External Business Factors Affecting Small and Medium Enterprises' Participation in Uganda's Oil and Gas Sector: The Moderating Role of Government Institutional Support

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DECLARATION

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

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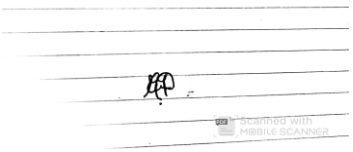

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DEDICATION

This dissertation is dedicated to my late father James Collins Dombo, whose unwavering support, love, wisdom, belief in me and countless sacrifices laid the foundation for my academic journey and continue to inspire me every step of the way. Secondly, to my mother Harriet Dombo, whose strength and nurturing presence have guided me through life's challenges. Thank you both for being my pillars of strength and for your relentless encouragement in all my pursuits.

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ABBREVIATIONS AND ACRONYMS

CNOOC	Chinese National Offshore Oil Corporation
DCT	Dynamic Capability Theory
FID	Final Investment Decision
FSD	Financial Sector Deepening
GDP	Gross Domestic Product
IOC	International Oil Companies
LCPs	Local Content Policies
NDS	National Supplier Database
OECD	The Organization for Economic Cooperation and Development
PAU	Petroleum Authority of Uganda
RBV	Resource-Based View
SMEs	Small and Medium Enterprises
UGX	Uganda Shillings
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
URA	Uganda Revenue Authority
URSB	Uganda Registration Services Bureau
USD	United States Dollars
VIF	Variance Inflation Factor

DEFINITION OF TERMS

Local Content Policies	These are regulations or policies that aim to boost the involvement of local businesses and workers in industries, particularly those dominated by foreign or larger companies (IGF, 2018).
Small and Medium Enterprises	A small enterprise is one that employs 5 to 49 people and has total assets between UGX 10m but not exceeding 100m while a medium enterprise employs 50 to 100 people with total assets more than 100 million but not exceeding 360m. (Uganda Investment Authority,2023)
External business factors	These are the conditions, trends, and events outside a company that influence its performance and decision-making processes (Messineo, 2024).
Access to finance	The ease with which individuals, businesses, or organizations can obtain financial resources such as loans, credit, or investment to fund their operations, growth, or projects (Beck et al., 2006).
Technological adoption	The acceptance, integration, and use of emerging technology (Chakraborty et al., 2021).
Regulatory frameworks	These are the set of rules, regulations, laws, and guidelines established by governments or regulatory bodies that govern how businesses operate within a particular industry or market (DataGuard, 2024).

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ABSTRACT

External business factors are key drivers of SME participation in Uganda's emerging oil exploration and production sector. This research examines how access to financing, technological capacity, and regulatory frameworks shape SME engagement in the sector, as well as the moderating influence of government institutional support. Anchored in the Resource-Based View (RBV), Institutional Theory, and Dynamic Capability Theory (DCT), the study applied a quantitative methodology with a descriptive correlational research design and a positivist philosophical paradigm. Primary data were collected through structured questionnaires administered to 215 SME owners and managers in Hoima and Buliisa Districts, key locations within Uganda's Albertine oil region. Data was analyzed using SPSS version 28, employing correlation and multiple regression techniques to examine the relationships between external business factors and SME participation. Empirical findings revealed statistically significant correlations between external conditions and SME involvement. Access to finance showed a positive effect on participation, although limited financial literacy and poor credit readiness diminished its impact. Technological capability emerged as the strongest predictor, with digital adoption and workforce technical skills driving participation. Regulatory frameworks were found to be the most limiting factor due to licensing complexity, policy inconsistencies, and weak enforcement of local content laws. Importantly, government institutional support significantly moderates these relationships by amplifying enabling factors and mitigating constraints, thus increasing explained variance in participation outcomes. This study significantly addresses a critical gap in empirical research on inclusive SME participation in extractive industries, particularly within low-income, resource-rich countries like Uganda. It offers evidence-based insights into how external structural factors and policy interventions shape equitable access to economic opportunities in the oil and gas value chain. The findings inform both academic and policy bodies by highlighting where targeted institutional support can unlock local enterprise potential. To promote inclusive and sustainable SME engagement, the study recommends strengthening business-linking initiatives, decentralizing SME clinics, fostering joint ventures, and developing a national SME profiling platform. Limitations included restricted access to industry data and high primary research costs. Future studies should explore internal firm-level capabilities and the role of digital support systems in deepening SME integration into Uganda's oil economy.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Uganda's oil and gas sector is considered one of the most promising drivers of economic transformation. Although oil was discovered in the country in 1925, the first commercial discovery took place in 2006 in the Albertine Graben region. As of May 2019, Uganda's found oil resources were projected to be 6.0 billion barrels, with 1.4 billion barrels deemed recoverable. This discovery represents a significant opportunity for economic development, particularly given the country's goal of beginning oil production in 2025, following the Final Investment Decision to develop the Tilenga and Kingfisher oil fields, as well as the East African Crude Oil Pipeline (EACOP) (Petroleum Authority of Uganda, 2023).To manage and benefit from this strategic resource, the Ugandan government has implemented ambitious plans, including the establishment of the Uganda National Oil Company (UNOC), development of a national refinery, and construction of pipelines for regional export (Ministry of Energy and Mineral Development, 2019).

The oil and gas sector accounts for around 3.8% of the global economy and plays an important role in development by generating income, creating jobs, and investing in infrastructure. Countries such as Libya, Saudi Arabia, and Gabon have used their oil resources to grow GDP and create jobs, with Libya relying on oil earnings for up to 53% of its GDP in 2020. These examples demonstrate the transforming impact of oil while also emphasizing the significance of effective government and local participation. Despite this progress, the sector has experienced delays due to infrastructure deficiencies, regulatory complexities, and protracted talks over production-sharing agreements (Makanga, 2023). A critical challenge confronting the sector is how Uganda can use oil production to promote inclusive and sustainable development while avoiding the "resource curse" that has struck some African countries (Parliament of Uganda,

2023; Lakuma, 2020). Local participation, particularly from Small and Medium Enterprises (SMEs), is commonly regarded as critical to accomplishing this goal. Small and medium-sized enterprises (SMEs) are key to Uganda's economy and are expected to play an important role in delivering goods and services to the oil sector, creating jobs, increasing local capability, and supporting broad-based economic growth. However, SMEs in Uganda confront major external hurdles, limiting their ability to participate in the oil and gas sector. These include limited access to financing, insufficient technological capabilities, and regulatory hurdles. (International Labor Organization, 2022; Wamon et al., 2012). These disparities highlight the structural constraints that local businesses confront, as well as the crucial need for coordinated policy, financial, and institutional reforms to encourage equitable SME participation in Uganda's oil-driven development strategy. Importantly, recent research highlights the role of government support as a moderate variable, specifically how policy execution, institutional coordination, and government-led capacity building can influence the relationship between external business conditions and SME involvement (Osei-Tutu et al., 2019; Monday et al., 2020). Uganda's experience demonstrates a continuous gap between policy intent and implementation, where initiatives such as the Local Content Policy and the National Supplier Database exist but many SMEs still excluded due to inconsistent support structures (Byaruhanga & Langer, 2020; FSD Uganda, 2024).This study addresses these concerns by looking into the external business factors that influence SME participation in Uganda's oil and gas sector, as well as how government support affects these dynamics. By doing so, it aims to provide practical insights for policymakers and stakeholders seeking to enhance SME inclusion and ensure that Uganda’s natural resource wealth contributes to sustainable and inclusive economic development (Appiah et al., 2018).

1.1.1 SME’s participation in the oil and gas sector.

Small and Medium Enterprises (SMEs) form the backbone of Uganda's economy, accounting for more than 90% of the private sector and employing over 2.5 million people (UN Trade and Development, 2022). The Ministry of Finance, Planning, and Economic Development (2008) defines SMEs as enterprises that employ less than 50 people and generate an annual sales income of up to UGX 360 million. They are critical to job development, innovation, and value addition. According to Liberto (2024), SMEs are enterprises that keep their revenue, assets, or personnel count under a certain range. Despite their importance, Ugandan SMEs face numerous challenges,

including access to money, technical expertise, and strategic relationships. According to Beck et al. (2005), SMEs frequently encounter major barriers to obtaining finance, which is one of the primary reasons for their limited engagement in highly capital-intensive sectors such as oil and gas. Eton et al. (2021) goes on to say that limited access to information and inadequate market linkages limit SMEs' ability to collaborate with larger enterprises in the industry, these problems contribute to a performance gap. Whereas SMEs dominate Uganda's private sector, only a small proportion are involved in the oil and gas value chain (Stanbic Bank, 2020) for example, by 2023, only 14% of total contracts in Uganda's oil projects had been awarded to local SMEs (Petroleum Authority of Uganda, 2023).

The sector has attracted over USD 10 billion in investments through initiatives such as the East African Crude Oil Pipeline (EACOP), the national refinery project in Hoima, and related infrastructure development (Ministry of Energy and Mineral Development (MEMD), 2024). Despite these advances, local SME participation remains disproportionately low. The PAU (2024) reports that only 17% of total contracts have been awarded to Ugandan entities, and fewer than 30% of these are SMEs, mainly engaged in low-skill downstream services like catering, PPE supply, and logistics. High financing costs averaging between 20% and 23% annual interest rates limit SMEs' access to capital (Bank of Uganda (BoU), 2024), while only 12% of SMEs surveyed by Financial Sector Deepening Uganda (FSD Uganda, 2024) reported having access to oil-aligned credit facilities Furthermore, despite the Uganda Investment Authority's continuous digitalization initiatives, less than 41% of SMEs in oil-rich areas understand how to register on the National Supplier Database (PAU, 2024). Most SMEs still lack the digital tools and technical capabilities needed to satisfy international oil industry requirements (Uganda National Bureau of requirements, 2024). Employment data emphasizes the inclusion gap. While SMEs account for more than 20% of Uganda's GDP and employ 2.5 million people (Uganda Bureau of Statistics [UBOS], 2024), less than 0.5% of these jobs are related to oil and gas activities, indicating a significant underrepresentation despite governmental aspirations.

The oil and gas production process are divided into three major segments: upstream, midstream, and downstream, each of which has specific functions in which SMEs can engage.

The oil and gas production process are organized into three primary segments upstream, midstream, and downstream, each offering distinct roles where SMEs can participate. Upstream-production and exploration stage**;** this phase includes initial geological surveys, exploration

drilling, well development, and crude oil extraction. In Uganda, Total Energies and CNOOC are leading these efforts with the Tilenga and Kingfisher projects, respectively. Due to the high technological requirements and capital intensity, SME participation in fundamental upstream activities is restricted. They can, however, participate in civil works (road and well pad construction), field worker catering and hospitality, environmental and social impact assessments (ESIAs), transportation and logistical services, and the provision of personal protective equipment (PPE). Midstream-processing and transportation; midstream operations primarily involve the transportation of crude oil, refining processes, and storage. The East African Crude Oil Pipeline (EACOP) and the projected oil refinery at Hoima are two key Ugandan projects. Opportunities for SMEs in midstream include supply of construction materials, welding and fabrication services, ICT services (monitoring systems, logistical platforms), and maintenance and waste management services. And lastly, the downstream which is also distribution and marketing phase; this phase focuses on the marketing and distribution of refined petroleum products such as gasoline, diesel, and lubricants. And provides greater opportunities for SMEs because it is less capital intensive than the upstream. These options include operating fuel stations and depots, distributing bitumen, and lubricants, providing fuel transportation and delivery services, and maintaining retail outlets and technical services.

Despite these formal entry points, many SMEs struggle to engage meaningfully in the sector due to technical, financial, and informational constraints. Recent economic reports reveal a mismatch between SME potential and actual participation. While SMEs' contribution to Uganda's export base is below 5%, indicating limited competitiveness in high-value supply chains (BoU, 2023). These statistics underscore the urgent need to investigate the external business factors such as financing access, regulatory burden, and capacity limitations that hinder SME inclusion in this strategic sector.

1.1.2 External Factors

External factors, broadly defined as the conditions, trends, and events outside a company that influence its performance and decision-making processes (Messineo,2024), have significant implications for SMEs. These external factors can include regulatory frameworks, access to finance, market dynamics, international trade agreements, technological advancements, and

environmental regulations (Appiah et al., 2018). Each of these variables significantly influences whether SMEs succeed or struggle within the industry.

One of the most significant external factors influencing SMEs in Uganda's oil and gas sector is access to finance. Access to finance is the accessibility of financial products and services, such as credit, loans, or equity, to individuals or businesses, which allows them to invest, grow, or manage operations (OECD, 2018). For SMEs, securing adequate and affordable financing is often the single biggest hurdle in entering and sustaining operations in capital-intensive industries. This sector requires substantial investment in equipment, technology, and infrastructure, which presents an enormous challenge for SMEs which often face restricted access to financial resources in comparison to larger corporations. (Beck et al., 2005). SMEs in Uganda's oil and gas sector face considerable difficulties in obtaining financing due to several interrelated factors. Firstly, this industry is capital-intensive and highly specialized, requiring huge upfront investment in machinery, technology, and skilled labor (Library of Congress, 2021). For example, according to the Library of Congress (2021), firms seeking to participate in the upstream oil sector may need to invest in drilling equipment, exploration technologies, and adherence to international safety and environmental standards. In the downstream sector, SMEs may need to establish refining capabilities, storage tanks, or transportation systems for petroleum products. These high capital requirements make it particularly challenging for SMEs to compete with larger, multinational corporations, which often have easier access to capital through international financial markets.

Technological advancement also shapes the external business environment in this sector. Technological advancement refers to the development and application of new technologies that enhance efficiency, productivity, and innovation within businesses and industries (Burrell, 2023). Modern oil extraction and refining processes rely on cutting-edge technology, which is often capital-intensive (Alagoz et al., 2023; Brar et al., 2011). While large multinational corporations in this industry can afford to invest in advanced technologies, SMEs may not have the financial resources or technical know-how to adopt such technologies. This discrepancy puts SMEs at a disadvantage when competing for contracts in the sector, particularly in the upstream segment, which requires specialized expertise in drilling and exploration. The Ugandan government, along with international development partners, has made efforts to tackle this challenge by promoting

technical training and capacity-building initiatives designed to equip SMEs with the essential skills required to engage in the oil and gas sector. (Petroleum Authority of Uganda, 2024). However, these efforts have not been fully effective, with many SMEs still lacking the necessary technical knowledge and expertise to compete with larger firms (Stanbic Bank, n.d.).

Regulatory frameworks are arguably among the most critical external factors influencing SME participation in the oil and gas sector. A regulatory framework is a set of laws, regulations, and policies that govern the operation of businesses within a specific sector or industry (Natural Resource Governance Institute, 2015). The Ugandan government has enacted several laws, regulations, and strategic policies designed to develop its oil and gas resources. The Petroleum (Exploration, Development, and Production) Act, passed in 2013, provides the legal framework for oil exploration, development, and production activities in Uganda, outlining the rules, obligations, and procedures that govern the sector. (Parliament of Uganda, 2013). Furthermore, Uganda has implemented local content policies designed to ensure that a substantial share of sector activities is undertaken by local businesses, including SMEs. These policies aim to foster the growth of domestic enterprises by encouraging their involvement in the provision of goods and services within the oil and gas industry. (Columbia Centre on Sustainable Investment, 2021). The practical implications of these policies often present challenges for SMEs. For example, while local content policies are meant to promote SME participation, the high technical standards and financial requirements needed to qualify for contracts in the industry make it difficult for smaller businesses to meet these requirements. Research by Amoako-Tuffour et al. (2015) in Ghana found that similar local content policies were intended to facilitate SME involvement but were often undermined by limited access to financing and inadequate technical capacity. In Uganda, these same challenges persist, as SMEs often lack the capital and specialized skills needed to enter and compete in the sector effectively. According to Ritwika (2020), while local content regulations have increased the involvement of Ugandan businesses in the sector, the degree of participation by SMEs remains low due to factors such as insufficient capacity-building initiatives and gaps in accessing technical training. Furthermore, recent literature highlights the importance of government institutional support as a moderating factor in overcoming barriers faced by SMEs in capital-intensive sectors. Institutions such as the Petroleum Authority of Uganda and the Uganda Investment Authority have launched initiatives

to promote local supplier development, digital registration platforms, and technical capacity-building. However, the effectiveness and consistency of these interventions remain uncertain. As such, this study also explores how government support moderates the influence of external business factors such as access to finance, technology, and regulation on SME participation in Uganda's oil and gas sector.

1.2 Problem Statement

Despite the huge potential for SMEs in Uganda's oil and gas sector to contribute to economic development, the extent of SME exclusion from the sector is evident in their limited share of oil and gas contracts. For example, out of the $13.5 billion spent by international corporations during Uganda's exploratory phase, local companies only received an estimated 17% of the contracts. Currently, local businesses account for only 25% of total suppliers, limiting the potential for oil and gas production to significantly contribute to local economic development, job creation, and poverty alleviation (Fred et al., 2018). This is mostly due to numerous significant external constraints that prohibit people from fully engaging and benefiting from this emerging industry (Alstine et al., 2014; Appiah et al., 2018; Mugerwa, 2020; Wamono et al., 2012). The main challenges are limited access to capital, rapid technical improvements, and stringent regulatory frameworks (Kembabazi & Osapiri, 2019; Rwengabo, 2017). Although government institutional support through agencies such as the Petroleum Authority of Uganda and the Uganda Investment Authority is supposed to counteract these external constraints, its implementation has been patchy and often unavailable to rural or under-resourced SMEs. For example, just 41% of SMEs in oil-producing districts are aware of or have registered with key government supplier platforms (PAU, 2024). The gap between legislative frameworks and on-the-ground SME inclusion jeopardizes the sector's contribution to broad-based economic growth. While previous studies have looked at the individual constraints that SMEs face, there is no empirical research on how government support modifies the link between external business factors and SME participation in Uganda's oil and gas sector. This study tries to bridge that gap by analyzing the impact of external business factors on SME involvement and assessing the moderating role of government institutional assistance in this relationship.

1.3 Research Objectives

1.3.1 General objective

To investigate the external business factors affecting the participation of SMEs in Uganda's oil and gas sector and to assess the moderating role of government support.

1.3.2 Specific Objectives

1. To assess the effect of access to finance on the participation of SMEs in Uganda's oil and gas sector.
2. To examine how technological advancements, affect SMEs participation in Uganda's oil and gas sector.
3. To evaluate the impact of regulatory frameworks on the SMEs participation in Uganda's oil and gas sector.
4. To determine the moderating role of government support in the relationship between external business factors and SME participation in Uganda's oil and gas sector.

1.4 Research Questions

1. What is the effect of access to finance on the participation of SMEs in Uganda's oil and gas sector?
2. What is the effect of technological advancements on the SMEs participation Uganda's oil and gas sector?
3. How do regulatory frameworks affect the participation of SMEs in Uganda's oil and gas sector?
4. What is the moderating role of government support in the relationship between external business factors and SME participation in Uganda's oil and gas sector?

1.5 Scope of the study

This study investigated how external business factors such as access to finance, regulatory frameworks, and technological advancements affect SMEs' participation in Uganda's oil industry. Because of inconsistencies in literature findings and Uganda's status as a new entrant into the oil and gas sector, the research context was unique. The study was conducted in Buseruka, Kiziranfumbi, and Bugambe sub counties, Kikuube town council, Buhimba town

council, Kigorobya town council, Biiso, Kigwera, Hoima city in Hoima district, and a few SMEs in Buliisa district in Uganda's Albertine region, as well as the Uganda Petroleum Authority, a government official body that promotes SMEs' participation in the oil and gas sector.
This location was chosen because it is crucial to Uganda's oil region, providing a relevant background for the study. The study collected data from 215 SMEs in the region that were actively working in or exploring possibilities in this industry, with respondents being key personnel such as owners, managers, or key decision-makers. The time scope of the study covered the period from as early as 2012 to April 2025, as this timeframe captured the old and most recent developments, trends, and SME participation in the sector.

1.6 Significance of Study

The findings of this study hold significant value for various stakeholders, as outlined below,

1.6.1 Government and Policymakers

The study will provide empirical data that can significantly inform the development of government policies through bodies like (Petroleum Authority of Uganda) PAU aimed at enhancing the participation of SMEs in this sector in Uganda. Policymakers will gain a deeper understanding of the specific challenges SMEs face, such as difficulties in accessing finance, high expenses required in adapting to technological advancements, navigating bureaucratic and restrictive regulatory frameworks, frustrated efforts due to failure to get contracts to supply products even after meeting all the requirements. This information will be important in designing targeted interventions, such as offering simplifying compliance procedures, increasing awareness of opportunities on the national suppliers' database and other platforms for SMEs to participate, setting restrictions that favor local suppliers, all of which can help create a more supportive business environment for SMEs.

1.6.2 Small and Medium Enterprises

Uganda's SMEs operating in this sector stand to benefit directly from the outcomes of this study. The research will provide give an in-depth understanding of the external business factors that affect their operations, such as regulatory challenges, financial barriers, and technological needs. By understanding how these external factors influence their competitiveness and participation, SMEs can develop strategies to mitigate risks and capitalize on available opportunities. Additionally, the study will offer practical recommendations on how to overcome these barriers,

helping SMEs improve their operational efficiency, access new markets, and strengthen their overall position within the sector.

1.6.3 Academic Body of Knowledge

This work will add to the prevailing knowledge base regarding SMEs and their role in this sector, particularly in the context of a developing country like Uganda. It will provide a detailed analysis of the factors that impact SME participation, filling a gap in the current literature. Researchers and academics can use these findings as a foundation for further exploration of similar issues, either in Uganda or in other developing countries. By offering empirical data and a comprehensive theoretical framework, the study will serve as a valuable resource for comparative studies, policy analysis, and future research on SMEs' participation in capital-intensive sectors globally.

1.7 Summary of the Chapter

Chapter One provides a detailed view of the study's background, focusing on the importance of oil and gas in global and African economies, and particularly in Uganda, which is set to become a significant oil producer. The chapter emphasizes the critical role SMEs could play in this sector in Uganda. Despite this potential, SMEs face several external challenges, such as limited access to finance, slow technological advancements, and regulatory hurdles. The chapter outlines the research problem, stating that while SMEs could drive local economic growth, their involvement in the industry is constrained by these external factors. The study's objectives are to assess the effect of access to finance, technological advancements, and regulatory frameworks on SME participation. The study's value lies in its potential to provide valuable insights for policymakers, SMEs, and other stakeholders, offering strategies to enhance SME participation.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

The section provides a complete overview of the research on the factors under consideration. This chapter conducts a comprehensive evaluation of the current research on the study's primary variables: access to finance, technological innovation, regulatory frameworks, and the moderating effect of government institutional support. The goal of this chapter is to situate research within the larger academic and policy discourse on SME engagement in the oil and gas industry. The chapter opens by introducing theoretical frameworks, including the Resource-Based View (RBV), Institutional Theory, and Dynamic Capability Theory, which serve as the study's conceptual foundation. These ideas describe how business resources, institutional contexts, and adaptive skills affect SME behavior and competitiveness. This is followed by an empirical assessment of research that look at how external business factors influence SME engagement, focusing on both global and Ugandan contexts. With a focus on the interaction of financial restrictions, technology readiness, regulatory conditions, and the impact of state-led interventions. The chapter finishes by outlining major gaps in the literature, specifically the scant research on Uganda's oil and gas sector and the underexplored moderating influence of government support, which serves as the basis for the current study.

2.2 Theoretical Review

Analyzing the participation of SMEs in this sector can be grounded in several theories, including the Resource-Based View (RBV), Institutional Theory and Dynamic Capability Theory. These theories are combined to provide a comprehensive understanding of the factors affecting the participation of SMEs. Each theory offers a unique lens through which the key variables such as access to finance, technological advancement, regulatory- frameworks and government institutional support can be analyzed, offering a multi-dimensional approach to the research and as a result provide deeper insights into how SMEs navigate and overcome the challenges of competing in a capital-intensive, highly regulated industry.

2.2.1. Resource-Based View Theory

As proposed by Barney (1991), this theory states that a company's market superiority comes from its capacity to obtain, control, and utilize its distinct assets and skills. These resources need to satisfy specific criteria: they need to be valuable, scarce, unique, and irreplaceable. According to RBV, resources such as financial capital, technological know-how, and skilled labor are crucial for a firm's success. For SMEs, particularly in capital-intensive sectors like oil and gas, access to these resources is critical for overcoming barriers to entry and for competing with larger, more established firms. Wernerfelt (1984), another key proponent of RBV, emphasizes that the accumulation and management of these resources form the foundation for sustained competitive advantage. In the context of Uganda, SMEs often face limited access to these resources, which impedes their ability to compete effectively. Studies by Appiah et al. (2021) and Mmako and Baadjie (2023) support the theory, asserting that financial resources, technological capabilities, and skilled labor are central to building competitive advantage. These studies underline the importance of resource management in explaining key variables such as access to finance, technological advancement, and regulatory compliance.

On the other hand, critics of RBV, such as Priem and Butler (2001), argue that the theory is too static and does not account for the dynamic changes in business environments, especially in fast-evolving industries like oil and gas. In these sectors, rapid technological advancements and frequent regulatory changes can erode the competitive advantage gained through internal resources. Moreover, RBV downplays the role of external factors such as market conditions, competition, and regulatory shifts, which are particularly relevant in this industry. For SMEs in Uganda, these external factors, including competition from established multinational firms and evolving regulatory frameworks, often have a greater impact on their ability to participate than internal resources alone.

RBV has been widely used to explain the importance of access to finance and technological advancements, which are two of the three variables under investigation in this study. Studies that employed RBV to show the effect of access to financial capital on the SMEs performance include Chen et al. (2009) and Fonseka et al. (2013). In summary, according to RBV, finance is an important resource that allows firms to invest in infrastructure, human capital, and technology. Without sufficient financial resources, SMEs cannot compete effectively. Additionally,

technological know-how and innovation are key resources that, if well-managed, can give SMEs market superiority. In the context of this study, RBV emphasizes that financial resources are critical assets for competitive advantage. Access to finance allows SMEs to invest in technology, skilled labor, and infrastructure. In this study, RBV supports the relationship between access to finance and SMEs' participation by explaining that limited financial capital hinders market entry and sustainability. Additionally, RBV emphasizes technological know-how as a vital resource for competitive superiority. The theory suggests that firms adjusting to technological advancements gain productivity and efficiency, thus positively affecting participation in the sector.

2.2.2. Institutional Theory

Institutional Theory, as proposed by Scott (2001), emphasizes how the wider institutional landscape impacts the conduct and achievements of organizations. According to this theory, organizations are shaped by the laws, traditions, and convictions prevalent in their operational environment. DiMaggio and Powell (1983) expanded on this by introducing the concept of institutional isomorphism, where entities in the same industry become more analogous over time because of three specific pressures: coercive (regulatory and legal demands), mimetic (imitation of successful organizations), and normative (industry standards and professional norms).

In the context of SMEs in Uganda, the theory asserts that their ability to navigate regulatory requirements, meet industry standards, and adapt to socio-cultural factors is critical for their participation and success. The institutional environment, including government policies, regulatory frameworks and institutional support mechanisms, serve a fundamental purpose in either facilitating or hindering the involvement of SMEs in capital-intensive industries like oil and gas. As noted by North (1990), institutions act as guiding principles that shape the economic environment, and compliance with these rules is necessary for firms to thrive.

The strength of Institutional Theory lies in its ability to explain how external forces such as regulatory frameworks, government policies, and industry norms shape organizational behavior. It is particularly useful in analyzing the relationship between regulatory frameworks and SME participation in Uganda, where adherence to complex legal and policy requirements is key to market entry and competitiveness. For instance, Byaruhanga and Langer (2020) highlighted how Uganda's Local Content Policies (LCPs) impact SME participation, revealing that compliance with these institutional frameworks can influence the success of smaller firms. Importantly, this

study extends the application of Institutional Theory by considering government institutional support such as technical training, procurement inclusion, and digital supplier platforms as a moderating variable. While coercive institutional pressures may pose entry barriers for SMEs, proactive institutional support can buffer these constraints and improve SME participation. This aligns with the argument that institutions not only create rules and expectations but can also provide strategic scaffolding that enables firms to better respond to external pressures. Empirical studies by Osei-Tutu et al. (2019) and Monday et al. (2020) found that where institutional support structures such as local supplier development programs were strong, the negative impact of regulatory and financial barriers on SME engagement was significantly reduced.

Critics argue that Institutional Theory can be overly deterministic, implying that organizations merely conform to external pressures without considering their capacity for strategic decision-making and innovation. Hirsch and Lounsbury (1997) assert that SMEs, particularly in Uganda, may actively engage with, negotiate, and sometimes resist institutional pressures rather than simply conform to them. Additionally, the theory tends to focus on external influences while neglecting internal organizational dynamics and capabilities, a critique also raised by Oliver (1991). This limitation is crucial because for SMEs, internal factors such as resource management, technological capabilities, and financial capital are equally important for navigating challenges in

Institutional Theory provides a strong foundation for understanding how government institutions shape and moderate the operational environment for businesses. In the context of this study, government institutional support through policy implementation, supplier development programs, regulatory oversight, and capacity building may strengthen or weaken the relationship between external business factors and SME participation. Coercive pressures (e.g., compliance with government regulations), normative support (e.g., training), and mimetic mechanisms (e.g., adoption of standards) can influence how SMEs respond to external barriers (DiMaggio & Powell, 1983). Thus, institutional support is conceptualized as a moderating variable that potentially enables or inhibits SME engagement in Uganda's oil and gas sector.

2.2.3. Dynamic Capability Theory

DCT, as put forward by Teece et al. (1997), builds upon the RBV by focusing on how organizations can adapt to rapidly changing environments through integrating, developing, and

reshaping internal and external competencies. While the RBV focuses on the possession of valuable resources, DCT emphasizes the processes by which organizations renew and leverage these resources to sustain competitive advantages in volatile markets. In this context, Teece et al. (1997) points out that dynamic capabilities are fundamental for organizations to adjust, innovate, and remain competitive in complex and uncertain environments.DCT is particularly relevant for SMEs in Uganda because the industry is characterized by high volatility, strict regulatory frameworks, and rapid technological changes. SMEs typically operate with limited resources, but Teece et al. (1997) suggest that firms can overcome these constraints through dynamic capabilities, namely, the ability to adapt and leverage opportunities by sensing, seizing, and transforming their resources. This theory offers a framework for understanding how SMEs can increase their participation despite resource limitations. Teece et al. (1997) and Wang and Ahmed (2007), assert that the dynamic capability theory is based on three core components.

Firstly, sensing opportunities and threats involves the ability of SMEs to develop capabilities to sense changes in the external environment, such as shifts in regulatory policies, technological advancements, and market demands. The ability to identify opportunities and threats early allows firms to position themselves strategically. For example, in Uganda, SMEs that can anticipate changes in oil and gas regulations may better align their business strategies to comply with new standards and take advantage of emerging opportunities (Teece, 2014).

Secondly**,** seizing opportunities involves SMEs making timely and effective decisions once opportunities are sensed. This involves resource allocation, investment in new technologies, and strategic partnerships. In Uganda's context, this could mean investing in industry-specific skills and technologies that enhance an SME's competitiveness or forming alliances with larger firms to gain access to critical resources (Eisenhardt & Martin, 2000).

Lastly, transformation and reconfiguring resources is the ability to reconfigure internal and external resources for sustaining a competitive edge. This involves restructuring the firm's asset base, reorganizing operations, and continuously innovating to meet the evolving demands of the market. For SMEs in Uganda, this might include diversifying their service offerings or adopting new business models that are better suited to the oil and gas industry's dynamics (Ambrosini & Bowman, 2009).One of the strengths of DCT is its ability to explain how organizations can adapt to rapidly changing external environments. The theory accounts for the dynamic nature of

industries like oil and gas, where regulatory frameworks, market demands, and technological advancements can shift frequently. DCT also highlights the importance of innovation and flexibility, which are critical for SMEs operating with little resources. In the context of SMEs in Uganda, Teece et al. (1997) and Helfat et al. (2003) suggest that dynamic capabilities allow these firms to overcome financial constraints by developing strategies to access alternative financing sources, optimize resource usage, and adopt cost-effective innovations. For example, SMEs could seek government grants or form cooperative alliances to share costs, enabling them to participate more effectively in the sector.

Despite its strengths, critics argue that DCT can be difficult to operate, as it is often unclear how firms can specifically build or measure dynamic capabilities. Helfat and Peteraf (2003) point out that the concept of dynamic capabilities is broad and lacks precise metrics for application. Additionally, Ambrosini and Bowman (2009) argue that the theory focuses heavily on adaptation and overlooks the potential role of stability and long-term resource planning. This criticism is relevant for SMEs in an industry where long-term investments in skills, technologies, and compliance structures are essential for sustainable participation.

In the context of this study, DCT extends RBV by focusing on how SMEs adapt to changing environments. It connects technological advancements (independent variable) to SME participation by highlighting dynamic capabilities such as sensing technological trends, seizing innovations, and reconfiguring resources to maintain competitiveness.

2.3 Empirical Review

This section investigates available research examining the external business factors affecting SMEs' participation in various countries.

Various external business factors influence the participation and performance of SMEs. These factors originate from conditions beyond the control of businesses but are crucial for their success. Some of the key external factors include the political and economic environment, regulatory frameworks, technological advancements, access to finance, market conditions, supply chain dynamics, infrastructure, and the impact of globalization (Appiah et al., 2018; Wamono et al., 2012). For this study, the focus was narrowed to access to finance, technological advancements, and regulatory frameworks as the key external factors influencing SME participation in Uganda’s oil sector. These factors were consistently cited in the literature as

having the most significant impact on SMEs in capital-intensive industries (Appiah et al., 2018; Tukamuhabwa et al., 2023). Access to finance is critical due to the significant financial needs of the sector, which SMEs often struggle to meet (Wamono et al., 2012). Technological advancements are essential because the sector relies heavily on cutting-edge technologies, which many SMEs find difficult to adopt due to high costs (Tukamuhabwa et al., 2023). Regulatory frameworks also play a significant role, as compliance with industry regulations can either facilitate or hinder SME participation (Appiah et al., 2018). In addition to these external factors, this study introduces government institutional support as a moderating variable, a dimension that has received limited empirical attention in the Ugandan context. While some studies acknowledge the role of government policy and support structures in enabling SME development, few have explicitly examined how such support influences the strength or direction of the relationship between external business factors and SME participation. Initiatives such as supplier development programs, access to state-backed financing schemes, and simplified digital registration platforms are designed to cushion SMEs against systemic constraints, yet their actual moderating impact remains underexplored in current literature. Other factors, such as market conditions and supply chain dynamics, were excluded due to their less direct influence especially specifically to Uganda as a new oil country. Therefore, this study not only investigates the direct influence of access to finance, technological advancement, and regulatory frameworks but also seeks to assess how government institutional support moderates these relationships. By focusing on Uganda's emerging oil and gas sector, this empirical review helps establish the study within a relevant but under-researched context, identifying both consistencies and gaps in the existing body of knowledge.

2.3.1. Access to finance and SMEs participation in Oil and Gas sector

Access to finance is particularly important for SMEs, especially in capital-intensive industries like oil and gas. It enables SMEs to invest in infrastructure, technology, and human capital, which are necessary for participation in the sector.

For example, Appiah et al. (2018) did a study in Ghana's oil and gas business, A binomial logistic regression using data from 245 SMEs revealed that the majority of local SMEs lacked access to financing and investment capital, severely limiting their ability to compete for upstream contracts. The study ascribed these limits to financial institutions' high collateral demands and

the perceived risk associated with small and medium-sized enterprise lending. However, the study did not look at how government financial support mechanisms, such as credit guarantees, tax breaks, or public-private partnerships, could alleviate these limits.

Similarly, Wamono et al. (2012) explored SME participation in the Ugandan context, focusing on linkages with large companies. Using a logit model with data from 220 SMEs, they identified limited capital as a key barrier. However, their study failed to offer actionable recommendations for improving SME certifications or fostering business partnerships.

Abor and Quartey (2010) provided a comprehensive review of SME contributions to economic development in Ghana and South Africa, highlighting constraints such as financing, technology access, and regulatory burdens. While their broad recommendations are useful, the lack of sector-specific insights reduces the applicability of their findings to this industry in Uganda.

A strong relationship is expected between access to finance and SME participation because financial resources are the backbone of any business venture, particularly in sectors that require large capital investments. SMEs that have access to financial services are more likely to participate in competitive industries, as they can afford the high upfront costs of equipment, technology, and skilled labor. On the other hand, financial constraints prevent SMEs from entering and competing effectively in the market. As Abor and Quartey (2010) points out, SMEs face financial challenges due to issues such as lack of financial security, excessive interest rates, and stringent loan conditions, which limit their capacity to secure funding for critical investments.

In Uganda, SMEs encounter significant barriers when trying to access finance. Beck et al. (2005) pointed out that financial institutions commonly view SMEs as borrowers with a high level of risk due to their smaller scale, limited assets, and inconsistent cash flows. This risk perception is especially pronounced in high-risk sectors like oil and gas, where capital requirements are large, and the return on investment is uncertain. In the Ugandan context, financial institutions adopt a cautious approach toward lending to SMEs, (Nangoli et al., 2013), making it challenging for SMEs to obtain the necessary capital to invest in their operations.

Despite governmental initiatives aimed at improving SME access to financing, such as the introduction of the Uganda Microfinance Regulatory Authority Act (2016), many SMEs still

struggle to secure financing. The financial sector in Uganda remains underdeveloped, with limited alternative financing mechanisms such as venture capital and equity funding (Institute of Certified Public Accountants of Uganda, 2023). The regulatory environment also poses challenges, as many financial institutions still require SMEs to meet stringent collateral requirements that they often cannot fulfill (Kasekende et al., 2003).

Additionally, in Uganda, SMEs often lack sufficient internal funds and face difficulties accessing external finance, mainly due to high interest rates and collateral requirements. This financial gap restricts their involvement where substantial capital is needed to compete effectively (Wamono et al., 2012).

Literature on this topic reveals some inconsistencies. For instance, while studies by Abor and Quartey (2010) and Beck et al. (2005) emphasize the role of collateral and high interest rates as barriers to accessing finance, others suggest broader systemic issues (Kasekende et al., 2003). Additionally, gender disparities add another dimension to the problem. Sseremba (2020) and Alinaitwe (2018) argue that women-owned SMEs face more challenges in accessing finance due to their limited control over productive assets like land, which are often required as collateral. This further limits their ability to participate where access to capital is critical (International Alert, 2014).

Grounded on the theoretical foundation and the specific context of Uganda, this study expects to find that accessing finance is a huge barrier affecting SME participation. The financial constraints faced by SMEs, particularly in terms of collateral requirements and high-interest rates, are likely to limit their ability to secure contracts and scale their operations. Moreover, the study anticipates that women-owned SMEs will face additional challenges due to gender imbalances in asset ownership and access to credit. Ultimately, this study seeks to provide a better comprehension of how financial constraints affect SMEs, particularly in underrepresented regions and among diverse demographic groups, and suggest ways to improve financial inclusion in this sector in Uganda.

2.3.2. Technological advancements and SMEs participation in Oil and Gas sector

In this study context, technological advancement specifically is the adoption and implementation of digital tools, automation systems, and modern machinery that can streamline processes and increase competitiveness in capital-intensive industries. These advancements include the use of

software for project management, data analytics tools for decision-making, and specialized equipment for extraction and production.

Maliki et al. (2019) explored the impact of technology innovations and entrepreneurship training on SME performance in Nigeria. They concluded that both significantly enhance productivity and profitability. However, poor infrastructure hinders technological adoption. While this study effectively connects technology to performance, it does not delve into the regulatory or financial barriers specific to oil and gas SMEs.

Another study by Okundaye (2016) investigated ICT adoption as a strategy for SME profitability and competitiveness in Lagos, Nigeria, through a multiple case study involving 20 SME leaders. Findings demonstrated that ICT adoption enhances operational efficiency and global market access. However, the study identified high costs, insufficient ICT skills, and limited government support as barriers. The study's' regional focus limits the generalizability of its findings to broader contexts within Nigeria and elsewhere.

Abaasa (2015) studied the impact of ICT on SME performance in Kampala, Uganda, by analyzing data from 200 participants. The research showed that ICT adoption improves business performance through better customer relations and operational efficiency. However, the study lacked depth in exploring the role of external linkages and policies in driving ICT adoption, which could have provided a good picture of the challenges SMEs face.

Tukamuhabwa et al. (2023) found that in Uganda's public works sector, SMEs often failed to compete due to their technological limitations and inadequate technical skills. While this study was insightful, it was limited to infrastructure and did not assess whether government technology transfer programs, innovation hubs, or SME training schemes could play a moderating role—thus leaving a moderating and sector-specific gap.

For this current study, a relationship is expected between technological advancement and SME participation because technology enables firms to improve efficiency, reduce costs, and enhance product or service quality. SMEs that invest in technology are better positioned to compete in complex industries like oil and gas, where technological proficiency is critical for securing contracts, managing operations, and meeting industry standards. Maliki et al. (2019) found that SMEs in Nigeria that adopted modern technologies experienced significant improvements in

productivity and profitability, especially those in capital-intensive sectors. This indicates that SMEs using advanced technology have a competitive edge, enabling them to participate more effectively in the industry.

In Uganda, the technological landscape for SMEs presents both opportunities and challenges. SMEs that adopt technology can enhance their operational efficiency, improve stakeholder relationships, and increase market reach. As noted by Abaasa (2015), technological adoption allows SMEs to access new customers, outsource suppliers, and collaborate with business partners globally. However, issues such as the excessive cost of technology, lack of infrastructure, and limited access to skilled labor restrict many SMEs from fully embracing these advancements (Okundaye, 2016). Additionally, Wamono et al. (2012) found that the inability of Ugandan SMEs to upgrade their technology has limited their participation, confining them to non-core, less specialized services.

The Ugandan government has made efforts to promote technological advancement among SMEs through legislation and policy frameworks. For example, the National Oil and Gas Policy (2008) and the Local Content Policy (2018) both highlight the need for local SMEs to be technologically competitive to participate in the sector, the National Information Technology Authority Uganda Act (2009) was also established to promote and regulate information technology. This includes providing support for SMEs to integrate technology into their operations. Despite this, gaps remain in the widespread adoption of technology due to financial and logistical barriers, leaving many SMEs behind in industries that require high levels of technical capability, such as oil and gas.

RBV supports the link between technological advancement and participation. This theory suggests that companies can achieve market superiority by utilizing their distinct resources and abilities. In this case, technological advancement can be seen as a strategic resource that can enhance SMEs' competitiveness and participation.

Maliki et al. (2019) and Abaasa (2015) both underscore the positive effects of technology adoption on SME productivity and profitability. Both studies emphasize that firms adopting modern technologies, whether in Nigeria or Uganda, tend to be more competitive and have greater potential for growth.

Despite the acknowledged benefits of technological advancements, empirical studies have consistently highlighted barriers that SMEs encounter in adopting new technologies. Maliki et al. (2019) and OECD (2020) highlight how financial constraints, unreliable infrastructure, and insufficient government support can hinder technology adoption. Similarly, Okundaye (2016) emphasizes that high costs and knowledge gaps are significant barriers that limit SMEs' ability to leverage technology effectively.

Given the theoretical framework and the context of Ugandan SMEs, this study anticipates that technological advancement will contribute greatly to determining SME participation in this sector. SMEs that can overcome barriers to technology adoption such as financial constraints and infrastructure limitations are expected to perform better in the sector, securing more contracts and increasing their market share. The study also expects to find that SMEs' ability to adapt to rapid technological changes will be crucial for long-term competitiveness in the industry. By identifying sector-specific technological needs and adaptive strategies, this study seeks to contribute to a broader comprehension of how SMEs can sustainably integrate technology into their operations. And despite the recognized importance of technology in oil and gas, few studies have examined how government institutional support through training programs, equipment subsidies, or partnerships with research institutions might moderate the impact of technological barriers on SME participation. This study responds to that gap

2.3.3. Regulatory frameworks and SMEs participation in Oil and Gas sector

Regulatory frameworks establish the legal and procedural requirements that businesses must adhere to, such as licensing, environmental standards, tax obligations, health and safety regulations, and other compliance measures necessary for legal operation. In oil and gas, regulatory frameworks are particularly stringent, as they often address complex issues like environmental protection, labor laws, and safety regulations, all of which are critical to maintaining industry standards.

The regulatory framework being investigated in this study focuses on compliance with Uganda’s oil and gas sector-specific regulations, including licensing requirements, environmental impact assessments, health and safety standards, and Local Content Policies (LCPs). These regulations are essential for legal operation in the sector but also present significant challenges for SMEs,

particularly due to the high costs of compliance, lack of clear guidelines, and administrative burdens.

Djankov et al. (2006) explored the relationship between business regulations and economic growth using cross-country data from 135 nations. Their findings showed that reducing regulatory burdens leads to faster GDP growth, with a 2.3 percentage point increase when moving from the worst to the best regulatory quartile. Although broad in scope, this study does not specifically address how regulatory reforms impact SMEs in capital-intensive sectors like oil and gas, limiting its direct applicability to Uganda.

Additionally, a study by Monday et al. (2010) aimed to investigate how Nigeria's LCP influences technological capacity building among oil-servicing SMEs. Using a structured questionnaire targeting 38 oil-servicing SMEs, the research also incorporated secondary data to evaluate the policy's role. The findings indicated that LCP significantly improved technological capacity and contract acquisition, although challenges such as inadequate power supply persisted. The study also identified constraints such as lack of R&D infrastructure and limited access to finance hinder technological capacity building of SMEs in the petroleum industry though the study lacked a longitudinal perspective to assess the long-term impact of the policy.

Another study by Oni et al. (1997) examined capacity building initiatives in public and private sectors. The study emphasized the importance of institutional collaboration in enhancing skillsets and technological capacity. However, the findings were generalized and did not delve into sector-specific challenges such as those faced by SMEs in capital-intensive industries like oil and gas, reducing its direct applicability to these contexts.

A study by Byaruhanga and Langer (2020) aimed to analyze the implementation and effectiveness of LCPs in this sector in Uganda. Specifically, the study sought to evaluate whether these policies have facilitated the participation of local businesses, including SMEs, in this industry. The authors also examined challenges in policy implementation and assessed whether these policies have achieved their intended economic development objectives. The study adopted a qualitative research approach, relying on interviews, document analysis, and case studies. The data were collected from a range of stakeholders, including policymakers, industry players, and local business representatives. The authors applied Institutional Theory as a framework to assess how institutional structures, norms, and behaviors influenced the implementation and

effectiveness of LCPs in Uganda. The study found that while LCPs in Uganda have created opportunities for local businesses to engage in the sector, significant challenges remain. These include inadequate enforcement mechanisms, limited technical capacity among local SMEs, and insufficient access to financing. Additionally, the policies were found to be ambiguous and inconsistently implemented, which hindered their effectiveness. The research also highlighted the dominance of international oil companies, which limits local firms' participation in high-value segments of the industry.

In this current study, a relationship between regulatory frameworks and SMEs' participation is expected because regulations define the terms under which businesses can operate legally and access market opportunities. Adherence to regulations such as obtaining licenses, meeting safety standards, and following local content requirements is necessary for SMEs to participate. However, these regulations often demand substantial financial and technical resources, which many SMEs lack, leading to lower participation rates. Large firms tend to benefit more from these regulatory frameworks because they can afford the costs associated with compliance, whereas SMEs may struggle to meet the same requirements, resulting in an uneven competitive landscape.

In Uganda, the sector is governed by a complex regulatory environment, which includes the Petroleum Act (2013), the National Oil and Gas Policy (2008), and the Local Content Policy (2018). These regulations are aimed at promoting local involvement in the sector while maintaining international standards for safety and environmental protection. However, for SMEs, complying with these regulations can be burdensome. According to Byaruhanga and Langer (2020), the complexity of the regulatory environment, combined with limited support structures for SMEs, has led to operational inefficiencies and diminished competitiveness. While Local Content Policies are designed to boost SME participation by requiring foreign companies to source goods and services locally, they also introduce challenges related to compliance, which SMEs often find difficulty with, owing to insufficient expertise and resources.

The Institutional Theory, as proposed by North (1990), presents a conceptual guide for understanding the link between regulatory frameworks and SME participation. This theory suggests that institutions, including regulatory frameworks, shape the rules of the game within which businesses operate. SMEs that can comply with the regulatory requirements are better

positioned to participate and compete. However, when regulations are overly stringent or complex, they can act as barriers to entry, particularly for smaller firms that lack the capacity to absorb the costs and administrative burdens associated with compliance.

Studies by Djankov et al. (2006) suggest that stringent regulatory frameworks can hinder SME growth by increasing operational costs and administrative burdens. This echoes the findings by Eberhard et al. (2014), who highlight that in Uganda, the regulatory environment is particularly challenging for SMEs due to the high costs of compliance and the expertise required to navigate these regulations. These barriers often result in lower participation rates among SMEs, particularly in sectors like oil and gas where compliance with environmental and safety standards is critical.

Byaruhanga and Langer's (2020) findings align with studies such as Monday et al. (2016), which highlighted the challenges of implementing LCPs in Nigeria. Both studies emphasize the limited technical and financial capacities of SMEs as significant barriers. However, while Monday et al. (2016) found that Nigeria's LCPs had relatively stronger enforcement mechanisms, Byaruhanga and Langer (2020) revealed that Uganda's LCPs suffer from inconsistent implementation and lack of clarity.

In contrast to studies like Djankov et al. (2006), which broadly examined the relationship between regulations and economic growth, Byaruhanga et al. (2020) provide a more focused sector-specific analysis. Unlike broad regulatory analyses, this study highlights the nuanced and industry-specific challenges of implementing LCPs in resource-rich but institutionally weak countries like Uganda. However, the reliance on qualitative methods and subjective stakeholder interviews may limit the generalizability of the findings. A mixed-methods approach, incorporating quantitative data, could have strengthened the analysis.

Additionally, there are studies that highlight the positive role of regulatory frameworks in enhancing SME participation through local content policies. Appiah et al. (2021), Monday et al. (2020), and Oni et al. (1997) found that LCPs made significant contributions to building the technological capacities of SMEs. These policies, by mandating that foreign company's source from local firms, help SMEs acquire the technological know-how and financial resources needed to participate in complex sectors like oil and gas. However, the design and effectiveness of these policies vary significantly depending on geographical location and overtime.

The inconsistencies in the body of work regarding the effect of regulatory frameworks on SME participation may arise from several factors. First, while all SMEs in Uganda operate under the same regulatory environment, their ability to comply with these regulations can vary widely depending on their financial capacity, access to resources, and technical expertise. Larger, more established SMEs may find it easier to navigate the regulatory landscape, while smaller or newer firms may struggle. Second, the variability in the conceptualization and execution of LCPs across different regions and time periods may lead to inconsistent outcomes for SMEs, as some policies may be more effective in encouraging SME participation than others.

Based on theory, context, and prior findings, this study expects to find that while regulatory frameworks, particularly Local Content Policies, possess the capacity to enhance SME participation, the complexity and cost of compliance will remain significant barriers for many SMEs. As a result, SME participation is likely to be uneven, with larger and more resourceful firms benefiting more from the regulatory environment than smaller SMEs. The study also anticipates that clearer guidelines and greater government support for SMEs could improve compliance and participation rates, as suggested by the Institutional Theory and findings from studies by Appiah et al. (2021) and Monday et al. (2020).

2.3.4 Government Institutional Support as a Moderating Variable

Government institutional support is critical in facilitating SME involvement in high-entry-barrier sectors by addressing structural restrictions through legislation, technical assistance, and capacity-building programs. While most existing research focus on the direct relationship between external business conditions and SME results, few investigate the moderating effect of government support on these correlations, particularly in growing oil economies such as Uganda.

Monday et al. (2020), in a study on SME inclusion in Nigeria's oil and gas industry, discovered that government-supported procurement training and access to national supplier databases greatly increased local SME competitiveness. However, the study concentrated on the consequences of government support and did not investigate how such interventions interact with specific external constraints (such as financing or regulation), indicating a moderating gap.

In Ghana, Osei-Tutu et al. (2019) found that state-led initiatives such as tax breaks, access to local content registration platforms, and subsidized training increased SME engagement. However, they did not conduct empirical tests to determine if such support increased or

decreased the relationship between external business restrictions and SME performance, showing a theoretical and empirical gap.

According to Byaruhanga and Langer (2020), while regulations such as the Local Content Policy attempt to increase SME participation, their effectiveness is limited by a lack of institutional coordination, low SME knowledge, and uneven policy enforcement. Moreover, while the Petroleum Authority of Uganda has launched initiatives such as the National Supplier Database (NSD) and digital supplier training programs, there has been little research into how these support mechanisms mitigate the effects of external constraints such as regulatory complexity, technological gaps or financial inclusion.

This study fills these gaps by specifically looking at the moderating impact of government institutional support in the relationship between access to capital, technology, and regulatory frameworks and SME participation in Uganda's oil and gas sector. It adds to the literature by assessing not only direct effects but also the conditional influence of institutional support, resulting in a more complete knowledge of how SMEs negotiate external business environments in emerging markets.

2.4 Summary of the Literature and Research Gap(s)

2.4.1 Overview of Research Gap(s)

The reviewed studies identify major gaps in theory, context, and conceptual framing. Most research focuses on established oil economies such as Ghana and Nigeria, while Uganda particularly Hoima District is underexplored. Few studies consider several external factors or the moderating influence of government institutional support. This study fills these gaps by conducting a Uganda-specific examination of how external business factors and institutional actions influence SME participation in the oil and gas sector. These gaps are shown in Table 2.1 below.

TABLE 2.1:RESEARCH GAPS

Study	Focus of study	Context.	Research gap	How current study addresses the gap

Abor & Quartey (2010); Beck et al. (2005)	Access to finance and SME performance in Africa	Ghana, Sub-Saharan Africa	Limited exploration of alternative financing mechanisms, and gender-specific financial barriers.	Explores multiple financing challenges and links them to policy-related support mechanisms for SMEs in Uganda's oil sector
Wamono et al. (2012); Tukamuhabwa et al. (2023)	SME constraints related to finance, regulation, and technology	Uganda – General SME Sector	Not oil-sector specific; did not integrate external factors into a unified framework; lacks contextual depth for Uganda's oil and gas industry.	Focuses on Uganda's oil and gas **sector**; analyzes how finance, technology, and regulation jointly influence SME participation.
Maliki et al. (2019); Okundaye (2016)	Technological adoption challenges among SMEs	Nigeria and Sub-Saharan Africa	Broad treatment of technology; no sector-specific strategies for adapting to high-tech environments like oil and gas.	Analyzes oil-sector-specific technology needs and the influence of government technological support programs on SME readiness.

Byaruhanga & Langer (2020); Oni et al. (1997)	Local Content Policy (LCP) and regulatory frameworks impacting SME access	Uganda and Nigeria – Oil Sector	Identifies LCP gaps but lacks analysis of how SMEs can be supported institutionally to comply with regulation.	Evaluates implementation of LCPs and examines how government support moderates' compliance challenges for SMEs.
Appiah et al. (2018, 2021); Ojonugwa (2019); Ablo (2019); Muturi (2016)	External factors affecting SME participation in extractive industries	Ghana, Nigeria, Kenya – Oil Sector	Contextual gap: Studies are not Uganda-specific; Uganda's oil sector has different market and regulatory dynamics.	Conducts study in Buseruka sub-county, Hoima District, Uganda a new oil development zone with a unique institutional context.
Osei-Tutu et al. (2019); Monday et al. (2020); FSD Uganda (2024)	Role of government in SME competitiveness and capacity-building	Ghana, Nigeria, Uganda	Government support treated as a direct enabler; lacks empirical testing as a moderating variable in the SME participation model.	Positions government institutional support as a moderator between external business factors and SME participation.

Ombaki (2019); Mmako (2023); Appiah (2024); Ablo (2019)	Theoretical approaches to SME behavior in oil sectors (e.g., resource curse theory)	Ghana, Kenya, Nigeria	Overreliance on Resource Curse and Strategic Positioning theories; limited use of Dynamic Capability Theory.	Dynamic Capability Theory Applies to explain how SMEs adapt to sector-specific challenges in

2.5 Conceptual Framework

This study integrates the theoretical insights from RBV and Institutional Theory to explore the external business factors affecting SMEs' involvement in Uganda's oil sector. This framework identifies key factors such as financial resources, technological advancements, and regulatory environment and a moderating variable of government institutional support. Adequate financial resources are key for SMEs to invest in technology, equipment, and skilled labor. Limited financial resources restrict SMEs from meeting the high entry and operational costs in this sector (Beck & Demirguc-Kunt, 2006). Additionally, the oil and gas sector require advanced technology and expertise meaning that SMEs with limited technological capabilities face difficulties in meeting industry standards and competing with larger firms (Teece et al., 1997). Finally, while compliance with regulatory requirements is essential, the complexity and cost of adhering to these regulations can be burdensome and may deter SME participation (North, 1990). However, initiatives by the government to support SMEs have subsidized some of the restrictions.

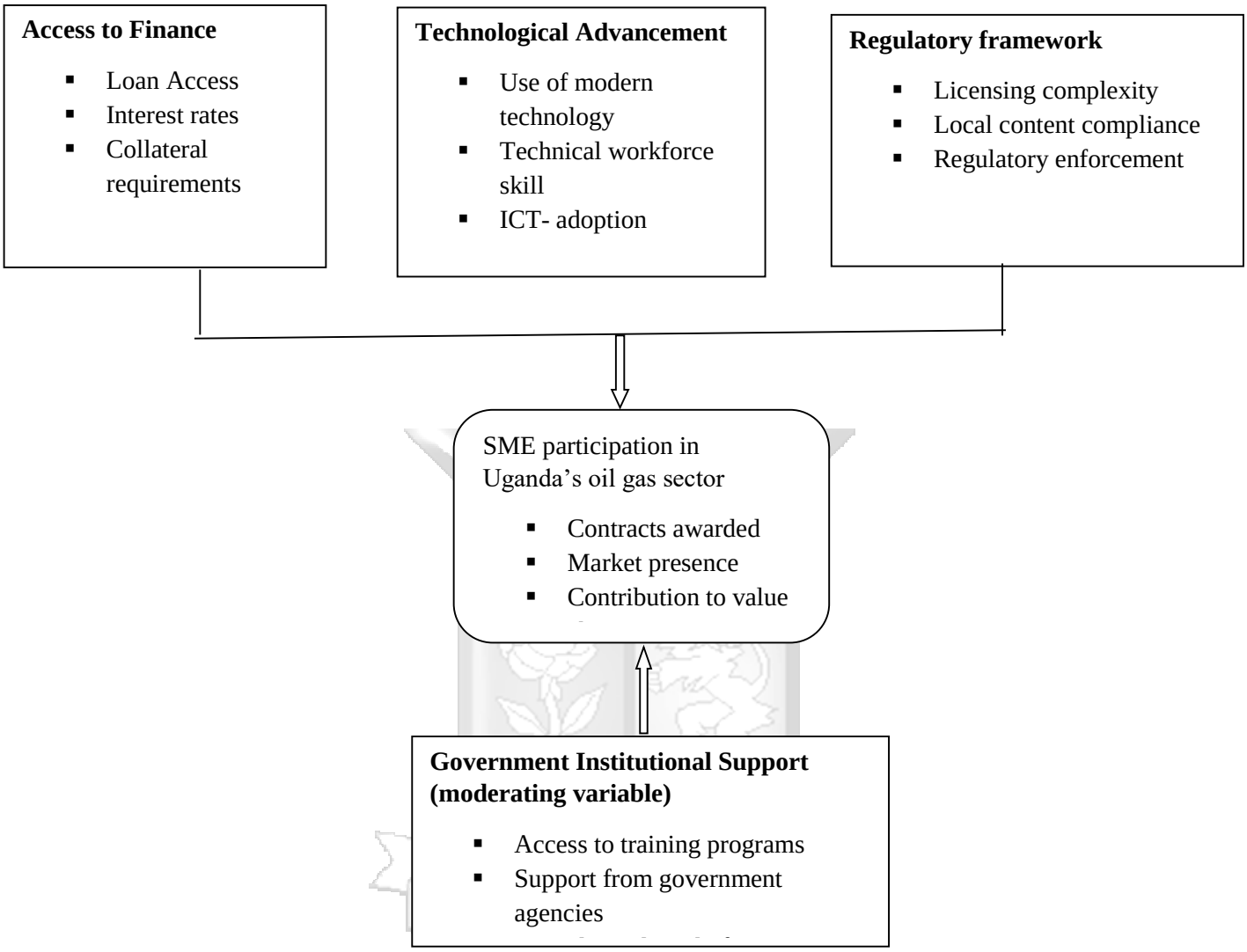

Figure 2.1: Conceptual framework.

Source: By researcher.

2.5.1. Operationalization of the Variables

The different variables identified and how they will be measured are illustrated in Table 1 below.

TABLE 2.2:OPERATIONALIZATION OF VARIABLES.

Variable	Assessment	Supporting theories	Supporting literature
SME participation (Dependent variable)	Market share, engagement in contracts, and overall contribution to the sector using a 5-point Likert scale.	Resource Based View	(Appiah et al., 2018; Bas et al., 2020)
Access to finance (Independent variable)	Proportion of SMEs with access to formal credit, loan size, cost of credit, and loan duration using a 5-point Likert scale.	Resource Based View	Beck et al. (2008)
Technological advancement (Independent variable)	Level of investment in technology, adoption rate of modern technologies, and technical skills of workforce using a 5-point Likert scale.	Dynamic Capability Theory	Teece et al. (1997)
Regulatory environment (Independent variable)	Compliance requirements, ease of doing business, number of licenses/permits, and	Institutional theory	Djankov et al., 2006

	compliance cost and time using a 5-point Likert scale.		
Government institutional support (moderating variable)	Access to government training and capacity-building initiatives. Government agencies aid with regulatory compliance.	Institutional theory.	Osei-Tutu, E., Abdulai, A.-G., & Ackah, C. (2019).

2.6 Summary of the Chapter

Chapter Two reviews existing literature on the external business factors affecting SME contributions to the industry. It is structured around three key variables i.e. access to finance, technological advancements, and regulatory frameworks. The chapter introduces three theoretical frameworks i.e. RBV, Institutional Theory, and DCT to analyze these factors. The empirical review reveals that accessing finance is still a significant barrier for SMEs, notably in capital-intensive sectors like oil and gas. Technological advancements are identified as crucial for SME competitiveness, but many SMEs struggle with the high costs and technical expertise required. Regulatory frameworks, while necessary for sector governance, often create compliance challenges for SMEs. The chapter highlights gap in the reviewed literature, particularly a scarcity of scholarly work focusing on Uganda's oil exploration and production sector and the specific obstacles faced by SMEs in this context.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter details the methodology directed by the study process investigating the factors affecting the participation of SMEs in Uganda's oil and gas sector. It includes research philosophy, design, sampling, data collection and analysis, quality and ethical considerations.

3.2 Research Philosophy

Saunders et al. (2019) view it as a collection of beliefs that direct the generation of knowledge. They further assert that there are different research philosophies as discussed hereafter. Positivism emphasizes the use of empirical evidence and scientific methods to study and understand the social world. It assumes that reality is external and can be viewed and quantified and often uses quantitative methods and statistical analysis (Adejare & Tolulope, 2022). Critical realism acknowledges the existence of an external reality with underlying mechanisms, while also recognizing that individuals give meaning to that reality. It suggests that while we can never fully understand reality, we can gain knowledge about the mechanisms that cause observable phenomena (Adejare & Tolulope, 2022). Interpretivism, also known as subjectivism or constructivism, explains the importance of understanding the disparities between individuals and their roles as social actors. It suggests that reality is subjective and constructed by individuals and it often uses qualitative methods to explore individuals' experiences and perspectives (Pervin & Mokhtar, 2022). Postmodernism is a research philosophy that challenges the notion of a single objective truth and questions traditional assumptions about knowledge and reality. It suggests that reality is fragmented and unstable, and that knowledge is socially constructed and influenced by power relations (Saunders et al., 2007). Pragmatism centers on a research philosophy that emphasizes focusing on practicality and the application of knowledge and it emphasizes the necessity of using research methodologies and theories that are most effective in solving real-world problems. Pragmatism often uses mixed methods, combining both qualitative and quantitative approaches.

The adoption of a research philosophy relies on the study questions' nature and context. The philosophy guiding this study is rooted in positivism, which emphasizes the use of empirical evidence and techniques to study and understand the social world (Cresswell, 2009). Positivism

allows for the use of quantitative approaches paired with statistical techniques (Saunders et al., 2019).

3.3 Research Design

Cresswell (2009) describes that research designs involve strategies and methods for conducting research, including choices from general assumptions to specific data collection and analysis techniques. This study employed a descriptive correlation research design and a quantitative method research design, using quantitative approaches to provide a holistic view of the research problem (Tashakkori & Teddlie, 2003). The quantitative component involved the use of structured surveys to collect data on the key variables identified in the study.

3.4 Population and Sampling

3.4.1. Population

Saunders et al. (2019) and Martinez-Mesa et al. (2016) assert that, a population is a full array of instances or objects from which a sample is derived, while the target population is a particular subset of this overall population. When choosing a sample for a study, it is important to make sure that it not only addresses the research questions and meets the study's intended outcomes, but also accurately represents the whole population (Alvi, 2016).

According to UN Trade and Development (2022), there are approximately 1.1 million SMEs in Uganda. The study drew its population from SMEs within this sector located in Albertine region of Uganda. Which included 215 SMEs from Buseruka sub county and other sub counties surrounding Hoima district including Kibaale, Kiziranfumbi and Hoima city etc. engaged in various activities such as catering and hospitality, exploration, production, support services, and supply chain management.

3.4.2. Sampling

Saunders et al. (2019) categorize sampling techniques into two main groups: probability sampling and non-probability sampling. In probability sampling, every individual in the target population is selected with a recognized and usually even opportunity. This approach is appropriate for answering research inquiries that need statistical estimations, as it allows one to deduce population characteristics statistically using the sample. In contrast, non-probability sampling does not assign a specific probability to each case chosen from the target population.

This method is used when the main aim is to gain insights or viewpoints from certain subgroups or individuals with specific characteristics, without focusing on statistical representativeness (Saunders et al., 2019).

This study used simple random sampling to ensure that all qualified SMEs within the given scope had an equal and unbiased chance of being chosen to participate. This technique increases sample representativeness and lowers selection bias, making the findings more applicable to the larger SME population in Hoima District (Creswell & Plano Clark, 2011). Official sources, such as Uganda's Petroleum Authority and local government departments, provided a list of registered SMEs operating in Hoima District. This strategy ensured that the selection procedure was unaffected by researcher discretion or SME availability. SMEs selected through this approach were contacted and invited to take part in the study.

When the population size is unknown, a common strategy is to use a formula that assumes an infinite population or to apply general guidelines for determining a sample size that will provide reliable and valid results. One of the widely used formulas in such cases is Cochran's formula for sample size determination, which is suitable for large populations.

Cochran's equation is utilized to establish the most suitable sample size considering the required accuracy, confidence interval, and estimated percentage of the attribute in the population (Cochran, 1977).

$$n_0 = \frac{z^2 * p(1-q)}{e^2}$$

Where:

- n_0 is the size of the sample,
- z is the Z-value,
- p represents approximate percentage of the population with the characteristic (if unspecified, 0.5 is assumed to maximize the sample size),
- e represents the target level of accuracy

Calculation

At a confidence level of 95%, the Z-value is 1.96, and given the unknown proportion, p is set at 0.5 for maximum variability, resulting in a conservative sample size and a margin of error of 5% (0.05).

$$n_0 = \frac{z^2 * p(1-q)}{e^2}$$

$$n_0 = \frac{1.96^2 * 0.5(1-0.5)}{0.05^2} = 385$$

Based on this calculation, a target sample size of 385 SMEs was established. However, due to practical field limitations, including the small number of SMEs in Buseruka Sub- County (fewer than 10 identified) and challenges accessing respondents and reliable data in oil-rich zones, the study broadened its scope to include additional sub-counties within Hoima District and parts of Buliisa District. Despite this expansion, only 215 valid responses were collected. This adjusted sample still provides valuable insight, particularly given the contextual difficulties associated with research in the oil and gas sector.

3.5 Data Collection Methods

Structured survey questionnaires were used to collect quantitative data from a sample of SMEs in Uganda's oil exploration and production sector. The questionnaires were designed using the objectives of the study and they included a closed-end questionnaire. Closed-ended questions were used to collect demographic information, participation levels, and perceptions of external business factors such as financial resources, technological advancements, and regulatory compliance (Dillman et al., 2014). The questionnaires were structured into five sections, each designed to address specific aspects of the study objectives.

Section A covered demographics and gathered essential information about the SMEs, including their size, ownership structure, and years in operation. This section allowed the study to categorize respondents based on various demographic factors that might influence their participation in the sector.

Section B covered access to finance and was designed to assess the financial challenges SMEs encounter. It included questions about loan applications, sources of financing, average loan amounts, and difficulties in accessing credit, such as high-interest rates or lack of collateral. This section directly addressed the study's first objective, which is to assess the effect of access to finance on the participation of SMEs in the sector.

Section C covered technological advancements and explored the role of technology in SMEs' operations. The section asked about the types of technology used, the level of investment in technology, and barriers to technological adoption, such as cost or lack of skilled labor. The focus here was aligned with the second objective which is to assess the impact of technological advancements on SMEs' ability to participate effectively in the sector.

Section D covered the regulatory framework and examined how regulatory requirements impact SME participation. Questions in this section assessed SMEs' familiarity with the regulatory environment, the costs associated with compliance, and any challenges they face in adhering to regulations. This section aimed to fulfill the third objective, which is to analyze the effect of regulatory frameworks on the operational efficiency of the SMEs.

Finally, Section E covered participation in the sector and measured the degree of SME involvement by asking about the type of goods or services provided and the number of contracts secured within the sector. It also explored barriers to securing contracts, such as competition from larger firms and high entry costs.

3.6 Data Analysis

3.6.1 Quantitative Data Analysis

The study employed quantitative data analysis to explore the influence of external business factors access to finance, technological advancements, and regulatory frameworks on SME participation in Uganda's oil and gas sector. Data analysis was guided by research questions and hypotheses and conducted using SPSS Version 28. Before analysis, data was cleaned and prepared. This involved screening for missing values, outliers, and coding errors. Missing values were addressed through list wise deletion or imputation as appropriate (ACAPS, 2016). Descriptive statistics were first computed to summarize the demographic profile of respondents, such as SME size, owner gender, and enterprise age. Measures such as frequency, mean, median,

and standard deviation provided a general overview of the sample. And the research questions were addressed as follows, the effect of access to finance on SME participation in Uganda's oil and gas sector and to answer this, an ordinal regression was conducted with SME participation measured on an ordinal Likert scale as the dependent variable, with access to finance as the independent variable. The model estimated how changes in financial access predict SME involvement levels. The effect of technological advancements on SME participation, ordinal regression analysis was again applied, with technological advancement indicators (investment in technology, adoption rate, and workforce skills) as predictors of SME participation. This tested the extent to which technology access influences participation. Lastly, how do regulatory frameworks affect SME participation? Ordinal regression was used to assess the impact of the regulatory environment (compliance burden, licensing, and ease of business) on SME involvement in the oil and gas sector.

3.6.2 Model specification.

To analyze all three independent variables together, a multivariate ordinal regression model was developed.

$$P=\mu_0+\mu_1X_1+\mu_2X_2+\mu_3X_3+\mu_cc+\varepsilon$$

Where:

- P represents the level of SMEs participation.
- X_1, X_2, and X_3 represent access to finance, technological advancements, and regulatory frameworks respectively.
- μ_0 is the y-intercept (the level of SMEs participation when all independent variables are zero).
- μ_1, μ_2, and μ_3 are the regression coefficients that measure the change in the level of SMEs participation for a one-unit change in the respective independent variables.
- C represents the control variable
- ε is the error that represents all other factors not included in the model.

Before running the regression, the assumptions of Multicollinearity, normality, and heteroscedasticity were checked. Multicollinearity was assessed using the Variance Inflation Factor (VIF)**.** Normality and heteroscedasticity were evaluated to ensure reliability; Cronbach's alpha was computed for internal consistency of multi-item scales. A pre-test with 10 SMEs was conducted, and items with alpha values below 0.5 were reviewed or removed.

3.7 Research Quality

3.7.1 Reliability

Mugenda and Mugenda (1999) state that it is the consistency of the research instruments and results. To ensure reliability, the same survey was conducted among all participants. This was ensured that the data was collected in a consistent manner, thereby enhancing the reliability of the findings. In addition, the survey questionnaire was pre-tested with 10 SMEs to refine the questions and ensure clarity. Cronbach's alpha was computed to evaluate the internal reliability of the survey questions (Tavakol & Dennick, 2011).

$$Cronbachs\ formula = (\frac{n}{n-1})(\frac{\delta^2 - \sum Variance}{\delta^2})$$

Where: n = Item count on the test

δ = The extent of deviation in the test scores

$\sum Variance$ = The overall sum of the variances of the scores for each individual test item

An alpha coefficient of 0.5 or greater is adequate to demonstrate reliability (Sekaran & Bougie, 2020)

3.7.2 Validity

This refers to the precision and suitability of the research tools and results. To enhance validity, the questionnaire was examined by professionals in the field and pre-tested. According to Mugenda and Mugenda (1999), pre-testing is essential for ensuring that the results are clear and accurate, which in turn allows the data collected to yield meaningful and reliable insights about the variables under investigation. The validity of the research was ensured using reliable sources

and rigorous data collection methods. The survey questions were designed to accurately measure the variables of interest. Furthermore, using a convenience sampling method guaranteed that the sample accurately reflects the population, thus improving the study's external validity. Construct validity was also ensured by aligning the survey items with the conceptual framework (Bagozzi et al., 1991).

3.7.3 Objectivity of the research

The objective in this research was to maintain by avoiding any personal biases or preconceived notions. The researcher adhered to the principles of the pragmatic research philosophy, which emphasize objectivity and the use of empirical evidence. All findings are based on the data collected, and any interpretations or conclusions are supported by this data.

3.8 Ethical Considerations

Approval was requested from the Strathmore Ethics and Scientific Review Committee as well as the Petroleum Authority of Uganda which is the policy making body in charge of oil and gas activities taking place in Uganda. Participants were briefed about the study's purpose and were given an opportunity to give their consent before data collection begins. The privacy and identity of the participants was safeguarded during the entire research procedure (Israel & Hay, 2006).

Lastly, participants in the study will access the research benefits of this study through access to the published report, stakeholder meetings, and digital access to findings. This ensures fair distribution and accessibility, particularly for participants who may not have easy access to academic channels.

3.9 Summary of the Chapter

Chapter three outlines the methodology for the study. A positivist research philosophy is adopted, using a quantitative survey to obtain responses from a representative sample of 215 SMEs in the Albertine region of Uganda. The research design is quantitative, with a structured survey questionnaire as the primary data collection tool. The sampling strategy included simple random sampling to ensure unbiased representation across different SME categories and the respondents for the data collection were key individuals within these SMEs, such as owners. Data was analyzed using correlation and multiple regression to analyze all three variables together and to evaluate how external business factors are related to SME participation. The chapter also details the study's ethical obligations, prioritizing informed consent and data confidentiality.

CHAPTER FOUR

PRESENTATION OF RESEARCH FINDINGS

4.1 Introduction

This chapter presents the analysis and interpretation of the data collected in line with the research objectives. The chapter begins by reporting the response rate, followed by descriptive statistics that summarize the perceptions of respondents using Likert scores, means, and standard deviations for each study variable. It then presents the results of correlation analysis, including multi-collinearity diagnostics, to establish initial relationships among the variables. This is followed by multiple regression analysis, which quantifies the predictive power of the independent variables, and a moderation analysis to assess the influence of government institutional support. The chapter concludes with diagnostic tests to verify the robustness and validity of the regression models used.

4.2 Response rate

Two hundred fifty-five (255) questionnaires were administered and a total of 215 actual respondents were achieved, giving a response rate of seventy-five (75%). According to Rubin and Earl (2009), a response rate of 70% is very good for analysis and reporting. The data collected from the questionnaires was subjected to SPSS software for analysis.

4.3 Descriptive statistics of study variables.

The tables below present the descriptive statistics of the study variables. This section is crucial for providing a simplified interpretation of the data. The descriptive findings showing mean Likert scores and standard deviation that relate to the variables (access to finance, technological advancement and regulatory frameworks). The study used a 5-point Likert scale to assess responses where (Strongly Agree (SA), Agree(A), Not sure (NS) and SD-Strongly disagree). The mean and standard deviation (SD) for each study variable is presented below:

4.3.1 Access to finance

The study explored respondents' perceptions regarding access to finance as it relates to SME participation. And The findings indicate a generally low perception of access to finance among

SME participants. For instance, most respondents (68.4%) disagreed to having applied for loans for business with (Mean = 3.9953, SD = 0.8117), indicating limited engagement with formal credit systems. Additionally, loan success rates were perceived negatively, with 46.5% disagreeing and 40.9% strongly disagreeing that their loan applications were successful (Mean = 4.1488). Respondents also highlighted the hindrance of high interest rates, with 54% strongly agreeing and 41.9% agreeing that interest rates were a significant challenge (Mean = 1.5349, SD = 0.68865), indicating a high perception of this challenge. Access to credit in Uganda was largely considered difficult, with 54.9% strongly disagreeing and 33% disagreeing that it was easy to access finance (Mean = 4.1163, SD = 0.87031). Respondents believed that limited access to finance hinders sector participation (Mean = 1.9302, SD = 0.86455). Overall, the results suggest that access to finance remains a major barrier to SME participation, with most items reflecting low perception levels, except for the perceived challenge of high interest rates.

TABLE 4. 1,PERCEPTION OF RESPONDENTS ON ACCESS TO FINANCE.

Item	**SA (%)**	**A (%)**	**NS (%)**	**D (%)**	**SD (%)**	**Mean**	**Standard deviation**
Have applied for a loan to fund business	9 (0.9%)	19 (8.8%)	2 (0.9%)	147 (68.4%)	45 (20.9%)	3.9953	0.81170
Loan application was successful	5 (2.3%)	19 (8.8%)	3 (1.4%)	100 (46.5%)	88 (40.9%)	4.1488	3.2372
The source of business finance is primarily self-financing	58 (27%)	12 (5.6%)	7 (3.3%)	97 (45.7%)	41 (19.1%)	3.2372	1.51766
The average loan amount meets my business	2 (0.9%)	6 (2.8%)	16 (7.4%)	122 (56.7%)	69 (32.1%)	4.1628	0.75288

financial needs.							
Accessing credit in Uganda is easy for SMEs.	4 (1.9%)	12 (5.6%)	10 (4.7%)	118 (54.9%)	71 (33%)	4.1163	0.87031
High interest rates are a significant challenge in accessing finance	116 (54%)	90 (41.9%)	3 (1.4%)	5 (2.3%)	1 (0.5%)	1.5349	0.68865
SMEs financial records are adequate for loan application	18 (8.4%)	69 (32.1%)	93 (43.3%)	30 (14%)	4 (1.9%)	2.6869	0.88287
The average loan duration is suitable for business operations	43 (20%)	36 (16.7%)	27 (12.6%)	98 (45.6%)	11 (5.1%)	2.9907	1.27884
Lack of access to finance limits participation in the sector	68 (31.6%)	111 (51.6%)	22 (10.2%)	11 (5.1%)	3 (1.4%)	1.9302	0.86455

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4.3.2 Technological advancement

The table below, Table 4.2 shows that majority of respondents strongly denied having access to modern technology needed in the sector (Mean=3.9581, Std Dev. = 1.05153). Majority of respondents strongly Disagreed (67%) on current technology used in business being sufficient for operations. Majority of the respondents (90.2%) strongly Affirmed that High costs were a significant barrier to adopting advanced technology, majority of respondents (54%) strongly denied their SME in investing adequately in technology annually.

TABLE 4. 2,PERCEPTION OF RESPONDENTS ON TECHNOLOGICAL ADVANCEMENT.

Item	**SA (%)**	**A (%)**	**NS (%)**	**D (%)**	**SD (%)**	**Mean**	**Standard deviation**
Business relies on technology for operations	38 (17.7 %)	9 (4.2%)	92 (42.8 %)	76(35.3 %)		3.925 6	0.73881
Have access to modern technology needed in the sector	1 (0.5%)	11 (5.1%)	3 (1.4%)	13 (60.5%)	68 (31.6%)	3.958 1	1.05153
The technology currently used in business is sufficient for operations	4 (1.9%)	17 (7.9%)	3 (1.4%)	144 (67%)	47 (21.9%)	3.711 6	1.04148
SME invests adequately in technology annually	8 (3.7%)	58 (27.6 %)	1 (0.5%)	116 (54%)	32 (14.9%)	4.280 4	1.54309
Adopting new technology at	114 (53%)	86 (40%)	9	4 (1.9%)	1 (0.5%)	3.990 7	0.84826

a high rate in business			(4.2%)				
Employees are trained in using advanced technology relevant to operations in business	71 (33%)	116 (54%)	27 (12.6%)	1 (0.5%)		3.4930	1.14741
High costs are a significant barrier to adopting advanced technology	194 (90.2%)	17 (7.9%)	1 (0.5%)	1 (0.5%)	1 (0.5%)	1.5607	0.70780
Lack of technology has negatively impacted competitiveness in the sector	7 (3.3%)	38 (17.7%)	14 (6.5%)	130 (60.5%)	26 (12.1%)	1.8047	0.66204
Technology improvements would enhance participation in the sector	10 (4.7%)	83 (38.6%)	2 (0.9%)	51 (23.7%)	69 (32.1%)	1.1215	0.44848

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4.3.3 Regulatory framework

The regulatory environment was rated poorly. Most respondents (60%) disagreed that they are familiar with regulatory requirements (Mean = 3.6047, SD = 1.01713). Additionally, most

respondents (58.6%) agreed they faced regulatory challenges while participating in the sector (Mean = 3.4000, SD = 1.39358).A significant proportion (41.4% disagreed; 46.5% strongly disagreed) did not find government policies beneficial to SMEs (Mean = 2.4465), and many reported experiencing bureaucratic delays in licensing (Mean = 1.9395).In summary, the findings suggest that the regulatory framework is perceived as a significant barrier to SME participation, due to limited awareness, lengthy licensing processes, and a lack of supportive policies.

TABLE 4. 3,PERCEPTION OF RESPONDENTS OF REGULATORY FRAMEWORK.

Item	**SA (%)**	**A (%)**	**NS (%)**	**D (%)**	**SD (%)**	**Mean**	**Standard deviation**
Familiar with regulatory requirements for participating in the sector	15 (7%)	12 (5.6%)	17 (7.9%)	129 (60%)	42 (19.5%)	3.6047	1.01713
Faced regulatory challenges while trying to participate in the sector	65 (30.2%)	126 (58.6%)	4 (1.9%)	12 (5.6%)	8 (3.7%)	3.4000	1.39358
Time taken to acquire necessary licenses is reasonable	26 (12.1%)	126 (58.6%)	14 (6.5%)	39 (18.1%)	10 (4.7%)	3.7953	1.04344
Experience bureaucratic delays in	48 (22.3%)	96 (44.7%)	45 (20.9%)	26 (12.1%)		1.9395	0.93782

licensing processes							
Government policies supporting SMEs have benefited business	9 (4.2%)	12 (5.6%)	5 (2.3%)	89 (41.4%)	100 (46.5%)	2.4465	1.06590

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4.4 Inferential statistics.

4.4.1 Correlation analysis

In module one of the tables below, the results show that Access to finance significantly predicted SME participation which implies that, as Access to finance increases, SME participation in the sector also increases. In module 2 of the table below, the standardized coefficients are 0.244 which implies a positive relationship between Technological advancement and SME participation meaning that when advancement in technology elevates, it increases SME participation. Meanwhile in Module 3, the regulatory framework predicted 0.618 with a positive significant > 0.005 implying a positive relationship. It meant that better regulatory frameworks increase SME participation.

The analysis also met that the assumption of Multicollinearity given that the tolerance values range from 0.1717 to 1.000, while the value inflation factor (VIF) ranges from 1.000 to 1.395 indicating that Multicollinearity is not a problem in this study. the regression assumptions.

TABLE 4. 4,CORRELATION COEFFICIENTS OF INDEPENDENT VARIABLES ON DEPENDENT VARIABLE.

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	4.267	.050		84.990	.000	4.168	4.366		
	Access to finance	.461	.110	.276	4.190	.000	.244	.678	1.000	1.000
2	(Constant)	3.141	.352		8.913	.000	2.446	3.835		
	Access to finance	.247	.127	.148	1.950	.053	-.003	.496	.724	1.380
	Technological advancement	.364	.113	.244	3.227	.001	.142	.586	.724	1.380
3	(Constant)	.448	.403		1.112	.267	-.346	1.242		
	Access to finance	.040	.107	.024	.376	.708	-.172	.252	.696	1.436
	Technological advancement	-.003	.101	-.002	-.032	.975	-.203	.196	.624	1.603
	Regulatory framework	1.325	.136	.618	9.747	.000	1.057	1.593	.717	1.395

a. Dependent Variable: SME participation

Correlation results confirmed that Access to finance positively predicts SME participation (β = 0.276, $p < 0.001$). Technological advancement also had a positive effect (β = 0.244, $p = 0.001$), and the regulatory framework was the strongest predictor (β = 0.618, $p < 0.001$).

Multicollinearity diagnostics confirmed that tolerance values ranged from 0.1717 to 1.000, and VIF values from 1.000 to 1.395, well within acceptable thresholds, indicating no Multicollinearity concerns.

4.5 Regression analysis

Multiple regression analysis was used to determine the predictive power of the independent variables on SME participation. The results of the regression analysis show that access to finance accounted for 72% variance in SME participation. While technological advancement accounted for 11.9% variance in SME participation and regulatory frameworks accounted for 39.3% variance in SME participation.

TABLE 4. 5,TABLE OF REGRESSION ANALYSIS RESULTS.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	**.276[a]**	**.076**	**.072**	**.73613**	**.076**	**17.554**	**1**	**213**	**.000**
2	**.346[b]**	**.119**	**.111**	**.72038**	**.043**	**10.415**	**1**	**212**	**.001**
3	**.627[c]**	**.393**	**.384**	**.59961**	**.273**	**94.996**	**1**	**211**	**.000**

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Model 1 (Access to Finance) showed a significant impact, explaining 7.6% of the variance in SME participation ($R^2 = 0.076$, $F(1,213) = 17.554$, $p < 0.001$).

Model 2 (Access to Finance + Technological Advancement) increased the explained variance to 11.9% ($R^2 = 0.119$, $p < 0.001$).

Model 3, which included the regulatory framework, significantly improved the model, accounting for 39.3% of the variance in SME participation ($R^2 = 0.393$, $p < 0.001$). These results suggest that while all three variables are important, regulatory frameworks are the strongest predictor of SME participation.

4.5.1 Moderation analysis

A second multiple regression analysis was conducted to test whether government institutional support moderates the relationship between the independent variables (access to finance, technological advancement, and regulatory framework) and SME participation in Uganda's oil and gas sector. The results of the regression analysis show that the access to finance accounted for 0.5%variance in Government institutional support(R2=0.05 and change in R20.76),F(1.032 and P<00.01).Meanwhile technological advancement accounted for 1.4% of variance in Government institutional support (R2=0.014 ,P<0.001).The results also revealed that regulatory frameworks accounted for 19.6% variance in Government Institutional support and (R2=0.196 ,P<0.001),indicating that regulatory frameworks have the strongest moderating effect on the relationship between the independent variables and government institutional support.

TABLE 4. 6,MODERATION ANALYSIS

Moderation analysis testing the interaction between government institutional support and independent variables

Model Summary									
				Std. Error	Change Statistics				
Model	R	R Square	Adjusted R Square	of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.069[a]	.005	.000	.65134	.005	1.032	1	213	.001
2	.117[b]	.014	.004	.64993	.009	1.927	1	212	.000
3	.443[c]	.196	.185	.58819	.182	47.842	1	211	.000

a. Predictors: (Constant), Access to finance

b. Predictors: (Constant), Access to finance, Technological advancement

c. Predictors: (Constant), Access to finance, Technological advancement, Regulatory framework

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4.6 Multi-collinearity findings

The analysis met that the assumption of multi-collinearity given that the tolerance values range from 0.1717 to 1.000, while the value inflation factor (VIF) ranges from 1.000 to 1.395 indicating that multi-collinearity is not a problem in this study.

TABLE 4. 7,TABLE INDICATING MULTI-COLLINEARITY TESTS.

Collinearity Diagnostics							
					Variance Proportions		
Model	Dimension	Eigenvalue	Condition Index	(Constant)	Access to finance	Technological advancement	Regulatory framework
1	1	1.001	1.000	.50	.50		
	2	.999	1.001	.50	.50		
2	1	1.990	1.000	.00	.00	.00	
	2	1.000	1.411	.00	.72	.00	
	3	.010	14.328	1.00	.28	1.00	
3	1	2.982	1.000	.00	.00	.00	.00
	2	1.001	1.726	.00	.69	.00	.00
	3	.011	16.373	.13	.15	.99	.19
	4	.006	21.919	.87	.16	.00	.81

a. Dependent Variable: SME participation

4.6.1 Normality test

Based on the test results below, the p-value is less than 0.005, therefore we reject the null hypothesis.

TABLE 4. 8,NORMALITY TEST RESULTS.

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	.122	214	.000	.899	214	.000
Standardized Residual	.122	214	.000	.899	214	.000

a. Lilliefors Significance Correction

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Based on the tests results above, the p-value is less than 0.005, therefore we reject the null hypothesis. This meant that there was a violation of normality of assumption. Normality of residuals was tested using both the Shapiro-Wilk and Kolmogorov-Smirnov tests. Results indicated that the data violated the normality assumption, which is important for ensuring the reliability of parametric analyses such as regression. To address this, three data transformation techniques were applied: log transformation, square root transformation, and inverse transformation. The goal was to normalize the distribution of the residuals.

TABLE 4. 9,VIOLATION OF NORMALITY

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Log transformation	.199	119	.100	.822	119	.167
Square root transformation	.106	119	.282	.968	119	.107
Inverse transformation	.116	119	.200	.947	119	.196

a. Lilliefors Significance Correction

As shown in the table above, the square root transformation resulted in the best improvement in normality, with both Shapiro-Wilk (p = .107) and Kolmogorov-Smirnov (p = .282) p-values exceeding the 0.05 threshold, indicating that the transformed data did not significantly deviate from normality.

4.8 Heteroskedastic test (Breusch-Pagan Test and Koenker test statistics) and significant values.

To assess homoscedasticity, both Breusch-Pagan and Koenker tests were conducted, and the results in the table below show, the significant values are less than 0.005 and therefore we reject the null hypothesis. The Heteroscedasticity is present

TABLE 4. 10,TABLE INDICATING HETEROSCEDASTICITY TEST

	t	Sig
Breusch-Pagan	1.432	0.04
Koenker	1.080	0.001

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The results in the figure above show that the significant values are less than 0.005 and therefore we reject the null hypothesis. The heteroscedasticity is present and to correct for this, robust standard errors were applied in the regression analysis to ensure valid inference despite the violation of homoscedasticity.

4.8 Summary of the chapter.

This study aimed to answer research questions, what is the effect of access to finance on the participation of SMEs in the oil and gas sector? What is the effect of technological advancements on SMEs participation in the oil and gas sector? How do regulatory frameworks affect the participation of SMEs in the oil and gas sector? And what is the moderating effect of government institutional support on SME participation. In the findings, access to capital, technological innovation, and regulatory frameworks affect SME growth, with government support serving as a moderating variable. Descriptive statistics revealed major disparities in financial access, technology investment, and regulatory assistance. Correlation and regression studies revealed positive and significant connections between all three independent factors and SME development, with access to capital having the greatest impact. Moderation analysis found that there was substantial impact majorly on the connection between regulatory frameworks and SME development. While multi-collinearity was not a problem, tests revealed violations of the normality and heteroscedasticity criteria, square root transformation significantly improved normalcy. The conclusions and recommendations offered in the next chapter are based on these observations.

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CHAPTER FIVE
DISCUSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction.

This chapter provides a comprehensive overview of the study's findings, including comparisons to previous research. It then summarizes the findings and makes practical recommendations. The chapter also discusses the study's implications for policy and practice, identifies shortcomings, and offers areas for future research. The study looked at the impact of access to finance, regulatory frameworks and technology advancements on SME participation sin Uganda's oil and gas sector, using government institutional support as a moderator.

5.2 Summary of main results

Uganda has recently joined the ranks of nations with significant oil and gas reserves, presenting a vital opportunity for economic growth and development if the resource is managed effectively. One key pathway to achieving this growth lies in fostering the participation of Small and Medium Enterprises (SMEs) in the sector through avenues such as supplying goods and services to international oil companies and accessing both skilled and unskilled employment opportunities. However, despite the promise of resource wealth, Ugandan SMEs continue to face numerous challenges in accessing and fully participating in the emerging oil and gas industry. This study sets out to examine. The study was guided by three core objectives: to access the impact of access of finance, technological advancements, and regulatory frameworks on SME participation in Uganda's oil and gas sector and government institutional support as a moderating variable. The analysis was grounded in a theoretical framework combining the Resource-Based View (RBV), Institutional Theory and Dynamic Capability Theory, offering a comprehensive perspective on the constraints and enablers influencing SME engagement. The findings revealed that access to financing has a substantial impact on SMEs' ability to satisfy the sector's capital demands, with rural companies being particularly disadvantaged due to limited credit access and high borrowing costs. Technological restrictions, such as obsolete techniques and insufficient training, further reduce SME competitiveness, particularly in distant places. Regulatory barriers, such as bureaucratic procedures and a lack of policy awareness, were also found to keep many SMEs from participating meaningfully. Notably, government institutional support was found to positively moderate these associations by improving SMEs' access to financial services,

technology uptake, and regulatory compliance. However, its impact is currently hampered by urban bias, limited coverage, and poor execution, reducing its ability to promote inclusive and widespread SME engagement in the industry

5.3 Discussion of findings.

5.3.1 Access to finance and SMEs' participation in oil and gas sector.

The study found a significant and positive relationship between access to finance and SME participation in Uganda's oil and gas sector. Financial access was a key determinant of whether SMEs could engage in supply chains, invest in capacity-building, and meet contractual requirements. The inability to access affordable credit primarily due to lack of collateral, financial literacy, and weak rural banking infrastructure limited many SMEs, especially those in regions like Buseruka and Kibaale, from effectively participating in the sector.

These findings are consistent with prior research. For instance, Appiah et al. (2018) found that access to finance significantly increased SME investment willingness in Ghana's oil and gas sector. Similarly, Wamono et al. (2012) highlighted limited capital as a major constraint for SME engagement in Uganda. Abor and Quartey (2010) also emphasized that access to finance is a fundamental enabler of SME growth in capital-intensive sectors. Together, these studies reinforce the role of finance as a structural factor that enables or inhibits participation.

In contrast, some studies emphasize broader systemic or institutional issues over direct financial access. Beck et al. (2005) pointed out that risk perceptions by financial institutions significantly reduce SME credit access, particularly in high-risk sectors like oil and gas. Kasekende et al. (2003) attributed financial exclusion to regulatory bottlenecks and underdeveloped capital markets, while Munyanyi (2017) found that excessive bureaucracy and weak institutional support had more impact than access to finance alone. These contrasting perspectives suggest that while finance is critical, it is interwoven with broader institutional and regulatory conditions.

Gender also emerged as a cross-cutting factor in financial exclusion. Sseremba (2020) and Alinaitwe (2018) found that women-owned SMEs face greater financing barriers due to limited asset ownership, which restricts their ability to meet collateral requirements. International Alert (2014) similarly reported that gendered access to finance hinders inclusive participation in

capital-intensive sectors. These disparities were also evident in this study, particularly in rural contexts were gender norms limit women's control over productive assets.

The results of this study confirm the propositions of the Resource-Based View (RBV), where access to capital is treated as a strategic resource enabling competitive advantage. Financial constraints limit SMEs from acquiring other key resources such as skilled labor and technology. The findings also support Dynamic Capability Theory, as SMEs with greater access to finance were more capable of reconfiguring internal processes and responding to external sector demands hence successfully acquiring contracts. Institutional Theory is partially confirmed, as institutional inefficiencies such as rigid collateral requirements, limited rural banking presence, and gendered financial norms continue to limit financial inclusion, particularly for informal and rural SMEs.

5.3.2 Technological advancements and SMEs participation in oil and gas sector.

Findings from this study revealed a statistically significant relationship between technological advancement and SME participation in Uganda's oil and gas sector. The sector is highly technical, demanding compliance with industry standards, precision, and digital integration across procurement, logistics, safety, and production processes. Despite this, SMEs in Uganda especially those based in rural areas like the Albertine Graben demonstrate low adoption of modern technology. This is attributed to the high costs of acquiring digital tools, limited infrastructure such as internet connectivity, inadequate training in specialized machinery or software, and high levels of illiteracy.

The results align with those of Abaasa (2015), who found that ICT adoption positively influences SME performance through enhanced customer engagement and operational efficiency. Similarly, Maliki et al. (2019) emphasized that SMEs in capital-intensive sectors that adopt technological innovations increase productivity and profitability, though their study identified infrastructural constraints as a key barrier. Okundaye (2016) also supports this view, reporting that ICT tools improve competitiveness but that SMEs face knowledge gaps, high costs, and lack of public support. These findings collectively confirm that technological advancement is a strong determinant of SME participation in the oil and gas sector.

However, the current study adds a regional and sector-specific dimension to existing knowledge. For example, SMEs in Buliisa and Hoima districts where agriculture and fishing is the main economic activity struggle to integrate simple technologies like irrigation systems. This limits their ability to sustainably supply agricultural produce to oil camps throughout the year. As a result, their role is confined to low-value, non-core services such as food vending, manual labor, and site clearing roles that require little to no technical input and provide limited economic uplift. This finding confirms Wamono et al. (2012), who noted that the lack of technological capability among Ugandan SMEs excludes them from high-value contracts in extractives and confines them to peripheral services.

By contrast, SMEs located in urban areas with better access to digital tools and training such as Kampala-based firms tend to secure more lucrative contracts. These firms are more capable of competing in tendering processes due to access to procurement portals, better logistics systems, and familiarity with industrial specifications. This dichotomy suggests a persistent urban-rural divide in technological integration.

The findings also confirm the relevance of the Resource-Based View (RBV) and Dynamic Capability Theory in explaining the role of technology in SME participation. According to RBV, technology is a critical internal resource that can give firms a competitive edge. In this context, SMEs with digital competencies and modern equipment are more likely to secure contracts and scale operations. The Dynamic Capability Theory is also supported, as firms that can continuously adapt to technological changes demonstrate greater agility and participation in evolving sectors like oil and gas.

However, this study departs from earlier work in that it highlights the gap between interest and ability to adopt technology. While many SMEs expressed awareness of the benefits of technology and a desire to improve, they lack the financial means and institutional support to actualize this goal. To address this, targeted livelihood restoration and capacity-building programs are recommended, especially in oil-rich rural areas especially around Hoima and Buliisa district. These should focus on enabling SMEs to acquire affordable technology, train personnel, and form digital linkages with industry players. In summary, this study confirms that technological advancement plays a critical role in enhancing SME participation in Uganda's oil

and gas sector. However, structural inequalities and capacity gaps must be addressed through deliberate policy interventions to ensure inclusive and equitable participation.

5.3.3 Regulatory frameworks and SMEs participation in oil and gas sector.

Regulatory frameworks are crucial in the oil and gas sector, setting legal and procedural requirements such as licensing, environmental standards, taxation, and safety regulations. In Uganda, these frameworks include the Petroleum Act (2013), National Oil and Gas Policy (2008), and Local Content Policy (2018), designed to promote local participation while maintaining international standards. However, these regulations are burdensome for SMEs due to high compliance costs, lack of clear guidelines, and administrative challenges.

Studies by Djankov et al. (2006) and Monday et al. (2010) suggest that regulatory burdens can stifle SME growth, especially in capital-intensive sectors like oil and gas. Byaruhanga and Langer (2020) found that while Uganda's Local Content Policies (LCPs) offer opportunities for local SMEs, challenges persist, such as inadequate enforcement, limited technical capacity, and poor access to financing. SMEs often struggle to comply with complex regulations, limiting their ability to fully participate in the sector.

This study found that regulatory frameworks significantly impact SME participation. Many SMEs are unfamiliar with specific legal requirements, and despite being registered on the National Supplier Database (NDS), they lack essential documentation such as audited accounts, quality management systems, and tax compliance. These deficiencies hinder their ability to compete for contracts. Additionally, there is insufficient engagement between SMEs, oil companies, and regulatory bodies, leading to an information gap.

Further insights from Edmond Kansiime the manager for strategic planning (PAU) and local officials highlight that Uganda's National Content Policy has made progress in promoting local businesses, however it is hindered by bureaucratic bottlenecks and lack of transparency in contract allocation. The system is perceived as favoring established firms with political or corporate ties, making it difficult for smaller SMEs to participate. These challenges align with Institutional Theory, which highlights how complex regulations can act as barriers, and RBV, which stresses the importance of resources to overcome such barriers.

To address these issues, the study suggests that the government establish information centers to improve communication about regulatory requirements. Streamlining processes and reducing bureaucratic barriers could enhance SME participation and foster local economic development. Regulatory frameworks in Uganda's oil and gas sector have a significant effect on SME participation, with compliance challenges acting as major barriers. Clearer guidelines, stronger communication, and better support structures are needed to improve SME engagement in the sector. By addressing these issues, the government can increase local participation and foster a more competitive and inclusive oil and gas industry.

5.3.4 Moderating role of government institutional support.

The study revealed that government institutional assistance plays a critical moderating role in enhancing the relationship between external business factors namely, access to finance, technological innovation, and regulatory frameworks and SMEs' engagement in Uganda's oil and gas sector. Empirical data from the regression analysis in Chapter 4 showed that, while each external factor increased SME involvement separately, their impacts were greatly boosted when focused government measures were implemented. State-led initiatives, such as supplier registration platforms (e.g., the National Supplier Database), subsidized training programs, and compliance assistance schemes, all contributed to closing gaps in financial access, technical skills, and regulatory navigation. These findings are consistent with Institutional Theory (Scott, 2001; DiMaggio & Powell, 1983), which holds that institutional demands and support systems influence organizational behavior. According to Osei-Tutu et al. (2019) and Monday et al. (2020), government support can serve as a buffer against systemic restrictions by providing scaffolding in the form of policy enforcement, procurement inclusion, and capability building. Furthermore, Dynamic Capability Theory (Teece et al., 1997) underlines the importance of companies adapting and transforming in response to environmental changes, which is assisted by institutional reforms that improve SMEs' ability to grab opportunities in the capital-intensive oil sector. As a result, the study concludes that without purposeful, well-coordinated government institutional support, SMEs' ability to actively engage in Uganda's oil and gas value chain is considerably limited.

5.4 Conclusions.

The study concludes by observation that formalization of business is fundamental in determining participation in the Oil and Gas sector. If the SMEs formalize their business by registering on the National Supplier Database, URSB, URA among others the participation rate in the sector will be enhanced. Therefore, for an SME to achieve participation in Oil and Gas activities, it is important to formalize the business.

Secondly, the low levels of technology have negatively impacted the participation of SMEs in the oil and gas sector. The Oil and Gas sector is largely technologically driven and so it requires huge investments in technology by SMEs to fit in with the sector's priorities. The technology investments require huge capital investments which most SMEs in the oil and Sub-region can barely afford. To this effect, there is a need for the SMEs to form joint ventures to raise consolidated capital for technological improvements to boost participation in the sector. The higher the levels of technology, the higher the chances of participating in the sector.

The regulatory frameworks have negatively impacted SME participation in the sector. Most SMEs do not meet the legal requirements required to participate in the sector. A part of this is due to the lengthy procedures that are called for when formalizing enterprises. Accessing the relevant authorities like URA, URSB, PAU that help in formalizing businesses is also a very tiresome process.

The study revealed that many SMEs in Albertine Graben are primarily engaged in agricultural production. However, most of these SMEs fall short of meeting the standards and requirements necessary to supply the oil and gas sector, largely due to limited access to finance, low levels of technology adoption, and failure to meet regulatory obligations. To address these gaps, there is a need for SMEs to strengthen their capacity by working through associations to meet the quality and sustainability standards required in the sector.

Lastly, institutional support is an important moderator in shaping SME participation in Uganda's oil and gas sector. While external business factors such as access to capital, technological capabilities, and regulatory frameworks have a direct impact on SME engagement, the existence of specific institutional interventions considerably increases or reduces their full potential. Government assistance, particularly through agencies such as the Petroleum Authority of

Uganda, strengthens the enabling environment by providing capacity-building programs, streamlining regulatory procedures, and developing platforms such as the National Supplier Database to connect SMEs with industry opportunities. This highlights the significance of a proactive and decentralized institutional framework that not only addresses structural hurdles but also strategically promotes SME competitiveness.

5.5 Recommendations.

The study based on the conclusions has come up with a few recommendations that run across policy, theory and practices for SMEs as presented below,

It is proposed that the government simplify and standardize regulatory frameworks, particularly by expediting licensing procedures and toughening enforcement of local content rules. Prioritize national programs to increase financial literacy and credit readiness among SMEs, as well as specialized financial instruments developed through public-private partnerships. Furthermore, establishing decentralized SME support units in oil-producing regions and implementing a national SME profiling and matchmaking database will promote transparency, accessibility, and sectoral alignment, increasing SME inclusion into the petroleum value chain.

The study recommends that the government, in partnership with international oil companies (IOCs), should undertake a comprehensive profiling exercise of locally based SMEs. This initiative is crucial for building a detailed database that can facilitate business-to-business (B2B) matchmaking, helping local SMEs connect with potential buyers and enabling buyers to find suitable suppliers Additionally, the database would support benchmarking by allowing SMEs to diagnose and compare their performance against competitors, guide supplier development by proven capacity-building tools and methods, and assist in generating various reports needed by SMEs for growth and improvement.

The study recommends that the government, in collaboration with sector stakeholders such as the Petroleum Authority of Uganda (PAU), Total Energies, UNOC, and others, should organize business linkage programs specifically targeting grassroots-level SMEs. The primary goal of these programs would be to foster connections between small, medium, and large enterprises, helping SMEs meet the supplier criteria of major companies, satisfy commercial bank lending requirements, facilitate technology transfer, and expand access to new markets. These business

linkage initiatives would strengthen SMEs' integration into the supply chains of Tier 1, Tier 2, and Tier 3 suppliers

The study recommends that SMEs form joint ventures or cooperatives to strengthen their capacity for participation in the oil and gas sector. By coming together, SMEs can consolidate resources, expand their capital base, and better position themselves to meet the sector's supply requirements. Key stakeholders in the sector, including international oil companies (IOCs), the Petroleum Authority of Uganda (PAU), and the Uganda National Oil Company (UNOC), should support the development of these centers where local SMEs can gather, prepare, and organize their products for supply. This deliberate effort would help bring markets closer to SMEs and enhance their access to supply chains.

Lastly, the study advances theoretical development by emphasizing the need of multi-theoretical methods to understand SME participation in complex industries such as oil and gas. It emphasizes the complimentary value of the Resource-Based View, Institutional Theory, and Dynamic Capability Theory in understanding the multifaceted connections between external business factors and organizational behavior constraints.

5.6 Limitations of the study.

Several challenges affected the scope and depth of this research, Restricted access to key institutions and databases (e.g., the National Suppliers Database) This limited the ability to cross-verify participation records, regulatory delays in acquiring research approvals reduced the available time for data collection. Additionally, limited cooperation from oil and gas authorities hampered access to procurement data and internal policy evaluations. As a result, the sample size was smaller than intended, and the study may not capture the full diversity of SME experiences across all oil-producing districts. Furthermore, the high costs associated with conducting the study, particularly in collecting primary data from 215 SMEs, posed additional constraints.

5.7 Suggestion of Future areas of research.

Due to the scope and the limitations highlighted in chapter three, Further research could explore several important areas that have not been fully addressed in this study. Firstly, examining the impact of current Oil and Gas regulations on the participation and performance of State-Owned

Enterprises (SOEs) in the sector would be valuable. While the study focused on SMEs, SOEs also play a crucial role in Uganda's oil and gas sector and understanding how regulatory frameworks affect their operations could provide insights into improving policy effectiveness and promoting better sectorial performance. Additionally, investigating the effectiveness of information platforms in facilitating SME participation in the Oil and Gas sector in Uganda could reveal the extent to which digital platforms, training programs, or local information hubs can enhance access to regulatory knowledge, business opportunities, and capacity-building for SMEs.

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APPENDICES

APPENDIX 1: QUESTIONNAIRE FOR THE SMES

Questionnaire for SMEs in the Oil Exploration and Production Sector in Uganda

Introduction

Dear Respondent,

This questionnaire is part of a research study to investigate how external business factors such as access to finance, technological advancements, and regulatory frameworks affect the participation of SMEs in this sector. Your participation is highly valuable as it will help you understand the key

challenges and opportunities SMEs face in this sector, particularly in areas of access to finance, technological adoption, and regulatory compliance.

The information you share will remain private and will be used only for academic objectives. Completing this questionnaire should take about 15-20 minutes.

Your time and contribution to this research are sincerely appreciated.

SECTION A: DEMOGRAPHICS

1. **Name of the SME (optional):**
2. **Location of the SME:**
3. **Age of the SME:**
    - Less than 1 year
    - 1-3 years
    - 3-5 years
    - More than 5 years
4. **Size of the SME (number of employees):**
    - 1-5
    - 6-10
    - 11-20
    - More than 20
5. **Ownership Structure:**
    - Sole proprietorship
    - Partnership
    - Limited liability company

6. **Gender of SME Owner/Manager:**
    - Male
    - Female
    - Both
    - Prefer not to say
7. **Education level of SME Owner/Manager:**
    - No formal education
    - Primary level
    - Ordinary Secondary level (Uganda Certificate of Education)
    - Advanced Secondary level (Uganda Advanced Certificate of Education)
    - Tertiary

SECTION B: ACCESS TO FINANCE

For each of the following items, kindly specify whether you agree or disagree, and to what extent by using the provided scale where:

1 = Strongly Affirm (SA), 2 = Affirm (A), 3 = Not Sure (NS), 4 = Deny (D), 5 = Strongly Deny (SD)

SN	Item	SA	A	NS	D	SD
B1	I have applied for a loan to fund my SME.					
B2	My loan application was successful.					

B3	The source of my business financing is primarily from self-financing.					
B4	The average loan amount I have received for my business meets my financing needs.					
B5	Accessing credit in Uganda is easy for SMEs.					
B6	High-interest rates are a significant challenge in accessing finance.					
B7	I believe my SME's financial records are adequate for loan applications.					
B8	The average loan duration I receive is suitable for my business operations.					
B9	Lack of access to finance significantly impacts my ability to participate in this sector.					

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SECTION C: TECHNOLOGICAL ADVANCEMENTS

For each of the following items, kindly specify whether you agree or disagree, and to what extent by using the provided scale where:

1 = Strongly Affirm (SA), 2 = Affirm (A), 3 = Not Sure (NS), 4 = Deny (D), 5 = Strongly Deny (SD)

SN	**Item**	**SA**	**A**	**NS**	**D**	**SD**
C1	My business relies on technology for operations.					

C2	I have access to modern technology needed for operations in this sector.					
C3	The technology I currently use in my business is sufficient for my operations.					
C4	My SME invests adequately in technology annually.					
C5	I adopt new technologies at a high rate in my business.					
C6	My employees are trained in using advanced technology relevant to our operations.					
C7	High costs are a significant barrier to adopting advanced technology in my business.					
C8	The lack of technology has negatively impacted my competitiveness in this sector.					
C9	Technology-related improvements would enhance my participation in this sector.					

SECTION D: REGULATORY FRAMEWORK

For each of the following items, kindly specify whether you agree or disagree, and to what extent by using the provided scale where:

1 = Strongly Affirm (SA), 2 = Affirm (A), 3 = Not Sure (NS), 4 = Deny (D), 5 = Strongly Deny (SD)

SN	Item	SA	A	NS	D	SD
D1	I am familiar with the regulatory requirements for participating in this sector.					
D2	I have faced regulatory challenges while trying to participate in this sector.					
D3	The cost of regulatory compliance for my SME is manageable.					
D4	The time taken to acquire the necessary licenses and permits is reasonable.					
D5	I experience bureaucratic delays in the licensing processes in this sector.					
D6	Government policies aimed at supporting SME participation in this sector have benefited my business.					
D7	The regulatory framework governing SMEs in this sector requires reform.					

SECTION E: PARTICIPATION IN THE SECTOR

For each of the following items, kindly specify whether you agree or disagree, and to what extent by using the provided scale where:

1 = Strongly Affirm (SA), 2 = Affirm (A), 3 = Not Sure (NS), 4 = Deny (D), 5 = Strongly Deny (SD)

SN	Item	SA	A	NS	D	SD

E1	My SME is currently providing goods or services to this sector.					
E2	I am content with the kind of goods/services my SME provides in this sector.					
E3	I have secured multiple contracts in this sector in the past 5 years.					
E4	Competition from larger firms is a significant challenge in securing contracts in this sector.					
E5	High entry costs limit my SME's participation in this sector.					
E6	Limited information on opportunities is a barrier to securing contracts in this sector.					
E7	I believe that improving my SME's expertise would enhance my competitiveness in the sector.					

I'm immensely grateful for your precious time and information.

APPENDIX II; ETHICAL APPROVALS

Strathmore UNIVERSITY

19th March 2025

Mrs Nabwire Gloria,
gloria.nabwire@strathmore.edu

Dear Mrs Nabwire,

RE: External Business Factors Affecting Small and Medium Enterprises' Participation in Uganda's Oil and Gas Sector

This is to inform you that SU-ISERC has reviewed and **approved** your above **SU-masters** proposal. Your application reference number is **SU-ISERC2661/25.** The approval period is from **19th March 2025 to 18th March 2026.**

This approval is subject to compliance with the following requirements:

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

PETROLEUM AUTHORITY OF UGANDA

Reference: **PAU 01-2-20250404-7203**

04th April 2025

Ms. Nabwire Gloria Eseza,
Strathmore University, Business School
NAIROBI, KENYA
Email: nabwiregloria05@gmail.com

RE: CLEARANCE TO CONDUCT INTERVIEWS ON PARTICIPATION OF SME'S IN OIL AND GAS SECTOR

This is in reference to your letter dated 03rd April 2025 to the Petroleum Authority of Uganda requesting for permission to collect data in oil and gas sector for study purpose.

This Authority has reviewed your research proposal and notes that it meets the minimum requirements to conduct research in the oil and gas sector.

The purpose of this letter is therefore to inform you of the Authority's **NO OBJECTION** to your collection of data based on the research titled **"External Business Factors Affecting Small and Medium Enterprises' Participation in Uganda's Oil and Gas Sector".**

Please ensure that a final copy (hard and soft) of the Research report is submitted to this Authority upon successful completion.

Edmond Kansiime
For: EXECUTIVE DIRECTOR

CC: The General Manager,
TotalEnergies EP Uganda,
Plot 21, Yusuf Lule Road,
KAMPALA.

The President,
CNOOC Uganda Limited,
Plot 22 John Babiiha Avenue (formerly Acacia Avenue), Kololo,
KAMPALA.

The Chief Executive Officer,
Uganda National Company,
Plot 21, Yusuf Lule Road,
KAMPALA.

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Summary of Literature Reviewed

STUDY	THEORIES	METHODOLOGY	Factors identified	Participation (how)	Key Findings	Research gap
The implications of macro-environmental forces and SMEs investment behavior in the energy sector; the role of supply chain resilience (Appiah et al., 2021) Country; Ghana	Strategic positioning Porters five forces framework PESTEL (political, economic, Social, technological, legal)	• Structured questionnaires that are self-administered have been utilized to gather cross-sectional data • Partial least square. • Quantitative research approach. • Stratified sampling techniue.	• Supply chain resilience • Macro-economic factors (PESTEL) • Access to the market. • Funding from outside sources. • Loan services. • Policies of labor and employment. • External funding. • Perceived corruption.	Supplying oil and gas products, transporting products, conducting contracts with companies, and delivering edible products to consumers	Positive aspects of the macro-environment are strongly connected to SMEs involvement in the downstream. The investment intentions of SMEs in Ghana are heavily impacted by supply chain resilience, requiring the integration of technology into their operations for	I need to research on internal factors of an organization and how they affect SME willingness to invest. A further study can be done on the effect of government support and policies on SMEs investment.

Internal Organizational Factors Influencing the Adoption of Strategic Outsourcing within Supply Chains. (Ajuk and Haddud, 2017) Country; United Kingdom		Qualitative research method using semi structured interviews.	• Legal and regulatory risk. • Internal skills and expertise. • Technological innovation. • Quality of services delivered. • Cost capability. • Focus on fundamental strengths.	Procurement, material and ware housing, transport and logistics.	competitiveness. Factors that played a role in companies deciding to outsource included: reducing costs, prioritizing core strengths, inadequate technological skills, and seeking innovative methods. If the government implements tax breaks, allocates sufficient budgets, and	There is a need to study how the capacity of different organizations can be built through things like training.

					streamline processes in the supply chain, it would be simpler to involve SMEs in supply chain through strategic outsourcing.	
Strengthening private sector engagement in the oil and gas value chain in Uganda. Author; (Ombaki, 2019)	Resource curse theory	Secondary data from literature in the same field and literature from government acts and policies in the oil field.	• Collaborative effect to strengthen the capacity of SMEs. • Business registration and licensing. • Gender inclusivity. • IOCs meet high	Offering goods and services, Fabrication and welding services, Transportation services, plant hire, security, building and construction, catering.	The diversity of SMEs across sectors signifies their potential to act as levers for linkages and ultimately value creation. Whereas	How to improve the skill set of local communities to equip them to compete favorably with international companies. And exploratio

			quality standard requirements. • Capacity and competitiveness.		the country has made significant progress in creating enabling regulatory environment, joint initiatives aimed at removing obstacles for entry and incorporating SMEs into the oil and gas supply network, are critical.	n of other factors that can strengthen SME engagement in oil and gas like technological use.
Understanding the forces that influence SMEs' investment decisions	Resource based view theory.	Population and sampling. Stratified random sampling technique	Entrepreneurial skills, marketing abilities, technology usage, and financial resources.	Supply of goods and services. Human resources. materials. Financing	Competitive strategies like entrepreneurial skills, financial resources, and technology	The study does not address the kind of activities SMEs can participate in to be part of the

in the Ghanaian energy sector: the effect of local content policy (Appiah et al., 2024) Country; GHANA					adoption strongly influence SMEs' investment intentions. The current local content policy functions more effectively with SMEs that possess internal resources.	value chain. The study suggests that financial resources deduces that financial resources do not affect SMEs investment intentions which I do not agree with because capital is necessary for sustainability of SMEs which will ensure their effective

						participation.
Local and International Factors Affecting Participation of Tanzanian SMEs in Market Opportunity Brought by the African Growth and Opportunity Act. (Simon et al., 2021) Edward Simon		Questionnaires. Interviews. Thematic analysis for qualitative data and descriptive and regression for quantitative data	The presence of extra funding, technological assistance, challenges in obtaining permits and licenses, technological resources within the nation, business regulations, business safety levels, and accessibility to business data in the country.	Supply raw materials and human resource.	It is essential to promote straightforward access to business permits and loans for SMEs. Furthermore, it is essential to eliminate business obstacles in the country to ease the process of importing capital goods.	The study ignores proper record keeping as another challenge for SMEs and how SMEs can increase their capacity to qualify for financial support from financial institutions like banks.

Country; Dar es Salaam						
Factors affecting entrepreneurial growth for petroleum wholesalers in South Africa. (Mmako & Baadjie, 2023)	Resource based view theory. Motivation based view	Multiple case study, Purposive sampling. Semi-structured interview, Studying and interpreting government reports.	• Policy and regulatory environment. • Competitiveness of the environment. • Access to finance • Market structure • Knowledge and skills	Storage facilities. Distribution networks Manufacturing, construction, insurance, mining, farming, and transportation.	The industry provides numerous opportunities, but the closed and complex nature hinders small businesses from taking advantage of them. The industry structure hinders entrepreneurial growth, as integrated oil companies control prices with	Theoretical gap, Human capital theory, contextual gap.

			• Infrastructure and logistical capacity		their refining capacity and supply power.	
Policy Environment and SME Investment in the Ghanaian Oil and Gas Industry. (Appiah et al., 2018) Country; Malaysia		• Primary data, • Structured questionnaires, Explanatory research design • Binomial regression.	• Training for the local workforce, • Development of skills and expertise, • Capability to absorb technology transfer • Macro-economic environment • Employment policy.		This research suggests that the local content policy, introduced through petroleum regulations, should be fully enforced, alongside consistent monitoring and evaluation of the implementation.	Lack of comprehensive study of how SMEs can participate in downstream activities. The study doesn't use any theories indicating a theoretical gap.
Do Industry	Porters five	Cross sectional	Perceived advantages of	Transporting fuel oil,	The Local-content	The study is very

Forces Affect SME's Investment in Downstream Oil and Gas Sector? Empirical Evidence from Ghana. (Appiah et al., 2021a) country; Ghana	forces model	survey methodology, structured questionnaire, partial least square method	investing in oil and gas by SME managers, competition between current oil and gas companies, customers.	trading directly in bulk and retail distribution of fuel oil, gas, and chemical products, managing distribution and marketing as suppliers in bulk and brokering of products.	Policy Regulations are just as crucial as Industry forces in the sector. To increase local involvement in the industry, policymakers, investors, and researchers should also consider micro-environment factors.	relevant for an established sector; however, Uganda's sector is simply starting and therefore might need additional study for smes on how to identify the opportunities in downstream supply chain.
Actors, networks and assemblages: local content, corruption and the	Resource curse theory, Actor network theory	Primary data. Informant interviews, observations and review of	Officials of Multinational corporations, foreign service companies, officials of state	Catering, security services, warehousing, transport and other logistics services in the sector.	LCPs are important policy instruments that can guarantee that the extraction	The study highlights the effect of party politics and corruption and the

politics of SME's participation in Ghana's oil and gas industry. (Ablo, 2019)		documents from various stakeholder institutions.	institutions, civil society organizations and management and CEOs of local SMEs.		of natural resources contributes to growth of nations. Depending on the assemblage of actors and their networks, Ghana's LCP promotes some local SME participation but, in the process, legitimizes local elites 'capture of oil rent.	part it plays in determining SMEs indulgence in the sector, a similar challenge is faced in Uganda however there is no study to address it.
How partnerships can aid SME participation in the Oil		Secondary data and primary data from UNOC (Uganda national oil	• Access to finance, • Contractual obligations.	Transportation, security, catering, food and drinks, land survey, civil works, logistics,	The National Oil and Gas policy promotes SME involveme	Stanbic Bank is offering a training program for SMEs alongside

and Gas Value Chain. (Stanbic bank Uganda, 2023)		corporation)	• Construction of an industry enhancement center to support SMEs.	crane rental, and provision of local construction materials.	nt in value chains by providing incentives for sector resources and protecting opportunities for local companies. Certain funds are allocated to SMEs in the local area who provide goods and services to support involvement in various sectors. Presently, services have been offered by more than 1,000	Mangala Oil Company located in India, therefore a comprehensive study needs to be conducted to find out how effective this program is in equipping SMEs for participation.

					SMEs throughout the chain.	
Identifying IOCS responsibilities to improve competitiveness of indigenous companies in Nigeria (Ojonugwa, 2019) Country; Norway	Community content	Exploratory study conducted on indigenous businesses using qualitative, cross-sectional approach. Interpretive paradigm.	• Regulations • Infrastructure • Nearby surroundings • Abilities of native firms, participants, and connections	Supply of goods and services. Human resources. Produce materials.	IOCs need to participate in training for local suppliers so they can meet international standards to conduct commerce. In addition, policymakers need to create consistent policies that facilitate the success of local businesses. Collaboration can lead to	The study conducted research from only 10 companies which is a small representative therefore the findings are not conclusive. The study is also only limited to Nigeria as some of the aspects do not apply to Uganda.

					faster business success compared to expanding independently. Local companies can gain an edge in the industry by utilizing their own resources, leading to job creation, poverty reduction, and enhanced quality of life for the community.	
Factors influencing the performa	Resource-based view.	Descriptive research design capital and	Capital and resources. Marketing and	Retailing Reselling products and distribution.	Capital and resources are crucial	The study also contradicts with a

nce of SMEs in Kenya: a case of independent petroleum dealers in Nairobi. (Muturi, 2016) Country; Kenya	Functional view Organizational theory	resources, marketing and management skills	management skills		components for a business, and entrepreneurs prioritize having access to them. SMEs are finding it increasingly convenient to obtain financial capital resources from sources like banks. Owners/managers of SMEs acknowledged the importance of establishing	previous study that stated financial resources only positively contribute to SME growth.

					relationships for the success of their companies.	
Assessing and prioritizing the key elements in the development of investment strategies within Ghana's downstream oil and gas sector. (Appiah et al., 2021b)	Resource based view theory Theory of Strategic positioning.	Structured questionnaires.	Macro-economic forces, Investment strategies, oil gas policy environment, Industry forces Resource competitive strategies.		Macro environmental factors, the investment intentions of SMEs are shaped by competitive resource management and factors specific to oil and gas policies. The connection among macro environmental elements, industry dynamics,	The study widely covers factors and how they affect SMEs willingness to invest however it is limited to Ghana SMEs it is therefore key to carry out a similar study in Uganda to compare and confirm results.

					oil and gas policy backing, and investment intentions is significantly influenced by competitive resource strategies.	
Modeling the implications of sustainable supply chain practices on sustainable performance in Ghana's petroleum	Resource-based view theory. Stakeholders' theory	Primary data was collected using questionnaires Rule of ten Variance-based smart partial least square to analyze data	Stakeholder's interests Sustainable supply chain practices	Downstream petroleum supply chain activities.	The Ghanaian government should strive to enhance the sustainability initiatives in the industry. The stakeholders play a critical role in	

industry: the role of stakeholders' pressure. (Appiah et al., 2022)					ensuring compliance with mandatory policies on sustainability, which cover environmental, social, and economic factors. The government should consider implementing strict penalties for those who do not follow these requirements.	
Local Content Policy and Technolo	Resource curse/Dutch disease	Structured survey, previous research, and	Local content policy Technological capacity	Providing inputs of goods and services	The Local Content Policy has greatly helped oil-	

gical Capacity Building of SMEs in the Nigerian Oil & Gas Industry James Monday Unam *, Claudius Jamike Agorzie , Taiwo Olufemi Asaolu		relevant literature for this study			servicing SMEs improve their technologi cal skills through various partnership s, enabling them to absorb and utilize new technology and manageme nt expertise to increase their success in securing contracts.	
Value co-creation between foreign firms and indigeno us SMEs in	Value co-creation , Sensitizi ng device.	Multiple case research methodolog y. Semi structured interviews	• The competiti ve surroundi ngs consist of industry traits and	Industries support oil and gas.	It is essential for SMEs to strategicall y align with national	The study does well to throw light on the relevance of adaptation

Kazakhstan's oil and gas industry: The role of information technology spillovers. Author: Irina Heim, Yelena Kalyuzhnuva Country; China		and studied secondary cases, such policies and companies' websites	various stakeholders, such as national oil and gas companies (NOCs), international oil companies (IOCs), local small and SMEs, and banks. • The macro-environment, which includes the government.		and IOCs, as well as other entities in the sector, to improve their value creation, performance, and expansion. ICT can bring together various public and private entities in a network to collaborate on creating value, enabling local industries to acquire the competitive edge needed for	information technology by SMEs and its impact on their growth and sustainability in the industry. Uganda's ICT sector is not as developed therefore it is not as applicable to their SMEs a stud needs to be done in the Uganda setting and offer applicable recommendation.

					their continued growth and success.	
External Environment and SMEs Investment in The Ghanaian Oil and Gas Sector. (Appiah et al., 2018)	Porters five forces model	• Quantitative research design. • Stratified sampling technique. • Survey by questionnaire. • Explanatory study.	• Access to capital. • Electricity supply. • Political stability. • Foreign direct investment. • Technical qualifications. • Institutional support. • Information sharing. • Corruption perception.		SMEs in Ghana are more inclined to invest in the sector if they have easy access to funding, a stable electricity supply, necessary technical expertise, no competition from international companies, and are aware regarding investment prospects.	The study is rich in analyzing the factors that affect willingness of SMEs participation however it does not touch the different opportunities SMEs can tap into in downstream activities and its exuberant to build on the study in the context of Uganda.

					Perceived corruption, stability in politics, and training assistance in capacity building did not have a major effect on the readiness of SMEs to invest.	
Constraints and Opportunities for SMEs Investment in Uganda's Oil and Gas Sector. (Wamono, 2012)	Dutch disease	Stratified random sampling Primary data collection; personal interviews, focus group discussions, questionnaires	Capital for investing, credit availability, data access, and ownership of physical assets.	Providing office materials, catering options, offering unskilled workforce, IT services, building services, logistics, lodging/acco	SMEs remain divided with most being run as sole proprietorships, limiting their capacity to provide large	A very comprehensive study, however, there haven't been many studies around the topic since then and there certainly

		Logit model.		mmodation, environmental services, fabrication, and welding solutions.	quantities and meet internation al standards for quality.	are many changes in the SMEs participati on in the sector hence creating a knowledge gap.
Fast-tracking procure ment of local content in Uganda' s oil and gas industry: the significa nce of local SME's capacity and regulator y		• Simple random sampling • Questionnai res • Secondary data; handwritten notes	Local firms establish strong, enduring partnerships with potential exporters to facilitate the acquisition of goods on credit, thereby avoiding the need for large amounts of capital to purchase supplies in the industry.	Supply requirements.	Important stakeholde rs in strengtheni ng local content developme nt, like Tullow, must redirect their training efforts to enhance the technical skills of local companies during the	The study is brief and does not base results on a theory hence there is a theoretical gap.

environment. (Fred et al., 2018) Fred Alinda, Nduhuru Alex Country: Uganda					bidding process. Some of the ways of capacity building are by educating companies on best practices for business such as keeping proper accounting records and certification of skills. Local businesses to establish reliable long-term partnerships with possible exporters	

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					to attract the buying of goods on credit and avoid the need for large amounts of capital for supplies in the industry.	
On the right track? An analysis of the implementation of oil and gas sector local content policies in Uganda ((Byaruhanga &	Rhodes' policy network theory	Qualitative methodology, specifically employing semi-structured interviews with 57 informants	• Power dynamics among stakeholders • Ambiguities in the local content regulations	• Top-down and bottom-up approaches i.e. the various ways in which various participants implemented the Ugandan LCP goals within their strategies	• The unclear policies resulted in differing interpretations by higher and lower-level participants, adversely	• A lack of comprehensive understanding of how local content policies are perceived and enacted by various stakeholders.

Langer, 2020).				and actions.	impacting the implementation process. • The varying levels of influence among the leading and lesser actors in the LCP implementation procedures arise from the governing	• The need for further exploration of the impact of power dynamics on policy implementation and the effectiveness of local content initiatives • Insufficient empirical data on the long-term outcom

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					instruments. • The individual and collaborative efforts of both top-down and bottom-up participants' aid in the effective execution of the policy.	es of local content policies on local communities and economies

Summary of Literature Reviewed