INFLUENCE OF MARKETING STRATEGIES ON THE ADOPTION OF MEDICAL DEVICES INNOVATIONS AMONG HOSPITALS IN KENYA

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DECLARATION

This research endeavor is entirely original with no submissions made to other universities for credit towards a degree.

Signature: Date: 30/11/2023

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This Research project has been submitted for examination with my approval as the university supervisor.

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ABSTRACT

This study aimed to ascertain the marketing strategies used by medical device firms in Kenya and determine the effect of these strategies on the adoption of these medical devices by healthcare providers. The study utilized marketing strategies adopted from Miles and Snow typology of organization strategy (Miles & Snow, 1978), Ansoff Growth model strategies (Ansoff, 1957), and the Marketing mix theory (Baker, 2012) to evaluate the marketing strategies utilized by medical device firms and their effect on the adoption of the firm's products by the target customer. The study utilized a descriptive survey and targeted all the medical devices firms in Kenya that sell or distribute class 2 and 3 devices. Senior members of the sales and marketing teams completed questionnaires to provide information, which was then analyzed using descriptive statistics. The findings indicated that medical device firms in Kenya hugely adopt the marketing mix tools in their marketing campaigns and these strategies have significant impact on the adoption of the medical devices sold in the Kenyan market. Additionally, Miles and Snow Typology of organizational competitive strategies are also common among medical device firms in Kenya, these strategies of competition approach are similarly positive correlated to the probability of healthcare providers influenced into adopting a healthcare technology into routine healthcare provision. Contrary, Ansoff growth model strategies of market penetration and product development and diversification, are uncommon among medical devices firms and these set of strategies have a negative correlation to adoption of technologies in the healthcare field.

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CHAPTER ONE: INTRODUCTION

1.1   Background of The Study

A marketing strategy is a plan that guides an organization towards its general market orientation and is used to carry out all promotions and advertisements. It is based on data that strives to fulfil the organization's goals and its marketing operations (Lo & Campos, 2018). Ducange et al. (2018) provide an alternative definition of marketing strategy, which is the long-term strategic planning of the business objectives that the organization sets out to accomplish. Selecting well-thought-out activities to boost sales or improve the reputation of goods and services. In order to identify the target client and strengthen the company's market position, it is imperative that market opportunities be taken advantage of. Regardless of the good or service being advertised, marketing tactics have been widely applied in all facets of marketing. (2017) Popkova et al. Reaching the intended audience, persuading them of the value of the service or product, and ensuring that the offering can satisfy consumers' needs and wants in light of quality, cost, and marketing strategy are the primary objectives. (Ghosh, 2017)).

Medical device marketing is the last aspect of an information continuum, where research and development concepts are layered onto therapeutic tools and where data is cumulatively layered and rendered helpful to the healthcare system. It is now the best structured and extensive information system available for keeping doctors informed on the risks, benefits, availability, safety, and methods of utilizing medical technologies. Therefore, one of the most important aspects of medical device innovation is informing physicians through marketing (Reynolds, 2020).

Marketing helps doctors adapt health technologies to the specific demands of each patient. New, innovative medical devices are not necessarily adopted by the target user as there are elements that influence the adoption process. Literature has identified six obstacles to the adoption process: legality(regulatory), complexity, time, usefulness, fear and cost (Reynolds, 2020), affecting either the direct user or the organization. Marketing strategies of medical device companies have to not only carry their marketing communication but overcome these barriers to ensure the adoption of these products into routine healthcare provision.

This study utilized the framework of Miles and Snow typology of organization strategy (Miles & Snow, 1978), Ansoff Growth model strategies (Ansoff, 1957), and the Marketing mix theory (Baker, 2012) to establish the marketing strategies utilized by medical device firms and the

effect of these strategies on the adoption of the firms' medical device products by healthcare professionals (HCPs) in Kenyan Hospitals.

In Kenya, non-governmental organizations, private for-profit institutions, and public health hospitals all offer healthcare services. The hospitals are organized in a hierarchical manner based on the complexity of the service delivered in a four-tier system from basic primary care facilities in tier 1 to tier 4 specialized national referral facilities. All the hospitals in the system use medical devices, but more specialized and sophisticated devices are used in tier 3 and 4 hospitals and are usually the target of marketing campaigns of medical device and pharmaceutical firms.

1.1.1 Concept of Marketing Strategy

A business's marketing strategy is its overall plan to draw in new clients and convert them to buyers of its products or services (Barone, 2022). A marketing plan comprises several elements such as the target audience's demographic data, brand messaging, and the business's value proposition. A thorough marketing plan addresses "the four p's" of marketing: product, pricing, place, and promotion (Barone, 2022).   A clearly defined marketing plan should center around the company's value proposition, which communicates to consumers about the company's mission, values, and reasons for meriting their business (Barone, 2022).

In order to create a plan of attack for the market, marketing strategies are created by selecting the target market and assembling the marketing mix. Understanding customer needs and wants is the key to developing and communicating a durable competitive edge over rival businesses, according to Investopedia (2021). The effectiveness with which a marketing asset conveys the company's primary value proposition can be used to assess it, regardless of whether it is a print advertisement, social media campaign, or mass communication (Investopedia, 2021). A marketing plan assists a business in allocating its advertising budget to the most effective areas (Investopedia, 2021). According to a 2019 survey, companies reporting campaign success were 313% more likely to have a written marketing strategy (Investopedia, 2021).

A marketing strategy specifies the company's strategic marketing goals and provides details on how to achieve them, ideally within a specific timeline. It also includes the marketing mix tools, promotion, distribution, pricing, product development, relationship management, and other factors.. Marketing strategy determines target market segmentation exercises, market positioning, marketing mix tactics, and their effect on resources. It is most effective when

integrated into the overall firm's business strategy explaining customer, prospect, and competitor engagement roadmap.

This study utilized marketing strategies adopted from Miles and Snow typology of organization strategy (Miles & Snow, 1978), Ansoff Growth model strategies (Ansoff, 1957), and the Marketing mix theory (Baker, 2012) to evaluate the marketing strategies utilized by medical device firms and their effect on the adoption of the firm's products by the target customer. Miles and Snow typology categorizes organizations based on their business-level strategic orientation into Prospectors, analyzers, defenders, and reactors. Ansoff product-market extension grid is a planning tool that lays out the framework for growth strategies. According to the matrix, organizations can grow by penetrating the market with current offerings in the current market, marketing development by exploring different markets with current offerings, product development by new offerings in current markets, or market diversification with new offerings in new markets. A company can employ a collection of tools outlined by marketing mix theory to pursue its marketing goals. It describes the tactics for the marketing mix tools: price, place, product and promotion.

1.1.2 Adoption of Innovations

The main process via which an innovation spreads is adoption. (Roback, et al. 2007). Diffusion of healthcare technologies is the process by which healthcare providers accept, integrate, and use medical technologies in their routine healthcare provision. Medical device firms' primary objective is to achieve adoption of their products, and it is often the de facto goal of their marketing campaigns. It is a typical occurrence in many businesses, particularly in healthcare and more uniquely in the medical device industry, that consumers do not always adopt new and innovative solutions (Reynolds, 2020). Due to several factors influencing the adoption process, the assimilation of medical technology is not always a simple process from innovation to adoption (Gelijns & Rosenberg, 1994). Three key elements—players in the process, the environment and structure, and the innovation's features—have been identified by Bonair and Persson (1996) as influencing adoption decisions in healthcare organizations. Notable among these aspects is the organization of the healthcare sector.

Healthcare is a conservative industry with a tendency to favor the 'dominant designs.' According to this theory of technology management, an invention (drug, surgery, technique, etc.) that gains widespread acceptance becomes dominant over competing technologies and sets the bar for future innovations (Warty et al., 2021). This dominance is frequently

demonstrated by the decreased likelihood of success of later inventions that provide an alternative approach to a comparable issue. This does not lessen the necessity for creative inventions. As a matter of fact, new ideas are frequently needed to spur reform and do rid of antiquated concepts. To shift consumer preferences from the prevailing design to a fresh, creative approach, however, a significant amount of work is needed (Warty et al., 2021).

The nature of medical device innovation also influences its adoption (Bonair & Persson, 1996). Time, money, and other resources must be invested in the implementation of innovative medical equipment (Faidu, 2020). While cutting-edge medical treatments and enhanced quality of life may be offered by revolutionary gadgets, hospitals may face difficulties due to the expensive cost of these devices as well as extra expenses like anaesthesia, hospital stays, and surgery required to install the device. An innovative medical device typically has a high price tag due to market factors, high costs associated with research and development, and clinical trial expenses (Faldu, 2020). The fact that new devices are rarely adequately reimbursed at the time of regulatory approval is another factor contributing to the delayed adoption of medical devices. Hospitals will also want to confirm that health insurers will cover the new device before making an investment in it, as doing so entails a risk of losing money on each procedure. (Faidu, 2020).

It is simple to defend the adoption of new, cutting-edge gadgets that improve patient outcomes while addressing unmet needs, have a low clinical risk, and are financially advantageous because they benefit both hospitals and patients. The majority of innovative gadgets, on the other hand, offer a competitive advantage over treatment methods that are currently available on the market (Faldu, 2020). The sustainability of the organizations behind these innovations is impacted by the gap between new product design and the diffusion and assimilation of these innovations, particularly SMEs because they have to navigate a difficult and opaque process in order to maintain their clinical presence, impact, and commercial success. (Roback et al, 2007). Because of this, marketers in this industry face a special problem in demonstrating the clinical usefulness and cost-effectiveness of their product while also identifying needs.

1.1.3 Marketing strategies and adoption of medical device innovations

The pharmaceutical and medical device industries have experienced a paradigm shift in the last ten years. The state of healthcare has changed from being a collection of transactional events involving a medical representative and a healthcare professional (HCP) to a state of a

healthcare continuum with a wide range of activities (Kurne, 2015). Companies that manufacture medical products have been progressively expanding their involvement within this continuum in order to affect their clients and other stakeholders more broadly. Businesses must showcase their brand by showing how a comprehensive solution benefits clients and offers value above and beyond the product or service (Kurne, 2015). When medical marketing tactics are planned and executed well, they can engage healthcare professionals and create long-term value beyond the product for which consumers are ready to pay a premium. Kurne (2015)

Adoption of healthcare technologies, i.e., medical devices by healthcare providers, is usually through a technology push model rather than a problem-driven (demand pull) Innovation (Roback et al., 2007). A device's existence must first be known in order to generate demand for the device itself, which brings us to adoption considerations. The vendor's actions, such as sales reps visiting or showcasing the gadget at conferences, trade fairs, and exhibitions, are typically what kickstart the adoption process. Vendors of medical devices, usually company or distributor sales representatives, have been regarded as change agents in the acquisition of medical technology (Reynolds, 2020), these representatives interact with healthcare providers during company hospital business visits or during conferences, symposiums, scientific congress, and trade show whether conventional physical activities or digital meetings. The marketing strategy employed by medical device marketers is typically founded on "the four p's" of marketing: price, product, promotion and place. Its goals are to reach the intended audience, persuade them a value proposition for the product or service, and ensure that the marketed device can satisfy clinical needs based on factors like price, efficacy, safety, and marketing strategy (Ghosh, 2017), which are the focus of this study.

The Technology Acceptance Model (TAM) (Davis, 1989) has proved to be a reliable predictor of the adoption of health technologies, as demonstrated by (Reynolds, 2020; Roback, et al., 2007) in their respective studies on the adoption of medical device innovations. The model's proposition of perceived ease of use and perceived usefulness of a technology affecting the potential users' attitude to the use of a technology are applicable in the healthcare industry. External variables in the context of a healthcare setting have the greatest influence on the two constructs. Reynolds (2020) argues that this external influence is often a marketing force. Victoria (2015) and Mwaura (2021) demonstrate this with their studies on the effect of marketing strategies on the sales execution of medical device firms, their findings bespeak the

importance of a more customer-engaging marketing approach as this would most likely influence healthcare professionals' attitude into adopting a medical device innovation.

1.1.4 Medical Device Industry in Kenya

The medical device industry is undergoing tremendous growth driven by technological innovations in the healthcare sector, enabling healthcare professionals to provide secure, cost-effective, and efficient healthcare services. According to the International Trade Administration (IDA), 'worldwide medical devices industry is predicted to grow from $455.34 billion in 2021 to $657.98 billion in 2028 at a Compound annual growth rate (CAGR) of 5.4% in the projected period, 2021-2028 (IDA, 2020)'. Due to the increasing prevalence of sedentary lifestyles and other circumstances, the incidence of chronic diseases, example: diabetes, cancer, and other non-infectious diseases, is rising, which is driving up demand (fortune business insights, 2022). As an illustration, the International Diabetes Federation (IDF) reported that 436 million people worldwide, or 9.2% of the population, had diabetes in 2019. To effectively manage this chronic condition, these people need to use medical devices like insulin pumps and glucometers (fortune business insights, 2022).

The Kenyan medical device market is estimated at USD 150 million and is projected to grow in the period 2019 – 2024 by a compound annual growth rate (CAGR) at 8.5% rising to USD 212 (KES 24.4 billion) by 2024 (IDA, 2020). The sector relies heavily on importation as domestic production is focused on basic equipment and consumables. The local growth is due to an increasing focus on diagnosis and treatment, with an expansion of health capital expenditure raising the number of people undergoing diagnostic and treatment services. The increasing capital expenditure on health and increasing health insurance coverage driven by Governmental and political policies have led to a recent expansion of the healthcare sector and, in the process, increasing demand for medical devices. Policies such as the Managed Equipment Service (MES) project, which consists of a contractual agreement between the ministry of health(MOH) and several contractors for the supply, installation, maintenance, replacement, and disposal of various medical equipment, as well as training medical staff for the duration of the contractual period at an estimated cost of USD 432,482,160.00 (Kenya - Healthcare - Medical Devices, n.d.), are examples of flexible, long-term contractual arrangements. The Big Four Agenda; is an ambitious project initiated by the president geared towards improving the lives of the population; in the agenda, one of the pillars aims towards

achieving 100% universal healthcare by 2022 by increasing the uptake of health insurance and increasing healthcare expenditure.

Medical devices used in the country are mostly imported from global device manufacturers from developed nations, as local manufacturing is mainly focused on basic equipment and consumables. Few global manufacturers of medical devices, such as Koninklijke Philips Inc., have a presence in the country where customers can outsource directly from them. The majority of devices, however, are imported by third parties. Kenya Medical Supplies Agency (KEMSA) is a Government entity with a mandate to procure and distribute pharmaceuticals and equipment to public healthcare facilities; KEMSA procures from manufacturers or distributors via open tenders or alternative competitive bidding. Non – Governmental non - profit-making Healthcare facilities such as Faith-Based Facilities procure medical supplies from a Non-Profit distributor called Mission or Essential Drugs and Supplies (MEDS), a non-profit Christian organization that is officially recognized as a Trust under the ecumenical cooperation between the Kenya Conference of Catholic Bishops (KCCB) and Christian Health Association of Kenya (CHAK) (Mission of Essential Drugs and Supplies, 2022). Private profit-making healthcare facilities procure medical equipment directly from manufacturers or through authorized commercial distributors in the country. Commercial distributors are often at the forefront of the acquisition of new healthcare technology that they import, apply for local registration, market, and distribute to public, private, and faith-based healthcare organizations.

1.2   Research Problem

Any organisation that faces knowledgeable opposition that could compromise the organization's goal outcome needs to have a marketing plan (Awour, 2014). The majority of businesses operate in settings where competitors may take advantage of them, thus they require strong marketing plans to decide how they want to compete in the market (Awour, 2014). Owing to the ever-changing landscape of business, companies of all sizes, big and little, must implement marketing strategies in order to thrive. These strategies help them draw in and keep clients, which in turn boosts productivity (Woodward, 2004). According to research by Cravens and Piercy (2006), effective marketing techniques have a significant positive impact on market share growth. Since strategic marketing techniques improve brand equity and, eventually, customers' success, they aid in sales.

Marketing strategies employed by medical device manufacturers and distributors are measured by the adoption of these devices by healthcare providers into their routine care provision

(Roback et al., 2007). However, strategic market planning in this industry, unlike the other consumers' products, is challenging as the medical device industry is heavily regulated, and marketers must be compliant with national regulations in order to market their products in these jurisdictions. Moreover, healthcare professionals are busy people, and their attention is often sought by patients, colleagues, interns, and other pharmaceutical representatives. Capturing their attention requires a strong value proposition that would pique their attention.

Adoption decisions of medical devices are influenced by various factors, and marketers of these devices have to implement strategies that overcome these barriers (Gelijns & Rosenberg, 1994). for instance, healthcare costs, especially in resource-restrained settings in hospitals with a limited compensation from health insurance, often make the devices unaffordable, and competitive parallel forces from market entrants with lower margins in a price-sensitive market are a problem. These devices are often complex, requiring an understanding of engineering concepts and clinical benefits; marketers, therefore, have to understand the underlying principles to be able to outline to customers the value derived from the features of the technology.

Reynolds (2020) studied factors influencing surgeons' adoption of medical device technologies from the perspective of the user. The study was key in identifying the motivation behind the adoption of medical devices by surgeons, which can be instrumental in strategic marketing planning by medical device managers. Reynolds recognized six obstacles to the widespread use of medical devices: expense, complexity, fear, usefulness, legality (regulatory), and time. Among these obstacles, time, anxiety, usefulness, and complexity are the ones that are most closely linked to the direct user. Since hospitals are more interested with legality and cost (regulatory permissions), the others are more organizationally focused (Reynolds, 2020). The study, however, did not evaluate the influence of external factors such as marketing practices on surgeons' adoption of these devices, as it has long been postulated that the adoption of new medical technology is mostly initiated by company representatives who interact with healthcare professionals through hospital visits or scientific conferences (Roback et al., 2007).

A study carried out in the USA to evaluate clinical market entry strategies of medical device innovations (Victoria, 2015) showed two strategies having a significant impact on the adoption rates of these innovations; the first strategy is having a physician with an influence in a particular field of medicine peer review the technology and in the process influence others to adopt based on the accrued clinical benefits. An evidence-based marketing strategy was also

effective where medical device manufacturers invested in clinical research to come up with clinical evidence of efficacy, safety, and cost-effectiveness that drives the value proposition in their marketing campaign. The study investigated these strategies as a market entry approach to marketing but did not investigate them at various stages of the product lifecycle. Moreover, the study design had a narrower scope of establishing the effectiveness of marketing strategies as it was focused on only two marketing strategies even though adoption, as shown by Roback et al. (2007), is a result of a combination of factors and variables.

Mwaura (2021) investigated the impact of marketing mix techniques on medical device distributors' sales success at the local level. He concluded that the product development marketing mix strategy is the mostly used by these distributors, with most of them differentiating their products from competitors and approaching a wide market distribution tactic, i.e., place strategy, promotion strategies were also used especially at scientific conferences, symposiums. Price strategy was the least used approach where there was no direct correlation between distributors setting a price in comparison to competition to gain an edge in the market. Mwaura established that the use of novel marketing mix strategies by medical device distributors increased their sales performance, and companies that utilized several approaches had better sales performance compared to the companies that relied on a single approach. The study did not evaluate the impact of marketing mix strategies on the customers' motivation to adopt the device and did not evaluate these strategies as a market entry approach for medical devices.

This study's objective was to evaluate the effect of marketing strategies on the adoption of these devices by healthcare workers in their routine healthcare provision. It was be directed by the question: What are the marketing strategies adopted by medical device firms in Kenya, and what is the influence of these strategies on the adoption of medical devices by healthcare professionals (HCPs)?

1.3   Objectives of the Study

i.   Determine the marketing strategies adopted by medical device firms in Kenya.
ii.   Find out the effect of the marketing strategies on the adoption of medical devices by healthcare providers in Kenyan Hospitals.

1.4   Value of the Study

The study aimed to enable marketing managers working with medical device distributors in Kenya to gain insight into the effectiveness of the common marketing strategies in the medical device industry. The insights are to enable them to design marketing plans from a perspicacious point of view, thus having a competitive advantage and maximizing the market potential of their products in the market. Moreover, increasing the adoption of medical devices in Kenyan healthcare is going to improve the effectiveness, efficacy, and efficiency of some of the services provided in the sector.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This review explores the theoretical concepts explaining the adoption of innovations and empirical studies on marketing strategies and their influence on the adoption of medical innovations. The chapter examines gaps in knowledge that exist with regard to marketing strategies and the adoption of medical device innovations.

2.2 Theoretical Review

The Technology Acceptance Model (TAM) and the Diffusion of Innovation theory (DOI) served as the foundation for this investigation.

2.2.1 The Technology Acceptance Model (TAM)

To direct studies on how human behavioral factors influence the acceptance of technology, Davis (1989) established the Technology Acceptance Model (TAM). According to TAM, two factors—perceived utility and perceived ease of use—affect whether or not potential users will embrace a technology (Thompson, 2018). This model's primary characteristic is its emphasis on the prospective user's perceptions (Thompson, 2018). In other words, even though a technology product's creator may think it's beneficial, potential customers won't embrace it unless they agree with these viewpoints (Thompson, 2018).

According to Reynolds (2020), these two variables subsequently affect users' attitudes towards technology (AT), which in turn affects users' behavioral intention (BI) to utilize the technology. There ought to be some degree of technological adoption from BI. (Source: Reynolds, 2020)

The Technology Acceptance Model (TAM) has shown to be a reliable instrument for researching the acceptance of technology in a variety of domains, including consumer behaviour, hospital administration systems, and education (Ratten, 2015; Escobar-Rodriguez, 2012). Research on TAM frameworks taking into account the clinical technology uptake of healthcare professionals is scarce. The TAM was restricted to Hospital automated medication management systems and the adoption of electronic health records systems (Terrizzi et al., 2012) in the few studies that were focused on the topic. Reynold's (2020) study on cognitive and social factors influencing surgeons' adoption of implantable medical devices using the constructs of TAM was the closest to using any of the variants of TAM to clinical adoption.

2.2.2 Diffusion of Innovation Theory

E.M. Rogers developed the Diffusion of Innovation (DOI) Theory in 1962 (Hussein, 2019). It was first used in the communication industry to describe how a concept or product diffuses among a community or social structure as it develops traction (Hussein, 2019). the outcome of a new concept, way of doing things, or item spreading and being adopted.

The theory evaluates how communication diffuses among people and organizations, which leads to the adoption of technology over time (Reynolds, 2020). This is the stem of a broadly used framework referred to as the adoption curve that categorizes adopters into various classes: innovators – the most risk averse, educated, with extensive information networks; early adopters – the leaders who are influential and well respected; early majority – the followers, late majority – t According to Reynolds (2020), the theory looks at how communication spreads among people and organizations and how this eventually results in the adoption of technology. This is the foundation of a widely used framework known as the adoption curve, which divides adopters into a number of classes: innovators, who are more daring, educated, and have longer information networks; early adopters, who are respected and powerful social leaders; early majority, who are followers; late majority, who are hesitant, suspicious followers; and laggards, who are traditional, unwilling followers. The medical device sector makes extensive use of the adoption curve to quickly identify early adopters (Key Opinion Leaders), classify prospects during customer segmentation activities, and determine marketing techniques that will impact future sales (Reynolds, 2020). The skeptical followers, and laggards – the classical, unwilling followers. The medical device sector makes extensive use of the adoption curve to quickly identify early adopters (Key Opinion Leaders), classify prospects during customer segmentation activities, and determine marketing techniques that will impact future sales (Reynolds, 2020).

The method by which a person accepts an invention and sees it through to diffusion; this includes recognizing the innovation's need, deciding whether to accept it or reject it, using it initially to test it out, and keeping using it after that. As stated by Rogers (1962)The five main factors listed below influence how soon an idea is adopted: Relative Advantage: The extend to which an invention is seen as being better than the idealology, plan, or thing it replaces The extent to which an innovation aligns with potential users' requirements, values, and experiences Complexity: The degree to which a new idea is comprehensible or apply Triability: The degree to which a new idea can be tested or assessed prior to adoption decisions Observability: The

extend to which the innovation produces quantifiable results. Roger claims that these factors affect the five adopter types differently.

Medical device businesses' sales and marketing strategies typically adhere to the diffusion modelling approach (Rogers, 2003), wherein HCP targets are considered "innovators" and are expected to impact the "majority" (Reynolds, 2020). Furthermore, research has demonstrated that DOI properly captures the actions of healthcare professionals in implementing workplace technologies (Lee, 2004; Gordana, 2006; Zhang et al., 2015). It has served as a conceptual framework for the uptake of medical innovations in a number of research (Roback et al., 2007; Lee, 2004).

2.3 Empirical Literature on Marketing Strategies and the Adoption of Medical Devices.

Adoption of healthcare technologies, i.e., medical devices by healthcare providers, is usually through a technology push model rather than problem-driven (demand pull) Innovations (Roback et al., 2007). Marketing has been regarded as the antecedent factor in the change of technology-dominant designs in the healthcare industry; adoption consideration of medical devices always begins with vendor activities creating awareness of the product which then creates demand for it (technology pull model). Vendor marketing initiatives, such as sales staff visiting or showcasing the device at conferences, trade fairs, and exhibitions, are typically what kickstart the adoption process.

Studies investigating the influence of marketing strategies of these medical device vendor companies on the adoption of these devices are, however, lacking. In a qualitative study set in the USA, Victoria (2015) sought to investigate clinical marketing strategies that increase the adoption of medical device innovations; the study was designed to investigate two strategies: key opinion leader strategy and evidence-based strategy, all forms of promotion strategy in the broad marketing mix approach. She concluded that these strategies had a positive correlation with the adoption of medical devices, with most medical device vendors, if not all, relying on these two strategies to promote their products. The study, however, had a narrower view of investigating marketing strategy as a whole as it focused on the commonly used marketing tools/tactics used by medical device and pharmaceutical firms but did not evaluate the firm's overall approach to marketing. Coufolova et al. (2011) dissertation on the development of a marketing strategy for launching medical devices is, however, consistent with Victoria's findings; in their conclusion, they assert that medical device companies have to make a lot of

afford in order to draw the core buyer's attention and acknowledgment, this physicians acknowledgment is essential in the industry especially during product launch as they lend products credibility and acceptability among the target community Moreover peer recommendations is very crucial in the medical device adoption decisions. These two studies illustrate a common theme of promotion strategies used in the medical device industry; Key Opinion Leaders strategy and evidence-based marketing strategy. A key opinion Leader is a form of influencer marketing that entails the use of respected experts to influence peers into adopting a technology. Evidence-Based medicine is the use of scientific and clinical evidence of device efficiency and effectiveness in the core value proposition to potential customers.

In a cross-sectional descriptive study, Elizabeth (2011) aimed to determine the impact of marketing methods employed by pharmaceutical companies in Nairobi, Kenya, on their sales success. She established a correlation between marketing strategy and the sales performance of pharmaceutical firms. Firms with a well-documented strategy had better sales. She opines that at the business level strategy pharmaceutical firms adopt defender and prospector strategies of the snow and miles typology to gain a competitive edge. Ansoff's growth model strategies were also used when firms sought to expand their customer base, with market penetration and market development strategies being the most prominent. Marketing mix strategies were dominant, with firms utilizing an assortment of Product, Price, Promotion, and Place strategies in their marketing approach; however, branding, product packaging, premium pricing, fronting quality products, wide market coverage, and multiple distribution channels were the most commonly used strategies.

Mwaura (2021) investigated how distributors of medical devices performed in terms of sales in relation to their marketing mix methods. He concluded that the product development marketing mix strategy is the mostly used by these distributors, with most of them differentiating their products from competitors and approaching a wide market distribution tactic, i.e., place strategy, promotion strategies were also used especially at scientific conferences, symposiums. Price strategy was the least used approach where there was no direct correlation between distributors setting a price in comparison to competition to gain an edge in the market. Mwaura established that the use of novel marketing mix strategies by medical device distributors increased their sales performance, and companies that utilized several approaches had better sales performance compared to the companies that relied on a single approach. These findings by Mwaura are in tandem with similar studies on the influence of marketing mix strategies on a firm's performance. (Mulinge,2019; Awino, 2018; Karanja, 2014;

Mohammed, 2012) all agree that there is a positive and substantial correlation between marketing mix strategies and performance, with product strategies having the largest impact and dictating the pricing, place, and promotion tactics that the company will adopt. These results agree with the marketing mix theory, which holds that in order for businesses to gain a competitive advantage, they must fully comprehend the marketing mix as it relates to the four Ps and use it to create a mix that meets the needs of their customers and markets by transforming the sector's available resources (Mulinge, 2019).

CHAPTER THREE: RESEARCH METHODOLOGY

3.1   Introduction

This chapter describes the research methods that will be used in this study to look into clinical marketing strategies that affect Kenyan healthcare providers' uptake of medical devices. The target population, data collecting, analysis, and presentation techniques, as well as the study design, are its main areas of attention.

3.2   Research Design

To find out how marketing tactics affected the uptake of medical devices, a descriptive cross-sectional survey approach was employed. Descriptive designs aim to describe a topic through data collection and their integration through the presentation of a set of people, problems and events (Cooper & Schindler, 2003. A descriptive design was selected because it quantitatively characterizes the degree to which marketing strategies affect the adoption decisions of medical devices. The method made sure to examine the who, what, where, when, and location in relation to a certain pertinent phenomenon as well as the degree of the correlation between the variables. (Mwaura, 2021).

3.3   Target Population

The populations of interest for this study involved manufacturers of class II and class III medical devices firms domiciled in Kenya and Local Authorized Representative companies of manufacturers located outside the country. Class II and III medical devices are defined as medical devices with moderate to high risk and require special control and pre-market approval (Pharmacy and Poisons Board).

Class II and III devices were selected for this study as they were often the devices heavily marketed by the manufacturers and their representatives. According to Data from Pharmacy and Poisons Board (PPB), there are 110 companies licensed to market and sell class II and III medical device companies in Kenya (PPB, 2022)

Since the population was easily accessible and fairly manageable, a census was adopted; moreover, the approach improved the accuracy of the findings of the study. Mugenda and Mugenda (2003) state as long as there are fewer than 200 people in the population, a census is appropriate.

3.4 Data collection

Because questionnaires can have predetermined answers, they are employed in data collection. The study factors led to the division of the structured questionnaires into two portions. Section A included comprehensive general data about the participants. Information on marketing tactics and their alleged impact on the uptake of medical devices was provided in Section B.

Respondents were selected from the marketing departments of the target firms based on their role in the marketing teams; marketing lead managers, sales supervisors, product specialists, or senior sales and medical representatives were each selected from the firm on a convenience and availability basis.

The researcher or a helper would drop the questionnaire and ask participants to complete it at their leisure using a drop-and-pick technique; the filled questionnaires was picked later. A follow-up with a phone call was used to remind respondents to fill in the questionnaires and handle any issues.

3.5 Data Analysis

The collected data was screened, cleaned, and coded into SPSS version 26. The data was analyzed quantitatively using descriptive and inferential statistics. First, to describe the population from which data was collected, descriptive information on gender, job titles, and work experience was described using mean mode and percentages, and tables and bar graphs were utilized to present the data. Secondly, in order to establish the marketing strategies utilized by the firms under study, Frequencies, percentages, and the descriptive measure of central tendency using the mean and standard deviation of the data from the variable marketing strategies was used to deductively identify common strategies in the study population.

Data from the Variables (marketing strategies and adoption of medical devices) was then subjected to a test of normality using the Kolmogorov-Smirnov test (assuming > 50% response rate) with a $p < 0.05$, non-parametric methods were used to establish relationships using Spearman's rank order correlation and Ordinal regression. The regression coefficient (β) and coefficient of correlation (r) derived from these tests of the association was used to explain the impact of marketing tactics on healthcare professionals' (HCPs') adoption of medical equipment in Kenyan hospitals.

CHAPTER FOUR: DATA ANALYSIS AND INTEPRETATION

4.1   Introduction

The purpose of the study was to ascertain the marketing strategies used by Kenyan medical device businesses and how these tactics affected the choices made by medical professionals to use these goods. This chapter presents the study's analysis and conclusions in accordance with the objective.

4.2   Response rate

As shown in table 4.1. Out of 110 questionnaires 78 were returned representing a 70.91 % response rate. These formed the basis for analysis of the data.

Table 4.1 Percentage of participants' responces

Questionnaires	Number	Percentage (%)
returned	78	70.91
Not returned	32	29.09
Total	110	100

Source, primary data, 2023

4.3   Demographics Analysis

4.3.1 Gender

Of the 78 respondents, 46 (58.97 %) were male while 32 (41.03 %) were female. This meant that the marketing department of the medical device firms in Kenya have slightly more male employees than the females.

4.3.2 Size of the Marketing Team

Determining if the size of the organization which influences the choice of marketing approach was crucial. The number of employees was gathered for the study as a variable to gauge the size of the business.

Table 4.2. Number of Employees in marketing teams

Sales team size

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	9	11.7	11.7	11.7
	less than 5 people	31	40.0	40.0	51.7
	5 - 10 people	35	45.0	45.0	96.7
	over 10 people	3	3.3	3.3	100.0
	Total	78	100.0	100.0	

Source: *Primary data, 2023*

Illustrated on table 4.2 most of the firms had marketing teams of between 5 – 10 people at 45%. A sizeable number of firms of about 40% had less than 5 people in their marketing teams. Only about 3.3% of the firms had more than 10 personnel in their marketing teams.

4.3.3 Length of Service

How long a person has worked for a company had a big role in determining whether or not that element would be taken into account when selecting the marketing plan.

**Figure 4.1 Length of Service in the Company**

Source: *Primary data, 2023*

Displayed in figure 4.1. 36.67% of the respondents in the data had fewer than five years of experience. At 35%, employees with 5 to 9 years of experience with the company came in second. Employees who have worked for their company for ten to fifteen years came in third place (20%). Merely 8.33% of the participants reported having worked for their present company for over 15 years.

4.3.4 Position of the Respondents

An additional crucial factor for the research was the respondent's position within the organization. This was due to the fact that senior sales and marketing employees who were familiar with the companies' marketing tactics were the study's target audience.

Figure 4.2: Participants' Job Title
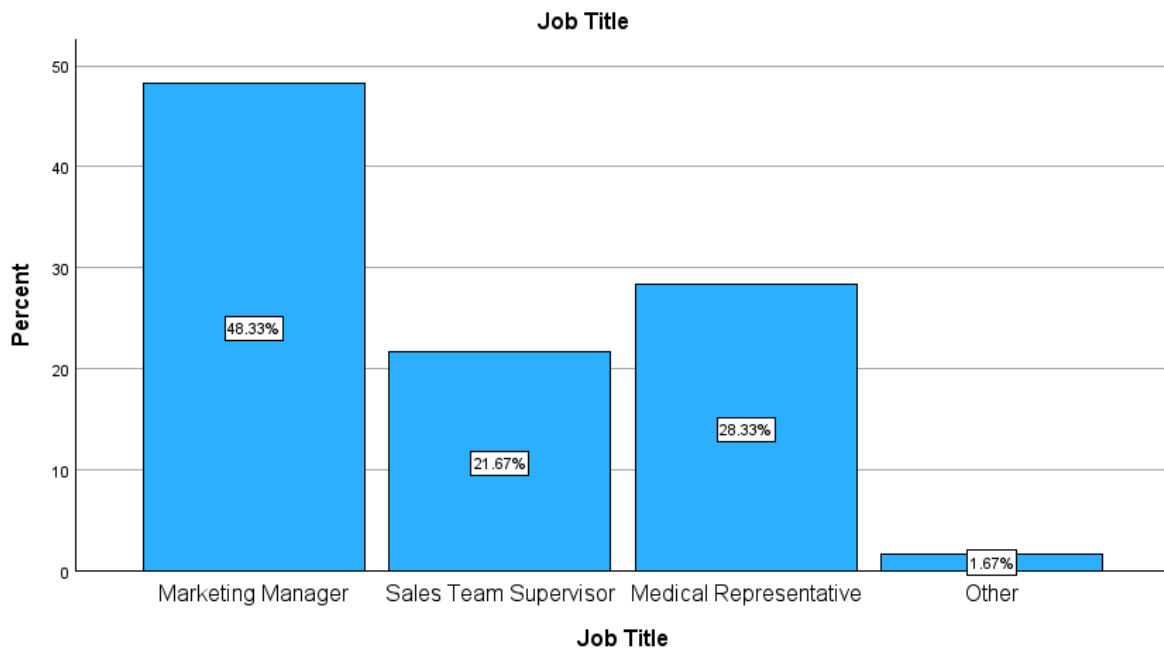
Source: *Primary data, 2023*

Figure 4.2 shows that of the survey participants, 48.33% were marketing managers, 21.67% were sales and marketing supervisors, 28.33% were medical representatives, and 1.6% were other team members. As the study had predicted, a sizable portion of the respondents worked in the marketing division.

4.3.5 Duration the company has been in Operation

The study sought to evaluate the duration firms have been operation to establish whether experience in the market influences choice of marketing strategy.

Table 4.3. Duration of the firms' operation.

Age of the company

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 5 yrs	4	5.0	5.0	5.0
	5-9 yrs	6	8.3	8.3	13.3
	10 - 15 yrs	4	5.0	5.0	18.3
	over 15 yrs	64	81.7	81.7	100.0
	Total	78	100.0	100.0	

Illustrated in table 4.3, Majority of the firms had been in operation for more than 15 years (81.7 %). 13.3 % of the firms were between 5 – 15years old in the business. Only 5 % had less than 5 years duration of operation.

4.4 Marketing strategies

The study sought to analyse the use of three marketing strategies by medical device firms in Kenya: Marketing mix strategies, Ansoff growth model Strategies and Miles and snow typology of organizational strategies, and their effect on adoption of medical devices by healthcare providers.

Table 4.4 Marketing strategies

Marketing Strategies

	N	Minimum	Maximum	Mean	Std. Deviation
Marketing mix strategies	78	3.45	4.94	4.4329	.32179
Ansoff Growth strategies	78	2.46	4.58	3.8260	.42147
Miles & snow typology of organization strategy	78	3.33	4.25	4.0549	.18594
Valid N (listwise)	78				

Source: *Primary data, 2023*

As shown on Table 4.4. Medical device firms utilize the three strategies in their marketing approach. Marketing Mix strategies are however more commonly used with a mean of 4.43 and a standard deviation of 0.32.(from a 5-point Likert scale). Similarly, Miles and Snow competitive strategies were adopted by the firms under study with a mean of 4.05 and a

standard deviation of 0.18. Ansoff Growth strategies were however, the least used of the three strategies, with a mean of 3.82 and a standard deviation of 0.42.

4.4.1 Marketing mix strategies

The study analysed the use of the four marketing mix tools: Product, Price, Place and Promotion, by medical device firms in Kenya.

Table 4.5 marketing mix strategies

Marketing Mix Strategies

		Product strategies	Pricing strategies	Place strategies	Promotion strategies
N	Valid	78	78	78	78
	Missing	0	0	0	0
Mean		4.63	4.48	4.69	3.94
Mode		5.00	4.50	5.00	4.25
Std. Deviation		.41	.38	.41	.39

Source: *Primary data, 2023*

As shown on table 4.5. Product and place marketing mix strategies were more commonly used with a mean of 4.62 and 4.69 respectively, pricing strategy followed closely with a mean of 4.48. Promotional strategies were the least preferred with a mean of 3.94. This is in tandem with a study, Mwaura (2021) that investigated the marketing mix strategies among medical device firms and asserted that product strategies and place strategies were the dominant strategy followed by pricing and promotions strategies.

4.4.2 Miles and Snow typology of organization strategy

This study evaluated the adoption of marketing strategies derived from Miles and Snow typology of organization strategy (Miles and Snow, 1978) into marketing tactics of medical device firms in Kenya. These included: Reactor competitive strategies, Prospector strategies, defender Strategies and Analyzer strategies.

Table 4.6 Miles and Snow typology of organization strategy

Miles & Snow typology of organization strategy

		Reactor competitive strategies	Prospector Competitive strategies	Defender competitive strategies	Analyzer competitve strategies
N	Valid	78	78	78	78
	Missing	0	0	0	0
Mean		1.60	4.92	4.89	4.81
Mode		1.00	5.00	5.00	5.00
Std. Deviation		.61	.25	.28	.40

Source: *Primary data, 2023*

As illustrated by table 4.6. Prospector, defender and analyser strategies are the most commonly used with a mean of 4.92, 4.89 and 4.81 respectively. However, Reactor strategies are the least utilized with a mean of 1.61, demonstrating a current practise where marketing strategy is becoming more proactive in pursuant to customers in the medical device industry which traditionally was problem driven (demand pull).

4.4.3 Ansoff Growth model strategies

Ansoff Growth model strategies (Ansoff, 1957) were the least used of the three strategies with a mean of 3.82. and a standard deviation of 0.42.

Table 4.7 Ansoff Growth model strategies.

Ansoff Growth Model Strategies

		Market penentration strategies	Market development strategies	Product development strategies	Diversification strategies
N	Valid	78	78	78	78
	Missing	0	0	0	0
Mean		3.87	4.64	4.48	2.31
Mode		4.00	5.00	5.00	2.00
Std. Deviation		.63	.42	.63	.88

Source: *Primary data, 2023*

Table 4.7 demonstrates that the companies under investigation favoured strategies with corresponding means of 4.64 and 4.48 that attempted to introduce new items into existing markets and expand into new markets using their current products (market development and product development strategies). With a mean of 3.87, market penetration tactics including

lowering prices to increase market dominance were also prevalent. With a mean of 2.31, acquisitions and mergers are the least prevalent diversification methods among medical device companies.

4.5   Marketing strategy and the adoption of medical devices.

Three marketing strategies: Marketing mix, Ansoff growth strategies and Miles & Snow competitive strategies, (independent variables) were analysed to determine their effect on the adoption of medical devices (dependent variable) by healthcare providers.

4.5.1   Test of normality.

The data distribution was tested using the Shapiro-Wilk test with a sample size of less than 100. All three variables had a significance value less than 0.01, suggesting that the data did not follow a normal distribution. The study employed a non-parametric approach that included ordinal regression and spearman's rank order correlation to investigate the link between medical device uptake and marketing strategy. The data distribution is shown in Table 4.8.

Table 4.8 Normality test.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Marketing mix strategies	.182	78	<.001	.899	78	<.001
Ansoff Growth strategies	.228	78	<.001	.873	78	<.001
Miles & snow typology of organization strategy	.201	78	<.001	.831	78	<.001
adoption	.210	78	<.001	.781	78	<.001

a. Lilliefors Significance Correction

4.5.2   Regression and correlation Parameters

The primary objective of the study was to investigate the effect of marketing strategy on the adoption of medical devices by healthcare providers. Three marketing strategies: Marketing mix strategies, Ansoff Growth Strategies and Miles & Snow Typology of organization strategy, were analysed against a dependant variable; adoption. To determine the relationship and association between the variables, spearman's rank order correlation and ordinal regression were employed.

Table 4.9 R square test

Pseudo R-Square

Cox and Snell	.435
Nagelkerke	.435
McFadden	.252

Link function: Logit.

Nagelkerke R square value of 0.435 (shown in table 4.9), indicates a moderate relationship between the Adoption of medical devices (dependant variable) and marketing strategies (independent variables), where approximately 43.5 % change in adoption is most likely due to the choice of marketing strategy by medical device firms.

Table 4.10 Regression Parameters

Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[adoption = 3.39]	24.069	5.779	17.346	1	<.001	12.742	35.396
	[adoption = 3.51]	25.251	5.827	18.776	1	<.001	13.829	36.672
	[adoption = 3.54]	25.950	5.883	19.458	1	<.001	14.420	37.480
Location	mm_strategies	3.256	1.079	9.115	1	.003	1.142	5.370
	Growth_strategies	-.595	.656	.823	1	.364	-1.882	.691
	Competitive_strategies	4.414	1.983	4.954	1	.026	.527	8.300

Link function: Logit.

Table 4.11 correlation coeficients

Correlations

			adoption	Marketing mix strategies	Ansoff Growth strategies	Miles & snow typology of organization strategy
Spearman's rho	adoption	Correlation Coefficient	1.000	.552**	.180	.544**
		Sig. (2-tailed)	.	<.001	.169	<.001
		N	78	78	78	78
	Marketing mix strategies	Correlation Coefficient	.552**	1.000	.181	.650**
		Sig. (2-tailed)	<.001	.	.166	<.001
		N	78	78	78	78
	Ansoff Growth strategies	Correlation Coefficient	.180	.181	1.000	.293*
		Sig. (2-tailed)	.169	.166	.	.023
		N	78	78	78	78
	Miles & snow typology of organization strategy	Correlation Coefficient	.544**	.650**	.293*	1.000
		Sig. (2-tailed)	<.001	<.001	.023	.
		N	78	78	78	78

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Marketing mix strategies were a significant positive predictor of adoption of medical devices, for every one unit increase in marketing mix strategy, there was a predicted increase of 3.25 (p = 0.003). in the log odds of being at a higher level on the adoption of medical devices (ρ =0.552).

The adoption of medical devices was significantly positively correlated with competitive strategies. Specifically, there was a predicted rise of 4.414 (p = 0.026) in the log odds of being at a higher level of the adoption of medical device for every unit increase in use of competitive strategies (ρ =0.544)

Growth strategies had a negative correlation with adoption of medical devices. As the use of these strategies increased by a unit, there was a – 0.595 (p = 0.364) probability that adoption of the device will occur (ρ =0.180)

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

The aim of the research was to identify the marketing tactics employed by medical device companies in Kenya and investigate the impact of these tactics on healthcare practitioners' adoption of these products. The major conclusions are outlined in this chapter. It then draws a conclusion based on the study's findings. In addition, the chapter highlights the study's shortcomings and offers suggestions for future research derived from the study findings.

5.2 Summary of the Findings

The goal of the study was to assess medical device companies' marketing tactics in the Kenyan market and how these tactics affected healthcare practitioners' decisions to use their products. Three tactics were assessed: The influence of the marketing mix, Ansoff growth tactics, and Miles & Snow competition strategies (independent variables) on healthcare providers' use of medical devices (dependent variable) was examined. Kenyan medical device companies run their marketing campaigns using a combination of all three tactics.

Marketing mix strategies were heavily utilized in the marketing approach of the firms under study. This is in tandem with study by Mwaura (2021) that showed marketing mix tools had a significant effect on sales performance of medical device firms in Kenya. Similarly, Elizabeth (2011) argued that pharmaceutical firms hugely depend on mix of strategies borrowed from the marketing mix theory. Product and place strategies dominated the choice of marketing mix approaches. Promotion and Price tactics being less preferred compared to the former, but still making a significant portion of their marketing plans. Mwaura (2021) had a similar discovery where product and place tactics had a superior preference compared to place and promotion tools. Analysis of Marketing mix strategies and adoption showed a positive relationship between its use and the probability of influencing healthcare workers into accepting medical technologies marketed by these firms. Nevertheless, this was deducted from the opinion of marketers and doesn't statistically show influence of marketing on the motivations of healthcare workers into accepting a technology.

Miles and Snow Typology competitive strategies were equally adopted into marketing campaigns of firms under investigation. Prospector, defender and analyser strategies are more

preferred compared to reactor strategies. These discoveries demonstrate a current paradigm shift where marketing in the medical technology space is becoming more proactive in pursuant to customers, an industry which traditionally was problem driven (demand pull) and medical technology firms were more transaction oriented. (Roback, et al.,2007). Evaluation of these strategies showed a positive prediction on the probability of a device being adopted by healthcare providers with the use of the said competitive tactics. Notwithstanding, this was deduced from the opinion of marketers and not the adopters (healthcare workers).

Ansoff growth model strategies were the least used marketing strategies by the firms under study. Moreover, these strategies had a negative correlation with the odds of influencing adoption of medical devices by healthcare practitioners. Nonetheless, the firms under investigation favoured strategies targeted at entering new markets with their current products (market development) and introducing new items in already-existing markets (product development strategies). Market penetration tactics including lowering prices to increase market dominance were also prevalent, acquisitions and mergers are the least typical diversification tactics. This contradicts results by Elizabeth (2011) in a similar industry that showed pharmaceutical firms highly use growth strategies to expand their business and increase sales.

5.3 Conclusion

The results showed that Kenyan medical device companies utilize a set of different strategies on their marketing approach. From the 3 strategies evaluated marketing mix approaches comprised of the majority of the strategy with product and place marketing mix tools dominating. Marketing mix approaches was significantly positive correlated to the adoption of medical devices. Similarly, Miles and Snow typology competitive strategies were also highly adopted by the medical device firms. These approaches have a positive prediction on the chance that a medical device will be adopted by healthcare providers in Kenya.

On the other hand, Ansoff growth model strategies are the least used strategies by the Kenya medical device firms. Moreover, these strategies had a negative predictive value of the probability of a medical device being adopted by healthcare providers. This means that these particular strategies have little or negative effect on the adoption decisions of medical devices by healthcare providers and should be used in the realm of other marketing goals but not in the context of adoption.

5.4 Limitations

The study did not the evaluate covariate factors that could influence the decision of adopting medical devices, and assumed decision were solely determine by marketing forces and not demand forces. For instance, factors such as cost, healthcare provider preference have a significant effect on the adoption of medical devices in Kenyan healthcare systems. Additionally, the study sought the opinions of marketers on the effect of marketing on adoption decisions of healthcare providers, introducing a potential bias of opinion.

5.5 Recommendations

Marketing managers in the medical device space should design strategies with the realization that choice of a particular strategy has significant influence on healthcare providers decision to adopt a particular technology. Moreover, marketing mix strategies are not only effective in predicting sales but also on the adoption of technologies.

Miles and Snow competitive strategies should be included in marketing plans of medical device firms because of its positive association with the adoption of medical devices. On the other hand, Ansoff growth model strategies have no influence on adoption decisions and marketing managers should be aware when designing strategy to increase market share.

5.6 Suggestions for further Research

The study found a moderate correlation between medical device adoption decisions and marketing strategies, indication a multivariate influence on adoption, I recommend marketing scholars to investigate adoption of medical devices to uncover the influencing factors besides marketing forces on the decisions of healthcare providers when purchasing medical technology.

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