which include the following items: (ME1); Customer satisfaction (in terms of loyalty and retention). (ME2); Market share against competitors. (ME3); Mindshare (brand awareness) against competitors. (ME4); Benefit analysis against cost of expenditures in marketing. (ME5); the quantity of time and human resources allocated to marketing. (ME6); share of spending on marketing efforts. (ME7); Number of visitors to the website. This metric was modified and applied by (Meng, 2015; Heikkurinen et al., 2019; Soelton et al., 2020; Seo et al., 2020; Bazrkar et al., 2021).

The fourth variable relates to the participants' answers to the mediating variable "Social Media Activities" (SMMAS), which include the following sub-dimension. The initial sub-dimension. "Customisation (CU1), which comprised the following items:"CU1" You can look for customised details about the hospital's social media. CU2, the hospital's social media, provides details of the live feed. "CU3," the hospital offers customised services through its social media. This measure was altered and used by (Sano, 2015; Seo et al., 2020). The second sub-dimension, Entertainment (EN), "EN1," the information contained in the hospital's social media, is fascinating. "EN2" Utilising the hospital's social media accounts are fascinating. "EN3" The process of gathering data on services via the hospital's social media. This metric was modified and applied by (Yadav and Rahman 2018; Cheung et al., 2021),

the third sub-dimension, "Trendiness (TR), includes the following items: "TR1," the hospital's Social media posts are current. "TR2", Social media use at the hospital is very popular. "TR3," Social media posts from the hospital the most recent data. This metric was modified and applied by (Sano, 2015; Yadav and Rahman 2018; Seo et al., 2020; Cheung et al. 2021). The fourth sub-dimension, "Interaction" (IN), which includes the following items, "IN1" able to share with ease the patients' viewpoints through the hospital's social media. "IN2," The hospital's social media accounts make it simple to share the views of its patients with other users; "IN3" The hospital's social media accounts allow for two-way communication. This metric was modified and applied by (Bushara, 2023; Kim and Ko, 2012; Cheung et al., 2021). The final dimension relates to the participants' answers to the dependent variable "marketing efficiency", which include the following items. 'ME1' Customer satisfaction (in terms of loyalty and retention). 'ME2' Market share against competitors. 'ME3' Mindshare (brand awareness) against competitors. 'ME4' Benefit analysis against cost of expenditures in marketing. 'ME5' the quantity of time and human resources allocated to marketing 'ME6' share of spending on marketing efforts). 'ME7' Number of visitors to website. . This measure was altered and used by (Geiger et al., 2018; Marcelo, 2019; Vardarjan, 2019).

In order to evaluate the validity and reliability of the questionnaire, a pilot study was being conducted, which comprises distributing it to a limited sample of participants (Artino Jr. et al., 2014). Thirty-five staff members from the marketing and sales divisions of hospitals in the health sector participated in a pilot study. These were removed from the study's main sample in order to assess the questionnaire's acceptability and reasonableness as well as its conciseness, comprehensibility, and consistency. Some changes were made to the questionnaire's wording based on test-taker input. Other reorganizations and adjustments also occurred. Cronbach's alpha for the research dimension scales ranged from 0.733 to 0.956, indicating a very high degree of internal consistency.

3.2. Study sample and data collection

The population of study consisted of marketing and sales employees in the Saudi healthcare sector. Convenience sampling was applied in hospitals in the health sector in Riyadh, and participants were encouraged to participate in the study by Whats App and emails. A sample of the research consented to participate in this research. Second, employees who were identified were approached directly using their information to extend an invitation to participate in the research. The survey form link was forwarded to the participants in the investigation, who may utilize it to fill it out. A welcome message and a concise description of the study's objectives were also provided. They were also prompted to review and resubmit their responses after completing the survey and told that participation was entirely voluntary. 500 forms in all were gathered during the course of the roughly four-week data collection period (January 2025). Only 432 forms were examined out of all of them and valid for analysis.

The number of hospitals in the Kingdom of Saudi Arabia stood at 499. This was six more than the previous year. Overall, the country has seen a consistent rise in the number of hospitals in the past decade; however, the prior two years were an anomaly with the number of hospitals dropping for the first time. In 2023, the region of Riyadh had 109 hospitals in Saudi Arabia, which was the most in the Kingdom. Of these 109 hospitals, 44 belonged to the private sector (Statista, 2023). The Eastern region had the second highest number of hospitals at 57. The study population consisted of hospitals in the Saudi healthcare sector, which numbered 109. The study sample included Saudi Healthcare Sector, which were identified based on Sekaran & Bougie statistical tables (Sekaran & Bougie, 2016), and constituted 21.8% of the size of the study population. The proportional stratified random sampling method was also used to determine the sample size. Targeted Saudi Healthcare Sector.

3.3. Data Analysis

Smart PLS v. 4. and SPSS v. 25 were utilized in this study to analyses the data. To provide a broad overview of the participants' demographic information, frequencies and percentages were calculated. Statistics will include measures such as mean, standard deviation, and frequency distribution, providing a clear understanding of the distribution of answers to every question on the survey. Cronbach's alpha and confirmatory factor analysis (CFA) were utilized to evaluate the content items' validity and reliability. The Harman single-factor test was used to determine the common method variance (CMV). Composite reliability (CR) and average variance extracted (AVE) were computed to evaluate the study's convergent validity. Additionally, the Heterotrait-Monotrait Ratio (HTMT) and indicators' cross-loading were employed in conjunction using the Fornell-Larck (1981) metric for assessing

discriminant validity. To assess how well the structural model predictive power, the effect size of the predictors (F^2) and the coefficient of determination (R^2) were calculated. To evaluate multicollinearity, the variance inflation factor (VIF) value was looked at. Lastly, the study's hypotheses were evaluated, and the results were assessed for statistical significance using the bootstrapping approach and partial least squares structural equation modelling (PLS-SEM).

4. Results

4.1. Characteristics of the Study Sample

There were 432 participants in total; 72.2% of them were male ($N = 312$), and the remaining 27.8% were female for the purpose of data analysis. In terms of age, those 30 to 45 years (51.9%, $N = 224$) were the highest percentage. Regarding educational attainment, the majority of participants (58.8%, $N = 254$) held a bachelor's degree, while those with a master's degree (22.68%, $N = 98$) came in second. The descriptive statistics offer a comprehensive overview of the responses for the observed variables, summarizing their mean scores and standard deviations. The standard deviations, between 0.62 and 0.82, suggest consistent variability in responses, with trendiness and marketing efficiency having the highest mean scores of 4.44 and 4.39, reflecting relatively higher levels of agreement or satisfaction for these dimensions. The Strategic integration variables display mean values between 4.27 and 4.33. The societal engagement construct has mean values between 4.09 and 4.42; the ethical capabilities construct shows mean scores between 4.00 and 4.43; the customization construct shows mean scores between 4.08 and 4.33; the entertainment construct shows mean scores between 4.16 and 4.34; the trendiness construct shows mean scores between 4.18 and 4.60; the interaction construct shows mean scores between 4.03 and 4.52; the marketing efficiency construct shows mean scores between 4.03 and 4.53.

4.2. Common Variance in Methods

To reduce the potential effects of regarding CMV, this study adopted several procedural measures during and after data collection. Three statistical methods were employed to evaluate CMV: Harman's test of one factor, marker variable technique, and the full collinearity test. Harman's single factor test evaluates whether a single factor accounts for the majority of covariance among variables in an unrotated factor analysis (Podsakoff et al., 2003). The results indicated that 33 distinct factors explained 100% of the variance, with the largest factor accounting for only 25.914%. This value falls well below the commonly accepted threshold of 50%, suggesting that CMV is unlikely to pose a significant threat.

4.3. The Measurement Model Assessment's findings

This study's measurement analysis was conducted based on well-established guidelines in the literature (Henseler & Chin, 2010), ensuring a rigorous evaluation of the measurement model. The primary objective of this analysis was to confirm the reliability and validity of each construct included in the research framework. Reliability was assessed by evaluating internal consistency, ensuring that the indicators for each construct were highly correlated and consistent in their measurement. Validity was examined through two key aspects: convergent validity, which evaluates whether indicators effectively represent their underlying construct, and discriminant validity, which ensures that each construct is distinct and not overly correlated with others.

The analysis was carried out using the PLS algorithm available in Smart PLS software, which generated comprehensive results for assessing the quality of the measurement model. The output of the measurement model, presented in Figure 2, offers critical insights into the performance of the constructs in terms of reliability and validity. Key metrics analyzed included indicator loadings, Cronbach's alpha, Composite Reliability (CR), and Average Variance Extracted (AVE). To assess discriminant validity, the Heterotrait -Monotrait Ratio (HTMT) was calculated. These methodical procedures guaranteed a comprehensive assessment of the measurement model, confirming that all constructs met the required standards for reliability and validity. This rigorous verification process provided a solid foundation for subsequent structural model analysis, ensuring the integrity of the relationships tested in the study.

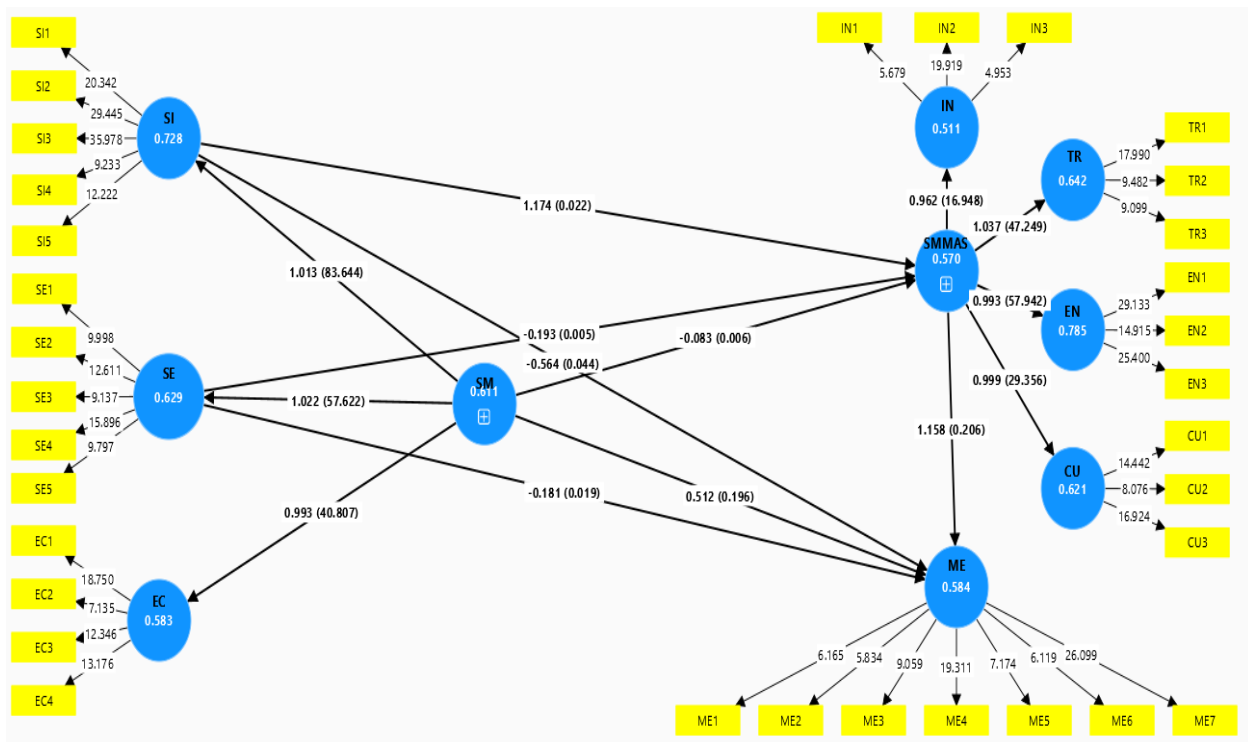


Figure 2: Measurement Model

4.3.1. Construct Reliability

Examining the indicator loadings was the first stage in evaluating the measurement model. In order for the construct to satisfactorily account for over half of the variability of the indicator, it is advised that the outer loading be more than 0.708. According to Table1, every factor loading was greater than 0.70 and statistically significant. Assessing internal consistency reliability was the second step. CR and Cronbach's alpha were both applied. CR scores and Cronbach's alphas in Table 2 varied from 0.733 to 0.958 and 0.789 to 0.956, respectively. These values guarantee strong internal consistency and dependability because they are above the 0.70 criterion set by Hair et al. (2019). Examining the convergent validity of each concept measure was the objective of the third evaluation step of the measurement model. This was accomplished by figuring out the AVE. It is advised to use an AVE that is more than or equal to 0.50 (Hair et al., 2019).

Table 1: The study's variables' reliability and validity

Constructs	Items	Indicator Reliability	Internal Consistency		Convergent Validity
		Outer Loadings > 0.5	Cronbach Alpha > 0.7	Composite Reliability > 0.6	AVE > 0.5
SM			0.956	0.958	0.611
SI	1	0.850	0.929	0.932	0.728
	2	0.877			
	3	0.921			
	4	0.811			
	5	0.801			
SE	1	0.719	0.894	0.897	0.629

	2	0.841			
	3	0.777			
	4	0.851			
	5	0.771			
EC	1	0.863	0.849	0.855	0.583
	2	0.664			
	3	0.752			
	4	0.763			
SMMAS			0.938	0.945	0.570
CU	1	0.794	0.834	0.838	0.621
	2	0.698			
	3	0.863			
EN	1	0.914	0.916	0.917	0.785
	2	0.876			
	3	0.868			
TR	1	0.844	0.847	0.845	0.642
	2	0.772			
	3	0.785			
IN	1	0.541	0.733	0.789	0.511
	2	0.880			
	3	0.682			
ME	1	0.726	0.901	0.917	0.584
	2	0.682			
	3	0.804			
	4	0.880			
	5	0.723			
	6	0.564			
	7	0.914			

Note: SM: Sustainable Marketing, SI: Strategic Integrations, SE: Societal Engagement, EC: Ethical Capabilities. SMMAS: Social media marketing activities; CU: Customisation; EN: Entertainment; TR: Trendiness; IN: Interaction; and ME: Marketing Efficiency.

4.3.2. Convergent Validity

In contrast to other latent variables, convergent validity evaluates how strongly each indicator connects with its relevant construct (Urbach & Ahlemann, 2010). The average variance extracted (AVE) values generated by the PLS method were examined in this study in order to evaluate convergent validity.

According to Hair et al. (2017), an AVE value of more than 0.5 is considered satisfactory, indicating that the indicators account for at least 50% of the variance in the construct. All of the study's constructs have AVE values over the 0.5 cutoff, as indicated in Table 2, which varied between 0.511 and 0.728. These AVE values corroborate the sufficiency of the measurement model by confirming that each construct explains a significant amount of the variance of its indicators. The findings show that the constructs have a reasonable degree of convergent validity, it enhances the reliability of the model for additional research and ensures that the indicators correlate to their relevant latent variables.

4.3.3. Discriminant Validity

In this research, discriminant validity was assessed to confirm that each item effectively measures its intended construct without significant overlap with other constructs. Discriminant validity examines the connections between things across several constructs to make sure a construct is unique and not just a reflection of other related constructs. (Ramayah et al., 2018). To evaluate this, the HTMT ratio was utilized, which compares the correlations between items of different constructs (between-trait correlations) to the correlations within the same construct (within-trait correlations). According to Henseler et al. (2015), an HTMT value greater than 0.85 may indicate issues with discriminant validity.

Table 2 HTMT results

	CU	EC	EN	IN	ME	SE	SI	SM	SMMAS
CU									
EC	0.843								
EN	0.832	0.812							
IN	0.776	0.647	0.761						
ME	0.794	0.721	0.822	0.789					
SE	0.757	0.813	0.788	0.723	0.774				
SI	0.825	0.816	0.752	0.801	0.844	0.817			
SM	0.818	0.826	0.813	0.757	0.813	0.842	0.783		
SMMAS	0.823	0.803	0.818	0.828	0.777	0.729	0.812	0.710	
TR	0.846	0.827	0.815	0.826	0.793	0.839	0.841	0.839	0.831

Note1: The HTMT values are lower than 0.85

Note: SM: Sustainable Marketing, SI: Strategic Integrations, SE: Societal Engagement, EC: Ethical Capabilities. SMMAS: Social media marketing activities; CU: Customisation; EN: Entertainment; TR: Trendiness; IN: Interaction; and ME: Marketing Efficiency.

Table 3: Discriminant validity-Fornell- Larcker criterion Matrix

	CU	EC	EN	IN	ME	SE	SI	SM	SMMAS	TR
CU	0.788									
EC	0.949	0.764								
EN	0.916	0.936	0.886							
IN	0.783	0.645	0.752	0.715						
ME	0.799	0.720	0.817	0.056	0.765					

SE	0.763	0.896	0.786	0.716	0.769	0.793				
SI	0.889	0.887	0.881	0.786	0.834	0.994	0.853			
SM	0.890	0.993	0.891	0.751	0.809	0.023	0.013	0.782		
SMMAS	0.998	0.906	0.993	0.962	0.961	0.828	0.908	0.909	0.755	
TR	0.866	0.838	0.923	0.930	0.994	0.846	0.855	0.876	0.038	0.801

Note: The bolded AVEs are the square roots on the diagonal. Simple bivariate correlations between the constructs are displayed in the other cells.

All constructs display HTMT values below the 0.85 threshold, according to the analysis results, which were produced using the PLS algorithm and are displayed in Table 3. These findings confirm that the constructs possess the necessary level of discriminant validity. In conclusion, the evaluation of the first-order measurement model demonstrates that all constructs meet the required criteria for reliability and validity, validating their suitability for examining the hypothesized relationships within the structural model.

4.4. Structural Model

Once the measurement model's reliability and validity were confirmed, the next phase involved assessing the structural model to test the hypothesized relationships. This evaluation included analyzing the path coefficients, their significance, effect sizes, and the coefficient of determination. The study also explored the potential mediating effects within the model to obtain a comprehensive comprehension of how the constructs relate to one another. The significance of the relationships was determined using t-statistics derived from the bootstrapping process. The settings for bootstrapping were configured for a one-tailed test at a 0.05 significance level, consistent with best practices in structural equation modelling. For a one-tailed test, the critical t-values are 2.33 for a 1% significance level ($p < 0.01$), 1.645 for a 5% significance level ($p < 0.05$), and 1.28 for a 10% significance level ($p < 0.1$) (Ramayah et al., 2018). This study adopted a 5% significance level as a standard threshold for hypothesis testing, aligning with established conventions in PLS-SEM research.

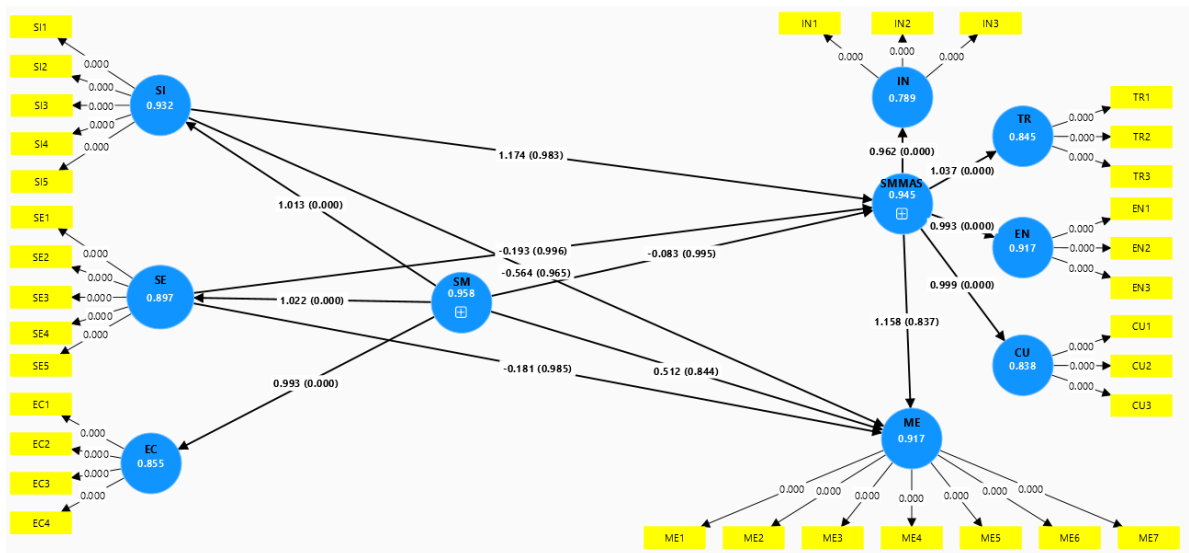


Figure 3: Structural Model Output

4.5. Evaluation of the Structural Model's Predictive Capability

In this research, the predictive accuracy among the models was thoroughly evaluated using PLS-Predict, a method implemented in SmartPLS designed to assess the predictive relevance of models within the sample. Traditional measures such as the blindfolding technique (Q^2) and the coefficient of determination (R^2), while valuable, have limitations in fully assessing predictive performance. For instance, Q^2 derived from blindfolding

provides limited insights into the relative predictive power of models, and R² only measures the model's explanatory power for the sample data without forecasting its performance on unseen data. To address these shortcomings, PLS-Predict was utilized as a more robust approach to evaluating predictive relevance. Following the guidelines proposed by (Sledi et al., 2019), this study adopted the 10-fold cross-validation technique combined with the root mean squared error (RMSE) to assess prediction errors. All constructs have positive Q²Predict values, as shown in Table 4, indicating an acceptable level of predictive relevance. Moreover, a comparison of PLS-RMSE values with LM-RMSE values was conducted to determine the model's predictive power (Shmueli et al., 2019).

Table 5 Predictive Relevance

	PLS-RMSE	LM-RMSE	PLS-LM	Q ² _predict
SMMAS1	1.133	1.422	-0.289	0.475
SMMAS2	1.213	1.327	-0.114	0.395
SMMAS3	1.198	1.266	-0.068	0.391
SMMAS4	1.215	1.392	-0.177	0.334
SMMAS5	1.195	1.393	-0.198	0.401
SMMAS6	1.231	1.373	-0.142	0.354
SMMAS7	1.218	1.337	-0.119	0.353
SMMAS8	1.114	1.299	-0.185	0.352
SMMAS9	1.129	1.341	-0.212	0.354
SMMAS10	1.212	1.352	-0.14	0.353
SMMAS11	1.148	1.301	-0.153	0.401
SMMAS12	1.188	1.312	-0.124	0.403
ME1	1.212	1.341	-0.129	0.364
ME2	1.123	1.341	-0.218	0.415
ME3	1.189	1.276	-0.087	0.385
ME4	1.115	1.432	-0.317	0.385
ME5	1.185	1.373	-0.188	0.385
ME6	1.131	1.273	-0.142	0.246
ME7	1.118	1.397	-0.279	0.248

Note: SMMAS; Social media marketing activities; ME; Marketing Efficiency

4.6. Testing the Study Hypotheses

Table 6 provides a detailed overview of the structural models direct path coefficients, shedding light on the relationships between the constructs. The standardized coefficients, ranging from 0.184 to 0.944, signify the strength of these relationships, with higher coefficients representing stronger connections between variables (Hair et al., 2017). The study also assumed that SM has a significant positive impact on ME H.1. The analyses showed that the independent variable SM has a direct effect on the dependent variable ME ($\beta=0.184, p<0.01$). This result indicates that the strength of the relationship and the direct effect are weak, which requires testing the strength of the effect through mediation of the mediating variable SMMAS; the result showed acceptance of the first hypothesis. The study also assumed that SM has a significant impact on ME H.2. The results showed that the variable SM has a strong direct effect on the mediating variable SMMAS ($\beta=0.909, p<0.01$). This result showed the

great impact of SM on SMMAS; the result showed acceptance of the first hypothesis. The following hypothesis emerges from the first hypothesis, H.2.1. SM has a significant positive impact on CU at ($\beta=0.907, p<0.01$), and the impact on EN H.2.2 at ($\beta=0.903, p<0.01$), and the impact on TR H.2.3 at ($\beta=0.944, p<0.01$), and the impact on IN H.2.4. at ($\beta=0.875, p<0.01$). The study assumed that SMMAS has a significant positive impact on ME H.3. The results showed that SMMAS has a significant positive impact on ME at ($\beta=0.837, p<0.01$); the result shows that the hypothesis is accepted. These findings highlight the central role of SMMAS as a mediator between SM and ME.

Table 6 Structural Model Results

Relationship	BETA	LL	UL	S. E	T-Stat	P-value	F-Sq	Result	Hyp.
Specific Direct Effect									
SM -> ME	0.184	0.801	0.628	0.212	5.585	0.000	0.047	Accepted	H.1
SM -> SMMAS	0.909	0.836	0.958	0.032	28.494	0.000	0.034	Accepted	H.2
SM -> CU	0.907	0.797	0.984	0.048	19.090	0.000	0.036	Accepted	H.2.1
SM -> EN	0.903	0.827	0.961	0.035	25.947	0.000	0.054	Accepted	H.2.2
SM -> TR	0.944	0.869	0.999	0.033	28.205	0.000	0.086	Accepted	H.2.3
SM -> IN	0.875	0.726	0.971	0.062	14.154	0.000	0.072	Accepted	H.2.4
SMMAS -> ME	0.837	0.354	0.172	0.073	0.206	0.000	0.024	Accepted	H.3
Specific Indirect Effect									
SM -> SMMAS-> ME	0.820	0.813	0.843	0.110	7.447	0.000	0.042	Accepted	H.4

Note: SM: Sustainable Marketing. SMMAS: Social media marketing activities; CU: Customization; EN: Entertainment; TR: Trendiness; IN: Interaction; and ME: Marketing Efficiency.

Table 6 highlights the specific indirect effects within the structural model, focusing on the mediating role of SMMAS in the relationships between SM and ME. The results confirm that SMMAS significantly mediates the impact of all predictors on ME, with positive and statistically significant path coefficients and confidence intervals that exclude zero. According to the study, SM has a significant indirect impact on ME through SMMAS ($\beta=0.820, p<0.01$). The results indicate that commitment to implementing sustainable marketing practices affects the efficiency of marketing in the Saudi healthcare sector through SMMAS.

5. Discussion

This study aims to examine the potential mediating role of Social Media Activities (SMMAS) in the relationship between Sustainable Marketing (SM) and Marketing Efficiency in the Saudi Healthcare Sector (ME). In order to investigate the indirect impact of SM on ME using SMMAS, we employed bootstrapping in the study. The analysis reveals that SM has a significant positive influence on SMMAS; this result agrees with what was mentioned by (Sheth and Parvatiyar, 2021). The result showed that SM has a significant positive impact on CU; this result is consistent using what was mentioned above (Sano, 2015), the result of the hypothesis showed that H.1.2. SM has a significant positive impact on EN; the result of this hypothesis is consistent with Cheung et al. (2021). The results also showed that SM has a significant positive impact on TR. This result is positive and supports by Seo et al. (2020). Regarding hypothesis H.1.4, the results showed that SM has a significant positive impact on ME; this result is consistent with what was explained by (Lim, 2016; Luci´c, 2020). By discussing the result of the second theory, it became evident that SM significantly improves ME. From discussing the result of this hypothesis, it became clear that the effect is weak, as explained by (Kramer, 2020). By discussing the result of the effect of the mediating variable SMMAS on the dependent variable ME, it became clear that there is a strong effect, and this result is consistent with what was mentioned by (Bushara, 2023) By studying the indirect effects, it was found that there is a strong effect of the independent variable SM on the dependent variable ME in the presence of the mediating

variable SMMAS, which confirms the partial mediation of the mediating variable in the effect between the two variables.

6. Theoretical and practical Implications

6.1. Theoretical Implications

The current study on the impact of applying sustainable marketing to increase and activate marketing efficiency in the medical field in Saudi Arabia with social media plays a mediating role activities in a sample of hospitals in the Saudi healthcare sector has significant theoretical contributions. The study contributes to the literature on sustainable marketing and its impact on increasing and activating marketing efficiency. In the face of growing environmental concerns and the need for more sustainable practices, businesses increasingly recognized the importance of incorporating sustainability into their marketing strategies. Investigates the impact of applying sustainable marketing on marketing efficiency in a sample of centers and hospitals in the Saudi healthcare sector. This research will add to the literature by providing empirical evidence on the effectiveness of sustainable marketing practices in increasing marketing efficiency. Investigates social media plays a mediating role activities in the relationship between sustainable marketing and marketing efficiency. By doing so, this study will contribute to the literature by providing insights into the importance of social media activities in the effective implementation of sustainable marketing practices. This agree with which mentioned by (Lunde, 2018; Nikolaou et al., 2019; Peterson, 2021) who mentioned that businesses are also self-interested, but they are also bound by their own moral principles and are prepared to forgo immediate gains in favor of long-term, desired results.

6.2. Practical Implications

The practical significance of the current research is evident in several aspects. Firstly, the study focuses on centers and hospitals. Saudi Healthcare Sector, this is due to the importance of the Saudi Healthcare Sector, which is evident in This is due to the importance of the Saudi medical sector, which is evident in the fact that healthcare in the Kingdom of Saudi Arabia is considered a basic right for all citizens. The Ministry of Health is responsible for providing preventive, curative and rehabilitative healthcare services through a network of healthcare centers across the country, all of which is framed according to what the Kingdom's Vision 2030 dictates in the field of health. Commitment to the vision has entailed developing the sector in line with future requirements. By examining the impact of applying sustainable marketing on increasing marketing efficiency, the study can provide valuable insights for these centers and hospitals to improve their marketing efficiency. Secondly, the study highlights the importance of social media activities in increasing marketing efficiency in the Saudi healthcare sector. Social media plays an important role in modern marketing by providing interactive platforms that allow centers and hospitals to communicate directly with their target audience. These media enable these centers in the healthcare sector to publish diverse content, whether it is posts, photos, videos, or even stories, which enhances brand awareness and builds strong relationships with customers and users. This agree with what mentioned by (Cheung et al., 2021; Bazrkar et al., 2021). In addition, social media allows for targeting specific audiences precisely through paid advertising, which increases the chances of reaching potential customers and increasing sales. Direct interaction with customers through comments and messages enhances trust and loyalty, which contributes to achieving long-term success. Finally, this study will contribute more realistically to increasing marketing efficiency through the use of sustainable marketing practices in the study sample of centers and hospitals in the health sector, which will have a great impact on the goals of institutions in the short and long term. This agree with what mentioned by (Maletic et al., 2018) who mentioned that the idea of marketing has made its way into the health industry and is now a crucial component of delivering high-quality services.

7. Research Limitations and Future Directions

This study had several limitations. It was limited to the followers of 21.8%% of the size Concerning the study population, The limitations in the study included that it relied on a sample of hospitals in the Riyadh region of the Kingdom of Saudi Arabia, which numbered 109 hospitals according to (Statista, 2023). Therefore, future studies could select centers and hospitals in the health sector in regions other than Riyadh. The study also relied on the following variables; (SM; SI; SE; EC; SMMAS; CU; EN;TR;IN, and ME). It is feasible to rely on factors other than the ones that were employed in earlier research. It's possible that the findings of this study won't hold true in

different nations, businesses, cultures, or workplaces. For a deeper understanding, it is therefore essential to review and validate the findings of this study in various health sector contexts in places other than the study area. Second, the study only examined social media's ability to mediate the relationship between marketing efficiency and sustainable marketing. Other potential mechanisms (mediators), such as perceived value, sustainable behaviors, and influencing consumer perceptions and behavior towards sustainable products, should be investigated further, it is recommended. In ways not examined in this study, the demographics of the polled individuals, including age, gender, and educational attainment, may alter the relationship between marketing efficiency and sustainable marketing. The possible moderating effect of these factors in these associations may be examined in future studies. Finally, we employed sustainable marketing as a one-dimensional construct in our study. To find out which factor is most predictive in this relationship, more study should be done to incorporate other dimensions. This might shed important light on each person's function in these connections.

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