

**INFLUENCE OF STRATEGIC REINVENTION ON BUSINESS
SUSTAINABILITY IN PETROLEUM FIRMS IN NAIROBI, KENYA**

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DECLARATION

Declaration by the Student

This research project is my original work and has not been presented for conferment of a degree in any other University or for any other award.

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ISAAC GACHANJA PhD

DEDICATION

I dedicate this research thesis to my two beloved children, my lovely wife, extended family and friends for their encouragement and support in my studies.



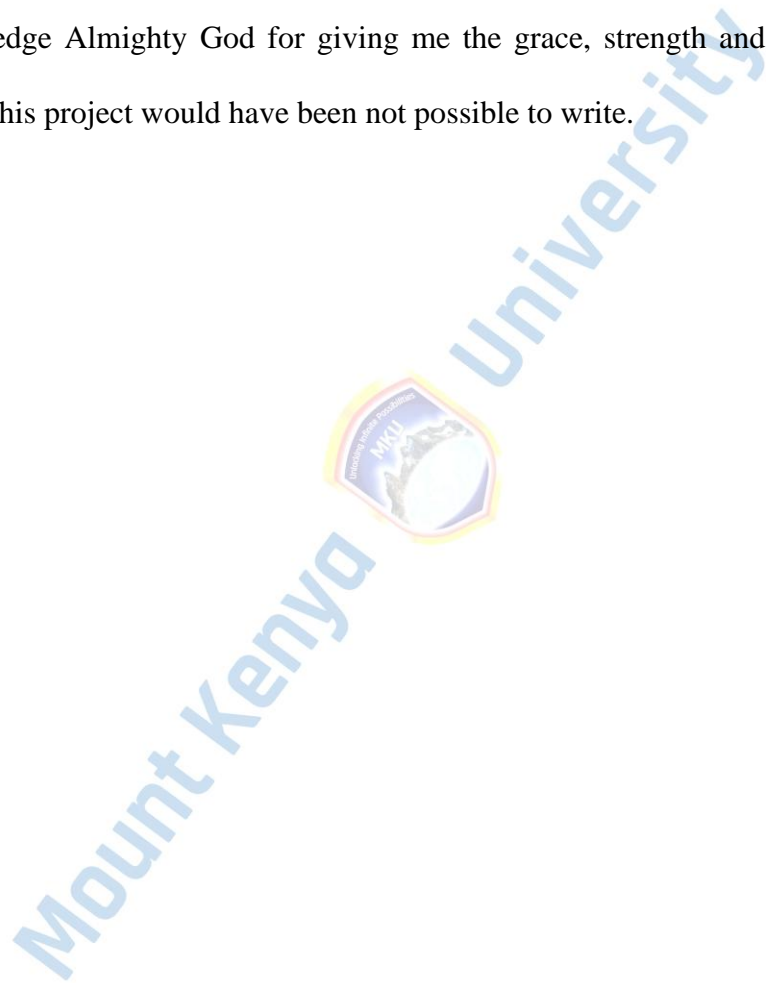
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ABSTRACT

Strategic reinvention provides disruptive competitive advantage that is essential for business to thrive in a difficult environment where rules and strategies change from time to time. There is little competition among the oil marketers in Kenya because government control pricing strategy. The investigation mainly targeted to determine influence of strategic reinvention on business sustainability among oil and gas marketing companies in Nairobi, Kenya. The specific objectives of the study were: to determine the influence of innovation, to evaluate the influence of technology, to investigate the contribution of research and development and to determine the influence of government policy on business sustainability for oil firms in Nairobi, Kenya. The study was underpinned by

Michael Porter’s generic competitive strategies and the dynamic capability theory. The investigation was guided by descriptive research design. The study total population was 60 oil marketing companies in Nairobi where all the oil firms were included in the study. The primary data was collected using questionnaires. Descriptive statistics were used in the study that included the mean, standard deviation, frequencies and percentages. The data was presented in tables and explanations were done in prose. The relationship of the strategic reinvention and business sustainability was estimated using linear regression model whereas the technique by Kenny and Baron was employed to determine the moderating effect of government policy on the relationship between strategic reinvention and business sustainability for oil firms in Nairobi, Kenya. Results indicated that innovation positively and significantly affected business sustainability of oil marketing companies. Likewise, technology, research and development depicted a positive and significant effect on business sustainability of oil marketing companies. In addition, government policies moderated the nexus between strategic reinvention and business sustainability in petroleum firms in Nairobi, Kenya as depicted incremental of coefficient of determination after introduction of interactive term. The study concluded that innovation is an enabler of business sustainability of oil marketing companies. It was inferred that strengthening of technology enhances the sustainability of business among oil marketing companies. Research and development is an essential predictor of business sustainability among the oil marketing companies. Further, businesses are directed by the government policies and their mode of operations always tend to be consistent with government policies. Implementation of innovative and creative ideas is crucial in spearheading innovation within an organization. The study recommends adoption of improvised technology for all the processes and services of oil marketing companies. More investment on research and development is essential in enhancing innovation and technological progress in an organization since currently financing of the R&D is inadequate as depicted by descriptive finding. Oil marketing companies should ensure that activities and operations are aligned with government policies since non-compliance on programs which touches environmental sustainability might be costly. In terms of policy implication, the energy and petroleum regulatory authority and Ministry of energy and petroleum in connection with oil companies need to strengthen existing policy framework to support strategic reinvention via energy and petroleum research and development hubs.

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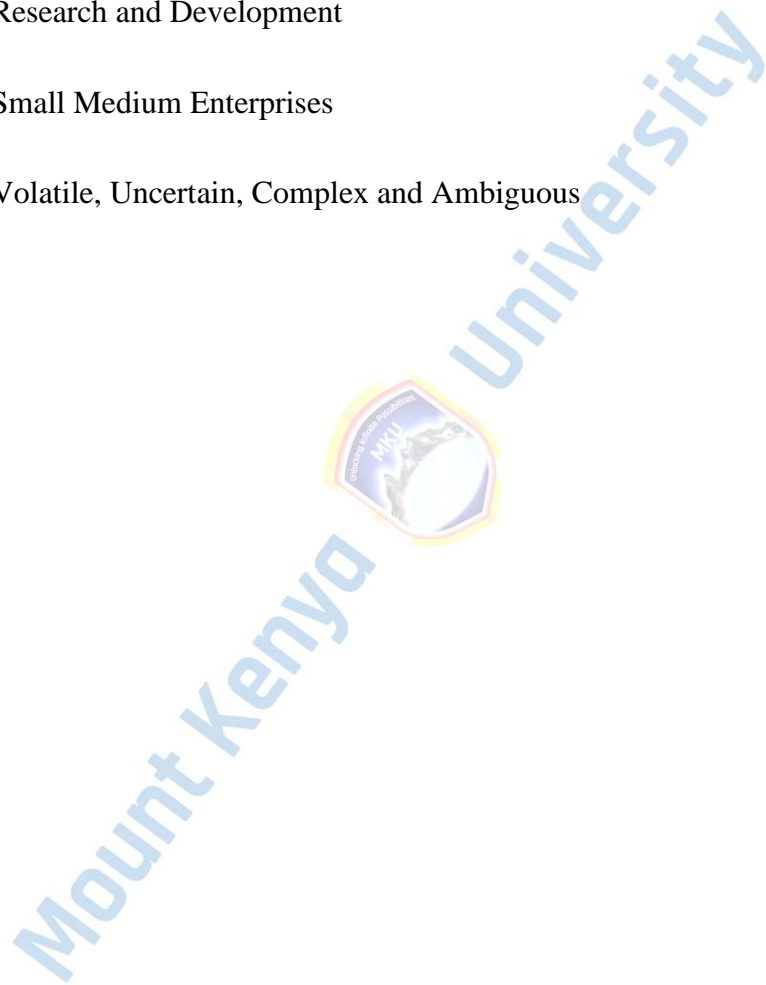
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LIST OF ABBREVIATIONS AND ACRONYMS

IT	Information Technology
KPMG	Klynveld Peat Marwick Goerdeler
NACOSTI	National Commission for Science, Technology and Innovation
R&D	Research and Development
SMEs	Small Medium Enterprises
VUCA	Volatile, Uncertain, Complex and Ambiguous



CHAPTER ONE

1.0 INTRODUCTION

The section examines background that outline the basis of this research. This is followed by narrowing of the research problem conceptualized in statement of the problem that is supported by empirical findings. Thereafter goals of the research shall be highlighted systematically, and questions shall be framed based on these goals. It was important for the researcher to reveal the rationality of the research problem under investigation and its justification was laid in this section. Additionally, limitations, scope and delimitations shall be examined in this chapter. Lastly, assumptions and operationalization of key study definitions are as well be examined.

1.1 Background to the Study

Sustainability is gaining more interest among several strategic management scholars. This is despite it being a term with elusive meaning (Bansal & DesJardine, 2014). There has been no consensus on the exact definition of the term sustainability in business, for instance some scholars restrict it to matters related to environment while of different opinion use it interchangeable with social corporate responsibility (Dyllick & Muff, 2016). Development economists viewed sustainability as a continuous process of satisfying needs of current people living as much as protection of future group of people is assured or well safeguarded (Borowy, 2013).

The ability of individual firm or collectively achieve short financial goals without endangering what the future demand outline is regarded as business sustainability. Institutions have put forward definition of this term and one of the most adopted position is by World Commission on Environment and Development (2015) that viewed this

concept as a scenario where business are faced with challenges regarding adequacy of resources and look for alternative means to dispose natural resources and ensure continuity in regenerative health within the globe in a manner that is seen as fair and equitable, this is geared towards fair wealth creation and leave behind a fair share to future generations.

Business sustainability has continually evolved like many other aspects of social life. According to Duque-Grisales, & Aguilera-Caracuel, (2021), the concept of business sustainability has reengineered itself over time from focusing on limited scope to now where it focuses on a wider scope, initially all efforts were directed at environmental aspect but over time this has shifted to more multifaceted system that considers all matters of governance especially the economic and social aspect. Rodgers (2015) alludes that investors utilize information of business sustainability performance to look beyond current financial performance to make investment and business decisions. The creation of sustainable business environment requires paradigm shifts on how businesses operate. In particular, businesses bear responsibility for many of social and environmental challenges. Every business has strategic management model that is geared to sustain their activities (Zott, & Amit, 2010). Rapid change of business environment has resulted many businesses adopting different business models. Businesses have embraced new models by integrating them with the existing ones to remain competitive in the market thus reinventing itself (Volberda, et al., 2018).

Strategic reinvention provides disruptive competitive advantage that is essential for business to thrive in a difficult environment where rules and strategies change from time to time so quickly (Reeves, & Deimler, 2012). Strategic reinvention does not only reconfigure organizational core strategy and dynamic capabilities but also lay emphasis on the need of social cultural dynamics and opportunity gaps, injecting new ideas on

customer value and the entire supply chain management. Strategic reinvention majorly deals with reconfiguration of value system, technological innovation, and new customer value propositions, and economic feasibility of the business process (De Bernardi, et al., 2020). Adaptation of business to new changes require reconfiguration on how they combine resources and capabilities into their services and products.

Denning, (2017) argued that strategic reinvention involves a deliberate move aiming at setting new performance frontiers by businesses revolving around digital core that help in sustaining growth of business. Strategic reinvention thus is a dynamic and continuous process targeting sustainable success of financial and overall business performance of business over a longer period of time (Hu, & Kee, 2022). Strategic reinvention is a unifying force between the internal processes of business and external needs of a business. Strategic reinvention focuses on new skills and leveraging on technology, streamlining management and optimizing on communication to achieve desirable success. Strategic reinvention therefore looks into the long-term vision, plan and strategies of business reconfigured to sustain the performance of the business through the competitive market (Casadesus-Masanell, & Ricart, 2010). Strategic reinvention therefore transforms organization's goals into a collective responsibility that can be actualized.

Strategic reinvention is an ingredient to the collective decisions taken by business in pursuing a given path. The process of pursuing new path by business is not only an attempt to bounce back from a slag but also to come up with something different that is new and can offer solutions to the existing market problems. Strategic reinvention is driven by innovation, technology, research and development and government policies. According to Habtay, (2011) business are faced with various challenges that include; change that is continuous or discontinuous, complex and multi dimension of uncertainty, businesses that are at the tipping point, business that are in transition among others require innovation for

it to reinvent and sustain their activities in the future. Innovation is regarded as a mature and hypercompetitive element that is essential in creating competitive advantage and sustainability of business (Giulian, et al., 2018).

Several researchers have focused on creation of technological innovations. However, De Martino et al., (2012) observed that half of the innovations in business are nontechnological. The non-technological innovations are entirely related to management of business. Innovation in business introduces new thoughts, creative ideas and unique solutions that have overreaching consequences and sustainability of business through upgrading technology and improving the way business is done (Von Stamm, 2008). Pisano (2015) opined that innovation is the only practical remedy to problems affecting business currently that shift how business are done. Business innovation tend to satisfy customer needs that are proving sophisticated over time and market demands.

Emergence of technology has changed how business operate, technology influences customer experience, operational processes and business models. Hess *et al.*, (2016) observed that businesses only remain competitive because it is aided by technology. Technology is a critical tool in creating a value a firm through enhancing efficiency and effectiveness of a business. Technology has improved business ability through doing more with less and getting more results (Fitzgerald, *et al.*, 2008). Technology has revolutionized business transaction ranging from making order, payments and delivery.

Innovation and technological advancement has been facilitated by research and development. Small firms and large innovate through investment in research and development. Innovation is an essential component in technical procedure meant to derive foundation from research and development (Sredojević, *et al.*, 2016). When company allows research and development to flourish and incorporate new knowledge of

technique. Research and development aid the company in transferring outer information to a new product or service and helping in construction of technical framework (Bashir, *et al.*, 2017). Research and development is instrumental in innovating the production process of the company.

Business activities are guided and regulated by government policies. Reinvention of business requires government protection and guidelines to perform optimally and sustain business process (Ebrahim, & Irani, 2015). Keynes economist argued that government actions such as introduction of exorbitant taxes can hamper business processes. Increased financial complexation through exchange rates that are volatile in nature has significantly increased the cost of running a business especially those that import larger portion of raw materials (Ahmad, *et al.*, 2010). Other fiscal policies such increased government spending enhances business performance. Some government regulations can protect business especially laws touching on imitating individual idea or brand to sustain the life cycle of a given idea (Lee, & Kim, 2018).

Globally, oil and gas business has undergone several reinventions. One of the most notable reinventions touched on the technological aspect of reinvention. With the paradigm shift in the oil and gas market, most of the companies have moved to implement the clean energy strategy to mitigate climate change risks (Daneeva, *et al.*, 2020). Others have formulated framework that include decarbonization and measures that are environmentally aimed at reinventing business for future use. When all these strategies are implemented then consumption and demand for gas will significantly reduce. The increased pressure on oil and gas companies on economic, social and environment is threatening their sustainability. These transformations are happening in many parts of the world since regulations are tightening, consumers are becoming uncertain, and oil and gas business should change strategy for them to remain in business. In addition, leading

companies in oil rich countries such as Saudi Arabia, Iran, Russia and Qatar have been adversely affected by disruptions such Corona that reduced that oil production by 13% threatening their sustainability (Wehrey, 2023). Some of the leading European oil and gas marketing companies such as shell, total energies among others have ratified to reduce the production of gas by 40% and venture in renewable energy as sustainable solution to oil and gas production. Some of the oil and marketing industries in United States of America have leveraged on carbon capture, utilization and storage strategy to reduce carbon emission that is emanated from the oil and gas production and consumption (Menéndez-Sánchez, et al. 2023). The leading Oil and Gas producing company Saudi Aramco is diversifying to both blue and green hydrogen projects as strategy of enhancing sustainability. Several treaties such as Paris agreement on climate change and sustainable development goals have aligned their strategies towards sustainable use of resources especially those that are unrenovable for instance oil and gas globally (Galouk, & Seinelä, 2020).

Regionally, oil and gas companies have adopted several strategies to reinvent their business. According to Price Waters Coopers report (2020) oil market in African countries are different and unique in their own way for instance oil market in Tanzania is so different from the Nigerian market. The oil and gas industry in Africa has also registered declining performance and this has manifested large lay some layoffs. Oil sector in Nigeria has been under pressure to evolve and fit the needs of the market. Working procedures have changes recently and more emphasis are put on application of innovative knowledge to reinvent business (Ovbagbedia, 2015). Demand of innovative solutions has engineered the reform of the sector through embracing technology and other innovative ways.

In Kenya, oil exploration began in 1950s until 2012 when oil deposit was discovered in

Turkana County and more experiments are still ongoing to establish the commercial viability of the product. Kenya does not have any oil production plant and all the oil used in Kenya is imported from other countries both in raw and finished form. The petroleum refinery plant in the coast has been declared uneconomical facility. Kitimo (2022) alludes that it had failed to live to its status as East Africa's only oil refinery. Oil companies in Kenya operate in an oligopolistic market structure that entail more independence, homogeneity of products and high capital requirements. This nature of market structure has seen rise in competition that declined profit margins and subsequent losses. The oil price in Kenya is controlled and regulated by state and this has reduced the urge of reinvention among oil marketers in Kenya because there is little competition in the market.

1.2 Statement of the Problem

Business sustainability has evolved over time across all the disciplines from focusing on improving conservation of environment, strengthening social and other aspects of governance that create more revenues and enhances sound financial management. The creation of sustainable business environment requires paradigm shifts on how businesses operate. The paradigm shift has resulted to the adoption of strategic reinvention to reconfigure business to remain competitive in the market. The oil sector globally has been undergoing reinvention. The climate change challenges have made many oil companies to think on producing clean energy. However, production of clean energy is a threat to the production of the ordinary oil.

In Kenya, for instance the oil marketing structure is oligopolistic in nature fully guided by government. There is little competition among the oil marketers in Kenya because

government control pricing strategy. The lack of reasonable competition and more control of pricing by government has seen many of the oil marketers not reinventing themselves. Literature indicated that less than 20 percent of oil marketers have initiated the process of selling clean energy thus justifying the fact that many of the oil marketers have not reinvented themselves (Majimbo & Namusonge, 2020).

The reluctance of oil marketers to reinvent themselves has far reaching implications given the ever-growing debate on mitigating climate change. The desire to reinvent business operations by oil companies by refocusing on environment, social and governance becomes an alternate to remain competitive. The continuous adoption of similar strategy by Kenyan oil firms without reconfiguring might be detrimental to their existence. The oil marketers are likely to lose market competitiveness if they do not reinvent themselves. One of the critical factors that can sustain business in market is adopting reinvention strategy.

Strategic reinvention and business sustainability empirical investigations remain scanty. Clauss, et al. (2019) argued that strategic reinvention has positive effect on firm performance but did not delineate the particular strategic reinventions presenting conceptual gap and the proposed study focused on innovation, research and development and technological process. The study also focused at general firms contrasting the current study that narrows to oil marketing firm presenting contextual gap. In another study, Masson (2020) observed that strategic reinvention enable business to innovate and seize growth opportunities, revitalize customer base and network to unexploited markets thus creating more profitable business opportunities. However, the study relied secondary information while the proposed study relied on primary data and hence resulting to methodological gap. The proposed study seeks to expand this score by doing in-depth literature review and proceeding to quantitatively ascertain the effect of strategic

reinvention on business sustainability with particular focus on oil marketing companies presenting both methodological and contextual gaps. Furthermore, Zahran and Nambisan (2012), Reeves and Deimler (2012) indicated that strategic reinvention provides disruptive competitive advantage that is essential for business to thrive in a difficult environment where rules and strategies change from time to time so quickly. The use of legal framework in the previous was meant to mediate the relationship of the study variables while the proposed study adopted this variable as a moderator and thus resulted both knowledge and methodological gap. Clauss, et al. (2019) indicated that strategic reinvention has positive effect on firm performance but this investigation did not adopt a moderator which was adopted by the current study and this lead to conceptual gap. Locally, a study by Majimboand Namusonge (2020) indicated that strategic innovation influenced the performance of oil marketing firms in Nairobi City County, Kenya. However, the study did not adopt sustainability as dependent variable that is broader than performance and hence amounted to conceptual gap and this study will correct it. This inform the proposed study intentions of investing how strategic reinvention influence business sustainability specifically oil and gas marketing companies in Kenya.

1.3 Purpose of the Study

The aim of this study was to determine the influence of strategic reinvention on business sustainability in petroleum firms in Kenya.

1.4 Objectives of the study

The study was guided by the following specific objectives:

- i. To determine the influence of innovation on business sustainability for the oil firms in Nairobi, Kenya.

- ii. To evaluate the influence of technology on business sustainability for oil firms in Nairobi, Kenya.
- iii. To investigate the contribution of research and development towards business sustainability for Kenya's oil firms in Nairobi.
- iv. To determine the influence of government policy on the relationship between strategic reinvention and business sustainability for oil firms in Nairobi, Kenya.

1.5 Research Questions

The research questions for the study were:

- i. What is the influence of innovation on business sustainability for oil firms in Nairobi, Kenya?
- ii. What influence does technology have on business sustainability for oil firms in Nairobi, Kenya?
- iii. How does research and development contribute towards business sustainability for oil firms in Nairobi, Kenya?
- iv. How does government policy influence the relationship between strategic reinvention and business sustainability for oil firms in Nairobi, Kenya?

1.6 Significance of the study

This study may be of benefit to a number of players in various ways. From the onset it will be an eye opener stakeholders in the petroleum sector in Kenya in understanding the reinvention strategies that that are likely to sustain business operation regardless of increased risks and appropriate business environment. Other scholars with keen interest on the petroleum industry may find the study useful as it may enrich the available

literature while enabling them to acquire essential knowledge useful in understanding how oil and gas marketing industry operates in Kenya. Reconfiguration of strategies may be informed by the outcome of this study and this will enhance sustainability of business.

1.7 Scope of the Study

In an endeavor to objectively achieve the stated objectives, this study may specifically focus on oil companies operating in Nairobi County presenting geographical scope. The Nairobi County consist most of the head offices for the operating oil companies in Kenya. There are 60 oil companies operating in Nairobi City County but also with branches across the country. The study was anchored on Michael Porter's generic competitive strategies and the dynamic capability theory an indication of theoretical scope. The study was conducted between the periods of May 2023 to August 2023 indicating the time scope in this survey.

1.8 Limitations of the Study

Scope will form the key limitation of this investigation. The study focused on oil companies operating in Nairobi County. Nairobi county houses several oil companies in Kenya and the population of 60 oil companies in Nairobi is deemed fit for the study. This might bring a limitation in the sample population. It is however believed that the population scope of the oil selected oil companies was representative of the entire population of oil firms in Kenya, and the results so obtained cut across the industry. Other researchers are urged to carry out similar researches focusing on other geographical regions and thus enable validation of the results of this investigation.

1.9 Delimitations of the study

Oil and gas marketing companies in Nairobi City County formed the interest of the investigation. Kenya has 72 oil and gas marketing companies that are operational. Nairobi County houses most oil companies in Kenya and the population was representative of gas and oil marketing companies. The unit of observation was the strategic innovation and development officer's one from each of the oil company. The strategic innovation and development officers are involved in the strategic advisory and reinvention business activities of the oil companies.

1.10 Assumptions of the study

The assumptions of this investigation involved a sample population was representative of the other oil companies operating in Kenya. The study assumed that business sustainability of the oil companies is a going-concern and as such may remain sustainable in the market for the foreseeable future. It further assumed that the owners and management of the oil companies are aware of the looming threat occasioned by the increased demands of green energy and have at least formulated appropriate strategies to counter the resultant adverse effects. Finally, the study assumed that the respondents provided honest responses regarding strategic reinvention practices and business sustainability of the oil companies under this survey.

1.11 Operational definition of key terms

The definitions set forth below apply to the following terms when used in this study.

Business sustainability –refers to the process of managing an organization by considering its three different aspects that include economic, environmental, and social.

In this study, business sustainability is the ability of the oil companies to generate economic gains in form of sales revenue, engage in activities that do not harm or less harmful to the environment and contributing to the wellbeing of the society through corporate social responsibilities.

Government policy – refers to a system of laws, regulations, guidelines, courses of action, and enforcement frameworks to guide certain activities and processes. In this study it refers to regulations enacted by Kenyan governments, regulators and other authorities to direct the operations and activities of oil companies.

Innovation – is a comprehensive process which involve creation of new products and services by applying new techniques in terms of delivery and all these are geared towards efficiency and effectiveness and overall thriving business sustainability.

Research and Development – refers to tapping of creative and organized work where new knowledge is resourceful in resolving challenges and improving existing procedures in all sectors of the economy including transport.

Strategic reinvention – is the comprehensive understanding of the business process and activities, opportunities and challenges and adjusting appropriately to adapt to the new changes with aim of attaining competitive advantage and long-term sustainability. In this study, it refers to technological processes, innovations and research and development activities guided by policies and regulations within which the organization operates.

Technology - is defined as a process developed by knowledgeable people to help improvise process in an organization. In this study, technology refers to all technological processes, system software and hardware deployed by oil companies in Kenya to aid their business processes and activities.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

The section examined recent studies to conceptualize variables and identify research gaps that can be solved by this research. Theories were analyzed to underpin the foundation of concepts and its development. Thereafter, examination of theories and conceptualization of variables using recent studies explored relationship variables and summarize them in framework know as conceptual framework.

2.2 Business Sustainability

The concept of business sustainability has different meanings depending on context that is being defined or studied which is seen as a collective responsibility by several organizations to have a feasible definition. Sambhanthan, Potdar and Chang (2017) defined business sustainability as the process of persuading organization goals, objectives and operational sustenance anchored on social, economic and environmental aspects. According to Mahajan and Bose (2018), managing of an organization involve looking into three key perspectives that include economic, social and environmental that deserve proper management. Similarly, Chungyalpa (2019) defined business sustainability as the ability of the organization to undertake their mandate anchored on three dimensions of economics, environment, and society. It is evident from the scholarly definitions that business is process of undertaking organization objectives and goals by considering its three different aspects that include economic, environmental, and social.

Sustainable business practice is increasingly embraced by both developed and developing economies. The environmental and social issues debate has accelerated the urgency of organizations implementing sustainable business strategy. There has been no consensus on the actual definition of business sustainability. The most acceptable definition imply that business sustainability involves organization operations that are characterized by economic discipline, high level of responsibility in both environmental and socially (KPMG, 2011, Clarke & Roome, 1999, Daood & Menghwar, 2017 and Beal *et al.*, 2017). It implies that a business is supposed to be financially stable, be able to enhance social implications through fair process and ensuring that production of goods does not negatively affect surroundings. Environmental and social aspect is the difference between a sustainable business and traditionally a profit-making business. The process of optimal management of key organization strategic resources ranging from social, environmental, and economical is what scholars universally referred to as business sustainability (Avesani, 2020).

Hart, and Milstein, (2003) proposed a framework guiding business sustainability where creation of stakeholders' value was seen as strategy of addressing sustainability challenges. The framework had four major components that include preventing pollution, clean technology, product stewardship and base of pyramid. This eventually resulted to the actualization of corporate social responsibility that heavily involved in tackling environmental and social issues (Porter, and Kramer, 2006). Businesses are supposed to conceptualize new ideas on exploring markets and producing new products, reorganization of various value chain processes for environmental and economic prosperity.

Several studies have viewed business sustainability as strategic thinking inclined towards long term unlike short term (Davis, 1991; Elkington, 1994; McWilliams & Siegal, 2000;

Mill, 2006; Hess & Warren, 2008; Porter & Kramer, 2019; Gupta, 2017). It is now imperative to argue that leaders with business sustainability mindset will not only focus on financial performance but also appreciate the need of being environmental consciousness thus breathing paradigm shift. There are three critical areas where business sustainability revolves around; resources optimization through recycling, reuse and reduce, ensuring brand value is safeguarded by involving stakeholders in all process starting from laying down framework to enhancing market niche by sales.

The current competitive market environment require business to be integrated with the society that is driven by innovation and inequity by companies across the sector. This paradigm shift create challenge to business leaders to apply knowledge and research finding to solve problems (Bratianu, *et al.*, 2020). The future generations are likely to face problems that implicates the sustainability of business and shape of business landscape. The society expectations on various businesses have shifted towards environmental and social. On the other hand, the stakeholders expect business to be self-reliant and offering practical solution to the societal problems (Chmielewski, *et al.*, 2020). The change outside should not overtake change inside the organization because that will mean that the business will not survive.

Scholars have been debating on the importance of business sustainability. Chungyalpa, (2019) opined that sustainable business practices require collaborative effort of all stakeholders in business. Businesses ought to shift from traditional way of thinking of focusing on profit taking and social corporate responsibility but rather about embracing sustainable values and sustainable practices. According to Mahajan and Bose (2018) majority of the organizations have not developed a road map towards sustainable practices, several have limited themselves on corporate social responsibility especially philanthropic on education and health. Naudé, (2011) noted that leadership is supposed

to borrow from their expertise and experiences in addressing challenges by offering solutions. Challenges have been evolving from day to day and to dynamic and business ought to remain competitive in order to overcome these challenges by acknowledging the significance of environment and social responsibilities. Though important, the aspect of measuring sustainability is a major concern for organizations. This is because it involves internal processes that entail meticulous picking of crucial parameters of sustainability and those that are deemed effective in improving the processes. This helped organization avert challenges are associated with environmental degradation.

Business sustainability has been measured using different parameters by different authors. Medel-González, et al. (2013) measured business sustainability using three key dimensions. The dimensions according to González, et al. (2013) are environmental, economic and social aspects. Similarly, Ngwakwe, and Ambe (2016) and Almasarwah, et al. (2019) measured business sustainability by looking at environmental, economic and social parameters. Furthermore, Green Business Bureau (2021) measured business sustainability using three metrics that include environmental, social and economic metrics. The environmental aspect entails the environmental impacts of the business activity on the environment like pollution, waste generation and protection of the environment. The economic aspect of business sustainability defines the economic gains of the business activity like profits while social aspects includes the impacts of the business on people way of life.

Gallo (2019) identified various indicators including: Conformity which refers to respecting the rules and the national or international standards. Second indicator was identified as use of materials and performance. This indicator measures quantity of raw material and resources utilized in waste emissions generation. Another key indicator is the supply chain and the life cycle of product which takes in to account process in entirety

from its commencement to the end product. A fourth indicator is identified as the effects the organization has on the people and the environment it operates in. According to Swallow (2022), the main Key Performance Indicators (KPIs) that businesses are using to create actionable sustainability insights are energy consumption, miles of supply chain, reduction of waste, carbon traces and means of mitigation such as recycling process.

The reviewed literature identified sustainability KPIs along the environmental, social and economic lines. This study therefore proposes the three modes of sustainability measurement, which gives all-round feedback regarding the organization's sustainability status. Business sustainability of the oil markets shall entail environmental aspects like pollution and waste emission, economic measures like profitability and sales growth and social aspect like creation of jobs to the people and support of social amenities.

2.3 Strategic reinvention

Sarkar (2006) defined strategic reinvention as the reconfiguration of business models, process, critical organizational strategy, reinvention of customer value recalibration of business network and its processes while adapting to sociocultural dynamics and opportunity gaps so as to remain competitive and sustainable in the near future. According to London and Hart (2004), strategic reinvention is the continuous adjustment of business process necessitated by needs and changes in the business environment with aim of offering better products and services, attaining competitive and being operationally sustainable. In another definition, Pietersen (2014) viewed strategic reinvention as the initial practicality and systemic framework geared towards adaptation of organization management that entail strategic learning aided by consistent thinking and doing other things differently to enhance competitiveness.

Based on the definitions by different scholars (London & Hart, 2004; Sarkar, 2006; Pietersen, 2014) strategic reinvention entails the act of an organization reconfiguring business process and activities to adapt to changing business dynamics, social, economic and environment expectation. The dynamic environment characterized by a lot of changes make an organization change tact from traditional means and embrace new thinking that is dominated by reinvention. (Voelpel, Leibold & Tekie, 2014). This is significant because it creates a disruptive environment that encourage competition which thrive business to new levels.

According to Clauss, et al. (2019) strategic reinvention involves aligning organization vision to the ever-changing market environment by starting up again or improving the existing processes so as to adopt to the new market forces and needs. Reinvention of businesses take several forms especially prioritizing on the emerging areas and sometimes changing the core of mandate of the business to suit the market needs. Business reinventions redefine the mission of the organization, identify the strength and weaknesses of a businesses. Masson (2020) observed that strategic reinvention enable business to innovate and seize growth opportunities, revitalize customer base and network to unexploited markets thus creating more profitable business opportunities.

In the competitive market of today every business has a model that conceptualized the idea and highlights how the idea can be actualized. Cheah, Yang and Saritas (2019) argued that business reinvention model is based on the disruptive innovation and not incremental change or continuous improvement. According to Schaede (2020), there are several drivers that make business reinvent for instance technological changes, deregulations and privatization and globalization. These driving forces have changed business processes and how business is conducted, consequently these forces have yielded to a new business environment characterized by knowledge and innovation. Hanson and Smallwood (2020)

pointed out that reinvention of business is not supposed to be initiated during crisis period but should be done at the maturity of the business.

Therefore, business reinvention is based on building strong cultural and technical capabilities.

Strategic reinvention involves fine tuning of rules in business environment through persistent innovative and imaginative of differentiating own industry product from the rest of the players producing the same product (Zahra, & Nambisan, 2012). This imply that the current strategy can be improved/optimized or new strategy can be formulated for the business to attain reinvention. The improvement of business requires restructuring of the entire strategy by the first-mover mindset or at times by being the second mover through learning from prime movers. Experimenting the strategy through portfolio strategy is important to identify weaknesses that require further strengthening.

The core tenets of strategic reinvention according to Pietersen (2014) include technological processes, innovations and research and development activities guided by policies and regulations within which the organization operates. Mamun and Shaikh (2018) identified strategic reinvention constructs to comprise new business models, innovation process, technological and continuous organization learning through research and development. According to Peric, Durkin and Vitezic (2017), strategic reinvention includes organization purpose, technology, innovation, and strategic leadership. Pietersen (2014), Mamun and Shaikh (2018) and Peric, Durkin and Vitezic (2017) linked strategic reinvention to business sustainability as it reconfigures how business activities of the firm are conducted adjusting them to align to the business dynamics, technological requirement, and customer expectations.

Furthermore, Schot and Steinmueller (2018) argued that the strategic reinvention model is made up of four critical components that define the strategy that include innovation, technology, research and development and government policies. All these strategic reinvention constructs are tailored to ensure that customer behavior is monitored, and their needs are satisfied while ensuring proper alignment to the relevant regulations. This study picked innovation, technology, research and development and government policies as the core constructs of strategic reinvention. These constructs have been identified by different scholars as core tenets of strategic reinvention that are likely to influence business sustainability.

Scholars have operationalized measuring strategic reinvention. Pietersen (2014) measured strategic reinvention using technological processes, innovations and research and development activities. Mamun and Shaikh (2018) measured strategic reinventions as new business models, innovation process, technological and continuous organization learning through research and development. Pietersen (2014), Mamun and Shaikh (2018) and Peric, Durkin and Vitezic (2017) measured strategic reinvention as the reconfiguration of business activities guided by business dynamics, technological requirement, and customer expectations. Peric, Durkin and Vitezic (2017) operationalized strategic reinvention as organization purpose, technology, innovation, and strategic leadership. Schot and Steinmueller (2018) measured strategic reinvention using innovation, technology, research and development.

Measuring innovation, technology and research and development is important, though not easy. It is a major step towards evidence-based policy making. Kylliäinen (2018) proposed a model for measuring the parameters through measuring the input and output metrics. These refer to 'what goes into innovation process and what comes out of it' respectively. Another measuring model is proposed by Mitzkus (2022) which involves

measuring the following metrics: Rate of product innovation – Share of revenue of reinvention / aggregate revenues of the organization * 100, Ratio of innovation – accrued number of innovations / aggregate product produced * 100 and degree of innovation - Degree of the novelty of purpose-means combination. Ponta *et al* (2021) suggests an innovation measurement model referred to as Innovation Patent Index (IPI), which makes it possible to quantitatively summarize different aspects of firm's innovation. The index considers five dimensions of innovation namely, efficiency, time, diversification, quality and internationalization.

Measurement of the input and output metrics as suggested by Kylliäinen (2018) can be subjective since awarding of the scores per metric is depended on the judgement of the person measuring. Thus, results varied depending on who is measuring the innovation since there are no standard measurement indices. The Innovation Patent Index (IPI) by Ponta *et al* (2021) has similar challenge of subjectivity. The ratios proposed by Mitzkus (2022) are more realistic measurement tools. However, there is potential subjectivity especially with the third ratio – degree of innovation – where the parameters are based on estimates, thus losing objectivity. This study recognizes the various measurement tools by the named scholars, however, an appropriate index per parameter being measured should be included as a reference guide to ensure fair judgement and objectivity while measuring innovation. By using pre-designed indices, different evaluators are able to obtain similar results since the scoring is guided by the indices. This eliminates subjectivity in measurement and assures objectivity in the process. This study measured strategic reinvention using innovation, technology, research and development. These three measures of strategic reinvention have been emphasized many by scholars.

2.4 Innovation and Business Sustainability

The academicians and policymakers have always emphasized the significance of innovation in enhancing sustainability in business. The cutthroat competition in the market has compelled several business firms to adopt innovation to improve their competencies, enhance capabilities and operational performance (Ahuja, 2007). Several scholars have provided definition of innovation. According to Kogabayev and Maziliauskas (2017) innovation is a process marked by change of product design and overall outlook of the business model with an aim of improving its operations. Hoang, et al. (2020) conceptualized innovation into social, eco, traditional and sustainable innovation. According to Hoang, et al. (2020) innovation is the robust process that create conducive environment for innovative ideas to thrive in getting competitive products and services. Tidd, and Bessant, (2020) noted that innovation is carrying out of new combination of existing factors in the following ways: new process, new product, new market, new sources of supply and new organization of industries. Mousavi, and Bossink, (2017) pointed out that innovation is a process of exploring and regeneration to produce better product, improved technology and changes of the entire institution and system. Price, et al. (2013) argued that innovation involves the employment of knowledge and ideas in calibrating new technology that bring success.

Sustainability of business is attained when customer needs are adequately addressed by innovation, increase market share, and contribute organizational profitability as well as sustain the operations of the company (Oliveira et al., 2020). Thus, innovation is employed by business to assess customer feedback so that demand is reconfigured to suit the situation and attain desired sustainability (Jakhar, et al., 2020). Many people have dubbed innovation as problem solving process. According to Onsel, *et al.*, (2015) although innovation is perceived to be associated with problem solving but also target

improving competitiveness and economic success ordinarily aided by technology. Today innovation has been part and parcel of business life ranging from new product development to management and customer communication. According to Harper and Becker (2004) innovation has been considered a success factor because of how it has improvised business, significant change that has brought to product, processes, or service that exceed the business achievement. Innovations have been supported by firms to sustain marketing and production goals, quality improvement of products, lower production cost, flexibility production, grow market share and strengthen management processes thus enhanced sustainability in business. The studies identified innovation as driver of performance in many industries as indicated by profitability, increased competitiveness while the current study linked innovation to sustainability and this resulted conceptual gap.

Recent finding indicate that innovation and sustainability are intrinsically interconnected issues. Improvement of their linkage could improve organizational competitiveness through distinguishing itself from the rest while addressing the societal issues (Murillo, and Lozano, 2006). Introducing sustainability into organization values, mission, vision, strategic goals then firm can set strategic goal of collaborating innovation and sustainability to their firm. The ability of a firm to innovate fundamentals to respond to this increasing pressure, embrace corporate social responsibility and embracing sustainable business practices (Porter, & Krammer, 2019). This innovation can range from small scale incremental on products to large scale or even radical aimed at incorporating sustainability into business goals and strategic objectives. In measuring sustainability the previous study did not factor element of environment conservation and the current study adopted it as an indicator and this resulted to conceptual gap.

Several scholars have debated on the relationship between innovation and sustainability. According to Stocker, *et al.*, (2022) adopting sustainability in business is crucial in changing how firm operations are undertaken through upscaling of innovations that can move business from one level to another. Adu, *et al.*, (2020) observed that product innovation enhances environmental sustainability. Jaksic, (2016) argued that innovation creates more value to a product thus increase satisfaction, welfare, and overall benefit to the society. Barbieri, *et al.*, (2010) opined that organization that initiates novelties of all kinds in a regular basis is likely to attain its goals. Therefore, innovation is a core element of that organization that supported development of both tangible and intangible results. Most of the studies used performance synonymous with sustainability but this study measured sustainability by use of three indicators; social, economic and environmental thus resulted to conceptual gap.

Other scholars have argued differently for instance Štverková, *et al.*, (2021) observed that its ideal for business to plan on how to satisfy customer demands that have kept on growing even exceeding them without making losses and maintaining desired sustainability. Development strategies that are sustainable are becoming part and parcel of thriving business in many organizations. Nonetheless, there has been lack of consensus on the significance of individual elements sustainability in both sides of the market.

Measuring innovation is an essential aspect of business. It can possibly lead to progression in business since it determines the impact of the innovation efforts out of which relevant decisions for future innovation can be made. However, as acknowledged by Fischer *et al.* (2020), noted that innovation is difficult to be measured and there is no agreeable position thus any method is remaining work in progress. In most cases it depends on nature of industry and the geared objectives meant to attain. It therefore emerges that innovation measuring is through identifying and evaluating the key metrics to be used to track the

progress of the innovative ideas. The importance of identifying key innovation metrics is underlined by Tucker *et al* (2021) who opines that mobilization of resources and collaboration of leaderships remains paramount in nurturing talents in an organization especially in creating conducive environment for new ideas to thrive.

Fisher *et al.* (2020) identifies various important metrics including the number of emerging ideas, ideas identified for implementation, projects that have not meet timelines, resources obtained from new ideas, proportion of resources derived from selling new ideas and experiences attained. Williamson (2018) further identifies more innovation measurement metrics as number of successful projects, implication on employee productivity, level of satisfaction among clients, cumulative turnovers, and profitability. Livescalt (2022) identifies broader metrics for measuring innovation which include timesheet metrics, new products or services metrics, financial metrics, training and staff competency metrics as well as management and leadership metrics. Collectively these be useful in evaluating impact of innovation to a business.

The various writers have suggested sundry key metrics for measuring innovation. However, these seem to vary from one to the other. Again, the tracking of the various metrics remains subjective in that evaluation by different persons is highly likely to give different results depending on their respective judgement of issues. A more standard measure of innovation would be measuring the return on investment. This is first by assuming that investments are as a result of the business' innovation. This financial ration is arrived at by dividing the net profits arising from the investment by the cost of the investment. This gave standard results irrespective of the person evaluating and thus eliminates the subjectivity in other metrics. However, return on investment can be used alongside other metrics for a wholesome innovation measurement.

2.5 Technology and Business Sustainability

Scholars from strategic management have acknowledged the role of technology in management since 1980s. According to Abel (1980) technology add dynamic character to assignments and tasks in business. Porter (1983) argued that technology is one of the critical factors that determined competitiveness of a business. The technological assets of an organization can be built, maintained and exploited in a well-defined strategy. One of the main goals of a technology is to acknowledge technological resources at both internal and external level by identifying basics that create distinction (Zahra, 2006). In another perspective, Carroll (2017) noted that an artificial system which uses knowledge in an organization to have techniques and objects as an outcomes in aiding the product process, process and service delivery. Wahab, et al. (2019) observed technology as complex applications of scientific and systemic knowledge in handling tasks practically where players in an organization actively participate aided by machines. Santa, et al. (2022) viewed technology as the application of new and innovative process, software systems and hardware systems to aid the efficient and effective delivery of tasks. The technological capacity building through usage of appropriate means is a long-term strategy that sustain success of an organization. The technology used in business operations affects environment, society and economy (Jakšić, et al., 2018).

Technology has evolved since then and information communication technology has recorded a rapid change which has affected business operations significantly. Technology has not only assisted people's lives become well every now and then but also support global business (Mgunda, 2019). Technology has introduced platforms such as media facilities like internet which business are conducted. Technology has disrupted business through how communication is conducted ranging from initial information creation to dissemination (Apulu, and Latham, 2011). Technology is instrumental in initiating

change that is instrumental in different aspect of project cycle and especially business. The changes in business environment have been occasioned by technological advancement. Technology has been critical tool in networking for business in areas that are populous (Brewer, 2005). Connection through internet platforms has seen business reach wider coverage in a short period of time using limited resources. Previous studies narrowed technology to information technology while the current study looked into aspects of technology within the oil and gas industry and this resulted to conceptual gap. Automation brought by technology has enhanced efficiency and reduced labour cost significantly. Some of the businesses are relying on robots to deliver services since human services are expensive and time consuming. The idea of incorporating robots in strengthening efficiencies processes amount to decreased costs and less labour intensive (Nahavandi, 2019). Automation of services in a given industry require the industry to assess what is required and how those services are supposed to be executed. There is need for business to change their mode of operations starting with how they allocate tasks and integrate technology for seamless operation. (Enholm, *et al.*, 2022). The investigation focused on automation form of technology while the current study focused on other aspects of technology such as ICT and this resulted to conceptual gap.

Technology and sustainability are intertwined by the tasks and goals geared to achieve. Santa, *et al.*, (2022) observed that there is paradigm shift in technological application especially green technologies where it has grown gradually and covers all sectors ranging from financing to agricultural. However, significance of green technology cannot be underestimated. Li-Hua, and Lu, (2013) observed that multinational companies created competitive advantage through strategizing on to adopt appropriate technology that guarantee competitiveness. Vidmar, (2019) remarked that business environment is in the midst of transformations that involve digital which aim at realizing business

sustainability. The digital technology is an enabler for businesses to adopt to outside pressure and implement changes to different aspect of business. Many of the studies linked digital technology to performance while the current study linked digital technology to business sustainability and this resulted to conceptual gap.

Information communication technology has revolutionized business. According to Mugunda, (2019) disruptive nature of IT and internet has occasioned change that improved performance of several sectors in the economy. The process of exchanging information by usage of internet as increased accessibility. Wilburn, and Wilburn, (2018) argued that adoption of technology has increased efficiency through lessen time in both production and products delivery. There is also significant decline in cost whenever technology is adopted since it is less labour intensive. The study linked technology to one aspect of sustainability and that is economic indicator while the current study included other aspects such as environmental and social hence addressing conceptual gap.

Costs can be cut as automation and robots replace humans who need wages and benefits.

Whether technology is a measurable aspect is a question that lingers on many people's mind. The impact of technology in business can however be determined. Barnard and Barringer (2022) also emphasized the importance of measuring technology impact. They indicated that it goes a long way in addressing and supporting operational excellence within the technology function.

Baryol (2022) proposes a four-step methodology of measuring technology which involves first understanding what a business needs to evaluate, taking the assessment, evaluating the results and finally creating a roadmap and implementing the plan. Fitzpatrick and Strovink (2021) identified five parameters of measuring technology in metric scale that include portion of expenditure on developing a technology, resources channeled to

various bold digital initiatives in percentages, duration taken to complete a technological innovation, portion of leaders involved in the process and number of technical talents involved in the entire process. According to Barnard and Barringer (2022), the impact of technology in business should involve determining the business value of technology, conducting digital value assessment, and determining IT efficiency and effectiveness.

The suggested models can effectively inform the impact of technology on business. However, identification of the various metrics for different organizations is likely to vary, thus making it inconsistent, where each organization ends up measuring different metrics. Technology is aimed at improving efficiency in processes, which in turn earns more advantages to the business. The main focus of measuring technology's impact would be to determine the level of improvement of the businesses' efficiency. Identifying determinants of efficiency like turnaround times and cost effectiveness and comparing the performance prior to and after implementation of an advanced technology. This provided a much better and more consistent measure and can enable benchmarking, since it is based on similar parameters.

2.6 Research and Development on Business Sustainability

This concept is becoming an emerging issue in most large business organizations. Business require R&A to sustain itself in market and tough environment. R&A affect the performance of business and in most cases improve. Baydoun, et al. (2022) noted R&A is creative and organized process where tasks are prioritized to have more knowledge in stock and improve its usage to create efficiency and change that optimizes output. As per Erfani (2019), research and development elucidate how activities in a firm and other commercial entities are organized to enhance efficiency and overall in performance. Wang, (2011) argued that organizations that allocate more resources to research are

expected to perform more than those that have not in the long run. It is expected that returns on investment on research will outweigh the actual expenditure on R&D. According to Khan (2014) R&D is mandatory for business that yearn to stay long in the competitive market environment through protecting imitation of their products and earn supernormal profits on return.

R&D is considered a critical tool of enhancing specialization patterns of products by organizations in the global market. R&D helps in the maintenance or upgrading of the existing product, creation of the new product and innovating companies' production processes thus improving performance of the company (Lerch, & Gotsch, 2015). R&D is vital in polishing professional know how that is associated with the production and manufacturing in an organization covering strategic units such as how commodities are conceptualized right from design and entire chain of production process. R&A is paramount in modernizing product design and entire process to output level thus require attention from all respective stakeholders.

R&D is instrumental in discovering of new knowledge that is vital in creation of new products and meeting goals of the course. R&D is crucial in revealing ideas and information on the new discoveries and better way of undertaking processes in an organization that is destined to satisfying customers. (Barge-Gil, *et al.*, 2011). R&D has resulted to inventions which some have improved lives and others have had adverse effects on individual lives especially degrading the environment. Invention of new products through R&D has impacted positively on the confidence of many of the consumers. R&D has proved to be a solution to some of the problems emerging in the competitive market.

All fields in an organization require R&D for sustainable performance. According to Booltink, and Saka-Helmhout, (2018), only certain R&D that is considered predictable in realizing desirable performance also an ingredient to competitiveness. Erdogan, and Yamaltdinova, (2019) observed that R&D has been instrumental in facilitating growth and achievement of goals in many organizations. Many scholars acknowledge that relationship between R&D and financial performance is significant. According to Sibiya, (2011) R&D is an enabler of new ideas and information that is important in business process and overall operationalization of an organization. This characterized by unique design and high quality of products that met customer expectation. These studies have linked research and development to either growth or performance but failed to expound the named indicators of sustainability which will be examined by this investigation and this resulted to knowledge gap.

The reengineering of economy to knowledge based is becoming an ingredient of R&D. Park, *et al.*, (2021) opined that organizations that treasure innovation are supposed to have a comprehensive verification process that aid a better decision making and allow business attain its goals. In an economy where knowledge is prioritized, technology is optimized in several production process to improve efficiency. Rao, *et al.*, (2013) noted that more adoption of R&D during recession is likely to increase vulnerability of an institution since it's considered highly risk. Ghaffar, and Khan, (2014) opined that R&D is crucial factor in enhancing competitiveness. The study linked to R&D to competitiveness while the current study linked it to sustainability and thus resulted to knowledge gap.

Like any other key input in business, the impact of R&D needs to be measured in order to determine its contribution towards the business sustainability. Nixon (1998) pointed out that R&D is very costly, and many organizations are constrained when financing it thus looking for external support in financing has been on the rise over years and

management of several organizations have pursued this strategy since technology is intertwined with most of their operations. Kulatunga (2006) insisted on the significance of R&D in enabling desired performance when utilized effectively despite faced with huge financing challenges and other complexities.

Various methodologies of measuring R&D have been developed and adopted by varied businesses. As cited by Kulatunga *et al* (2006), Drondelen *et al* (2000) observed that since 1970s organizations have been embracing several initiatives in their production to improve their performance, focusing mainly on technical products, financial benefits and judgements about the success of individual R&D projects.

Gwynne (2015) points out that some businesses use amount of spending on R&D as a criterion for its value. Gwynne (2015) however criticizes the criterion by indicating that it provides no context for the results of the expenditure. Gwynne (2015) further argues that another common measure of R&D productivity is 'the number of patents an organization is awarded'. According to Gwynne (2015), only few companies (less than fifty percent) that perform R&D file patents in any particular year. This is therefore not a universal measure of R&D performance. The use of input and output measures is a more effective mode of R&D performance measurement. However, in order to allow for consistency and thus enable benchmarking, universal input and output metrics need to be identified.

2.7 Government Policy and Business Sustainability

Policy basically refers to deliberate sets or a set of guidelines made by institutions that influence decisions. According to Lassance (2020), government policy refers to a system of laws, regulations, guidelines, policies, and enforcement frameworks to guide certain activities and processes. Hassel (2015) defined government policy as package of decisions

laid out by governance structure especially those in political offices to influence how operations of organizations are undertaken within a certain framework. According to Kilpatrick (2000) government policy is form regulations and laws formulated by authorities to create order in operationalization of an organization in a given environment. Much as government policies are aimed at providing a sense of direction, they can influence business decisions in various ways. Williams (2019) noted that regulations and laws established by government help to regularize business operations. This evident in most national level events and across lower tier of government levels guided by set of laws. This is also extended to international level where treaties guide businesses of multinational companies in running their operations. Government policies are important since they provide guidance on how to undertake various aspects, they provide consistency in dealing with similar matters, and they help improve accountability, efficiency, and clarity on how various organs of government operate. Mwai, (2019) observed that business operations largely rely on how state policies are formulated. Davis *et al* (2022) reiterates that government policies also protect consumers from exploitative practices. Same is emphasized by Bryan (2013) noted that for significant progress in economic growth to be realized policies of government are supposed to be sound.

Government policies can have either positive or negative impact on business. This is emphasized by Davis *et al* (2022) who opined that the relationship between firms and the government can be either collaborative or adversarial. Abdin (2009) gives an example where, introduction of high taxes tends to lower profitability of many commercial entities thus slowing down progress of that entity an in extreme circumstances lead to closure. On the other hand, if government give tax incentives to some organizations in business that will create an avenue of extra motivation to venture into business. The studies only linked

government policies to one aspect of sustainability but the current study captured all the three aspects as predicted by literature hence addressing the conceptual gap.

Government policies have impact on various aspects of businesses including the macroeconomic environment, cost and availability of power, political stability, pricing, education and training as well as infrastructure. These aspects affect business in various ways. For instance, price control policies control the maximum prices that commodities can be charged. Businesses have to control their costs to ensure they don't exceed the set prices in order to remain profitable. Through infrastructural development, efficiency is improved and there is increased likelihood of cutting costs for doing business. Indeed, Mwai (2019) opine that strengthening of infrastructure is an enabler of stimulating business growth and social amenities. Various policies can also have impact on cost of doing business while other policies require strategic reinvention in order to survive. Policies related to lending and interest rates can also impact business. Abdin (2009) argues that lower cost of capital occasioned by government is a monetary incentive of growing investments. Anjaneyulu (2022) who reiterates that interest rates and cost of borrowing is largely influenced by government policies. Increases interest rates amount to high cost of borrowing and this has a negative effect on investments. This is linked to inflation that has negative effect on profitability. The studies have linked government policies to two aspects of sustainability that is economic and social but omitting the environment aspect and thus resulted to knowledge gap.

Government policy therefore impacts businesses directly since businesses ought to remain compliant and will thus have to make decisions that align the business to the requirements and will also try to take advantage of the favorable policies to maximize returns.

Government policies impact on businesses' daily decisions to remain competitive and to operate within the legal framework. Which technologies to adopt, which areas to invest in research and development and whether the businesses' innovations are to be implemented are all subject to the relevant government policies. It is therefore evident that government policies mediate the impact innovation, technology and research and development for a business that has significant impact on business sustainability.

Government policy has been measured in variety of ways by scholars. Trapnel (2013) measured government policy using strategic capacity, inter-agency coordination, policy implementation, and institutional learning, steering capability, resource efficiency and consensus building. Christian, (2022) operationalized government policy as set of rules and laws, accountability and transparency, reduction of leakages that is characterized by efficiencies and extensive involvement of stakeholders. Lassance, (2020) measured government policy as the regulations, policies, rules, laws and procedures laid down to guide the operations of an organization, government or any other entity. In this study, government policy was measured by reviewing the regulations, policies and corporate governance features that guide the business operations of oil marketing companies with focus to Kenyan scenario.

2.8 Theoretical Framework

This section presents theories upon which this study was anchored. The study was anchored on Michael Porter's generic competitive strategies and the dynamic capability theory.

2.8.1 Michael Porter's generic competitive strategies

Michael Porter's generic competitive strategies is premised on how a company pursues competitive advantage across the perceived chosen markets. This theory is founded on three principles that include strategy on differentiation, strategy on leadership and strategy on focus. According to the theorist leadership is supposed to be the lowest expenditure in operating an organization. It through leadership that business has guarantee of economies of scale through lower cost incurrence. Adoption of economies of scale, aided technology, application of research, allowing innovation to thrive and other factors. Competitive advantage is realized when cost of production is minimized, and optimal prices are charged so that desired profit is realized. Akkannavar (2022) noted organization that embrace leadership create a successful market full of efficiencies.

Differentiation entail creating unique products of a company to make it competitive and stand from the rest of the players in the market. This strategy makes firm products unique along some dimensions that is widely accepted by buyers. Selection of one product with unique attribute is perceived crucial in meeting needs.

The strategy focus entails an organization putting more emphasizes on market niche. This is navigated through understanding dynamics market are faced with and develop the unique solutions to address the problem. Product that is uniquely made is likely to develop following from different customers.

The relevance of Michael Porter's generic competitive strategies theory is that an organization that has gained competitive advantage over its rivals will be generally sustainable. In general, Michael Porter's generic competitive strategies are relevant to this study because they provide petroleum firms in Kenya with various strategic options to adopt in the current changing operating environments in order to remain competitive and

thus remain sustainable. Sustainability of organizations depends on its ability to gain competitive edge over its rivals.

2.8.2 Dynamic capability theory

Teece, Pisano and Shuen (1994) developed this theory. The theory analyzes dynamic capability as the organization position to integrate reconfigure and strategies on various competencies to adapt to changes that occur within the market. Teece (2018), opined that dynamic capabilities are unique from others such as operational or ordinary that only focus on current occasions. This dynamic capability involves organization ability to create and improve how resources are utilized. Culek (2019) noted that dynamic capabilities remain routine functionality of companies that transform operations.

This theory is based on assumption that modification of short-term competitiveness enroots to achieving long term competitiveness is marked by competency as the key component. According to Ludenyo (2018), the theory elucidates the background why firms fail to function well despite of environmental dynamics.

While deciding and adopting the appropriate technology, a business must assess its dynamic capabilities to determine whether required resources are sufficiently available. A business must also determine whether they have sufficient resources in terms of funding and competent human resources to undertake effective research and development. Innovative ideas must also be supported by resources to in order to be effectively implemented. A business must therefore continually determine whether it has the dynamic capability to provide the desired resources for research and development, innovation, and acquisition of the appropriate technology. Changes in operating environments therefore

require organizations to have dynamic capabilities in order to remain competitive and thus sustain its operations.

Indeed, an organization with dynamic capabilities can take advantage of opportunities as they arise and thus remain competitive. Culek (2019) alludes that dynamic capabilities enable firms create, renew, or orchestrate their resources in a manner that creates new value and allows them to compete and evolve. Therefore, sustainable organizations ought to develop dynamic capabilities for competitive advantage. The theory is vital in explaining dynamic capabilities of firms that practices oil and gas marketing hence a platform of creating a sustainable business environment.

2.9 Conceptual Framework

Strategic reinvention which is the independent variable influences sustainability of petroleum firms in Kenya which is the dependent variable. Various factors influencing strategic reinvention include innovation, technology and research and development. Innovation enables a business to come up with new improved methods of doing business, as well as new products that boost the businesses' competitive advantage. Similarly, research and development enable a business to identify the market needs and appropriate markets to focus on. Appropriate technology helps increase efficiency in operations for reduced costs and better customer service. All these earn competitive advantage which is key for business sustainability.

The specific influence of the independent variable is moderated by government policy, since business must make decisions that are aligned to the relevant business policies. This is diagrammatically represented in Figure 1.

**Independent variables
reinvencion**

Dependent variable Strategic

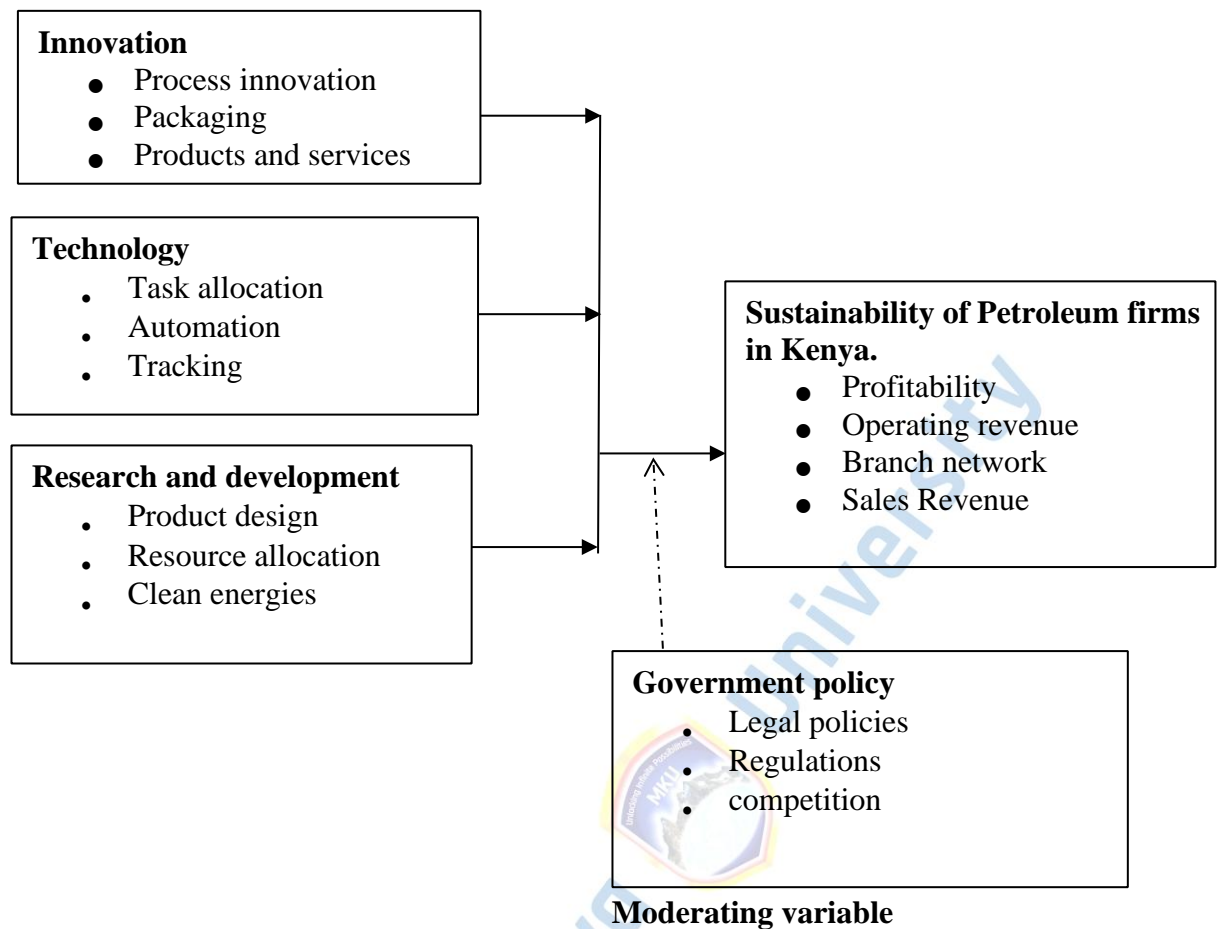


Figure 1 Conceptual Framework Source; Author 2024

Based on the literature strategic reinvention aspects such as innovation, technology and research development was expected to have positive and significant influence on sustainability of oil and gas business. It was also expected that government policy moderated the relationship between strategic reinvention and business sustainability.

2.10 Literature review recap

There have been investigation in the past on the nexus between strategic reinvention and business sustainability. The examination of literature in depth brought out the clear relationship between the variables. Business sustainability which formed the dependent variable was well articulated. Strategic reinvention that formed independent variable was

reviewed under the constructs of innovation, technology and research and development. Theoretical and conceptual framework was presented.

Studies reviewed deduced mixed findings on strategic reinvention which should be employed to achieve business sustainability. Stocker, *et al.*, (2022) pointed out that innovation significantly change how business is conducted, while Adu, *et al.*, (2020) observed that product innovation enhances environmental sustainability. On the other hand, Jaksic, (2016) noted that innovation created value while Barbieri, *et al.*, (2010) remarked that innovation is essential in initiating changes. Moreover, Štverková, *et al.*, (2021) observed that innovation is instrumental in meeting customer expectation.

Technology and sustainability are intertwined by the tasks and goals they are geared to achieve. Santa, *et al.*, (2022) noted that application of technology has enhanced sustainability in areas of agriculture. Li-Hua, and Lu, (2013) pointed out that technology has created competitive advantage. On the other hand, Vidmar, (2019) noted that digitization of business process transform operations to a sustainable level. Mgunda, (2019) noted that technology revolutionized business activities while Wilburn, and Wilburn, (2018) argued that technology has enhanced efficiency.

All fields in an organization require R&D, Booltink, and Saka-Helmhout, (2018) observed that only certain R&D intensity ranges of non-high-tech SMEs lead to increased firm performance with the potential to increase competitiveness of firms thus enhances sustainability. Erdogan, and Yamaltdinova, (2019) noted that R&D is an ingredient for future growth of business. Sibiya, (2011) observed that R&D bring in new ideas. Park, *et al.*, (2021) noted that R&D enhances innovation by creating knowledge that can improve business.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodology of the study. It explains how data was collected and how research instruments were tested to ascertain its reliability and validity. It also presented how data was analyzed.

3.2 Research methodology

Methodology of research is an organized way on how persistent problem can be solved. This is the science behind how a problem can be solved. There are laid rule, procedures and principles that define how this activity is carried out. It ranges from how describe how the situation occurred, juxtaposing a phenomena and how future occurrences might take place. Researchers acknowledge them as techniques utilized in achieving a certain goal in problem solving scientifically.

Methods used in research are considered to be set of procedures, rules and algorithms among others used during research. There are meticulously planned and follows strictly laid scientific rules. These include techniques such as procedural theoretical framework, studies that involve experiments, statistical approaches and numerical techniques. The research techniques are instrumental in defining samples, solving a given problem scientifically. Explanations that are verifiable are only accepted because they meet scientific procedures very well. Mixed research design underpinned this study.

3.3 Research Design

The design of research is a blueprint that highlight how goals and objectives are likely to be attained or solved (Schindler & Cooper, 2004). The selection of research design is always compromised by diverse techniques, sampling plan and protocols. Answering research questions or testing hypothesis is central role of a research. Research design used normally had influenced the specific knowledge being sought. Research design collaborate both quantitative and qualitative finding of study for the researcher to draw a meaningful conclusion about the study.

This study adopted a descriptive research design in assessing the influence of strategic reinvention on business sustainability in petroleum firms in Kenya. The choice of this design is informed by it is flexibility nature that accommodate multifaceted within management discipline. It attempts to examine how a situation has occurred under what scenario and who participated. It elucidates how occurrences happens in an organized set up in a given duration. **3.4 Area of the Study**

Nairobi is the largest city in Kenya and the capital city of the country. Nairobi lies in the latitude of 1.286389 and longitude of 36.817223. It is situated south-central part of the country, 87 Miles from equator. It is a densely populated region with a population of

4,850 persons per kilometer square (KNBS, 2019). The city contributes an estimate of a fifth of the wealth to the GDP of the country making it the largest commercial hub of the country and the region.

Map of Nairobi City County



Figure 2 Map

Source: Nairobi City-County Health Services (2020).

3.5 Target Population

Population targeted in a study is normally involve all members in a cluster group that is subject of interest in the examination (Robinson & Neuman, 2014). Population is regarded as grouping of elements which form a reference point to the research.

The study targeted respondents from the 60 registered oil marketers in Nairobi. Nairobi has been selected because most of the oil marketing companies have offices in the area. The researcher interviewed head of business development unit from each of the oil marketing company. The head of business development unit are the technical officers who

advise the company on the overall strategy of reinventing business. The researcher collected data from all the 60 oil marketing companies in Nairobi. Therefore, census was the appropriate sampling method and thus was adopted. Census has been preferred because the size of the population is small and can be studied in an entirety.

3.6 Construction of Research Instruments

Research instruments are crucial in obtaining adequate information that can help in answering research questions or hypothesis. There are two major research instruments that are widely used in research. Qualitative and Quantitative research instruments. Qualitative data instruments explore several research techniques such as direct observation, structured observation, participant observation, in depth interview, face to face interview, semi structured interview, discussion group and focus discussion group. On the other hand, quantitative research instrument collaborate choices selection based on the view of the respondent. The common quantitative instrument used is questionnaire which this study adopted.

The questionnaire was used to obtain data from respondents and also surveys within same period through the extensive interviews. All the questions were collaborated in one research tool to ensure that every respondent is comfortable. All the respondents were briefed before any collection commences to foster confidentiality and comfortability.

3.6.1 Data Collection Procedures

The primary data were obtained using a standardized research tool that is made up of questions that have closed choices in form of a questionnaire. Questionnaires were administered to heads of business development units of the oil marketing companies to fill. The questionnaires incorporated two sections with the first section being background

information of the respondent and the second section consisting of the study questions. A 5-point Likert scale was used in asking the questions.

3.6.2 Pilot Test

A pilot study is a smaller sized study that helped in planning and modification of the main study and is usually the first step of the research protocol. Lichtenstein, et al., (2021) observed that the objectives of a pilot study being, validating the feasibility of the main study by assessing the criteria of selecting participants, checking if randomization and blinding are done appropriately, check appropriateness of the consent forms and recruitment rate and calculation of the sample size.

According to Mugenda and Mugenda (2006) numerical range from 1% to 10% of the population will be used in the pilot study to pretest the research questionnaire. The questionnaires were piloted and a sample of 10% of the respondents were drawn from oil marketing companies. This ensured polishing up of the questionnaires for efficiency and objectivity of the process.

3.7 Testing of Validity and Reliability

Validity and Reliability test are conducted to determine whether the proposed research instruments meet the required standard that can guarantee appropriate finding that can answer researcher's objective.

3.7.1 Test for Validity

The test of validity is technique geared towards strengthening transparency and reducing chances of biasness in research. This technique involves measuring whether research instruments are likely to achieve what have been designed to get. Validity is made up of three critical components and they include construct, content, and criterion validity.

Construct validity deal with how inferences made from theoretical framework is operationalized in a study. This is achievable by sub dividing research tool into several sections and each part ought to achieve a certain goal. It uses Cronbach alpha where a generated statement attracting value >0.6 is considered adequate.

On the other hand, content validity deal with how items are fairly represented within the domain. Draft questionnaire will be formulated and dispatched to the selected managers to ensure that content validity is uphold. The accumulated knowledge of the selected managers will be essential in fine tuning the questionnaire and improve the quality.

3.7.2 Reliability Test

Test for reliability assesses consistency of research tools whenever subjected to various conditions (Roberts and Priest 2006). The test-retest is the commonly used indicator of reliability of a survey instrument and is measured by having the same set of participants complete a survey at two different times to check the stability of the responses (Litwin, 1995).

3.8 Data Collection and Procedures

Kabir (2016) defined collection of data as the undertaking of obtaining information that related to determining parameters of variables in an attempt to test hypothesis and

answering questions raised by researcher in the process of solving a problem. There are two broad categories of data namely quantitative and qualitative. There is also a mixed methods approach which combines both quantitative and qualitative techniques.

Information that is obtained from first hand experience is regarded as primary and the sources include; interviews, experiments, surveys, observations and questionnaires. Primary data has greater validity than secondary data as it has not yet been published and is more authentic, reliable and objective. The disadvantages of using primary data is that it is time consuming and is not hassle free, the cost involved is a major research expense and it is upon the researcher to ensure accuracy of the data.

The questionnaire was invented by Sir Francis Galton and has the advantage of being cheap, having standardized answers and has less hassle compared to some other types of surveys. For the purposes of this study, primary data were obtained using questionnaires to achieve the objectives set for this study.

3.9 Data Analysis Techniques and Procedures

The questionnaires were edited after they are filled to check the consistency and completeness. The data generated from the study were coded and entered into Statistical Packages for Social Scientists (SPSS) and was analyzed using descriptive statistics in order to be able to present the data in a more meaningful way to allow simpler interpretation of the data.

The descriptive statistics was used in the study included the mean, standard deviation, frequencies and percentages. The data were presented in tables and explanations was done in prose. A simple linear regression model was then used to determine the relationship between the independent variables and the dependent variables and were as follows:

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

Where:

Y – Business Sustainability which is the dependent variable

α – the constant (intercept). It's the value of Y when the independent variables (X_1 , X_2 , and X_3) are equal to zero. β_1 , β_2 , and β_3 – beta coefficients

X_1 – Innovation

X_2 – Technology

X_3 – Research and Development ε

– error term of the model

The study adopted Kenny and Baron (1986) technique to determine the influence of government policy on the relationship between strategic reinvention and business sustainability for oil firms in Nairobi, Kenya. The technique involves estimating a model involving a dependent variable, independent variable, moderator variable, and interaction term (independent variable*moderator variable).

$$Y = \beta_0 + \beta_1 X + \beta_2 M + \beta_3 X * M + \varepsilon$$

Where; Y is business sustainability

X is strategic reinvention

M is moderator (government policy)

$X * M$ is interaction term of strategic reinvention and government Policy β_0

is is constant (coefficient of intercept)

ε is error term. β_1 , β_2 and β_3 are the regression coefficients of the independent variable, moderator variable and interaction term.

3.10 Ethical Consideration

The introductory letter from the university outlining the purpose of the investigation will be presented and permission will be sought Energy Regulatory Commission to allow collection of necessary data. In addition, the researcher obtained a research permit from the National Commission for Science, Technology and Innovation (NACOSTI) that was presented to the heads of the oil marketing companies' business development units, this will give assurance to the respondents that data collected is for academic purposes only.

Additionally, the researcher sought an ethical letter from Mount Kenya University. The researcher maintained high standard of code of conduct and behaviors in relations of the rights of the respective respondents.

The respondents will be made aware of the study objectives and the confidentiality of information being sought. Voluntary participation is essential in research and this is aided by ethics (Cooper, & Schindler, 2011). In addition, respondents will not be allowed to record their personal information hence their personal contacts will remain undisclosed.

Precaution will be taken to ensure that participants are not coerced in taking part of the study and also in ensuring that minimum information is used. Confidentiality and privacy will be observed as suggested (Houghton, *et al.* 2010). There will be no inducement for the participants and also contacting them during unreasonable time will not be allowed.

CHAPTER FOUR

RESEARCH FINDINGS, ANALYSIS AND PRESENTATION

4.0 Introduction

The discussion and interpretation of results were undertaken in this section. The study sought to analyze the influence of strategic reinvention on business sustainability in petroleum firms in Nairobi, Kenya. Descriptive finding was useful in summarizing data and analysis of each item. It gave the general distribution of data that formed the foundation of inferential statistics. The inferential statics enabled the study to predict the relationship of study variables. A thematic approach was employed in the analysis of the study data based on the four specific objectives.

4.1 Response Rate

The study dispatched 60 and 52 were returned fully filled. This yielded an acceptable response rate 86.7 percent. The unreturned questionnaire were considered unproductive. Empirical studies have established that a return rate above 50 percent is considered appropriate while a return rate above 70 percent is considered excellent (Hendra, & Hill, 2019). Results examining response rate is presented in figure 3.

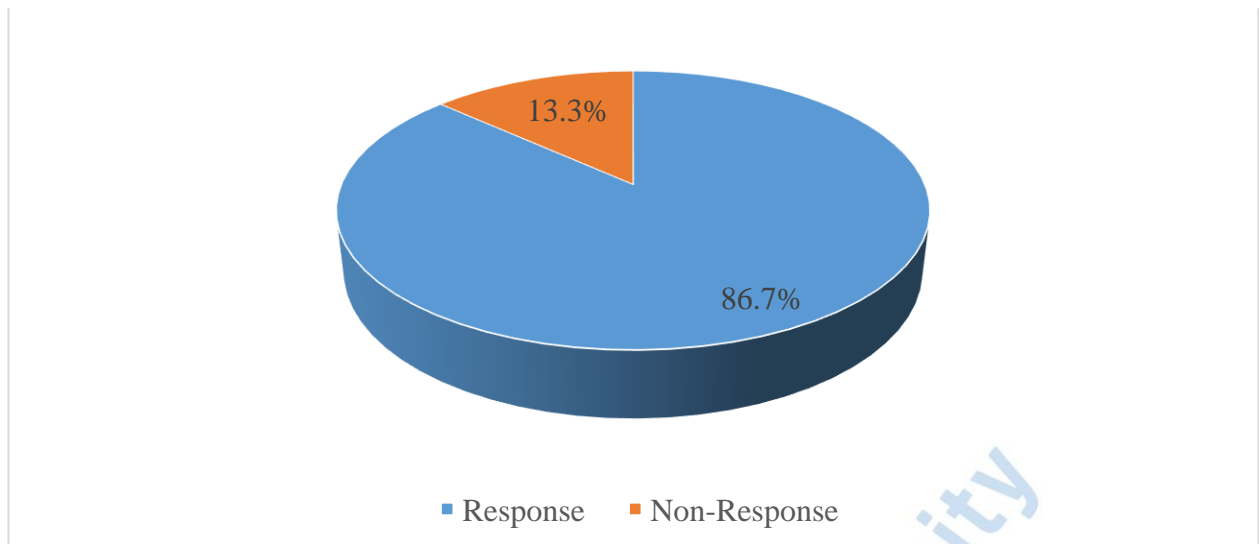


Figure 3 Response Rate

4.2 Demographic Information of business development heads in Oil Marketing Companies

Participants were interviewed on their gender, age, years of experience and duration the company has been operational. The data relating with gender capture their identities as either male or female. Data relating to age was also collected to enable link sustainability of business. Further, respondents were asked about their accumulated years of working experience to examine how skills developments affected organization performance. Duration of the company in operation was crucial in determining whether company has been sustainable if it has operated for longer periods while the shorter periods indicate inconclusive. Table 1 depicts demographic information of oil marketing companies' respondents presented in frequencies and percentages.

Table 1

Demographic Results

General Information Gender	Frequency	Percentage
Male	27	51.9
Female	25	48.1

Total	52	100
Age (Years)		
20 – 30	12	23.1
31 – 40	22	42.3
41 – 50	14	26.9
Over 50	4	7.7
Total	52	100
Working experience (Years)		
Less than one year	9	17.3
1-3	29	55.8
3-6	14	26.9
Total	52	100
Duration of the company in Operation (Years)		
1 – 5 years	8	15.4
5 – 10	16	30.8
Over 10 years	28	53.8
Total	52	100

Results indicated that frequency of respondents by gender was evenly distributed where (n=27, 51.9%) were male and (n=25, 48.1%) were female. This showed that study population was gender representative, and the finding could be generalized to male and female of oil marketing companies. This implied that the study was gender representative thus finding could be generalized as male or female employee of oil marketing companies. Gender information is essential in explaining some aspect in an organization where one gender as a comparative advantage on performing certain roles and this has a direct influence on business sustainability.

Results on the age indicated that oil marketing companies' employees aged 31-40 years constitute 42.3% (22) while those aged over 41 years constitute 26.9% (14). Additionally,

employees aged 20-30 years constitute 23.1% (12) while those aged above 50 years constitute 7.7% (4) of the workforce. This signified that majority of oil marketing company employees are aged between 31-40 years. This is the prime age where employees are considered prime in their careers and energy wise. Employees in prime age and careers are known for high productivity thus at this age many of respondents are at prime age where they play critical roles in enhancing organizational performance. Productive age is critical in enhancing performance especially nature of tasks that can be handled depending on the age bracket for instance labour intensive tasks require youthful age unlike advanced ages.

Finding on the working experience indicated that 55.8% (29) of oil company employees had a working experience of 1-3 years while 26.9% (14) of the employees had a working experience of 3-6 years. Additionally, 17.3% (9) of oil marketing employees had a working experience of less than a year. This signified that most employees have accumulated years of experience of 1-3 years. Years of experience is crucial in skill nurturing and learning new skills, thus workers in the organization are skilled making organization achieve its performance. Years of experience is crucial in skill nurturing and learning new skills, thus workers in the organization are skilled making organization achieve its performance.

Regarding the duration of oil marketing companies in operation, the finding of the study revealed that 75 % (39) of the oil marketing companies have been in operation for a period of 1-5 years while 25% (13) have been in operation for a period of 5-10 years. This imply that many oil marketing companies are still infant in the business and thus it is not possible to determine their sustainability.

4.3 Analysis of Business sustainability and Strategic Reinvention

The section presents descriptive results of business sustainability and aspects of strategic reinvention that include innovation, technology, research and development. Further, the study also assessed the data structure of the moderator government policies and business sustainability. The research responses were based on the Likert scale where: 1 is strongly agree, 2 is agree, 3 is neutral, 4 is disagree and 5 is strongly disagree. Descriptive statistics entailed examination of the structure of data using mean and standard deviation. The mean measured center of tendency while the standard deviation measured the data disparity.

4.3.1 Business sustainability

The competitive business environment demand strategic thinkers to attain success and business sustainability mindset has been critical in realizing such a dream. There is need for paradigm shift in solving any pending problem that might derail success of the business.

The business sustainability was the dependent variable of the study. This was indicated by parameters such as sales, profitability and corporate social responsibility. The respondents were asked about profitability of their business, growth in sales, activities targeting environmental conservation and their involvement in social corporate responsibilities. The responses were captured by Likert scale with 8 statements in a scale of 1-5 with maximum score being 5. The descriptive statistics such as the mean and standard deviation was employed. The study assessed how oil marketing companies have embraced business sustainability, and the findings are summarized in mean and standard deviation as presented in Table 2.

Table 2*Business Sustainability*

Statement	Mean	Std
The company has registered consistent profit growth in the last five years	2.33	1.25
The company sales have grown progressively in the last five years	2.12	1.25
The company has opened more branches in other regions in the country in last two years.	2.17	1.18
The company systems of production have been designed in way that it reduces pollution of the environment	2.56	1.26
The company has laid down strategies on how to recycle waste materials	2.17	1.20
The company has participated in activities that result to ecological restoration and environmental conservation with external players	2.46	1.34
The company has established a fund kitty that is used to pay school fees for the needy students in the society	2.33	1.28
The company has a well-defined policy on social corporate responsibility	2.17	1.18

Based on the finding in Table 4.2, it was found out that many of the oil marketing companies have recorded consistent growth in the last five years (mean= 2.33, std =1.25).

This depicted oil marketing companies have been performing considerably well as indicated by growth parameters such as sales, profitability and overall market share improvement. This is also evident as many of the oil marketing companies have recorded increased sales progressively in the last five years (mean= 2.12, std =1.25). This signify that sales of oil marketing companies have been on upward trajectory. This has also resulted to opening of new branches by these oil marketing companies (mean= 2.17, std =1.18). Increased market share as result of improvement of sales will automatically result to opening of new branches. On the other hand, many of the oil marketing companies have developed systems of production designed to reduce pollution of the environment (mean= 2.56, std =1.26). This imply that production processes of the oil marketing

companies have conformed to environmental laws and thus avert pollution of the environment.

The finding of the study revealed that many of the oil marketing companies have laid down strategies on how to recycle waste materials (mean= 2.17, std =1.20). This is essential in reducing pollution of environment and embracing the sustainable development goals. Moreover, it was noted that many of the oil marketing companies have participated in activities that result to ecological restoration and environmental conservation with external players (mean= 2.46, std =1.34). This imply that oil marketing companies have laid down strategies of ensuring that environmental conservation is a pillar to their activities through strategies such as ecological restoration. In addition, many of the oil marketing companies have established a fund kitty that is used to pay school fees for the needy students in the society (mean= 2.33, std =1.28). This imply that corporate social responsibility of oil marketing companies has been empowering the society through programs such as financing education of less fortunate and have the ability to transform the society in the future through education. Further, the study denoted that many of the oil marketing companies have well-defined policy on social corporate responsibility (mean= 2.17, std =1.18). This signify that oil marketing companies have a well-structured social corporate responsibility policy that obliges them to ensure the welfare of the society is improved.

4.4 Analysis of Strategic Reinvention

Strategic reinvention crucial in creating a positive disruption in business and thus make it sustainable. Strategic reinvention does not only reconfigure organizational core strategy and dynamic capabilities but also lay emphasis on the need of social cultural dynamics and opportunity gaps, injecting new ideas on customer value and the entire supply chain

management. Strategic reinvention majorly deals with reconfiguration of value system, technological innovation, and new customer value propositions, and economic feasibility of the business process (De Bernardi, et al., 2020). Adaptation of business to new changes require reconfiguration on how they combine resources and capabilities into their services and products. The study examined how various aspects of strategic reinvention that include innovation, technology and research and development using descriptive statistics such as mean and standard deviation. The statement of each construct was measured by Likert scale with a range of 1-5. The generated Likert score for each construct was measured by the use of descriptive statistics which included the mean and standard deviation. The presentation of the descriptive statistics has been examined in presented in the section 4.3.2 to 4.3.6.

4.4.1 Innovation

Innovation is considered a significant factor in enhancing sustainability of oil business. The study investigated the aspect of innovation in oil companies as an agent of strategic reinvention by enquiring from the respective oil companies and findings are summarized in mean and standard deviation and the results is presented in Table 3.

Table 3

Descriptive findings of Innovation

Statement	Mean	Std Deviation
The packaging of products is unique and meets the needs of customers	2.23	1.02
The company has developed several processes that can resolve any challenge easily	2.10	1.00
There are tracking mechanisms in this company which respond to customer demands instantly	2.15	1.04
The company has been producing new products every year which has increased the sales of the company	2.31	1.09
The company has a developed mechanism where new ideas are shared and nurtured	2.21	1.09

The company has established a policy where creative and innovative ideas are implemented fully	2.42	1.18
The sales system in the company is unique and effective thus customers are served quickly	1.92	1.03
The company target innovative leaders during recruitment	2.06	1.21

Based on the results, majority of the respondents agreed that packaging of oil of products have been unique and has met customer expectations (mean= 2.23, std=1.02). Thus, this affirms that oil companies' mode of packaging has been made unique as result of innovation. There is also tendency that many of the oil marketers have embraced several approaches in addressing emerging challenges (mean= 2.10, std=1.00). This has been made possible by the presence of innovation. In addition, it was found that many of the oil marketers have tracking devices and are able to respond to distress calls from clients on time (mean= 2.15, std=1.04). The oil market companies have devised mechanism aided by innovation in responding to distress calls from clients. Majority of the oil companies have been producing new products frequently (mean= 2.31, std=1.09). This has been as result of innovation and this has been evident with the increased sales recorded by these companies. Moreover, this has been supported by oil marketing companies' tendency of nurturing new ideas (mean= 2.21, std=1.09). Innovation is only driven when an enabling environment is created for new ideas. In addition, the process of supporting innovation has been aided by the fact the oil marketing companies have been in the fore front in implementing or executing creative and new ideas (mean= 2.42, std=1.18). The act of innovation can only be real if the oil marketing companies implement new and creative ideas, and this has been heavily evident in the oil marketing companies. Majority of these oil marketing companies have ventured in having unique sales system for their own good (mean= 1.92, std=1.03). This is meant to improve sales services and enhance competitiveness in customer care service. Finally, it was found out that many oil

marketing companies target innovative individuals in their recruitment (mean= 2.06, std=1.21). This is evident with increased level of innovative solutions in terms of sales systems, new products, and more creative packaging methods.

4.4.2 Technology

Technology has been instrumental in creating efficiency in the many aspects and operations of oil marketing companies. The study sought to determine the importance of technology, and the findings are summarized in mean and standard deviation that is presented in Table 4.

Table 4

Descriptive finding of Technology

Statement	Mean	Std
Tasks and roles allocation in this organization is effective and efficient.	2.06	1.23
The communication structure in this organization between employees, management and clients have been supported by technology.	2.44	1.32
All systems in this company have been automated.	2.17	1.20
Oil products are monitored by system aided by technology in this company.	2.62	1.47
The production of oil products and its distribution take shorter time nowadays.	2.35	1.25
The cost of production of oil products has reduced significantly in the last one year.	2.23	1.25
Networking in this business has resulted to significant growth of sales in populous areas.	2.50	1.42
Product creation in this company has been efficient in the last one year.	2.25	1.27

Based on the finding of the study, many of the respondents agreed that tasks and roles allocation in this organization is effective and efficient (mean = 2.06, std =1.21). One of

the key roles of technology is improving how operations are undertaken. This is evident with the increased number of communication structure among oil marketing companies and their employees likewise to clients (mean = 2.44, std =1.32). Technology creates ease in communication, and this has been the case of oil marketing companies. Moreover, many of the oil marketing companies have automated their systems (mean= 2.17, std =1.20). Automation is always complimented by technology since certain level of scientific applications are employed. This is evident as many oil marketers monitoring systems are aided by technology (mean= 2.62, std =1.47). Technology is paramount in ensuring that monitoring system is effective and captures accurate results. In addition, distribution of products among the players is taking a shorter period as result of employing technology (mean = 2.35, std =1.25). Many of the oil marketers have recorded reduced cost of oil distribution in the last one year as result of employing technology (mean= 2.23, std =1.25). Reduction in distribution cost is as result of employing technology in distribution and also endearing to higher levels of efficiency as result of technology adoption. This is also evident with the increased level of networking in the business as depicted by the results (mean= 2.50, std =1.42). This was supported by the creation of new products in the company (mean= 2.25, std =1.27). Technology has improved manufacturing and processing of oil products.

4.4.3 Research and Development

Research and development has been known as foundation of knowledge and aid both innovation and technological process of an organization. The study assessed how research and development have been implemented in oil marketing companies using mean and standard deviation and the finding is presented in table 5.

Table 5*Descriptive finding of Research and Development*

Statement	Mean	Std
The company has put mechanisms that protect imitation of their products by other competitors	2.12	1.06
The company has consistently over time upgraded their products design and brands	2.17	1.12
The company has specialized in manufacturing certain brand of product because it has hedge over similar products in the market	2.12	1.13
Consumer confidence over the company products has grown over time	2.21	1.09
The company has produced high-tech products recently	2.38	1.35
The company reduces investment of resources on new products during lag and risk periods	2.33	1.40
The company has found sustainable solutions to the most recurring challenges	2.21	1.18
The company reengineers processes periodically thus future growth is predictable	2.25	1.01

Based on the finding in Table, many of the respondents agreed that the company has put mechanisms that protect imitation of their products by other competitors (mean= 2.12, std =1.06). It was found out many of the oil marketing companies have consistently over time upgraded their products design and brands (mean= 2.17, std =1.12). This implies that oil marketing companies have been upgrading their products over time. Many of the oil marketing companies have been upgrading their products over time. Many of the oil marketing companies have specialized in manufacturing certain brand of product because it has edge over similar products in the market (mean= 2.12, std =1.13). This is evident as many of the oil marketing companies enjoy consumer confidence over their products growing significantly over time (mean= 2.21, std =1.09). This signified consumer confidence in the company products has been on the rise since their engagement on extensive research and development. In addition, many of the oil marketing companies have produced high-tech products recently (mean= 2.38, std =1.35). This implies that products produced by these companies have undergone extensive research and thus entail

a high level of technological innovativeness. Moreover, it is evident that many of the oil marketing companies have recorded reduced investment of resources on new products during lag and risk periods (mean= 2.33, std =1.40). This imply that oil companies are risk averse and tend to reduce their investment when the economic performance is on decline trends. This is evident with many oil marketing companies developing sustainable solutions to the most recurring challenges (mean= 2.21, std =1.18). This imply that these companies have been able to use research and development to come up with solution on daily challenges and competitive business environment to stay afloat in the market for a foreseeable future. In addition, many of the oil marketing companies have reengineered processes periodically thus future growth is predictable (mean= 2.25, std =1.01). This signified that any processes have been reengineered because of research and development.

4.4.4 Government policies

The regulatory role of government is crucial in aiding reinvention process such as innovation, technology and research and development. The study assessed the role of government policies in enhancing reinvention and the finding is summarized in Table 6.

Table 6

Descriptive Finding of Government policies

Statement	Mean	Std
The existing legal regulations and guidelines are conducive for oil marketing business	2.46	1.35
Current policies are very consistent thus enhance efficiency and accountability in dealing with products and raw materials from overseas	2.29	1.18
The company products are protected from imitation and any other form of counterfeiting.	2.21	1.16
The company is making supernormal profits because the current tax regime is favorable for business efficiency	2.37	1.24
The company has enjoyed incentives from government for their role of enhancing economic growth through expansion	2.17	1.12
The introduction of price control mechanisms has reduced the profit-		

making margins of the company	2.21	1.14
The government has put necessary physical infrastructure thus doing business has been efficient	2.44	1.27
The existing monetary policy is favorable, and businesses can access credit at an affordable cost	2.17	1.22

Based on the findings of the study, majority of the oil marketing companies are of the view that existing legal regulations and guidelines are conducive for business (mean= 2.46, std =1.35). This demonstrate that the current legal regime is conducive for business. This evident with many oil companies affirming that current policies are very consistent thus enhance efficiency and accountability in dealing with products and raw materials from overseas (mean= 2.29, std =1.18). This implies that many of the policies were progressive and thus acted as incentives to the reinvention of business. In addition, it was noted that many of the oil marketing are protected from imitation and any other form of counterfeiting (mean= 2.21, std =1.16). This implies that regulation on averting counterfeiting has been implemented fully. This is also evident in that many of the oil marketing companies are making supernormal profits because the current tax regime is favorable for business efficiency (mean= 2.37, std =1.24). This indicates that taxes levied on oil marketing companies are within a reasonable range and thus allow them to make reasonable profits. In addition, it was noted that most oil marketing companies have enjoyed incentives from government for their role of enhancing economic growth through expansion (mean= 2.17, std =1.12). This implies that government offered incentives to these companies as way of reducing the cost of the ease of doing business and thus making it more attractive. Moreover, it was found that many businesses agreed that the introduction of price control mechanisms has reduced the profit-making margins of the company (mean= 2.21, std =1.14). It implied that price control reduced profit margins for many of the oil marketing companies' profits. Moreover, it was noted that many of the

businesses have benefitted from government initiatives on physical infrastructure and thus doing business has been efficient (mean= 2.44, std =1.27). This implies that oil product distribution has benefited from the infrastructure set up by government as result its efficiency and effectiveness. Finally, it was noted that many of the oil marketing companies are favored by monetary policy and can access credit at an affordable cost (mean= 2.17, std =1.22). This implies that monetary policy stabilization has favored oil companies to expand their business because of increased credit access.

4.5 Relationship between Strategic Reinvention and Business Sustainability of Petroleum Firms

To measure the level of strategic reinvention, business sustainability of petroleum firms and adherence to government policies, aggregate scores (sum of response score) were used. The scores were generated from the 5-point Likert scale (1-strongly disagree, 2-disagree, 3-neutral, 4-agree, 5-strongly agree). There were eight statements for each of the study variables business sustainability, innovation, technology, research development and government policy. This implied that the minimum score would be 8 that is (1*8) and maximum score would be 40 that is (5*8). A score of 8 implies lowest score, 16-low score, 24=moderate score, 32-high score and 40-highest score. For interpretation purposes, a score of 8-19 is low score, 20-27 moderate score, 28-40 high score.

Based on the finding in appendix IV, the mean score of business sustainability was 18. This implies that the business sustainability for petroleum firms was low and majority were likely to stop operations. One of the petroleum firm had business suitability score of 31 implying highest level of business sustainability while the lowest petroleum firm had score of 11 implying lowest level of business sustainability.

Regarding innovation by petroleum firms, the mean score was 17. This implies that the innovation level of petroleum firms on aggregate mean was low. One of the petroleum firm had innovation score of 27 implying moderate level of innovation while the lowest petroleum firm had score of 11 implying low level of innovation.

Further, the study explored the level of technology use by petroleum firms. The average score was 19. This implies that the level technology use by petroleum firms was still low. One of the petroleum firm technological use score was 27 implying moderate level of technological use while another petroleum firm had score of 11 implying low level of technological use.

For research development the score, the mean score was 19 implying low level of research development undertaking by the petroleum firms. The highest score was 31 implying one of the petroleum firm had invested heavily in research development while the lowest score was 9 implying that some of the petroleum firms had scarcely invested into research development.

Finally, the study explored the level of government policies' adherence by petroleum firms. The aggregate score was 21. This implies that the level government policies' adherence by petroleum firms was moderate. One of the petroleum firm level of government policies' adherence score was 31 implying high level of adherence while another petroleum firm had score of 10 implying low level of adherence to government policies.

4.6 Relationship between innovation and business sustainability for the oil firms

The study sought to determine the influence of innovation on business sustainability for the oil firms in Nairobi, Kenya using the calculated scores above. The study applied Pearson correlation analysis to establish the nature and strength of association between

innovation and business sustainability. It further employed simple linear regression to determine the effect of innovation on business sustainability for the oil firms in Nairobi, Kenya.

4.6.1 Correlation between innovation and business sustainability for the oil firms

Pearson correlation (r) analysis was employed to establish the nature and strength of association between innovation and business sustainability of petroleum firms. Pearson correlation measures the nature and strength of association between research variables and ranges ± 1 . As per Schober, et al. (2018), r of 0.7 and above implies very strong correlation, 0.5-0.69 strong correlations, r less than 0.49 is moderate correlation, r of 1 is perfect correlation whereas 0 implies no correlation. The results of correlation between innovation and business sustainability of petroleum firms is shown in table 7.

Table 7

Correlation between innovation and business sustainability of petroleum firms

		Business sustainability of Innovation petroleum firms	
Business sustainability petroleum firms	Pearson Correlation	1	.550**
	Sig. (2-tailed)		.000
	N	52	52
Innovation	Pearson Correlation	.550**	1
	Sig. (2-tailed)	.000	
	N	52	52

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

The finding revealed that innovation has a positive, strong and significant association with business sustainability of oil marketing companies ($r=.550$, $p=0.000$) at 95% confidence level. This implied that innovation is a drive of business sustainability. Innovation is essential in problem solving and thus help to sustain activities of a business since challenges have been resolved. Onsel, *et al.*, (2015) opined that innovation is crucial in problem solving but also target improving competitiveness and economic success ordinarily aided by technology. Today innovation has been part and parcel of business life ranging from new product development to management and customer communication.

4.6.2 Regression Coefficient between innovation and business sustainability for the oil firms

Simple liner regression was employed to determine the effect of innovation on business sustainability for the petroleum firms. The model results output comprised of the model summary, ANOVA test and regression of coefficient. Table 8 presents the model summary results.

Table 8

Model Summary Results of innovation and business sustainability of petroleum firms

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.550 ^a	.302	.288	4.88053

a Predictors: (Constant), Innovation

Results of regression indicated a coefficient of determination R Square of .302 and R of 0.550 which is significant. The coefficient of determinant (R-squared) of .302 presents a 30.2 percent of the total variation in business sustainability of oil marketing companies is explained by the innovation. On the other hand, the Adjusted R Square of .288 shows that,

in exclusion of constant variable innovation, explained in the changes in the business sustainability of oil marketing companies by 28.8%. The remaining (71.2%) can be elucidated by the factors not included in this regression model under investigation. The average deviation of the independent variable from line of the best fit is (4.88053). The validity of the model was also validated using Analysis of Variance (ANOVA) and results are shown in Table 9.

Table 9

ANOVA Results of innovation and business sustainability of petroleum firms

Mode	Sum of Degree of Mean I	Squares freedom Square F	Sig.
Regressio			21.66 .000 ^b
1 n	516.096	1	516.096
Residual	1190.981	50	23.820
Total	1707.077	51	

a) Dependent Variable: business sustainability of petroleum firms

b) Predictors: (Constant), Innovation

The results indicated that the model was statistically significant in explaining effect of innovation on business sustainability of oil marketing companies as explained by a pvalue = 0.000; $F(4,51) = 21.667$. The $p < 0.000$ which is less than critical value 0.05 thus implying that innovation and business sustainability model is statistically significant. Therefore, innovation is a significant predictor of business sustainability of oil marketing companies. The simple linear regression model was employed in determining the relationship between innovation and sustainability of petroleum firms and the finding is presented in Table 10.

Table 10

Regression Coefficient Results of innovation and business sustainability of petroleum firms

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	5.577	2.817		1.979	.053
1				4.655	.000
Innovation	.731	.157	.550		

a. Dependent Variable: business sustainability of petroleum firms

The model regression coefficients that explain the effect of innovation on business sustainability of oil marketing companies in Kenya.

$$Y = 1.979 + .731X_1$$

Where:

Y is Business sustainability of oil marketing companies in Kenya while X_1 is the innovation level among the oil marketing companies

Basing on the regression of coefficient results, the coefficient of innovation was positive and statistically significant with business sustainability of oil marketing companies ($\beta = .731$, $p = .000 < 0.05$). The regression of coefficient of .731 implies enhancing innovation in firm is likely to improve its sustainability by .731 as measured by its indicators. This suggest that strengthening innovation in an organization will result to improvement of business sustainability among oil marketing companies. The implication of the findings is that strategic innovation is crucial component, which enhance business sustainability of oil marketing companies. The variables are essential in determining business sustainability of oil marketing companies.

The correlation and inferential finding indicated that innovation is a significant predictor of business sustainability of oil marketing companies. Innovation is a process marked by change of product design and overall outlook of the business model with an aim of improving its operations. This is attainable through the creation of enabling environment that is crucial for the production of innovative ideas. The process of innovation is a holistic process that combine the existing ideas and the new ideas to bring in a hybrid product that is superior and have a competitive advantage over existing products and thus essential in guaranteeing sustainability of business. Innovation plays a crucial in enhancing customer

feedback and thus reconfigures demand in a way that suit the situation and attain desired sustainability.

The success of many businesses today has been driven by innovation and this is the case with oil marketing companies. Innovation has aided production of unique products in the industry that enjoy market competitiveness. This also has been accompanied by the improved quality of these products as result of innovation. Innovation is also crucial in enhancing continuity of business through regeneration of new ideas and thus enhance sustainable business environment.

The finding of this agreed with a study by Stocker, *et al.*, (2022 and Adu, *et al.*, (2020) which opined that innovation creates more value to a product thus increase satisfaction, welfare and overall benefit to the society. It also concurred that with a study by Barbieri, *et al.*, (2010) which noted that organization that initiates novelties of all kinds in a regular basis is likely to attain its goals. It also agreed with a study by Štverková, *et al.*, (2021) and Fischer *et al.* (2020) argued that innovation is difficult to be measured and there is no agreeable position thus any method remains work in progress.

4.7 Relationship between Technology and business sustainability for oil firms in Nairobi, Kenya

The relationship between technology and business sustainability was analyzed using correlation and regression statistics. Regression was used to test the study hypotheses upon which conclusion was drawn from.

4.7.1 Correlation between technology and business sustainability for the oil firms

A correlation between technology and business sustainability of petroleum firms using Pearson correlation. The correlation results is shown in table 11.

Table 11*Correlation between innovation and business sustainability of petroleum firms*

		Business sustainability of Technology petroleum firms	
Business sustainability petroleum firms	Pearson Correlation	1	.451**
	Sig. (2-tailed)		.000
	N	52	52
Technology	Pearson Correlation	.451**	1
	Sig. (2-tailed)	.000	
	N	52	52

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

There was a moderate positive correlation between technology use and business sustainability petroleum firms. Technology is known to be the driver of efficiency in an organization. Technology improves the competitiveness of an organization through diversification of products, production of high-quality products and reduction in cost and thus gives a firm superiority over competitors. Adoption of technology in the industry has eased operational cost and provided an enabling environment. The process of automation of the production and distribution process has increased efficiency in terms of cost and time wastage. According to Enholm, *et al.*, (2022) business adopts technology in allocating tasks and thus allow seamless operation that guarantee business sustainability.

4.7.2 Regression Coefficient between technology and business sustainability for the oil firms

Simple liner regression was employed to determine the effect of technology on business sustainability for the petroleum firms. The model results output comprised of the model summary, ANOVA test and regression of coefficient. Table 12 presents the model summary results.

Table 12

Summary of Model Results of technology and business sustainability for the oil firms

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.451 ^a	.203	.187	5.21511

a. Predictors: (Constant), Technology

The study conducted a correlation coefficient (R) and coefficient of determination (R²). Coefficient determination was (20.3%) and adjusted (R) square of (18.7%). This means that technology explains the 20.3% of business sustainability for the petroleum firms. The study conducted analysis of variance to establish significance of the model and the finding is presented in Table 13.

Table 13

ANOVA Results of technology and business sustainability for the oil firms

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	347.207	1	347.207	12.766	.001 ^b
	Residual	1359.870	50	27.197		
	Total	1707.077	51			

a. Dependent Variable: Business sustainability
b. Predictors: (Constant), Technology

As indicated in table 13, the F-critical 12.766 and a p-value < 0.05 this translates a significant between the variables. This indicates the model was significant in predicting the independent and dependent variables. The regression model was sufficient in studying the effect of technology on business sustainability. Moreover, specific regression coefficient findings are examined in Table 14.

Table 14

Coefficient Results of technology and business sustainability for the oil firms

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	7.318	3.160		2.316	.025
Technology	.590	.165	.451	3.573	.001

a. Dependent Variable: Business sustainability

The model regression coefficients that explain the effect of technology on business sustainability of oil marketing companies in Kenya.

$$Y = 7.318 + .590X_2$$

Where:

Y is Business sustainability of oil marketing companies in Kenya while X_2 is the technology use among the oil marketing companies

Technology was found to have a positive and statistically significant effect on business sustainability of petroleum companies ($\beta = .590$, $p\text{-value} > 0.05$). This implies one unit change in technological deployment by oil companies result to 0.590 units increase in business sustainability. The coefficient of 0.590 indicates that fostering technology enhances business sustainability of oil marketing companies. Adoption of technology is

likely to create efficiency in operation of these companies by 0.590 for every new technological practice implemented. This was supported by descriptive analysis and correlation finding.

Correlation and inferential statistics found out that technology is crucial in enhancing business sustainability. Technology has revolutionized how business is carried out especially through automation of the process and procedures. Technology has transformed distribution infrastructure for instance use of internet to track movement of product from one area to another and this key in the oil marketing industry. Technology is instrumental in initiating change that is instrumental in different aspect of project cycle and especially business. The changes in business environment have been occasioned by technological advancement. Technology has been critical tool in networking for business in areas that are populous (Brewer, 2005). Connection through internet platforms has seen business reach wider coverage in a short period of time using limited resources and thus make distribution more efficient and effective in the society.

Technology has been instrumental in the automation process of business. Automation is essential in enhancing efficiency through reduced time and operational time. The use of technology increases output production, and this happens within a reduced time period. Automation of services in a given industry require the industry to assess what is required and how those services are supposed to be executed. There is need for business to change their mode of operations starting with how they allocate tasks and integrate technology for seamless operation. (Enholm, *et al.*, 2022).

The finding of this study agreed with a study by Santa, *et al.*, (2022) and Li-Hua, and Lu, (2013) which observed that technology positively affected business sustainability through creating a competitive advantage. It also concurred with a study by Mugunda, (2019)

which established that adoption of technology has increased efficiency through less time in both production and products delivery. It also concurred with a study by Barnard and Barringer (2022) which concluded that technology is a tool which has a long way in addressing and supporting operational excellence within the technology function.

4.8 Relationship between Research Development and business sustainability for oil firms in Nairobi, Kenya

4.8.1 Correlation between Research Development and business sustainability for the oil firms

A correlation between research development and business sustainability of petroleum firms using Pearson correlation. The correlation results is shown in table 15.

Table 15

Correlation between Research Development and business sustainability of petroleum firms

		Business sustainability of Research petroleum firms	
		petroleum firms	Development
Business sustainability petroleum firms	Pearson Correlation	1	.546**
	Sig. (2-tailed)		.000
	N	52	52
Research Development	Pearson Correlation	.546**	1
	Sig. (2-tailed)	.000	
	N	52	52

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

The third objective was to asses' the effect of research and development on business sustainability of oil marketing companies. There was a strong positive correlation between research development and business sustainability petroleum firms. The

correlation finding revealed that there is a moderate, positive and significant association between research & development and business sustainability of oil marketing companies with correlation coefficient of ($r=.560$, $P=0.000$) at 95% confidence level. Research and development is considered a critical tool of enhancing specialization patterns of products by organizations in the global market. Research and development helps in the maintenance or upgrading of the existing product, creation of the new product and innovating companies' production processes thus improving performance of the company (Lerch, & Gotsch, 2015).

4.8.2 Regression Coefficient between Research Development, and business sustainability for the oil firms

Simple liner regression was employed to determine the effect of research development on business sustainability for the petroleum firms. The model results output comprised of the model summary, ANOVA test and regression of coefficient. Table 16 presents the model summary results.

Table 16

Summary of model results of research development and business sustainability of petroleum firms

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.546 ^a	.298	.284	4.89500

a. Predictors: (Constant), Research Development

The coefficient of determination was (29.8%) and adjusted (R) square of (28.4%). This means that research development explains the 29.8% of business sustainability for the petroleum firms. Further, the study conducted analysis of variance to establish significance of the model and the finding is presented in Table 17.

Table 17*ANOVA results of research development and business sustainability of petroleum firms*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	509.025	1	509.025	21.244	.000 ^b
	Residual	1198.052	50	23.961		
	Total	1707.077	51			

a. Dependent Variable: Business sustainability

b. Predictors: (Constant), Research development

The F-critical 21.244 and a p-value < 0.05 demonstrates that the overall model was statistically significant. This indicates the model was significant in predicting the independent and dependent variables. The regression model was sufficient in studying the effect of research development on business sustainability. Moreover, specific regression coefficient findings are shown in Table 18.

Table 18*Coefficient Results of research development and business sustainability of petroleum firms*

Model	Unstandardized Coefficients			Standardized Coefficients	t	Sig.
	B	Std. Error	Beta			
(Constant)	8.512	2.231		3.815	.000	
Research Development	.551	.119	.546	4.609	.000	

a. Dependent Variable: Business sustainability

The model regression coefficients that explain the effect of research development on business sustainability of oil marketing companies in Kenya.

$$Y = 7.318 + .590X_3$$

Where:

Y is Business sustainability of oil marketing companies in Kenya while X_3 is the research development among the oil marketing companies

Research development was found to have a positive and statistically significant effect on business sustainability of petroleum companies ($\beta=.551$, $p\text{-value}>0.05$). This implies one unit change in research development by oil companies result to 0.551 units increase in business sustainability. The model results mean that employing research and development in an organization enhances sustainable business practice. Organizations require new knowledge to develop new products with unique features that meet customer expectation and thus research and development is essential.

Both the correlation and inferential statistics found out that research and development is a significant predictor of financial sustainability in oil marketing companies. Research and development is key in creating specialization of products and services in a company. This can only be realized by upgrading the existing system or network of products to ensure that high quality that meet customer expectation is attained. Research and development is vital in polishing professional know how that is associated with the production and manufacturing in an organization covering strategic units such as how commodities are conceptualized right from design and entire chain of production process. This is key in modernizing product design and entire process to output level thus require attention from all respective stakeholders.

Research and development is important in discovering new knowledge and also creation of new products. This through revelation of the new ideas and discoveries of doing activities in the sector differently but also in an efficient and effective way. However, inventions brought by new knowledge have resulted to both and positive and negative

effects at societal level especially welfare. Research and development has proved to be a solution to some of the problems emerging in the competitive market.

The finding of this study agreed with an investigation by to Booltink, and Saka-Helmhout, (2018) and Erdogan, and Yamaltdinova, (2019) that found out that R&D has been instrumental in facilitating growth and achievement of goals in many organizations. It also concurred with a study by Park, *et al.*, (2021) that opined that R&D aids better decision making and allows a business to attain its goals. However, a study by Rao, *et al.*, (2013) noted that more adoption of R&D during recession is likely to increase vulnerability of an institution since its considered high risk and thus negate sustainability of business.

4.9 Relationship of government policy, strategic reinvention and business sustainability for oil firms

The relationship between government policy, strategic reinvention and business sustainability was analyzed using correlation and regression statistics. Regression was used to test the study hypotheses upon which conclusion was drawn from.

4.9.1 Strength and association of government policy and business sustainability

The nature of association and strength of government policy and business sustainability was investigated using Pearson correlation. The government policy was adopted as the moderator variable in determining the relationship between the strategic reinvention and business sustainability for oil firms. The correlation coefficient of 0 indicate that there is no connection among variables. The correlation findings are presented in Table 19.

Table 19

Correlation between Research Development and business sustainability of petroleum firms

	Business sustainability	Government policy
--	--------------------------------	--------------------------

Business sustainability	Pearson Correlation	1	.679**
	Sig. (2-tailed)		.000
	N	52	52
Government policy	Pearson Correlation Sig. (2-tailed)	.679**	1
		.000	
	N	52	52

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

The finding of the study revealed that there is a positive, strong and significant association between government policies and business sustainability of oil marketing companies with correlation coefficient ($r=.679$, $P=0.000$) at 95% confidence level. Government policies can have either positive or negative impact on business. This is emphasized by Davis *et al* (2022) who opined that the relationship between firms and the government can be either collaborative or adversarial. Abdin (2009) gives an example where, introduction of high taxes tends to lower profitability of many commercial entities thus slowing down progress of that entity and in extreme circumstances lead to closure. On the other hand, if government give tax incentives to some organizations in business that will create an avenue of extra motivation to venture into business.

4.9.2 Testing the Moderating Effect of government policies on strategic reinvention and business sustainability

The use of coefficient of determination and regression coefficient were used by the study to make a decision on how moderation effect of specific variable on the relationship of other variables. The study conducted hierarchical regression analysis where introduction of interface term was introduced (combination of government policies and strategic reinvention) as an additional explanatory variable.

Table 20

Model Summary Results of strategic reinvention, government policy and business sustainability for oil firms

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.595 ^a	.354	.341	4.69675
2	.754 ^b	.569	.551	3.87572

a. Predictors: (Constant), strategic reinvention
b. Predictors: (Constant), strategic reinvention, Government policy

The coefficient of determination (R Square) explaining the effect of strategic reinvention on business sustainability of petroleum firms was .354. This implies that strategic reinvention comprising innovation, technology, research and development explain 35.4 percent of business sustainability of petroleum firms in Kenya. Upon the introduction of government policy in the model as the moderator, the R square rose to .569 an indication of positive strengthening effect. This indicates that adherence to government policy enhances the effect of strategic reinvention on business sustainability of petroleum firms in Kenya. The results are in tandem with Warner (2013) who established that a positive change in the R square upon the introduction of a moderator signifies that the moderator variable has a strengthening effect on the relationship between the predictor variable and the outcome variable. The model ANOVA results are shown in Table 21.

Table 21

Regression Results of ANOVA of strategic reinvention, government policy and business sustainability for oil firms

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	604.103	1	604.103	27.385	.000 ^b
	Residual	1102.973	50	22.059		
	Total	1707.077	51			
2	Regression	971.037	2	485.518	32.322	.000 ^c
	Residual	736.040	49	15.021		

Total 1707.077 51

- a. Dependent Variable: Business sustainability
- b. Predictors: (Constant), strategic reinvention, government
- c. Predictors: (Constant), strategic reinvention, policy

The results indicated that the model 1 was statistically significant in explaining effect of strategic reinvention on business sustainability of oil marketing companies as explained by a p-value = 0.000; F=27.385. The p<000 which is less than critical value 0.05 thus implying that strategic reinvention and business sustainability model is statistically significant. Therefore, strategic reinvention is significant predictors of business sustainability of oil marketing companies. Upon the introduction of government policies on the relationship between strategic reinvention and business sustainability of oil marketing companies, the ANOVA model was statistically significant. It signified that government policies significantly explains the effect of strategic reinvention on business sustainability of oil marketing companies. The hierarchical regression model was employed to determine the moderating effect of government policies on strategic reinvention and business sustainability. The results are shown in Table 22.

Table 22

Hierarchical regression Results depicting moderating effect of government policies on strategic reinvention and business sustainability

Model		Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
		B	Std. Error			
1	(Constant)	3.653	2.875		1.271	.210
	Strategic reinvention	.817	.156	.595	5.233	.000
2	(Constant)	-1.129	2.562		-.441	.661
	Strategic reinvention	.504	.144	.367	3.510	.001
	Government policy	.567	.115	.517	4.942	.000

a. Dependent Variable: Business sustainability

The regression of coefficient of strategic reinvention positively and significantly influences the business sustainability of oil marketing companies ($\beta=.817$, $p=.000<0.05$). The regression of coefficient of .817 means that adoption of favorable strategic reinvention may induce sustainability of oil marketing companies in Kenya. Introducing the moderating effect of government policy on the effect of strategic reinvention on business sustainability of oil marketing companies, the effect of both strategic reinvention and government policy. The individual effect of strategic reinvention was reduced from .817 to .504. The effect of government policy on business sustainability of oil marketing companies was higher than the effect of strategic reinvention implying that adherence to government policies strengthens the effect of strategic reinvention on sustainability of oil marketing companies in Kenya. Therefore, government policies moderated the relationship of strategic reinvention and business sustainability oil marketing companies in Kenya. Policies and government regulations enhance.

Government policies are essential in enhancing business sustainability among oil marketing companies. Much as government policies are aimed at providing a sense of direction, they can influence business decisions in various ways. Williams (2019) noted that regulations and laws established by government help to regularize business operations. This is evident in most national level events and across lower tier of government levels guided by set of laws. This is also extended to international level where treaties guide businesses of multinational companies in running their operations. Government policies are important since they provide guidance on how to undertake various aspects, they provide consistency in dealing with similar matters, and they help improve accountability, efficiency, and clarity on how various organs of government operate.

The findings of the study agreed with a study by Williams (2019) that noted that regulations and laws established by government help to regularize business operations and thus enhance business sustainability. It also agreed with a study by Mwai (2019) that concluded that strengthening of infrastructure is an enabler of stimulating business growth and social amenities. However, it disagreed with a study by Davis *et al* (2022) which established that the relationship between firms and the government can be either collaborative or adversarial. This was further supported by Abdin (2009) who argued that introduction of high taxes will discourage growth of businesses.



CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This section presents summary, conclusions and recommendations based on empirical review, research objectives and tested study hypothesis.

5.2 Summary

The purpose of the study was to determine the influence of strategic reinvention on business sustainability in petroleum firms in Kenya. The study was guided by specific objectives that include: to determine the influence of innovation on business sustainability for the oil firms in Nairobi, Kenya, evaluate the influence of technology on business sustainability for oil firms in Nairobi, Kenya, to determine the contribution of research

and development towards business sustainability for Kenya's oil firms in Nairobi and determine the influence of government policy on business sustainability for oil firms in Nairobi, Kenya. Regression analysis test on relationship between strategic reinvention and organizational performance showed that innovation, technology, research and development and government policies are statistically significant predictors of business sustainability.

5.2.1 Innovation and Business Sustainability

The first objective of the research was to determine the influence of innovation on business sustainability for the oil firms in Kenya. The study found that innovation is an essential enabler to business sustainability for the oil firms in Kenya. Correlation finding revealed existence of a positive and significant association between innovation and business sustainability for the oil firms in Kenya ($r=.550$, $p=0.000$). Regression finding showed that regression coefficient of innovation has a useful and remarkable impact on the business sustainability for the oil firms in Kenya ($\beta=.731$, $p=.000<0.05$). This proposes initiation of plans aligned to innovation enhance business sustainability for the oil firms in Kenya. This was supported by descriptive analysis and correlation finding.

The results from descriptive analysis and inferential analysis established that innovation is essential business sustainability for the oil firms in Kenya. This finding agreed with other comparable studies that found innovation as a significant predictor of business sustainability for the oil firms in Kenya (Stocker, *et al.*, 2022; Adu, *et al.*, 2020; Barbieri, *et al.*, 2010, Štverková, *et al.*, 2021 and Fischer *et al.* 2020) which opined that innovation creates more value to a product thus increase satisfaction, welfare, and overall benefit to the society.

5.2.2. Technology and Business Sustainability

The second objective of the study was to determine the relationship of technology on business sustainability for the oil firms in Kenya. The study found out that technology significantly influenced business sustainability for the oil firms in Kenya. Correlation results showed that there is a strong positive and significant association between technology and business sustainability for the oil firms in Kenya. Technology is one of the most essential pillars in realizing business sustainability for the oil firms in Kenya.

Regression finding indicated that coefficient of technology has a positive and significant association with the business sustainability for the oil firms in Kenya ($\beta=.590$, $p\text{-value } 0.000 < 0.05$). The model results mean that employing technology in an organization enhances business sustainability for the oil firms in Kenya. Descriptive finding pointed out that some aspects of technology contributed more to business sustainability for the oil firms in Kenya as compared to others. The important role played by technology is exhibited in automation of the processes and allocation of tasks.

5.2.3 Research & Development and Business Sustainability

Third objective of the study determined the relationship of research and development on business sustainability of oil marketing companies. The study established that research and development significantly influence business sustainability. Correlation results showed that there is a strong positive and significant association between research and development and business sustainability of oil marketing companies ($r=.560$, $P=0.000$). Research and development is crucial in business sustainability. The regression results showed that regression coefficient of research and development has a positive and significant effect on business sustainability of oil marketing companies in Kenya ($\beta=.551$,

p-value $0.001 < 0.05$). R&D is instrumental in discovering of new knowledge that is vital in creation of new products and meeting goals of the course. R&D is crucial in revealing ideas and information on the new discoveries and better way of undertaking processes in an organization that is destined to satisfying customers. (Barge-Gil, *et al.*, 2011). R&D has resulted to inventions which some have improved lives and others have had adverse effects on individual lives especially degrading the environment. Invention of new products through R&D has impacted positively on the confidence of many of the consumers.

5.2.4 Government Policies and Business Sustainability

The last objective of the study was to determine the effect of government policies on strategic reinvention and business sustainability of oil marketing companies. Government policies significantly influenced business sustainability of oil marketing companies. Correlation finding showed that there is a moderate positive and significant association between government policies and business sustainability of oil marketing companies $r=0.679$, $P=0.000$. This implied that government policies of regulating certain activities that may inhibit business sustainability is crucial in attaining long term goals. On the other hand, regression finding noted that government policies have positive and significant influence on business sustainability of oil marketing companies ($\beta=0.817$, $p=0.000 < 0.05$). Government policies are key in determining the environment in which business operate. The regulation of businesses by the government gives them room to operate in a specified manner. This is replicated across the globe since laws and regulations guide business activities.

5.3 Conclusion

Making inference on the study finding that innovation is a significant predictor of business sustainability among oil marketing companies. The study conclude that innovation is an enabler of business sustainability of oil marketing companies. Innovation has aided production of unique products in the industry that enjoy market competitiveness. This also has been accompanied by the improved quality of these products has result of innovation. Innovation is also crucial in enhancing continuity of business through regeneration of new ideas and thus enhance sustainable business environment. According to Stocker, *et al.*, (2022 and Adu, *et al.*, (2020) innovation creates more value to a product thus increase satisfaction, welfare and overall benefit to the society.

Based on inferential finding the study established that technology has a positive and significant effect on business sustainability of oil marketing companies ($\beta=.590$, $pvalue>0.05$). It can be inferred that strengthening of technology enhances competitiveness and thus result to sustainability of business among oil marketing companies. Improvement in technology leads to automation of business operations and thus increases the level of efficiency in business since time wastage is reduced as well increases production of goods and services in large quantities. Mugunda, (2019) opined that adoption of technology has increased efficiency through lessen time in both production and products delivery.

Research and development is known to be the foundation of technological progress and innovation. Therefore, the study conclude that research and development is the cornerstone of business sustainability among the oil marketing companies. Research and development forms the pillar of specialization and thus production of quality goods and services. The oil marketing benefit by upgrading the existing products to the new products

that is desired by many in the market. Bootlink, and Saka-Helmhout, (2018) and Erdogan, and Yamaltdinova, (2019) noted that R&D has been instrumental in facilitating growth and achievement of goals in many organizations.

Empirical investigations have found that government policies can both have positive and significant influence on business sustainability ($\beta=.817$, $p=.000<0.05$). The finding of this study established that government policies have a positive influence on the business sustainability of oil marketing companies in Kenya. Many businesses are directed by government policies and their mode of operations always tend to be consistent with government policies. The policies regulate how certain activities are undertaken and failure becomes inconsequential. Mwai (2019) opine that strengthening of infrastructure is an enabler of stimulating business growth and social amenities.

5.4 Recommendations

The study makes several recommendations to management of oil marketing companies, government, and future researchers.

The study conclude that innovation is an enabler of business sustainability of oil marketing companies. Implementation of innovative and creative ideas is crucial in spearheading innovation within an organization. Oil marketing companies are supposed to embrace creative and innovative ideas through elaborate and comprehensive implementation mechanism. There is need for oil marketing companies to implement fully creative and innovative ideas also by encouraging innovation in the organization. These companies can select and hire employees that are creative and innovative in nature to set the pace of innovative and creative solutions. The oil marketing companies can also create a conducive environment innovative talent can be identified and nurtured for the prosperity of the organization.

Technology has been critical in enhancing efficiency. The study recommends full automation of all the processes and services of oil marketing companies. Elimination of the manual processes in the oil marketing companies is important in the attaining efficiency and sustainability. The use of technology through automation will simplify the operation and reduce bureaucratic procedures in business when interacting with clients.

Research and development is the foundation of innovation and technology. The study recommend more investment in research and development. This is essential in enchaining innovation and technological progress in an organization. Investment in research will yield new knowledge that will be essential in creation of new and unique products that will have competitive advantage over the rest in the market.

Government policies have been established to be drivers of business operation. The study recommends full compliance to government policies as remedy of being consistent with government directions. Oil marketing companies should ensure that activities and operations are aligned with government policies. Consistency of activities with government policies is key ensuring that firms do not incur unnecessary cost for sin tax for non-compliance. Innovation, technology and research and development is more intellectual property that require protection from government laws. The government is supposed to strengthen intellectual property rights through strong enforcement team to ensure that there is full adherence to the law. The enforcement of property rights has been found to be the weak link in the implementation of property rights and thus full implementation is critical in nurturing innovation and technological progress free from counterfeiting threat.

The study targeted a sample of 60 oil marketing companies in Kenya. The sample size may not be adequate to draw the inference of strategic reinvention on business

sustainability. Future researchers ought to increase sample size for more and reliable representation to be attained including expanding to include stakeholders and use of interview guides to get more insights from the regulatory institutions.

The regulatory institution could be having reasons why certain measures are taken and lack of their involvement in this study could have derailed important information sought. This study limited itself to innovation, technology and R&D aspects of strategic reinvention and future researchers should explore other aspects of strategic reinventions for a conclusive finding to be obtained.

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APPENDICES

Appendix I: Consent Form

CONSENT FORM

Dear

I kindly request your participation in a research study conducted by **Charles Anthonio Mutisya**, a student pursuing a **Master of Business Administration** at Mount Kenya University. The purpose of this study is to determine the influence of strategic reinvention on business sustainability in petroleum firms in Kenya. Your involvement in this study is entirely voluntary, and you have the right to withdraw at any time without any negative consequences. Your decision to participate or withdraw will not impact your relationship with Mount Kenya University or any other entity involved.

I want to assure you that your privacy and confidentiality will be strictly maintained throughout the study. Your personal information and responses will be treated with utmost care and will only be accessible to the researcher and, if necessary, the research supervisor(s). Your identity will remain anonymous unless you choose to disclose it willingly.

Your participation in this study will not provide you with any immediate benefits. It is important to note that your viewpoints and opinions may not necessarily align with those of other parties involved in the study. However, we encourage you to freely express your own viewpoint. If at any point you feel that a particular subject is sensitive and may pose a risk to your personal or professional safety, please let the researcher know, and appropriate measures will be taken to ensure your anonymity and well-being.

Should you require any additional assistance or information, please feel free to contact the researcher, **Charles Anthonio Mutisya**, who will be more than willing to address your concerns and provide any necessary clarification.

By signing this consent form, you indicate your understanding of the purpose and nature of this study and your voluntary participation. You also confirm that you have had the opportunity to ask questions and have received satisfactory answers.

Participant Information:

Name:

Signature: _____

Date: _____

Researcher's Statement:

I, **Charles Anthonio Mutisya**, as the researcher, affirm that I believe the participant has provided informed consent to participate in this study.

Researcher Information:

Name: **Charles Anthonio Mutisya**

Signature: HPMP.

Date: 06-02-2024

For further information or inquiries, please contact:

Chairman,

MKU ERC,

P.O Box 342-01000, Thika.

Mount

Appendix II: Introductory Letter



DIRECTORATE OF GRADUATE STUDIES

MBA/2020/68495

12th March, 2024

*National Commission for Science Technology & Innovation (NACOSTI)
Off Waiyaki Way, Upper Kabete,
P.O Box 30623- 00100
NAIROBI, KENYA*

Dear Sir/ Madam,


RE: CHARLES ANTHONIO MUTISYA - REGISTRATION NO. MBA/2020/68495

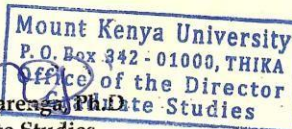
The purpose of this letter is to introduce the above named student who is pursuing **Master of Business Administration** in the department of **Accounting and Finance** in the school of **Business and Economics**.

The title of the research is **"Influence of Strategic Reinvention on Business Sustainability in Petroleum Firms in Nairobi, Kenya."** It has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **March 2024, and May 2024**.

Any assistance accorded to the student will be highly appreciated.

Thank you.


Dr. Samuel M. Karenga, PhD
Director, Graduate Studies
Enc.



Main Campus, General Kago Road, P.O. Box 342-01000 Thika.
Cell: +254 709 153 000 / +254 709 153 200
Email: info@mku.ac.ke, Web: www.mku.ac.ke
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Appendix III: ERC Approval



REF: MKU/ISERC/3471

Date: 28 February 2024

TO: CHARLES ANTHONIO MUTISYA

REG: MBA/2020/68495

Dear Sir/Madam,

RE: INFLUENCE OF STRATEGIC REINVENTION ON BUSINESS SUSTAINABILITY IN PETROLEUM FIRMS IN NAIROBI, KENYA

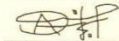
This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **2515**. The approval period is **28/02/2024 - 27/02/2025**.

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 **Mount Kenya University**
- 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 **Mount Kenya University** within 72 hours of notification
- iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to **Mount Kenya University** within 72 hours
- v. Clearance for 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 expiry of the approval period. Attach a comprehensive progress report to support the renewal
- vii. Submission of an executive summary report within 90 days upon completion of the study to **Mount Kenya University**

Prior to 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 also obtain other clearances needed.

Yours sincerely,



The Chairman
Mount Kenya University
Ethics Review Committee
P.O. Box 342 - 0100, Thika

Dr. Alfred Owino, PhD
Chairman, Mount Kenya University ISERC

Appendix IV: Questionnaire

Dear respondent,

I am a MBA student at Mount Kenya University undertaking a research titled “Influence of Strategic Reinvention on Business Sustainability in Petroleum Firms in Nairobi, Kenya.” I therefore wish to request that you fill in the questionnaire genuinely. The information obtained will be used purely for academic purposes and will be confidential.

Section A: Respondent Information

1. Age

20 - 30

30 - 40

40 – 50

Above 50

2. Gender

Male

Female

3. How many years have you worked in your company?

Less than one year

1- 3 years

3-6 years

Over 6 years

4. How long has the company been in operation?



Less than one year

1- 5 years

5-10 years

Over 10 years

Section B: Strategic Reinvention and Business Sustainability of Petroleum Firms.

Kindly indicate your level of agreement on the influence of strategic reinvention on business sustainability of oil marketing companies in Nairobi, Kenya. Use the scale 1: strongly disagree, 2: disagree, 3: neutral, 4: agree, 5: strongly agree.

Strategic Reinvention	Strongly disagree	Disagree	Not Sure	Agree	Strongly agree
Innovation					
The packaging of products is unique and meets the need of customers.					
The company has developed several processes that can resolve any challenge easily.					
There are tracking mechanisms in this company which respond to customer demands instantly.					
The company has been producing new products every year which has increased the sales of the company.					

The company has a developed mechanism where new ideas are shared and nurtured.					
The company has established a policy where creative and innovative ideas are implemented fully.					
The sales system in the company is unique and effective thus customers are served quickly.					
The company target innovative leaders during recruitment.					
Technology					
Tasks and roles allocation in this organization is effective and efficient.					
The communication structure in this organization between employees, management and clients have been supported by technology.					
All systems in this company have been automated.					
Oil products are monitored by system aided by technology in this company.					
The production of oil products and its distribution take shorter time nowadays.					

The cost of production of oil products has reduced significantly in the last one year.					
Networking in this business has resulted to significant growth of sales in populous areas.					
Product creation in this company has been efficient in the last one year.					
Research and Development					
The company has put mechanisms that protect imitation of their products by other competitors.					
The company has consistently over time upgraded their products design and brands.					
The company has specialized in manufacturing certain brand of product because it has hedge over similar products in the market.					
Consumer confidence over the company products has grown over time.					
The company has produced high-tech products recently.					

The company reduces investment of resources on new products during lag and risk periods.					
The company has found sustainable solutions to the most recurring challenges.					
The company reengineers processes periodically thus future growth is predictable.					
Government Policy					
The existing legal regulations and guidelines are conducive for oil marketing business.					
Current polices are very consistent thus enhance efficiency and accountability in dealing with products and raw materials from overseas.					
The company products are protected from imitation and any other form of counterfeiting.					
The company is making supernormal profits because the current tax regime is favourable for business efficiency.					

The company has enjoyed incentives from government for their role of					
enhancing economic growth through expansion.					
The introduction of price control mechanisms has reduced the profitmaking margins of the company.					
The government has put necessary physical infrastructure thus doing business has been efficient.					
The existing monetary policy is favourable, and businesses can access credit at an affordable cost.					
Business Sustainability					
The company has registered consistent profit growth in the last five years.					
The company sales have grown progressively in the last five years.					
The company has opened more branches in other regions in the country in last two years.					
The company systems of production have been designed in way that it reduces pollution of the environment.					

The company has laid down strategies on how to recycle waste materials.					
The company has participated in activities that result to ecological restoration and environmental conservation with external players.					
The company has established a fund kitty that is used to pay school fees for the needy students in the society.					
The company has a well-defined policy on social corporate responsibility.					



Appendix V: Table of Relationship of strategic reinvention, adherence to government policies and business sustainability of petroleum firms

Petroleum Firm	Business sustainability scores	Innovation scores	Technology scores	Research Development scores	Government policy scores
1	13	16	19	14	13
2	14	18	20	17	17
3	12	12	13	9	17
4	14	13	20	12	17
5	11	14	13	14	18
6	14	14	16	15	12
7	15	15	15	14	13
8	13	15	14	15	11
9	14	16	18	19	18
10	17	14	19	12	17
11	13	16	16	13	15
12	15	15	15	14	16
13	12	16	17	15	16
14	13	18	18	13	15
15	14	18	19	14	10
16	11	13	12	17	15
17	15	11	14	13	16
18	11	12	19	12	18
19	19	17	13	16	17
20	11	17	24	17	13
21	15	17	14	15	16
22	14	15	16	16	13
23	19	16	15	15	14
24	12	17	15	17	12
25	14	17	16	12	14
26	15	14	14	16	11
27	14	17	15	17	14
28	14	14	19	17	12
29	18	13	16	11	23
30	18	12	13	20	23
31	24	15	14	19	24
32	24	14	14	17	28
33	31	13	11	12	23
34	24	17	26	13	22
35	23	14	24	14	31
36	23	18	21	17	24

37	24	23	25	12	24
38	20	18	23	13	14
39	28	26	21	28	30
40	24	19	21	25	22
41	26	27	23	27	27
42	18	25	25	20	19
43	28	21	25	30	29
44	23	24	27	28	19
45	27	27	26	30	22
46	24	27	24	26	24
47	17	23	22	27	23
48	21	14	23	27	21
49	28	24	21	23	18
50	30	21	25	23	14
51	25	23	18	26	19
52	16	20	22	27	20
Mean score	18	17	19	18	21

Appendix VI: NACOSTI PERMIT

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: 748685	Date of Issue: 18/March/2024
RESEARCH LICENSE	
	
This is to Certify that Mr.. Charles Mutisya Anthonio of Mount Kenya 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 STRATEGIC REINVENTION ON BUSINESS SUSTAINABILITY IN PETROLEUM FIRMS IN NAIROBI, KENYA, for the period ending : 18/March/2025.	
License No: NACOSTI/P/24/33933	
748685 Applicant Identification Number	 Director General NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
	Verification QR Code 
NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.	
See overleaf for conditions	

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013 (Rev. 2014)
Legal Notice No. 108: The Science, Technology and Innovation (Research Licensing) Regulations, 2014

The National Commission for Science, Technology and Innovation, hereafter referred to as the Commission, was established under the Science, Technology and Innovation Act 2013 (Revised 2014) herein after referred to as the Act. The objective of the Commission shall be to regulate and assure quality in the science, technology and innovation sector and advise the Government in matters related thereto.

CONDITIONS OF THE RESEARCH LICENSE

1. The License is granted subject to provisions of the Constitution of Kenya, the Science, Technology and Innovation Act, and other relevant laws, policies and regulations. Accordingly, the licensee shall adhere to such procedures, standards, code of ethics and guidelines as may be prescribed by regulations made under the Act, or prescribed by provisions of International treaties of which Kenya is a signatory to
2. The research and its related activities as well as outcomes shall be beneficial to the country and shall not in any way:
 - i. Endanger national security
 - ii. Adversely affect the lives of Kenyans
 - iii. Be in contravention of Kenya's international obligations including Biological Weapons Convention (BWC), Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), Chemical, Biological, Radiological and Nuclear (CBRN).
 - iv. Result in exploitation of intellectual property rights of communities in Kenya
 - v. Adversely affect the environment
 - vi. Adversely affect the rights of communities
 - vii. Endanger public safety and national cohesion
 - viii. Plagiarize someone else's work
3. The License is valid for the proposed research, location and specified period.
4. The license any rights thereunder are non-transferable
5. The Commission reserves the right to cancel the research at any time during the research period if in the opinion of the Commission the research is not implemented in conformity with the provisions of the Act or any other written law.
6. The Licensee shall inform the relevant County Director of Education, County Commissioner and County Governor before commencement of the research.
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11. The Commission reserves the right to modify the conditions of the License including cancellation without prior notice.
12. Research, findings and information regarding research systems shall be stored or disseminated, utilized or applied in such a manner as may be prescribed by the Commission from time to time.
13. The Licensee shall disclose to the Commission, the relevant Institutional Scientific and Ethical Review Committee, and the relevant national agencies any inventions and discoveries that are of National strategic importance.
14. The Commission shall have powers to acquire from any person the right in, or to, any scientific innovation, invention or patent of strategic importance to the country.
15. Relevant Institutional Scientific and Ethical Review Committee shall monitor and evaluate the research periodically, and make a report of its findings to the Commission for necessary action.

National Commission for Science, Technology and
Innovation(NACOSTI),
Off Waiyaki Way, Upper Kabete,
P. O. Box 30623 - 00100 Nairobi, KENYA
Telephone: 020 4007000, 0713788787, 0735404245
E-mail: dg@nacosti.go.ke
Website: www.nacosti.go.ke

Appendix VII: Plagiarism Report

INFLUENCE OF STRATEGIC REINVENTION ON BUSINESS SUSTAINABILITY IN PETROLEUM FIRMS IN NAIROBI, KENYA

ORIGINALITY REPORT

10%	9%	1%	8%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

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