

**THE INFLUENCE OF MEDICAL SCIENCE LIAISONS ON ONCOLOGISTS'
ADOPTION OF INNOVATIVE CANCER THERAPIES IN KENYA**



**A RESEARCH PROJECT SUBMITTED TO STRATHMORE BUSINESS SCHOOL,
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REQUIREMENTS FOR THE DEGREE OF MASTERS IN BUSINESS
ADMINISTRATION**

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DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the dissertation contains no material previously published or written by another person except where due reference is made in the dissertation itself.

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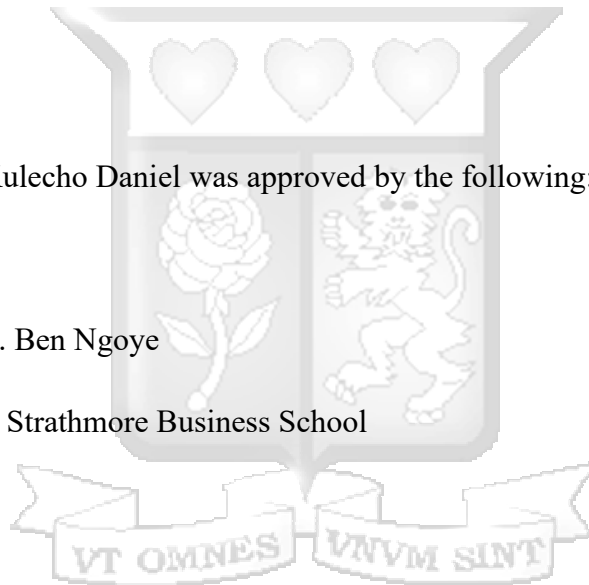
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ABSTRACT

In the rapidly evolving field of oncology, the introduction of new pharmaceutical products is critical to advancing treatment options, improving patient outcomes, and addressing the complexities of cancer management. The role of medical science liaisons has become increasingly important in the process of facilitating the adoption of these innovative treatments among oncologists. MSLs bridge the gap between pharmaceutical companies and healthcare providers, ensuring that oncologists are well-informed about the latest advancements in cancer treatment options. However, the specific impact of MSLs on the adoption of new innovative cancer therapies among oncologists in Kenya is understudied. The study sought to examine the influence of medical science liaisons on oncologists' adoption of innovative cancer therapies in Kenya. Specifically, the study sought to determine how the attributes of MSLs, attributes of oncologists, characteristics of MSL – oncologists' interactions and the product characteristics that influences their adoption by oncologists in Kenya. The research was premised on the diffusion of innovation theory and the relationship marketing theory. This study used a positive philosophy and a descriptive research study design. The research targeted the 70 Oncologists registered with the KMPDC as of 2024. The research sampled all the 70 respondents in the sampling frame and obtained a 77% response rate. A structured research questionnaire was utilized in the data collection with both drop and pick method as well as use of Google forms. The study instrument was pretested to determine its reliability and validity. Analysis of the study data was conducted using descriptive and inferential statistics. The findings of the overall regression revealed that there was no statistically significant relationship between the MSL attributes ($p = -.066 > .05$), physician attributes ($p = .562 > .05$) and product attributes ($p = .156 > .05$) on the adoption of new cancer therapies in Kenya. However, MSL-Oncologist interactions had a positive and significant effect ($p = .045 < .05$) on the adoption of new cancer therapies. Based on the research results, the study recommends that the Ministry of Health through the relevant body should establish national guidelines that emphasize scientific and clinical evidence as the primary driver for the adoption of new cancer therapies. The study also recommends that pharmaceutical companies should reevaluate the role of MSLs and focus on enhancing their impact beyond technical knowledge by improving engagement strategies. Finally, pharmaceutical firms should foster collaborative engagements, such as multidisciplinary team meetings, to strengthen the oncologist-MSL relationship.

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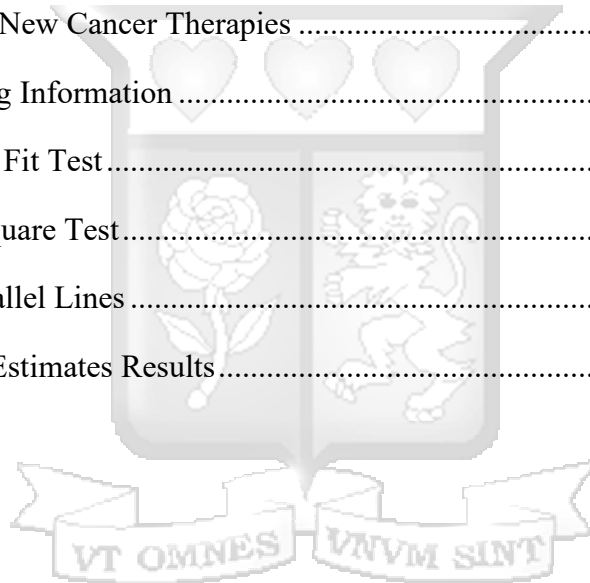
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LIST OF ABBREVIATIONS

GP	General Practitioner
KOL	Key Opinion Leader
MSL	Medical Science Liaison
PSR	Pharmaceutical Sales Representative
R&D	Research and Development
SP	Specialist Practitioner
CME	Continuous Medical Education
PTAMs	Pharmacotherapy Audit Meetings



DEFINITION OF TERMS

Adoption of Innovative Cancer Therapies	The process by which oncologists incorporate new and innovative cancer therapies and treatment protocols into their clinical practice (Krendyukov & Gattu, 2020).
Key Opinion Leaders	These are acknowledged experts in academics and research who are frequently seen by their colleagues as trailblazers and mentors in respective particular fields (Lilliana, 2014).
Medical Science Liaison	A group of professionals, commonly field-based, under the medical affairs department within a pharmaceutical or biomedical organization (Moss, Smith, Anderson, 2015).
MSL Attributes	MSL attributes that convinced KOL to adopt a new product include product knowledge, scientific credibility, therapeutic area knowledge, timeliness of responsiveness, and communication skills (Moss, Smith, Anderson, 2015).
Oncologist	An oncologist is a medical doctor specialized in diagnosing, treating, and managing cancer (Setia, Ryan, Nair, Ching, & Subramaniam, 2018)
Physician	A physician is a competent medical practitioner, especially one who focuses on diagnosis and non-surgical treatment (Setia, Ryan, Nair, Ching, & Subramaniam, 2018)
Physician attributes	Lublóy (2014) identifies certain physician attributes identified to influence drug adoption. She broadly classifies the attributes into two: socio-demographic and scientific orientation

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

In the oncology industry, the success of new and innovative cancer therapies heavily and often depends on how physicians perceive and adopt them (Wamble & Brogan, 2018). As these new therapies enter the market, it is vital that oncologists are equipped with knowledge of and access to the latest information that best meet their patients' health needs (Lublóy, 2014a). The adoption of innovative cancer therapies in oncology pushing the boundaries of cancer treatment and is critical to addressing the evolving challenges of cancer treatment (Price et al., 2021). Globally, where cancer is a leading cause of mortality and morbidity, innovative treatments have the potential to improve patient outcomes significantly (KEMRI, 2024). However, the process of adopting new innovative treatments in oncology is often complex and influenced by various factors despite the potential benefits of these therapies.

Oncology development has made significant strides globally, with an increasing number of targeted therapies, immunotherapies, and personalized medicine approaches becoming available (Upadhaya, Hubbard-Lucey, & Yu, 2020). The adoption of these therapies, however, is highly dependent on the willingness and ability of oncologists to incorporate them into their treatment protocols. MSLs help to facilitate this process by providing oncologists with real-world evidence, highlighting the benefits and limitations of new products, and offering insights into patient selection and monitoring (Abdihamid, 2022). This evidence-based guidance is particularly important where oncologists may face various constraints. The relationship between MSLs and oncologists, therefore, has a direct impact on the successful introduction and use of new oncology drugs (González del Castillo, García, Matesanz-Marín, Gómez-Sánchez, & Sastre, 2022).

Research has shown that MSLs possess information and knowledge that is critical to influencing the adoption of new innovative cancer therapy products through several mechanisms, including educational support, clinical consultations, and providing unbiased, science-driven information (Rabea, 2022). Rabea (2022) avers that their impact is especially pronounced in oncology, where treatments are often complex, expensive, and require thorough understanding before they can be recommended for patients. By fostering trust and credibility, MSLs can help mitigate potential

barriers to adoption, such as skepticism or lack of familiarity with new treatments (Wamble & Brogan, 2018). In Kenya, the impact of MSLs on the adoption of oncology drugs remains underexplored (Abdihamid, 2022), creating a gap in understanding how this unique role can optimize the integration of innovative therapies into oncological care. This is despite cancer being one of the most significant public health concerns in Kenya.

According to KEMRI (2024), cancer is the third leading cause of mortality in Kenya, following infectious and cardiovascular diseases. Every year, approximately 42,000 new cancer cases are reported, with an estimated 27,000 deaths (Ministry of Health, 2023). The high mortality rate associated with cancer in Kenya highlights the need for more effective treatments, including the adoption of innovative therapies that can improve survival rates and quality of life for cancer patients. Innovative cancer therapies offer the potential to improve survival rates and quality of life for patients. However, the uptake of these therapies in Kenya remains low, hindered by systemic barriers such as inadequate healthcare infrastructure, high costs, and limited awareness among oncologists (Manduku, Wangwe, Wanjala, Mackintosh, & Ngilangwa, 2024). Medical Science Liaisons serve as critical facilitators in addressing these barriers by providing oncologists with the latest evidence-based information about new treatments. The study examined how these medical science liaisons influence oncologists' adoption of innovative cancer therapies in Kenya.

1.1.1 Medical Science Liaisons

Moss, Smith, Andeson (2015) consider Medical Science Liaisons MSLs to be those field-based professionals in the medical affairs division of a pharmaceutical or biomedical company whose role is to bridge the information gap between research and clinical practice. Lilliana and Cruz (2014) aver that these experts hold extensive degrees and expertise in the life sciences, and are typically used to inform medical practitioners about a company's therapeutic potential at a certain point in a product's lifetime. The MSL role was created in 1967 by Upjohn Corporation and was initially a top sales representative (García García et al., 2023), but its role expanded since 1989 as it emerged as a distinct field of study and profession, refocusing their attention from marketing assistance to key opinion leaders (KOL) who specialize in unique fields such as oncology (Lilliana and Cruz, 2014). Although MSLs have a variety of duties (Battaglia & Landi, 2023), their primary responsibility is to connect the science behind pharmaceutical corporations' research and development (R&D) to the doctors who prescribe their medicines (Plantevin, 2017).

Renko (2022) explains that pharmaceutical corporations consider MSLs to be trusted colleagues who have in-depth knowledge about the scientific landscape, a company's products and therapeutic areas, information that can be contextualized to translate complex research into actionable knowledge. They act as the link between clinicians, research and the pharmaceutical industry and provide clinicians with accurate and balanced information without which they would not know the effectiveness of treatments. By using someone they see as a colleague to bridge this gap, pharmaceutical corporations see it as a means to win over healthcare professionals' confidence (Renko, 2022). Estimates from Plantevin (2017) suggest that at least 50% of new medicine releases fail without this connection.

While this relationship may be valuable to improving the effectiveness of cancer treatment by influencing oncologists' knowledge and decision making regarding new forms of treatment, the success of this newfound relationship is influenced by a variety of factors, which in turn affect how the product diffuses and is adopted (Filetti, Trapani, Cortellini, Cofini, & Giusti, 2021). Matikainen (2017) and Moss et.al (2015) outline various attributes that may enhance or slow down the rate at which innovative treatments are adopted. Moss et.al (2015) interviewed KOLs on the attributes they expect MSLs to possess and majority of responses indicated that they value MSLs product knowledge, scientific credibility, therapeutic area knowledge, timeliness of responsiveness, and communication skills. Meanwhile, Battaglia and Landi (2023) identified strong clinical knowledge and a credible, evidence-based approach as key MSLs attributes that can influence oncologists' adoption decisions. Understanding the expectations of Kenyan oncologists is critical to ensuring stable supply of MSL professionals whose attributes are localized and relevant to the Kenyan healthcare sector (Abdihamid, 2022).

Oncologists are specialized healthcare professionals who are trusted experts and influential voices in their field, and according to Filetti, Trapani, Cortellini, Cofini, and Giusti, (2021), a variety of factors unique to them have significant impacts on their acceptability of innovative treatments. García et al., (2023) opine that factors such as their clinical knowledge, openness to innovation, and familiarity with recent research, heavily influences their willingness to adopt new treatments. Studies indicate that oncologists who engage in continuous education, and have access to the latest clinical trial data are more likely to adopt innovative treatments (Zdon, et al., 2024). A review done by Lubloy (2014) identifies certain oncologist attributes identified to influence drug adoption.

She broadly classifies the attributes into two: socio-demographic and scientific orientation. The socio-demographic attributes include gender, age, professional age and location and nationality while the scientific orientation attributes include: specialty, hospital affiliation, perceived scientific orientation and position held.

Medical Science Liaisons (MSLs) play a vital role in bridging the gap between pharmaceutical companies and healthcare providers (Setia, Ryan, Nair, Ching, & Subramaniam, 2018). In Kenya, MSLs are responsible for providing oncologists and other medical experts about new treatment options, presenting clinical data, and addressing concerns regarding efficacy and safety. The effectiveness of MSL-oncologist interactions is influenced by factors such as their scientific expertise, communication skills, trust and relationship-building capabilities. Lubloy (2014) also highlighted that the most frequently cited reasons for poor MSL-KOL relationships were aggressiveness, asking leading questions, a commercial spin, and infrequent meetings.

In his study, Matikainen (2017) identified various drug related issues that influenced its adoption as per the responses of the interviewed oncologists. These issues were: pricing, costs versus benefits and a lack of reimbursement, clear product advantage, drug classification per interest area, accessibility, information about the new drug, clinical experiences and opinions by their colleagues or experts pertaining to the same drug and restrictions set by their work community, or a conservative organizational culture. Ocran Mattila, Ahmad, Hasan, and Babar, (2021) further noted that the characteristics of pharmaceutical products themselves, such as their clinical efficacy, safety profile, ease of administration, and cost, significantly impact oncologists' adoption. Oncologists are more likely to consider treatments with proven efficacy and manageable side effects, particularly those backed by robust clinical trials. The affordability and accessibility of these drugs are also major considerations, given the economic constraints within low-income nations. Despite their potential clinical benefits, Abdihamid (2022) asserts that costly drugs that lack insurance coverage may face slower adoption.

Most studies conducted cover developed countries where the MSL-oncologist relationship is well defined. There is paucity of data on the same topic in most developing countries, especially in Kenya (Abdihamid, 2022). This study therefore aims to identify the various attributes possessed by MSLs, oncologists and the product, and how these attributes influence the rate of adoption of the new pharmaceutical products by the oncologists in Kenya.

1.1.2 Adoption of Innovative Cancer Therapies

Adoption means that a person does something differently than what they had previously. In the study's context, adoption of innovative cancer therapy refers to the process by which oncologists incorporate novel treatments, such as targeted therapies, immunotherapies, and precision medicine, into their clinical practice (Krendyukov & Gattu, 2020). This adoption process is essential for advancing cancer treatment, as it ensures that patients receive the latest and most effective therapies. The adoption of new pharmaceuticals in oncology is influenced by a combination of factors, including clinical efficacy, safety, cost, regulatory approval, oncologist characteristics, and external support from pharmaceutical representatives or Medical Science Liaisons. The adoption of new oncology drugs is more challenging than in other specialties due to the rapid pace of innovation, high costs, and the need for specialized knowledge. Oncologists must continually update their knowledge to stay abreast of new treatment options, particularly given the rise of personalized medicine and targeted therapies (Matikainen, Olkkonen, Katajavuori, Parvinen, Juppo, 2017).

Some of the factors that influence the rate of adoption of new products and therapies by oncologists include: oncologist prescription behavior and success of previous treatments (Lublóy, 2014a), medical communication including word of mouth and peer influence (Goswami, Sakun, Jain, Agarwal, 2015), product characteristics (Matikainen et.al, 2017), regulations, guidelines and laws (Riggs, Widmier, Plank, 2016) as well as oncologists' relationship with the pharmaceutical industry (Matikainen, Olkkonen, Katajavuori, Parvinen, Juppo, 2017). According to a case study on the adoption of medical products, the perception an individual has towards the product heavily influences their adoption intention and behavior (Abreu & Rodrigues, 2020).

Hu, et al., (2021) posits that innovative therapies offer the potential to extend survival rates and improve the quality of life for cancer patients. It is therefore important to identify the various barriers and facilitators of its adoption to help address gaps in oncologists' access to cutting-edge treatments. Insights into adoption patterns can inform healthcare policies, resource allocation, and infrastructure development to support advanced cancer care (Hu, et al., 2021). With Kenya's unique healthcare constraints, such as limited resources and late-stage diagnoses, it is important to shed light on tailored interventions to overcome the barriers to adoption (Abdihamid, 2022).

One of the primary metrics for measuring adoption is the frequency with which oncologists prescribe a new therapy. This measure reflects the degree of acceptance and utilization of the therapy in clinical practice. This can also be backed by the integration of the therapy in clinical guidelines. Additionally, the attitudes of oncologists are another measure evaluating their openness to adopting the new pharmaceutical product. This qualitative measure provides insights into perceived benefits, concerns, and the influence of individual or institutional factors on adoption rates (Helfrich, Weiner, & McKinney, 2007). Patient response to treatment, including clinical outcomes and quality of life improvements, can also be utilized to assess the adoption's impact. Positive patient outcomes can reinforce oncologists' confidence in the therapy, leading to sustained or increased adoption. The study adopted the three as the measures assessing adoption of pharmaceutical products among oncologists.

1.1.3 Oncologists in Kenya

Oncologists in Kenya play a critical role in the country's healthcare system by diagnosing, managing, and treating various types of cancer, which is a rising concern in Kenya (Manduku, et al., 2020). Oncologists usually complete a medical degree followed by a residency in internal medicine or pediatrics and then pursue specialized training in oncology. Due to limited training facilities in Kenya, many oncologists seek postgraduate education abroad highlighting a training gap as a significant challenge, especially since the demand for cancer care in Kenya has increased faster than the availability of locally trained oncology specialists (Abdihamid, 2022). Kenya has taken steps to improve oncology care through policies such as the National Cancer Control Strategy, which aims to expand access to early diagnosis, treatment, and palliative care. Efforts are also underway to decentralize cancer care to regional hospitals, reduce travel burdens, and increase oncologist availability. Additionally, initiatives to boost oncology training within the country could help alleviate workforce shortages and enhance the quality of cancer care over time (Abdihamid, 2022).

The number of oncologists in Kenya remains low relative to the population's needs, and they are primarily concentrated in urban areas, especially in Nairobi. According to the Kenyan medical practitioner's database (2023), there were 58 oncologists, 60 oncology nurses, and 12 oncology pharmacists as compared to the 1:1000 oncologists to cancer patient's ratio recommended by the WHO. This distribution leads to disparities in access to cancer care, as patients in rural areas often

need to travel long distances to receive treatment. Additionally, public hospitals and facilities like Kenyatta National Hospital in Nairobi house most of the country's oncology resources, while private oncology centers provide an alternative but are generally more costly (Mutebi et al., 2020). The study thus considered the 70 oncologists registered in 2024 for the study.

1.2 Statement of Problem

Cancer is a significant and growing health issue in Kenya, with the country recording approximately 47,887 new cancer cases annually, with high mortality rates (Ministry of Health, 2023). The cancer prevalence rate is only getting higher as the country's healthcare system contends with insufficient resources, the high costs of cancer treatment and insufficient cancer research (Makau-Barasa, et al., 2020). While the adoption of innovative cancer therapies has transformed cancer treatment globally, offering significant improvements in cancer care, survival rates and quality of life, Wambalaba and Wambalaba (2024) confirms that the integration of these advanced cancer treatment therapies remains limited among Kenyan oncologists. As the country struggles with few oncology-allied professionals (Affey, et al., 2025), Banda et al., (2022) report that these have limited information on new products, inadequate training in the latest treatment approaches, and lack the professional development opportunities that could increase their confidence in prescribing novel therapies. While this slow adoption of new treatments can be bridged by MSLs, whose scientific knowledge is critical to bridging the gap between research and clinical practice, facilitating knowledge transfer, training, and support in the adoption of new cancer treatments, evidence on their impact on oncologists' decision to adapt innovative cancer treatments is not well-studied in the Kenyan context (Makau-Barasa, et al., 2020).

Most research into the role of MSLs on the knowledge and decision making of medical professionals has focused on developed countries where the medical affairs experience is more robust (Setia, et al., 2024; Zdon, et al., 2024). Setia, et al. (2024) highlighted their role in advancing industry-led continuing medical education (CME) programs while according to Zdon, et al. (2024), general managers rely on them as strategic leaders who improve clinicians' application of evidence-based medicine (EBM) in clinical settings, elevating patient care outcomes in the process. Spain's Sastre, et al., (2022) confirmed that MSLs play key roles in the preparation and/or implementation of medical plans, planning and execution of company-sponsored clinical trials, but in the context of hospital management. While valuable, these studies do not inform the role

and influence of MSLs on advancing the adoption of innovative cancer care and treatment in developing contexts where researchers Ibrahim (2020) confirms has insufficiently localized cancer care therapies.

Regional evidence also fails to properly inform of the role of MSLs on advancing cancer treatment, with Viljoen and Pepper (2025) highlighting that MSL as a profession is not yet well developed in Africa as many pharmaceuticals are highly reliant on information from unofficial intermediaries such as community health volunteers and caregivers, sales teams, and clinical officers. Nevertheless, Viljoen and Pepper (2025) confirmed they play key roles in influencing regulatory development and reduction of hurdles to the adoption of cell-based and gene therapy products for HIV treatment and Opeyemi and Hassan (2024) added that they have been instrumental in transforming the quality of medical laboratory services in Nigeria. Local evidence also reveals that secondary medical professionals have been instrumental in pushing for the adoption of Dactylography over electrophoresis methods in DNA analysis (Silali & Rogena, 2021), while according to Affey, et al. (2025), community health volunteers have been instrumental in advancing alternative cancer care pathways in Kenya. The study by Affey, et al. (2025) was informative of cancer treatment in Kenya, but from the perspective of patients in Wajir County. This study seeks to fill this empirical gap by exploring how the presence and activities of MSLs, and in turn, oncologists' attributes influence their adoption of innovative cancer therapies in Kenya.

1.3 Research Objective

To examine the influence of Medical Science Liaisons on Oncologists' adoption of innovative cancer therapies in Kenya

1.3.1 Specific Objectives

- i. To determine the attributes of MSLs in Kenya that influence oncologists' adoption of innovative cancer therapies in Kenya.
- ii. To determine the attributes of oncologists in Kenya that influence oncologists' adoption of innovative cancer therapies in Kenya.
- iii. To determine the characteristics of MSL – oncologists' interactions in Kenya that influence oncologists' adoption of innovative cancer therapies in Kenya.

- iv. To determine the product characteristics that influence oncologists' adoption of innovative cancer therapies in Kenya.

1.4 Research questions

- i. What MSL attributes influence oncologists' adoption of innovative cancer therapies in Kenya?
- ii. What attributes of the oncologists in Kenya influence their adoption of innovative cancer therapies in Kenya?
- iii. What characteristics of the MSL-Oncologists relationship in Kenya influence oncologists' adoption of innovative cancer therapies in Kenya?
- iv. What are the product characteristics that influence oncologists' adoption of innovative cancer therapies in Kenya?

1.5 Scope of the study

This study focused on examining the influence of Medical Science Liaisons on oncologists' adoption of innovative cancer therapies in Kenya. This study focused on how the attributes of the MSLs, oncologists and the product influence MSL-oncologists relationship which in turn affects the rate of adoption of innovative cancer therapies in Kenya. MSLs were chosen because the medical affairs department is a new and emerging field, whose roles are not well known especially in developing countries. The study's geographic scope is limited to Kenya because of the few numbers of MSLs available in the country. The research targeted the 70 Oncologist registered with the KMPDB as of 2024 and are actively working. Both oncologists in public and private hospitals was considered. Pharmacists were not included because they are not registered by the KMPDB and are not legally authorized to prescribe. This study did not cover the work done by medical sales representatives and any other marketing strategies employed by pharmaceutical companies because they are under a different department and there are well-defined studies done on them.

1.6 Significance of the study

This study may have significant implications for healthcare policies in Kenya, particularly in the area of cancer treatment and innovation adoption. The study findings can inform policymakers on the systemic changes needed to support advanced treatment integration. Recommendations from this study may also guide the development of policies that enhance access to innovative therapies

and those that strengthen the collaboration between healthcare professionals and pharmaceutical companies.

From a practical perspective, the study findings were significant to oncologists, healthcare institutions, and pharmaceutical companies. The pharmaceutical companies can use the findings of this study to be informed on the importance of MSLs and be encouraged to invest more on the medical affairs department. This, if adopted, may increase the sales of their products, bring growth in the MSL career as well as expose the country to new and better medical products thus increasing the health status of the country. These companies can also use the findings to reform the strategies they use to approach various oncologists when marketing their products. Medical managers can benefit from this study by using the findings to develop more targeted strategies for MSL performance metrics based on real-world data and seek to enhance the competencies that enhance better quality MSL-oncologist relationship.

The medical affairs department can use the findings to learn oncologists' perspective on MSL roles, current performance and expectations to improve how they work. Oncologists may also use the data in this study to learn on the distinct roles of MSLs, expected attributes and their importance in linking them to pharmaceutical companies as well as up-to-date scientific information.

The study will also be instrumental in enriching the theoretical frameworks and sets a foundation for future research in the intersection of healthcare innovation, professional engagement, and oncology practice. This research advances the DOI theory by exploring how innovation characteristics, such as compatibility and observability, influence adoption in resource-constrained settings like Kenya.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter provides detailed information about the research topic. It discusses various theories and uses support from other studies to better explain the reason for the study.

2.2 Theoretical framework

The study used the Diffusion of Innovation (DOI) theory and the Relationship Marketing Theory.

The DOI theory provides insights into how the attributes of innovations affect adoption rates, while relationship marketing theory highlights the influence of the relationship between MSLs and oncologists on their decision to accept and adopt Innovative Cancer Therapies.

2.2.1 The Diffusion of Innovation (DOI) theory

In 1962, Everett M. Rogers introduced this theory to describe how, over time, an idea or product gradually gains acceptance and spreads within a particular population, ultimately leading to its adoption. Rogers views adoption as the process of embracing something new or different from prior norms. He further emphasizes that for diffusion to occur, individuals must perceive the idea, behavior, or product as innovative or unfamiliar, and useful to their objective (Duffy, 2022). The stages crucial for successful innovation adoption and diffusion include becoming aware of the innovation's necessity and making a conscious choice to accept or decline it (Wonglimpiyarat & Yuberk, 2005). The theory states that five main factors have significant influences on the rate of innovation adoption, the relative advantage it offers, its trialability, compatibility, complexity and observability (Hull, 2022). Hull (2022) explain that it further adds that the user's characteristics such as their personality, socioeconomic status, skills and communication behaviors can influence their adoption intention. This implies that easy to use innovations that offer unique benefits should have a high rate of acceptance, and that certain individuals are more likely to accept and use new technologies.

Rogers' (2003) (DOI) theory combines the process of diffusion and the rate of adoption and it has been widely applied in the healthcare sector to examine the adoption of innovations, such as new medical treatments and technologies (Krendyukov & Gattu, 2020; Hull, 2022). Zdon, et al. (2024) revealed how to use thw DOI theory to identify barriers to technology adoption and in designing strategies to encourage early uptake. Berwick (2003) applied the DOI in exploration into the

adoption of new medical technologies within clinical settings, noting that perceived advantages and ease of use are key factors influencing healthcare professionals' adoption decisions. In contrast, Matikainen (2017) observed a differing outcome, finding that nearly half of the oncologists prescribed new drugs across both early (innovators, early adopters) and later (late majority, laggards) stages of the innovation adoption curve. However, the research had a small sample size of 22 physicians therefore it was not inclusive enough. Similarly, Li et al. (2020) used DOI to analyze factors influencing physicians' adoption of telemedicine services, finding that both relative advantage and observability were critical in the decision to adopt.

This theory is relevant for understanding the adoption of new innovative therapies among oncologists because it identifies the internal and external factors that influence the rate of adoption of innovative cancer therapies in Kenya. From the research, the theory predicts that attributes of innovative pharmaceutical products that predict adoption include having significant health advantages over existing treatments, compatible with oncologists' existing practices, easy to use and with observable results (Hair, Maryon, & Lieneck, 2022; Hull, 2022). In the context of this study, the DOI theory can also be used to examine how characteristics of innovative cancer treatments, as well as their communicators (MSLs) and their ability to demonstrate their value to cancer patients can influence their adoption intentions among oncologists in Kenya.

2.2.2 Relationship Marketing Theory

The Relationship Marketing Theory was developed in the early 1980s by Leonard L. Berry. The theory focuses on building long-term relationships with customers and stakeholders rather than simply making single transactions. According to Day (2000), a firm's ability to establish and sustain connections with its most valuable customers provides a lasting foundation for competitive advantage. Relationship orientation, as defined by Matikainen (2017), reflects the degree to which a company is committed to building long-term relationships with its customers and demonstrates a desire to foster strong ties with current or prospective partners for specific exchanges. Laith (2010) further suggests that successful relationship marketing stems from cooperative qualities that typify effective relational exchanges.

Day (2000) outlines three primary types of exchange processes in marketing relationships, each involving a unique value-giving and receiving dynamic: transactional exchanges, value-adding

exchanges, and collaborative exchanges. In transactional exchanges, both customer and supplier prioritize timely exchanges of standard products at competitive prices, viewing the transaction as a zero-sum game, where negotiation is central, and one party benefits at the expense of the other. In value-adding exchanges, the focus shifts from merely acquiring customers to retaining them; the selling firm seeks to understand customers' evolving needs and tailors its offerings accordingly, incentivizing customers to concentrate their purchases with the firm. Collaborative exchanges, meanwhile, involve close information-sharing, social and process linkages, and mutual commitments, with both parties anticipating long-term benefits from the partnership.

Day (2000) asserts that a relationship orientation permeates an organization's mindset, values, and norms, shaping every interaction with the customer—before, during, and after a sale. This orientation is evident in the attitudes of those who engage directly with customers and opens the organization's collective perspective to new opportunities for building strong relationships. For a firm to excel in relationship marketing, it must develop three essential capabilities. First, a relationship-focused approach should be embedded in the organization's mindset, values, and culture. Second, the firm must continuously deepen its understanding of its customers and apply this knowledge across the organization. Third, core processes should be both internally cohesive and aligned externally with the corresponding processes of the firm's customers.

Relationship marketing theory has been applied in healthcare marketing to improve stakeholder engagement and drive product adoption. Previous studies have shown that strong relationships between healthcare providers and industry representatives can positively impact the acceptance of new products. Sharma and Patterson (2000) used relationship marketing principles to examine how trust and commitment affect physicians' willingness to engage with pharmaceutical representatives, finding that trust significantly enhances openness to new drugs. Similarly, a study by DeLorme et al. (2017) demonstrated that relationship-building efforts by pharmaceutical representatives contributed to greater awareness and interest in novel products among physicians, underscoring the importance of trust and consistent engagement. Matikainen's study (2017) found that physicians with a positive outlook toward the pharmaceutical industry described their attitude as supportive, trusting, and collaborative. They expressed interest in partnering with the industry, citing favorable past experiences. These physicians valued interactions with representatives and

appreciated the educational resources and information provided by pharmaceutical companies (Filetti, et al., 2021).

The relationship marketing theory in the context of this study focuses on the relationship, collaboration and engagement between Medical Science Liaisons (MSLs) and oncologists. MSLs play a key role in educating and engaging oncologists by providing information, addressing concerns, and supporting the adoption of new products through ongoing, trust-based interactions. Through these relationships, MSLs can create a favorable environment for the diffusion of new pharmaceutical products, as oncologists are more likely to adopt products recommended by trusted and knowledgeable partners (Rabea, 2022). The theory also supports the objective of examining the MSL-oncologist interactions and the influence these relationships have on product adoption. Effective relationship marketing by MSLs can increase oncologists' openness to new treatments, reduce perceived risks, and encourage quicker adoption. This theory suggests that the adoption process is not purely transactional but depends significantly on the quality and consistency of interactions, aligning well with the study's focus on both the characteristics of MSLs and the dynamics of MSL-oncologist relationships.

2.3 Empirical Review

This section is discussed as per the objectives of the study.

2.3.1 MSL Attributes and Adopting Innovative Cancer Therapies

According to a study by (Moss et al., 2015), the KOLs were interviewed on the expected MSL attributes that convinced them to adopt a new product and they listed them as follows: product knowledge, scientific credibility, therapeutic area knowledge, timeliness of responsiveness, and communication skills. While scientific and technical expertise and relationship management remain core requirements of the MSL role (Dyer, 2015). KOLs also valued an MSL who was knowledgeable about internal corporate processes to access specific resources and research opportunities within the MSL's company (Moss et al., 2015). Dyer (2015) describes the communication skills of Medical Science Liaisons (MSLs) across several key dimensions: clarity in communication (adapting messages for specific audiences), partnership-building (developing and leveraging diverse networks to gather valuable insights), value demonstration (continuously identifying new ways to benefit stakeholders), persuasion (understanding others' motivations to help them appreciate their perspective), and emotional intelligence (being attuned to social and

psychological cues to guide timing, content, and delivery). Effective communicators leverage their emotional intelligence to understand stakeholder needs, using clarity, influence, and persuasive skills to engage interest. Additionally, they apply partnership-building and value-demonstration skills to enhance stakeholder value (Dyer, 2015).

Setia, Ryan, Nair, Ching, and Subramaniam, (2018) examined the evolving roles of medical science liaisons and their impact on medical evidence and education in Singapore. A qualitative analysis of MSL practices and physician feedback in various regions in Singapore was adopted. Findings revealed that personalized, data-driven engagement and strong scientific expertise among MSLs lead to higher adoption rates among oncologists. The study further showed that MSLs with advanced therapeutic knowledge and tailored communication approaches significantly impact drug uptake. The study was however conducted in Singapore while the focus of the current study is in Kenya.

Zdon, et al., (2024) examined the impact of MSL affairs on product adoption in various fields now and in the future. The study adopted a desktop methodology examining the current trends in the pharmaceutical industry. Findings showed a significant impact of MSL affairs on product adoption. Findings further noted that effective MSLs are highly informed in their specific science and actively update their knowledge, leading to increased trust and adoption by physicians. The study however adopted a desktop methodology while the current study employed a qualitative approach.

Shepard, Kremer, and Sundem, (2024) on the other hand investigated the specific role of medical science liaisons in enhancing therapeutic product adoption through key opinion leaders in the Biopharmaceutical and Medical Technology Industries. A mixed methods approach was adopted, focusing on MSL interactions with Key Opinion Leaders. The study revealed a positive and significant relationship between the role of medical science liaisons and enhancing therapeutic product adoption. Strong rapport between MSLs and KOLs aids in positively influencing decisions on adopting new therapies. The study emphasized the importance of building relationships with KOLs as instrumental for MSLs in promoting product adoption.

Wamble and Brogan, (2018) sought to assess the influence of Health Outcomes Liaisons on Drug Adoption in Oncology in the United States. The research conducted in-depth telephone interviews

with 8 US managed care representatives responsible for more than 190 million covered lives. The study found that high-quality, consistent HOL interactions strongly correlated with oncologists' likelihood to adopt new treatments. The relationships place a high premium on the accuracy and applicability of information conveyed, which also helps shape perceptions of the manufacturer, product line, and product. The study was however conducted in the United States while the current study was based in Kenya.

In Spain, García, Riosalido, Sastre, González del Castillo, and Matesanz, (2023) also assessed MSL Skills and Their Impact on Prescription Decisions in clinical and translational Oncology. An online survey was completed by 151 employees from commercial departments in the pharmaceutical industry in Spain between January and April 2020. The study noted that MSLs should possess a unique skill set, which includes the clinical understanding and experience of an MSL and the health services research expertise of a health outcomes and economics research scientist. Additionally, oncologists value MSLs with deep clinical knowledge and communication skills, which improves adoption rates.

2.3.2 Oncologist Attributes and Adopting Innovative Cancer Therapies

A review done by (Lublóy, 2014) identifies certain physician attributes identified to influence drug adoption. She broadly classifies the attributes into two: socio-demographic and scientific orientation. The socio-demographic attributes include gender, age, professional age and location and nationality while the scientific orientation attributes include: specialty, hospital affiliation, perceived scientific orientation and position held. Lublóy (2014) discovered that male physicians were more inclined to adopt new drugs than their female counterparts, although women were somewhat more likely to embrace new medications six months post-launch compared to three months. Younger doctors were frequently early prescribers, possibly due to a greater openness to innovation than older practitioners (Lublóy, 2014). Additionally, doctors with international qualifications tended to prescribe new drugs more frequently than those with domestic qualifications. Physicians who had graduated from a top 25 medical school exhibited a slower adoption rate, potentially due to these institutions' conservative approach toward new drugs and limited exposure to pharmaceutical marketing. By contrast, graduates from newer medical schools showed relatively higher rates of new drug use. Physicians with multiple workplaces adopted new drugs earlier than others (Lublóy, 2014).

Mataikainen et al. (2017) further observed that doctors with a strong professional focus adopted new drugs sooner than those oriented more toward patient care. Physicians attending professional events, such as meetings, conferences, and symposia, were more likely to adopt innovations, likely because they valued the pharmaceutical information presented at these gatherings (Mataikainen et al., 2017). Doctors were also more inclined to prescribe new drugs in clinical and therapeutic areas where they had expertise or a specific interest. Specialists in relevant therapeutic areas tended to influence general practitioners' adoption of new drugs through advice or example, with specialization significantly and positively linked to adoption rates (Lublóy, 2014b).

Being affiliated with academic institutions, such as universities or research centers, through teaching, publishing, or holding an academic role, provided a professional orientation conducive to early adoption of new drugs. Conversely, physicians with longer hospital tenure were less likely to prescribe new medications. Continuing Medical Education (CME) showed a significant, albeit weak and inconsistent, association with the uptake of new drugs in certain clinical fields. Lublóy (2014) also found that general practitioners who attended lower-quality post-training activities (PTAMs) were over twice as likely to prescribe new drugs early in the post-marketing phase compared to those who participated in high-quality PTAMs.

Filetti, Trapani, Cortellini, Cofini, and Giusti, (2021) examined the knowledge and attitudes of Italian medical oncologists toward medical use of cannabis in cancer care. The study adopted a cross-sectional study and examined a population of 2616 oncologists and palliative care physicians. The study found no significant relation between knowledge and attitudes of medical oncologists with their openness to new treatments. However, the study noted that demographic and professional background of oncologists affects their openness to new treatments with younger oncologists and those with specialization in clinical trials are more open to adopting new therapies.

2.3.3 MSL – Oncologists' Interactions and Adoption of Innovative Cancer Therapies

Popov, Tan, and Manojlovich, (2024) examined the communication strategies and patterns in interactions between physician and nurse in inpatient oncology care settings. An observational study design was used, incorporating a secondary analysis of video-recorded interactions. A total of 33 distinct physician-nurse dyadic interactions were analyzed. The study highlighted the gradual development of a shared understanding between physicians and nurses over time. Findings further showed that transparent, evidence-based communication increases oncologist confidence in

adopting new products. The study employed an observational study design while the current study used a descriptive study design.

González del Castillo, García, Matesanz-Marín, Gómez-Sánchez, and Sastre (2022) investigated the frequency and quality of MSL engagement in oncology. An online survey was completed by 107 healthcare professionals between June 2019 and January 2020, through three Scientific Societies, to gather their perspectives on the value of MSL activities in clinical practice. The study found that both MSLs and key opinion leaders recognized the importance of collaborating on scientific projects, with regular and high-quality engagements leading to greater adoption. The study also highlighted that the role of MSLs was becoming increasingly essential for physicians in the near future.

Swillens, Voorham, Nagtegaal, and Hermens, (2021) conducted a qualitative study aimed at understanding the barriers and facilitators in the adoption of standardized reporting structures to improve communication within oncology teams. Through semi-structured interviews and focus groups with oncologists and other healthcare providers, the study identified key factors impacting the effectiveness of interdisciplinary communication. The study found that structured, clear, and standardized reporting significantly improved interdisciplinary communication, which, in turn, facilitated better treatment decisions. For MSL-oncologist interactions, structured engagement, ongoing support, and clear communication could significantly impact the adoption of new pharmaceutical products by reducing informational barriers and building trust.

Theron, et al., (2021) examined the best practices for medical science liaisons seeking guidance from the four major regulatory committees, APPA, IFAPP, MAPS and MSLS. The study revealed that it was essential for MSLs to interact, collaborate and exchange scientific information with physicians in the field so as to achieve effectiveness. Kallio and Halverson, (2020) examined trust building in interactions between a networked improvement community. The results demonstrate a direct correlation between greater adoption rates and a high degree of trust. These findings demonstrate how specific collaborative design activities can foster the kinds of trust-building networks necessary for organization success. The study was however based on a networked improvement community while the current study was based on adoption of innovative cancer therapies.

2.3.4 Product Attributes and Adopting Innovative Cancer Therapies

In his study, (Mataikainen et al., 2017) identified various drug related issues that influenced its adoption as per the responses of the interviewed physicians. The issues identified included pricing, the balance between costs and benefits, the absence of reimbursement, unclear product advantages, drug classification according to specific interest areas, information about the new drug, clinical experiences and opinions from colleagues or experts regarding the drug, as well as restrictions imposed by their work environment or a conservative organizational culture. Donohue et al., (2018) further showed that doctors were more likely to prescribe new drugs that were highly prescribed by other doctors. Elumalai, Srinivasan, and Shanmugam, (2024) on the other hand reviewed efficacy and side effect profile as determinants of adoption of nanoparticle-based drug delivery systems for cancer treatment. Findings revealed that physicians prefer products with higher efficacy and manageable side effects.

A study by Lublóy (2014) revealed that doctors were more inclined to prescribe drugs that were heavily marketed. The research further showed that, six months after launch, the prescribing frequency of the study drug was not linked to its therapeutic novelty. Additionally, the study found a negative association between the likelihood of prescribing new drugs and the level of competition in the pharmaceutical market. Lublóy (2014) also observed that cost was less of a consideration compared to safety and perceived efficacy. Cost, however, did not pose a significant obstacle to the early uptake of novel medications. She clarifies that although physicians strive to strike a balance between cost and effectiveness, they are not afraid to recommend more expensive but more potent drugs. It's interesting to note that those who were least concerned about cost were also the most likely to be early users of new medications.

Zhai et al. (2021) investigated further the variables influencing Chinese radiation oncologists' acceptance of innovative goods, particularly a contouring technique aided by artificial intelligence. 307 people responded to the study, which used the Unified Theory of Acceptance and Use of Technology (UTAUT) paradigm. The study found a high perception of the new technology with minimal resistance among respondents. Findings further revealed that unique mechanisms of action are highly valued by oncologists and innovation in drug and treatments formulation influences adoption. The study was however based on the Unified Theory of Acceptance and Use

of Technology (UTAUT) model while the current study collected data directly through questionnaires highlighting a methodological gap.

Ocran Mattila, Ahmad, Hasan, and Babar, (2021) further looked into the elements unique to each product that affect the adoption of anti-cancer medications in low- and middle-income nations. A systematic search was conducted across six electronic databases reviewing literature from 2015 to 2020. The study revealed that availability, affordability, access, and pricing of anti-cancer medicines significantly influenced the uptake of anti-cancer medicines. These factors further had an impact on oncologists' willingness to prescribe new products. The study however conducted literature review as the preferred data collection method, while the current study sought primary data for qualitative analysis.

2.4 Summary of Research Gaps

The empirical review provides important insights into previous researchers' findings on the relationship between MSLs and the rate of adoption of innovative cancer therapies among oncologists. However, several research gaps were brought out that necessitate further investigation. Firstly, not all studies were conducted in Kenya and therefore may not be applicable to the context of Kenyan oncologists thereby bringing about a contextual gap. Moreover, the conceptual scope of some of the studies may differ from the current research which specifies the combined impact of MSL attributes, attributes of the oncologists, characteristics of the MSL - oncologists relationship and product characteristics on adoption of innovative cancer therapies. Additionally, the studies reviewed may have used different methodologies which the current study seeks to improve on. The current research therefore focuses on filling these gaps.

Table 2.1 Summary of Literature Gaps

Author	Title	Findings	Gap in Study	Mitigating Gaps
Ocran Mattila, Ahmad, Hasan, and Babar, (2021)	The product specific factors influencing the uptake of anti-cancer medicines in low-and middle-income countries.	The study revealed that availability, affordability, access, and pricing of anti-cancer medicines significantly	The study employed an empirical approach creating a methodological gap	The study adopts a qualitative approach

			influenced the uptake of anti-cancer medicines.		
Filetti, Trapani, Cortellini, Cofini, and Giusti, (2021)	The knowledge and attitudes of Italian medical oncologists toward medical use of cannabis in cancer care.	The study found no significant relation between knowledge and attitudes of medical oncologists with their openness to new treatments.	The study was however conducted in Italy creating a contextual gap	The study is conducted in Kenya	
Popov, Tan, and Manojlovich, (2024)	The communication strategies and patterns in interactions between physician and nurse in inpatient oncology care settings.	Findings further showed that transparent, evidence-based communication increases oncologist confidence in adopting new products.	The study employed an observational study design creating a methodological gap	The study adopts a descriptive study design and a qualitative approach	
Setia, Ryan, Nair, Ching, and Subramaniam, (2018)	The evolving roles of medical science liaisons and their impact on medical evidence and education in Singapore.	Findings revealed that personalized, data-driven engagement and strong scientific expertise among MSLS lead to higher adoption rates among oncologists.	The study was however conducted in Singapore while the focus of the current study is in Kenya.	The study is conducted in Kenya	
García, Riosalido, Sastre, González del Castillo, and Matesanz, (2023)	MSL Skills and Their Impact on Prescription Decisions in clinical and translational Oncology.	The study noted that MSLS should possess a unique skill set, which includes the clinical understanding and experience of an MSL and the health services research expertise of a health outcomes and	The study was however based on Prescription Decisions creating a conceptual gap.	The study is based on adoption of innovative cancer therapies	

Source: Researcher (2024)



2.5 Conceptual Framework

A conceptual framework serves as a visual depiction, in the form of a diagram, that captures the essence and structure of the study (Sekaran & Bougie, 2016). From the theoretical review, the adoption of innovative cancer therapies should be influenced by factors unique to the MSL, oncologist, the characteristics of MSL–oncologist relationship, and the characteristics of the product. The conceptual framework below provides a visual representation of the relationship between the study objectives.

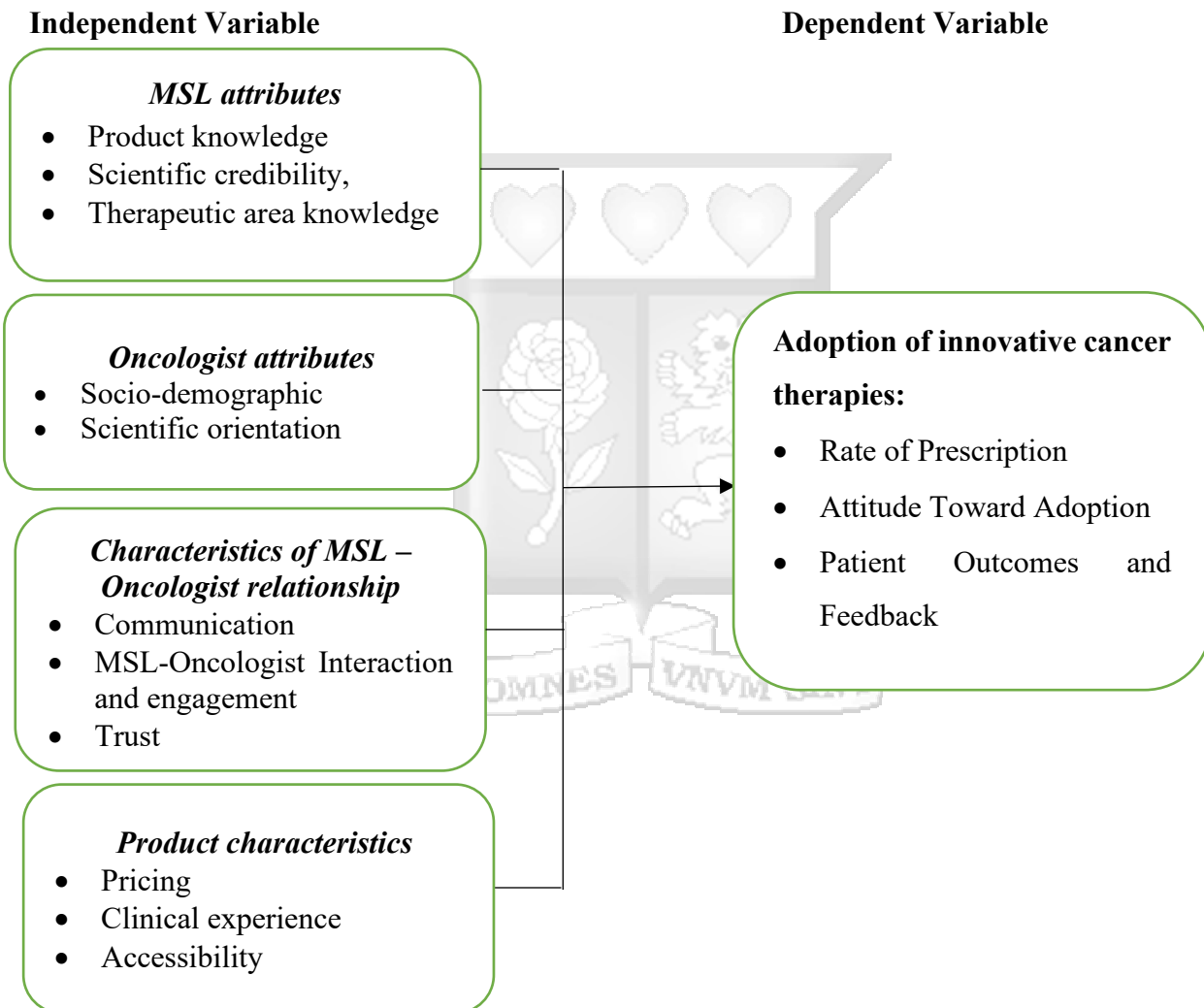


Figure 2.1 Conceptual Framework

Source: Researcher (2024)

Table 2.2 Operationalization of Variables

Variable	Indicators	Measurement	Data Collection Tool	Data Analysis
MSL Attributes	<ul style="list-style-type: none"> • Product knowledge • Scientific credibility, • therapeutic area knowledge 	<ul style="list-style-type: none"> • Ordinal Scale (Likert Scale) 	Questionnaire	Descriptive analysis and inferential analysis
Oncologist Attributes	<ul style="list-style-type: none"> • Socio-demographic • Scientific orientation 	<ul style="list-style-type: none"> • Ordinal Scale (Likert Scale) 	Questionnaire	Descriptive analysis and inferential analysis
Characteristics of MSL – Oncologist relationship	<ul style="list-style-type: none"> • Communication • MSL- Oncologist Interaction and engagement • Trust 	<ul style="list-style-type: none"> • Ordinal Scale (Likert Scale) 	Questionnaire	Descriptive analysis and inferential analysis
Product characteristics	<ul style="list-style-type: none"> • Pricing • Clinical experience • Accessibility 	<ul style="list-style-type: none"> • Ordinal Scale (Likert Scale) 	Questionnaire	Descriptive analysis and inferential analysis
Rate of adoption of new pharmaceutical products	<ul style="list-style-type: none"> • Rate of Prescription • Oncologist Attitude Toward Adoption • Patient Outcomes and Feedback 	<ul style="list-style-type: none"> • Ordinal Scale 	Questionnaire	Descriptive analysis and inferential analysis

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter covers the study design, sampling methods, study location, target population, sample size, data collection tools and procedures, data analysis and presentation techniques, as well as validity, reliability, and ethical considerations.

3.2 Research Philosophy

The study philosophy presents the overarching development of knowledge in the research work and helps to examine particular assumptions guiding the research (Walliman, 2021). This study used a positive philosophy that is anchored on testing a hypothesis supported by key theoretical assumptions (Ghauri, Grønhaug, & Strange, 2020). The positivism philosophy is ideal when conducting quantitative studies where the researcher has minimal interference with the phenomena under investigation. Hence it was suitable for this study as the researcher delineates from the subject being studied thus ensuring there is no undue influence that may affect the quality of information obtained to answer the questions. Thus, this philosophy was suitable in the current study in investigating the effect of MSLs and the oncologists in Kenya influences the adopting innovative cancer therapies.

3.3 Research Design

A descriptive research design was used for this investigation. According to Saunders et al. (2019), a descriptive study approach can be beneficial for identifying and understanding the associations between variables using correlation statistical tests. The selected study approach concentrated on investigating the relational elements that affect the caliber of interactions between doctors and MSLs, as well as the ways in which these connections affect oncologists' adopting innovative cancer therapies. The design was instrumental to this research by providing a basis of obtaining cross-sectional data within the current period that help understand how the variables interact. Further, the descriptive approach supports adoption of quantitative analysis which is ideal for this study in establishing the interaction between the predictor variables and the adoption of innovative cancer therapies.

3.4 Target Population

The target population includes the oncologist currently located in Nairobi County, Kenya. The oncologists were those currently registered under the KMPDC (CAP 253 of Medical Practitioners

and Dentist Act). The research targeted the 70 Oncologist registered with the KMPDC as of 2024. These oncologists formed the unit of observation as they can provide information on the role they play in adoption of new pharmaceutical products within Oncology treatment in Kenya.

3.5 Sampling Design and Sample Size

The sampling technique to be used for the oncologists was stratification according to area of profession. This is to ensure that all only oncologist under the KMPDC is fully represented in the study (Ghauri, Grønhaug, & Strange, 2020). The research randomly sampled the 70 Oncologist that ensuring that all respondents are accorded equal chance of participation in the survey. The research sampled all the 70 respondents in the sampling frame thus making sure there is full representations of registered oncologist in the survey.

3.6 Data Collection Instruments

The study employed only questionnaires as data collection tools. The questionnaires consisted of both open and closed-ended questions, with some formatted on a Likert scale and others using a nominal scale for demographic data. The questionnaire was organized into several sections. The first section focused on the demographic information of the respondents. The study's goals were covered in the second portion, which gathered information on the quality of interactions between MSLs and doctors, the characteristics of doctors and MSLs, the features of goods, and the acceptance of new products by Kenyan oncologists. Questionnaires were administered both physically and online for both the MSLs and oncologist in Kenya.

For the online questionnaires, the link to the questionnaire was sent to the participants through various forums like email and virtual meeting forums for them to follow and fill. This link was active for a certain period of time. The research ensured approval is obtained from the supervisor, the Ethical Review Committee and National Commission for Science Technology and Innovation prior to conducting the field work.

3.7 Research Quality

The research conducted a pretest with 10% of the sample size (7 oncologists' specialist) who were not considered in the main survey. The aim of the piloting was to support the validity and reliability tests of the instrument. To ensure validity, the researcher pre-tested the data collection tools on a pilot sample, after which the tools was revised based on the feedback. Changes in wording, phrasing, sentence structure and alignment was made as necessary to best suit collection of actual

data (Ghauri, Grønhaug, & Strange, 2020). This was supported by reviewing the tool for content validity with the aid of the supervisor. Further reliability check was conducted using the Cronbach Alpha scores to ascertain the internal consistency of the research tool (Walliman, 2021). An alpha score of 0.7 and above was used as the standard of determining the internal consistency of the research instrument.

3.8 Data Analysis and Presentation

Data collected was analyzed using several software like Excel and SPSS. Input of the quantitative data was direct. Quantitative analysis was conducted using descriptive and inferential tests. Descriptive analysis aided in summarizing the structured questionnaires using means, frequencies, percentages and standard deviation. The study further performed Spearman rank correlation test to establish the nature of relation between the research variables. Lastly diagnostic tests such as normality, collinearity, autocorrelation and heteroscedasticity were performed before conducting multiple linear regression analysis. The findings were presented using a mix of tables and figures.

The research estimated the below regression;

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where Y represented the Adopting Innovative Cancer Therapies

α is the constant of the regression model

$\beta_1 - \beta_4$ are the coefficients of the independent variables

X_1 is the MSL attributes

X_2 is Physical attributes

X_3 is MSL Oncologist interactions

X_4 is Product attributes

ε represented the error term of the model

3.9 Ethical Considerations

Permission for data collection was sought from Strathmore University Ethical Committee before the commencing data collection. As for the participants, they were given full information about

the study and their consent sought before undertaking the study. They were further informed that the study is voluntary and they can opt out at any point during the process. The identity of the participants was confidential as they were asked not to write their names on the data collection tools. Instead, each tool was coded with a reference number. The data collected was used only for this study and no alterations was made afterwards. Most importantly, data collected were only accessed by the researcher for the purpose of analysis to provide information for this study.



CHAPTER FOUR

PRESENTATION OF RESEARCH FINDINGS

4.1 Introduction

This chapter focuses on the presentation of the results that were derived from the analysis of the collected research data. The key focus areas are the demographic information, the descriptive results, diagnostic tests and the regression findings.

4.2 Demographic Information

The demographic analysis presents the analysis of the response rate and the profile of the respondents being considered in the survey.

4.2.1 Response Rate

The research sought responses from the 70 Oncologist registered with the KMPDB as of 2024. The study was conducted between January and February 2025 with responses being obtained from 54 oncologists which represented 77% response rate which was sufficient in conducting the quantitative analysis as shown in Figure 4.1 below.

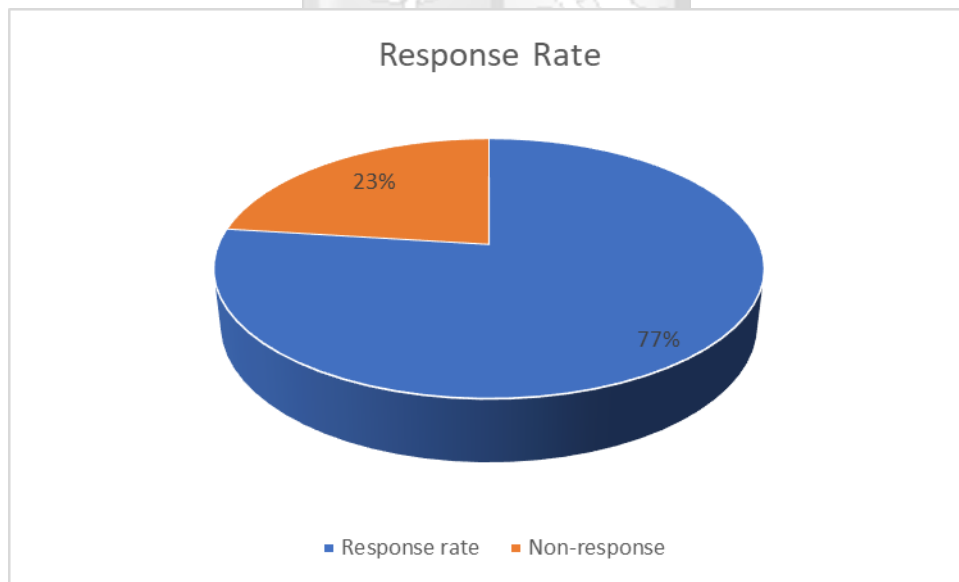


Figure 4.1 Response Rate

4.2.2 Age of the Respondents

The research evaluated the age profile of the respondents and the summary of the analysis is shown in Table 4.1 below;

Table 4.1 Background Information

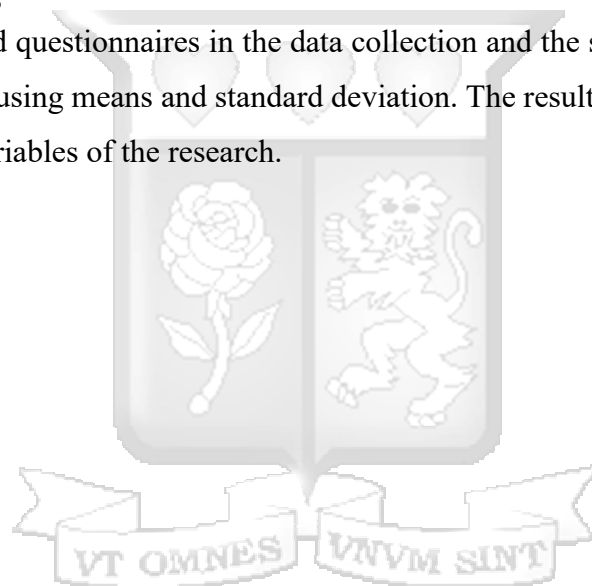
		Frequency	Percent
Age of Respondent	Below 35 years of age	6	11.1
	36-45 years	23	42.6
	46-55 years	19	35.2
	Over 56 years	6	11.1
	Total	54	100.0
Gender of Respondent	Male	28	52.0
	Female	24	48.0
	Total	54	100.0
Education Respondent	Postgraduate	49	91.0
	Graduate	4	7.0
	Other qualifications	1	2.0
	Total	54	100.0
Experience as Oncologist	Below 5 years	15	27.8
	6-10 years	10	18.5
	11-15 years	15	27.8
	Over 16 years	14	25.9
	Total	54	100.0

Analysis indicated that most of the respondents 42% (n = 23) were between 36-45 years, 35% (n = 19) of age 46-55 years with only 11% of ages over 56 years and below 35 years respectively. The outcome was indicative of diversity in the age of oncologists within the country which implied there was representation within the profession. The study reviewed the gender distribution among the oncologists and results showed that 52% were female oncologist and 48% were male which indicated there was parity in the gender distribution within the profession.

The survey examined the education attainment among the respondents and the summary showed the majority 91% (n = 49) have a postgraduate degree, 7% had a graduate degree and 2% (n = 1) had other qualifications. This showed there was more perspective and problem-solving approaches among oncologists as shown by the diversity in professional qualification. The findings revealed that 28% of the oncologists have been practicing for between 11-15 years and less than 5 years. The study further indicated that 26% of the respondents had over 16 years working within the health sector. This showed there was differences in the experiences of the participants included in the survey thus can provide diverse information on the subject matter thus helping in answering the research problem.

4.3 Descriptive Analysis

The study used structured questionnaires in the data collection and the summary of the responses obtained were presented using means and standard deviation. The results are shown in the section below in line with the variables of the research.



4.3.1 MSL Attributes

The study investigated how MSL attributes affect the adoption of new cancer therapies and the summary of responses is shown below.

Table 4.2 MSL Attributes

	N	Mean	Std. Deviation
I rely on the level of medical liaison knowledge of pharmaceutical product before adopting	54	3.9259	1.16314
I assess the scientific credibility of the medical liaison before making decision on new pharmaceutical products	54	4.1481	1.03536
I rely on the therapeutic knowledge and awareness of the medical liaison when evaluating adoption of new pharmaceutical products	54	4.1481	.95971
I consider the technical expertise of the medical liaisons when adopting new pharmaceutical products	54	4.1481	.89879
I consider the timeliness and responsiveness of the medical liaison when adopting new pharmaceutical products	54	4.1296	.86975
I assess the communication and feedback of the medical liaison when making decision in adopting new pharmaceutical products	54	4.1852	.89177

The participants were in agreement (mean = 4.185, dev = .891) they assess the communication and feedback of the medical liaison when making decision in adopting new pharmaceutical products. Results indicated agreement the respondents considered the technical expertise of the medical liaisons when adopting new pharmaceutical products (mean = 4.148, dev = .898). The research showed agreement that respondents relied on the level of medical liaison knowledge of pharmaceutical product before adopting as indicated by mean of 3.925

4.3.2 Oncologist/Physician Attributes

The second objective reviewed the role of oncologist/physician attributes on the adoption of new cancer therapies and summary of responses is shown below.

Table 4.3 Oncologist/Physician Attributes

	N	Mean	Std. Deviation
I consider the professional experience of the medical liaison when assessing new pharmaceutical products	54	4.0926	.97649
I consider the age and gender of the medical liaison when making decisions on new pharmaceutical products	54	2.5185	1.41075
I perceive the hospital affiliations of the medical liaison as key when adopting new pharmaceutical products	54	3.3333	1.37361
I consider the scientific orientation of the medical liaison when assessing new pharmaceutical products	54	4.0556	.83365
I consider the nationality of the medical liaison when evaluating new pharmaceutical products	54	1.9074	1.12045

Results indicated agreement the respondents consider the professional experience of the medical liaison when assessing new pharmaceutical products (mean = 4.092, dev = .976). The study indicated moderate agreement (mean = 3.333, dev = 1.373) the participants perceive the hospital affiliations of the medical liaison as key when adopting new pharmaceutical products. The analysis showed disagreement among respondents they consider the nationality of the medical liaison when evaluating new pharmaceutical products (mean = 1.907, dev = 1.120).

4.3.3 MSL-Oncologist Interaction

The third objective focused on the influence of MSL-oncologist interaction on the adoption of new cancer therapies and summary of results is shown below.

Table 4.4 MSL-Oncologist Interaction

	N	Mean	Std. Deviation
I highly consider transparent communication as vital in making decisions on adopting new pharmaceutical product	54	4.7222	.49208
I require evidence-based communication from medical liaisons when adopting new pharmaceutical product	54	4.5741	.53560
I consider collaborative engagements with medical liaisons as necessary when adopting new pharmaceutical product	54	4.6111	.68451
I assess the quality of standardized reporting on treatment options provided by medical liaisons when adopting new pharmaceutical product	54	4.4630	.60541
I consider medical liaisons who offer ongoing support and networking when making decisions on new pharmaceutical products	54	4.3889	.91973

The respondents showed strong agreement they highly consider transparent communication as vital in making decisions on adopting new pharmaceutical product (mean = 4.722, dev = .492). The participants strongly agreed they consider collaborative engagements with medical liaisons as necessary when adopting new pharmaceutical product (mean = 4.611, dev = .684). Results showed strong agreement respondents consider medical liaisons who offer ongoing support and networking when making decisions on new pharmaceutical products (mean = 4.388, dev = .919).

4.3.4 Product Attributes

The research further examined how the various product attributes influence the adoption of new cancer therapies and summary of responses is shown below;

Table 4.5 Product Attributes

	N	Mean	Std. Deviation
I consider the pricing of new pharmaceutical products when adopting them	54	4.5000	.63691
I classify new pharmaceutical products based on their advantages before adoption	54	4.5185	.66562
I rely on the quality of information on new pharmaceutical products before adoption	54	4.7222	.49208
I consider the opinion of experts and colleagues on new pharmaceutical products before adoption	54	4.6296	.55952
I rely on available clinical experience and evidence before adoption of new pharmaceutical products	54	4.7037	.46091
I assess the side effects of new pharmaceutical products before adoption	54	4.5741	.53560

The analysis revealed strong agreement respondents rely on available clinical experience and evidence before adoption of new pharmaceutical products (mean = 4.703, dev = .460). Results were indicated of a strong agreement (mean = 4.722, dev = .492) respondents relied the quality of information on new pharmaceutical products before adoption. The study showed strong agreement they consider the pricing of new pharmaceutical products when adopting them (mean = 4.500, dev = .636).

4.3.5 Adoption of New Cancer Therapies

The dependent variable of the study focused on the adoption of new cancer therapies in the country and summary of responses.

Table 4.6 Adoption of New Cancer Therapies

	N	Mean	Std. Deviation
I have a positive attitude towards adopting emerging treatment methods	54	4.4259	.53560
I regularly prescribe new pharmaceutical products to my patients	54	3.9074	.83029
I'm always willing to engage with medical liaisons to learn of new pharmaceutical products	54	4.5370	.79415
I have seen improvement in patient outcome since I started them on new innovative therapies	54	4.0926	.70760
I have received positive feedback from my patients on utilization of new innovative practices	54	4.1481	.81048

The analysis showed strong agreement the respondents are always willing to engage with medical liaisons to learn of new pharmaceutical products (mean = 4.537, dev = .794). The study indicated agreement the participants have seen improvement in patient outcome since I started them on new innovative therapies as indicated by mean of 4.092 and deviation of .707. The results showed agreement the participants have received positive feedback from the patients on utilization of new innovative practices (mean = 4.148, dev = .810).

4.4 Ordinal Regression Analysis

The study performed ordinal regression analysis to determine the magnitude of interaction between medical science liaisons on oncologists' adoption of innovative cancer therapies in Kenya. The summary of the findings is presented in this section.

Table 4.7 Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	Df	Sig.
Intercept Only	224.386			
Final	219.369	5.017	4	.286

Link function: Logit.

The analysis above focuses on the complementary log-likelihood function and overall findings on the intercept indicated the intercept of the independent variables (MSL-Oncologist interaction)

was 224.386 with a chi-square = 5.017 and a corresponding sig .286 > .05 which signified there was no statistically significant relationship between interaction of medical science liaisons on oncologists' and the adoption of innovative cancer therapies in Kenya.

Table 4.8 Goodness of Fit Test

	Chi-Square	df	Sig.
Pearson	434.597	412	.213
Deviance	217.983	412	1.000

Link function: Logit.

The research further performed the goodness of fit test to check the consistency between the observed data and the model fitted for the study. Based on the test the null hypothesis is the observed data is consistent with the estimated values in the model fitting. The findings indicated both sig values were .213 and 1.000 which were greater than .05 thus accepting the null hypothesis. This showed that the observed data was consistent with the estimated values in the fitted model.

Table 4.9 Pseudo-R Square Test

Cox and Snell	.089
Nagelkerke	.090
McFadden	.022

Link function: Logit.

The results of the Pseudo-r square focus on determining the magnitude of effect of the independent variables on the dependent variable. Analysis shown above indicated there was predictive positive effect of the independent variables has shown by Cox & Snell's Pseudo R-squared was .089, the likelihood value for Nagelkerke was .090 while the McFadden's likelihood value was .022. This confirmed that the interaction of medical science liaisons on oncologists had a positive predictive power on the adoption of innovative cancer therapies in Kenya.

Table 4.10 Test of Parallel Lines

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	219.369			
General	151.323 ^b	68.046 ^c	28	.000

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.

a. Link function: Logit.

b. The log-likelihood value cannot be further increased after maximum number of step-halving.

c. The Chi-Square statistic is computed based on the log-likelihood value of the last iteration of the general model. Validity of the test is uncertain.

Results showed a $p\text{-value}=.000 < .05$ indicated there was significant difference for the corresponding slope coefficients across the response categories, meaning that the model assumption of parallel lines was not violated in the model with the complementary Log-log link function.

Table 4.11 Parameter Estimates Results

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	Adoption Cancer Therapies	11.456	5.152	4.944	1	.026	1.358	21.554
Location	MSL Attributes	-1.159	.629	3.391	1	.066	-2.393	.075
	Physician Attributes	.260	.448	.336	1	.562	-.619	1.139
	MSL Interactions	1.580	.789	4.011	1	.045	.034	3.127
	Product Attributes	1.251	.881	2.016	1	.156	-.476	2.978

Link function: Logit.

The study findings on the first objective on the MSL attributes showed a $X_1 = -1.159$, Wald = 3.391, Sig = .066 > .05 indicating there was no significant effect on the adoption of new cancer therapies in Kenya. The second objective examined physician attributes and the resulting findings were that $X_2 = .260$, Wald = .336, Sig = .562 > .05 indicating there was no significant effect on the adoption of new cancer therapies in Kenya.

The results of the third variable parameter estimate on MSL interactions revealed $X_3 = 1.580$, Wald = 4.011, Sig = .045 < .05), indicating that MSL-Oncologist interactions will increase the likelihood of adoption of new cancer therapies by a factor of 1.580. Lastly, the results showed that product attributes had a parameter estimates of $X_4 = 1.251$, Wald = 2.016, Sig = .156 > .05 indicating there was no significant effect on the adoption of new cancer therapies in Kenya.



CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Introduction

The fifth chapter of the research focused on the presentation of the summary of the research and discussion of the findings. Further, the conclusions and recommendations based on the findings are presented. Also the chapter highlighted the limitations of the survey and the areas for further research to be considered.

5.2 Summary of the Study

The study sought to examine the influence of medical science liaisons on oncologists' adoption of innovative cancer therapies in Kenya. Specifically, the study sought to determine how the attributes of MSLs, attributes of oncologists, characteristics of MSL – oncologists' interactions and the product characteristics that influences their adoption by oncologists in Kenya. The research was premised on the diffusion of innovation theory and the relationship marketing theory. This study used a positive philosophy and a descriptive research study design. The research targeted the 70 Oncologist registered with the KMPDB as of 2024. The research sampled all the 70 respondents in the sampling frame. A structured research questionnaire was utilized in the data collection with both drop and pick method as well as use of Google forms. Analysis of the study data was conducted using descriptive and inferential statistics.

The findings of the overall regression revealed that there was no statistically significant relationship between interaction of medical science liaisons on oncologists' and the adoption of innovative cancer therapies in Kenya. The study findings on the first objective revealed that the MSL attributes had no significant effect on the adoption of new cancer therapies in Kenya. The second objective examined physician attributes and the resulting findings indicated that there was no significant effect on the adoption of new cancer therapies in Kenya. The results of the third variable parameter estimate on MSL interactions revealed that MSL-Oncologist interactions had a positive and significant effect on adoption of new cancer therapies. Lastly, the results showed that product attributes had no significant effect on the adoption of new cancer therapies in Kenya.

5.3 Discussion of Findings

The findings of the overall regression revealed that there was no statistically significant relationship between interaction of medical science liaisons on oncologists' and the adoption of innovative cancer therapies in Kenya. This outcome contrasts with expectations based on diffusion of innovations theory and relationship marketing theory, which emphasize the role of knowledge dissemination, trust, and relationship-building in influencing adoption behavior.

The DOI theory posits that the adoption of new innovations follows a five-stage process: knowledge, persuasion, decision, implementation, and confirmation and MSLs act as change agents who facilitate knowledge transfer and reduce uncertainty about new cancer therapies as well as help oncologists assess the relative advantage, compatibility, complexity, trialability, and observability of new treatments, which are key determinants of adoption. However, the study's findings suggest that oncologists in Kenya may prioritize other factors over direct interactions with MSLs and thus the influence of MSLs might be outweighed by institutional policies or resistance to change within the healthcare sector. Adoption decisions could also be highly independent, with oncologists relying more on peer-reviewed research and professional networks rather than industry representatives.

On the other hand, the relationship marketing theory emphasizes trust, commitment, and long-term engagement in business-to-customer and business-to-business relationships. In the pharmaceutical industry, MSLs act as relationship builders, fostering trust between healthcare providers and pharmaceutical companies and these strong relationships are expected to enhance oncologists' confidence in new treatments, leading to higher adoption rates. However, the lack of a significant relationship in this study implies that the trust and credibility of MSLs alone may not be sufficient to drive adoption and oncologists may be more influenced by other factors than by relationship-based marketing efforts. The pharmaceutical industry in Kenya may also not have well-established MSL engagement strategies, leading to ineffective relationship-building efforts.

5.3.1 MSL Attributes and Adoption of Innovative Cancer Therapies

The first objective sought to determine whether the attributes of MSLs in Kenya influence oncologists' adoption of innovative cancer therapies in Kenya and findings from the study were that MSL attributes have no significant effects on the adoption of new cancer therapies in Kenya.

This finding contrasts with a study by Setia et al. (2018) in Singapore who found that personalized, data-driven engagement and strong scientific expertise among MSLs led to higher adoption rates among oncologists. Additionally, MSLs with advanced therapeutic knowledge and tailored communication strategies positively influenced drug uptake. This contrasts with the current study's findings, suggesting that local healthcare dynamics in Kenya might limit the influence of MSL attributes, possibly due to different regulatory environments, levels of physician autonomy, or trust in industry interactions. Zdon et al. (2024) further emphasized that effective MSLs with deep scientific knowledge tend to be trusted more by physicians, leading to increased adoption of pharmaceutical products. While this aligns with Setia et al. (2018) and other global perspectives, it differs from the Kenyan context where MSL attributes did not significantly influence therapy adoption.

The findings from this study were further disputed by Shepard, Kremer, and Sundem (2024) who highlighted the role of MSLs in engaging Key Opinion Leaders (KOLs) to facilitate therapeutic adoption. A strong rapport between MSLs and KOLs was identified as a critical factor in influencing new therapy decisions. The absence of a significant effect in the current study suggests that either MSL-KOL interactions are underdeveloped in Kenya or that oncologists in Kenya prioritize other factors over MSL engagement.

The findings were also not in line with a study conducted in the United States by Wamble and Brogan (2018) that found high-quality and consistent HOL interactions were strongly correlated with oncologists' likelihood to adopt new treatments. Their study emphasized the role of accurate, applicable information in shaping oncologists' perceptions of drugs and pharmaceutical companies. Again, this finding contrasts with the current study findings, where MSL attributes did not significantly influence adoption decisions. This discrepancy may be due to differences in physician training, healthcare infrastructure, or the extent of influence pharmaceutical representatives have in decision-making.

The findings were also contrasted by García et al. (2023) who stressed that MSLs should possess a combination of clinical expertise and health economics knowledge to influence oncologists' prescription decisions. Their findings indicated that oncologists valued MSLs with deep clinical knowledge and strong communication skills, leading to improved adoption rates. This contradicts

the current study's findings, suggesting that oncologists in Kenya might rely more on institutional protocols, government policies, or independent research when adopting new therapies rather than MSL-driven insights.

5.3.2 Oncologist Attributes and Adoption of Innovative Cancer Therapies

The second objective sought to determine whether the attributes of oncologists in Kenya influence their adoption of innovative cancer therapies in Kenya. Findings indicated that there was no significant effect on the adoption of new cancer therapies in Kenya suggesting that factors such as demographic characteristics, specialization, and professional background do not directly impact oncologists' willingness to prescribe new cancer treatments. However, previous studies provide mixed evidence regarding the role of physician attributes in drug adoption, highlighting possible reasons for the discrepancy.

The study was partially supported by that by Filetti et al. (2021) who examined oncologists' knowledge and attitudes toward medical cannabis in cancer care and found no significant relationship between knowledge levels and openness to new treatments. However, they also noted that younger oncologists were more receptive to new therapies and specialization in clinical trials positively influenced the willingness to adopt innovative treatments. This study aligns partially with these findings, as both indicate that knowledge alone does not necessarily translate into adoption behavior. However, the current study contradicts Filetti et al. (2021) by finding no significant effect of oncologists' age or specialization and thus suggesting that factors driving adoption in European settings such as early-career oncologists' exposure to experimental treatments may not be as relevant in Kenya, where oncologists might adhere more strictly to national guidelines rather than individual preferences.

The study findings were heavily contrasted by Lublóy (2014) who identified physician demographics and scientific orientation as key factors in drug adoption. They found that male physicians were more likely to adopt new drugs early, younger doctors were more inclined toward prescribing innovative treatments due to openness to new knowledge while internationally trained doctors had a higher adoption rate, possibly due to broader exposure to new treatments. Furthermore, they noted that physicians with multiple workplaces adopted new drugs sooner than those with single practice settings while graduates from top medical schools showed slower

adoption rates, potentially due to conservative training approaches. In contrast, the current study found no significant effect of oncologists' attributes on therapy adoption in Kenya suggesting that Kenyan oncologists may rely more on institutional guidelines, regulatory approvals, and clinical evidence rather than personal or educational background when deciding on new therapies. The lack of gender-based or experience-related differences in Kenya could be attributed to standardized national treatment protocols that reduce variability in prescribing behavior.

Findings from the current research have also been contradicted by those by Mataikainen et al. (2017) which showed that physicians with a strong scientific focus were more likely to adopt new drugs early compared to those more patient-care oriented. Additionally, attending professional events increased adoption rates, as these forums provided exposure to emerging treatments and pharmaceutical innovations while specialists in relevant therapeutic areas significantly influenced general practitioners' prescribing behavior. The current study's findings diverge, as oncologists' attributes had no measurable impact on adoption. This may indicate that oncologists in Kenya do not prioritize pharmaceutical interactions as a primary driver of decision-making, instead relying on hospital policies, peer-reviewed studies, and national treatment protocols. Additionally, accessibility issues such as funding constraints and availability of new cancer therapies might limit the relevance of physician preferences.

5.3.3 MSL - Oncologist Interaction and Adoption of Innovative Cancer Therapies

The third objective sought to find out whether MSL – oncologists' interactions influence oncologists' adoption of innovative cancer therapies in Kenya. The results revealed that MSL-Oncologist interactions had a positive and significant effect on adoption of new cancer therapies. This shows that increased interactions with Medical Science Liaisons (MSLs) enhance oncologists' confidence and willingness to adopt new cancer treatments supporting the notion that scientific exchange, trust-building, and structured communication play a critical role in influencing treatment decisions.

These findings were also in line with results by Swillens et al. (2021) that showed that structured, clear, and standardized reporting improved interdisciplinary communication, ultimately facilitating better treatment decisions. The findings align with the current study, as both emphasize the role of structured communication in reducing informational barriers and building trust with

each suggesting that structured engagement between MSLs and oncologists can enhance adoption by creating a reliable framework for decision-making.

The study findings were supported by Popov, Tan, and Manojlovich (2024) whose findings highlighted the gradual development of a shared understanding over time, with transparent, evidence-based communication increasing oncologist confidence in adopting new treatments. Both studies emphasize the importance of clear, evidence-based communication in promoting adoption of new treatments. Additionally, both studies suggest that effective scientific communication fosters confidence and trust, ultimately leading to improved adoption of new treatment strategies.

The findings further align with the findings by González del Castillo et al. (2022) who found that regular and high-quality MSL engagements significantly increased the likelihood of new therapy adoption highlighting the growing role of MSLs in clinical decision-making, indicating that these interactions will become even more essential in the future. Both studies confirm that frequent, structured engagement with MSLs has a direct impact on oncologists' adoption of new therapies. Even though González del Castillo et al. (2022) employed a different methodology, both reinforce the idea that MSL interactions enhance scientific understanding, leading to increased adoption rates.

The study results were further corroborated by Kallio and Halverson (2020) who suggested that structured interactions and collaborative activities fostered trust, which, in turn, led to increased adoption of new initiatives. The role of trust in adoption is a key finding in both studies. While Kallio and Halverson (2020) focused on networked communities, the current study applies this concept to oncologists and MSLs, demonstrating that trust-based relationships enhance oncologists' openness to new therapies. Similar to the current study's findings, Theron et al. (2021) emphasized that frequent interactions, collaboration, and scientific exchanges between MSLs and physicians were essential for effective medical education and therapy adoption. Both studies affirm that continuous engagement between MSLs and physicians plays a crucial role in facilitating adoption.

5.3.4 Product Attributes and Adoption of Innovative Cancer Therapies

Finally, the study sought to determine the influence of product characteristics on oncologists' adoption of innovative cancer therapies in Kenya. The results showed that product attributes had no significant effect on the adoption of new cancer therapies in Kenya. Contrary to expectations, the study found that product attributes had no significant effect on oncologists' adoption of new cancer therapies thereby exhibiting mixed comparisons with existing studies that have identified drug-related factors, including efficacy, cost, safety, availability, and physician perceptions, as key determinants of adoption.

The findings were however corroborated by Donohue et al. (2018) who found that doctors were more likely to prescribe new drugs that were highly prescribed by their colleagues implying that peer influence outweighs inherent product features in shaping prescribing behaviors. The results of Donohue et al. (2018) provide a plausible explanation for the current study's findings noting that if peer adoption precedes individual adoption, product characteristics alone might not be the primary driver of oncologists' prescribing decisions. The findings were also supported by Lublóy (2014) who noted that therapeutic novelty did not determine early adoption instead, external promotion strategies played a larger role. The current study's findings align with Lublóy's (2014) argument that product novelty alone does not guarantee adoption noting that if oncologists in Kenya do not prioritize product characteristics, factors such as marketing strategies, peer influence, or regulatory support might be more influential.

The findings were also supported by Ocran Mattila et al. (2021) who also found that availability, affordability, access, and pricing significantly influenced uptake. The findings of Ocran Mattila et al. (2021) suggest that external factors influence oncologists' decisions more than intrinsic product attributes. This supports the current study's findings, indicating that oncologists in Kenya may base adoption decisions on systemic constraints rather than product characteristics alone. Elumalai, Srinivasan, & Shanmugam (2024) was however of a contrary opinion as their findings revealed that oncologists prioritize efficacy and manageable side effects when considering new therapies. The current study contradicts these findings, as product attributes (including efficacy and safety) did not significantly affect oncologists' adoption decisions. One potential reason for this difference is that Kenyan oncologists may focus more on external factors rather than specific product

attributes. The findings from the current research were further not in line with those by Zhai et al. (2021) that showed minimal resistance to new technology and a strong preference for novel mechanisms of action and innovative formulations.

The study findings were also contrasted by Mataikainen et al. (2017) who identified pricing, cost-benefit balance, reimbursement absence, unclear product advantages, drug classification, clinical opinions, and work environment restrictions as major factors affecting physicians' adoption of new drugs suggesting that oncologists weigh multiple factors simultaneously, and resistance to adoption often stems from uncertainty regarding clinical advantages or organizational constraints. These findings differ from the present study, where product attributes had no significant effect on adoption.

5.4 Conclusions

The study found that Medical Science Liaison attributes had no statistically significant effect on the adoption of new cancer therapies in Kenya. This suggests that while MSLs play a role in disseminating scientific knowledge, their characteristics alone do not directly drive oncologists' decisions to adopt innovative cancer therapies. However, descriptive analysis findings indicate that oncologists highly value certain MSL attributes, including scientific credibility, therapeutic knowledge, technical expertise, and communication effectiveness. These findings imply that while oncologists acknowledge the importance of these attributes, they may not be sufficient in influencing adoption decisions, possibly due to other overriding factors.

Findings from the analysis of the second objective indicate that physician attributes had no statistically significant effect on the adoption of new cancer therapies in Kenya. This suggests that factors such as oncologists' experience, affiliations, or demographic characteristics do not directly influence their decisions to integrate innovative cancer treatments. However, the descriptive analysis reveals that certain physician attributes are still valued in decision-making. Professional experience and scientific orientation were rated highly, suggesting that oncologists prioritize expertise and evidence-based evaluation when considering new therapies. Conversely, attributes such as age and gender and nationality were rated lower, indicating they are not critical determinants in the adoption process. These findings imply that while oncologists acknowledge the importance of experience and scientific rigor, their adoption of new therapies is likely influenced by external factors rather than personal attributes alone.

The study further concludes that MSL-Oncologist interactions had a positive and significant effect on the adoption of new cancer therapies in Kenya. This suggests that effective engagement between Medical Science Liaisons and oncologists plays a crucial role in facilitating the integration of innovative cancer treatments into clinical practice. The descriptive analysis further supports this conclusion, showing that transparent communication, evidence-based communication, and collaborative engagement were highly rated by oncologists indicating that oncologists prioritize trust, scientific rigor, and interactive discussions when considering new therapies. Additionally, standardized reporting on treatment options and ongoing support and networking were also rated highly, demonstrating that continuous engagement and structured information sharing significantly influence adoption decisions. These findings highlight the critical role of relationship-building and knowledge transfer in shaping oncologists' acceptance of new treatments.

Finally, the research noted that product attributes had no significant effect on the adoption of new cancer therapies in Kenya. This suggests that oncologists do not primarily base their adoption decisions on factors such as pricing, classification, or perceived advantages of pharmaceutical products. Instead, their choices may be more influenced by other elements. However, the descriptive analysis shows an interesting contrast, as oncologists rated quality of information, clinical experience and evidence, and expert opinions highly implying that while product attributes alone do not drive adoption, oncologists still place considerable importance on the availability of reliable data, peer recommendations, and clinical validation when evaluating new pharmaceutical products.

From the analysis, the overall conclusion from the research was that while medical science liaison attributes, physician attributes, and product attributes had no significant effect on the adoption of new cancer therapies in Kenya, MSL-Oncologist interactions had a positive and significant effect on the adoption of new cancer therapies in Kenya.

5.5 Recommendations

Based on the research results, the study suggests various recommendations. Policy wise, the Ministry of Health (MoH) through the relevant body should establish national guidelines that emphasize scientific and clinical evidence as the primary driver for the adoption of new cancer therapies. They can also develop a centralized national database for clinical trial outcomes, real-

world evidence, and post-market surveillance to support oncologists in evaluating new therapies independently of MSL interactions. The ministry can also implement clear regulatory frameworks governing pharmaceutical industry interactions with oncologists to reduce commercial influence and ensure unbiased decision-making. The Kenya Medical Practitioners and Dentists Council should also integrate mandatory continuous professional development training on emerging cancer therapies, independent of pharmaceutical industry influence.

Since MSL attributes had no significant effect on the adoption of new cancer therapies, the study recommends that pharmaceutical companies should reevaluate the role of MSLs and focus on enhancing their impact beyond technical knowledge by improving engagement strategies. Additionally, these companies should invest in training programs that equip MSLs with advanced communication and relationship-building skills to make their scientific insights more influential. They should also develop personalized engagement models where MSLs tailor their approach based on the specific needs and expectations of oncologists.

With physician attributes also showing no significant effect, the study suggests that pharmaceutical firms should move beyond demographic considerations (such as age, gender, and hospital affiliations) and instead focus on scientific collaboration and shared decision-making processes. They should further target continuing medical education initiatives that provide oncologists with updated research and clinical trial results. The study further recommends encouragement of peer-to-peer discussions among oncologists to create a more credible and trusted environment for evaluating new cancer therapies.

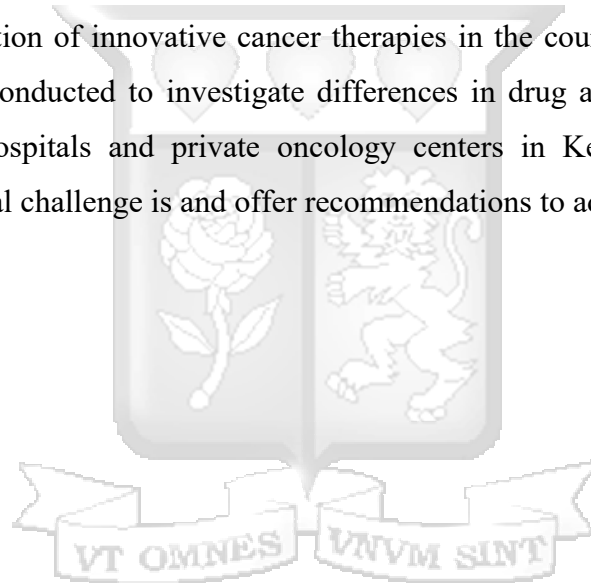
Since MSL interactions had a significant positive effect on adoption, the study suggest that it is crucial to enhance transparent and evidence-based communication by ensuring that MSLs present high-quality, research-backed information. Pharmaceutical firms should foster collaborative engagements, such as multidisciplinary team meetings, to strengthen the oncologist-MSL relationship. They should also implement structured follow-ups and ongoing support programs where MSLs maintain long-term relationships with oncologists rather than just one-time product promotions.

Based on the conclusion on the last objective that product attributes had no significant effect on adoption, the study recommends that pharmaceutical companies should shift their focus from

product-specific factors to building trust through clinical validation and expert consensus. They should also strengthen real-world evidence generation by supporting clinical trials and observational studies that provide oncologists with more confidence in new therapies. Lastly, the study suggests that the firms should increase the role of medical communities and expert panels in disseminating trusted insights about new therapies to influence adoption.

5.6 Areas for Further Studies

The study was based on the influence of medical science liaisons on oncologists' adoption of innovative cancer therapies in Kenya. Further research can be conducted in Africa and other developing areas to identify common and country-specific adoption barriers. Since the study found no significant influence, further research could be conducted on the influence of other internal and external factors on adoption of innovative cancer therapies in the country. Further comparative research could also be conducted to investigate differences in drug adoption patterns between oncologists in public hospitals and private oncology centers in Kenya. This will assist in pinpointing where the real challenge is and offer recommendations to address them.



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APPENDICES

Appendix I: Research Questionnaire

Hello, the attached questionnaire is aimed at getting information from personnel within the medical industry focusing on the assessing how the relationship between the MSLs and the oncologists in Kenya influences the rate of adopting innovative cancer therapies. I kindly ask for your assistance in answering the attached questions to the best of your ability.

Thank you for your participants in this research work.

Part A: Demographic Information

- 1. What is your age bracket?**

Below 35 years of age	(<input type="checkbox"/>)
36-45 years	(<input type="checkbox"/>)
46-55 years	(<input type="checkbox"/>)
Over 56 years	(<input type="checkbox"/>)
- 2. What is your gender identity?**

Male	(<input type="checkbox"/>)
Female	(<input type="checkbox"/>)
- 3. What is your current education attainment?**

Graduate degree	(<input type="checkbox"/>)
Postgraduate degree	(<input type="checkbox"/>)
Others	(<input type="checkbox"/>)
- 4. How long have you been working as an oncologist in Kenya?**

Below 5 years	(<input type="checkbox"/>)
6-10 years	(<input type="checkbox"/>)
11-15 years	(<input type="checkbox"/>)
Over 16 years	(<input type="checkbox"/>)

PART B: RELATIONSHIP BETWEEN THE MSLS AND THE ONCOLOGISTS IN KENYA INFLUENCES THE RATE OF ADOPTING INNOVATIVE CANCER THERAPIES

Please tick the level of agreement of the following statements, as shown in the table. Please indicate in the table with a tick (√) or across (×) with a scale of

5= strongly agree 4= Agree 3= Neither agree nor disagree 2= Disagree 1= Strongly Disagree

No	MSL Attributes Statements	1	2	3	4	5
1.	I rely on the level of medical liaison knowledge of pharmaceutical product before adopting					
2.	I assess the scientific credibility of the medical liaison before making decision on new pharmaceutical products					
3.	I rely on the therapeutic knowledge and awareness of the medical liaison when evaluating adoption of new pharmaceutical products					
4.	I consider the technical expertise of the medical liaisons when adopting new pharmaceutical products					
5.	I consider the timeliness and responsiveness of the medical liaison when adopting new pharmaceutical products					
6.	I assess the communication and feedback of the medical liaison when making decision in adopting new pharmaceutical products					

No	Physician Attributes Statements	1	2	3	4	5
7.	I consider the professional experience of the medical liaison when assessing new pharmaceutical products					
8.	I consider the age and gender of the medical liaison when making decisions on new pharmaceutical products					

9.	I perceive the hospital affiliations of the medical liaison as key when adopting new pharmaceutical products					
10.	I consider the scientific orientation of the medical liaison when assessing new pharmaceutical products					
11.	I consider the nationality of the medical liaison when evaluating new pharmaceutical products					

No	MSL-Oncologists Interactions Statements	1	2	3	4	5
12.	I highly consider transparent communication as vital in making decisions on adopting new pharmaceutical product					
13.	I require evidence-based communication from medical liaisons when adopting new pharmaceutical product					
14.	I consider collaborative engagements with medical liaisons as necessary when adopting new pharmaceutical product					
15.	I assess the quality of standardized reporting on treatment options provided by medical liaisons when adopting new pharmaceutical product					
16.	I consider medical liaisons who offer ongoing support and networking when making decisions on new pharmaceutical products					

No	Product Attributes Statements	1	2	3	4	5
17.	I consider the pricing of new pharmaceutical products when adopting them					

18.	I classify new pharmaceutical products based on their advantages before adoption					
19.	I rely on the quality of information on new pharmaceutical products before adoption					
20.	I consider the opinion of experts and colleagues on new pharmaceutical products before adoption					
21.	I rely on available clinical experience and evidence before adoption of new pharmaceutical products					
22.	I assess the side effects of new pharmaceutical products before adoption					

No	Adopting New Pharmaceutical Products Statements	1	2	3	4	5
23.	I have a positive attitude towards adopting emerging treatment methods					
24.	I regularly prescribe new pharmaceutical products to my patients					
25.	I'm always willing to engage with medical liaisons to learn of new pharmaceutical products					
26.	I have seen improvement in patient outcome since I started them on new innovative therapies					
27.	I have received positive feedback from my patients on utilization of new innovative practices					

Thank you for the Time.

Appendix II: Institutional Ethical Review Approval



22nd January 2025

Dr Kulecho Daniel,
kulecho.daniel@strathmore.edu

Dear Dr Kulecho,

RE: Influence of Medical Science Liaisons on Oncologists' Adoption of Innovative Cancer Therapies in Kenya

This is to inform you that SU-ISERC has reviewed and **approved** your above **SU-masters** proposal. Your application reference number is **SU-ISERC2569/24**. The approval period is from **22nd January 2025 to 21st January 2026**.

This approval is subject to compliance with the following requirements:


- i. Only approved documents including (informed consents, study instruments, MTA) will be used.
- ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-ISERC.
- iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-ISERC within 72 hours of notification.
- iv. Any changes anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-ISERC within 72 hours.
- v. Clearance for the export of biological specimens must be obtained from relevant institutions.
- vi. Submission of a request for renewal of approval at least 60 days prior to the expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- vii. Submission of an executive summary report within 90 days of completion of the study to SU-ISERC.


Before commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology, and Innovation (NACOSTI) <https://research-portal.nacosti.go.ke/> and obtain other clearances needed.

Yours sincerely,

Mr Ambrose Rachier,
Chairperson; SU-ISERC


Appendix III: NACOSTI Research License


REPUBLIC OF KENYA


**NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY & INNOVATION**

Ref No: **840032** Date of Issue: **03/February/2025**


RESEARCH LICENSE




This is to Certify that Dr.. Kulecho Daniel of Strathmore University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: INFLUENCE OF MEDICAL SCIENCE LIAISONS ON ONCOLOGISTS' ADOPTION OF INNOVATIVE CANCER THERAPIES IN KENYA for the period ending : 03/February/2026.

License No: **NACOSTI/P/25/415737**

840032
Applicant Identification Number


Director General
**NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY &
INNOVATION**

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