

Determinants of Local Content Participation among Domestic Firms in Uganda's Oil and Gas Sector

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Abstract: This study examined the determinants of local content participation among domestic firms operating in Uganda's oil and gas sector. The study adopted a mixed-methods cross-sectional research design. Data were collected from 280 firms registered on the National Supplier Database of the Petroleum Authority of Uganda. Quantitative data were collected using structured questionnaires administered to Procurement Officers, Accountants, and National Content Officers, while qualitative data were obtained through interviews with Chief Executive Officers. Quantitative data were analyzed using descriptive statistics, Pearson correlation and hierarchical regression analysis using SPSS Version 26. Qualitative data were analyzed using thematic analysis. The findings revealed that capacity building has a positive and statistically significant relationship with local content participation ($r = .501, p < .01$), while firm capabilities also exhibited a positive and statistically significant relationship with local content participation ($r = .417, p < .01$). Hierarchical regression results further showed that capacity building significantly predicts local content participation ($\beta = .444, p < .001$), while firm capabilities also exert a positive and significant influence ($\beta = .343, p < .001$). The final regression model explained 36.1% of the variation in local content participation (Adjusted $R^2 = .361$). Qualitative findings revealed that training, knowledge transfer and access to finance enhance domestic firms' ability to participate in oil and gas activities, while production capacity, infrastructure, skilled human resources and financial resources improve firms' competitiveness and readiness to exploit procurement opportunities in the sector. The qualitative findings corroborated the quantitative results by demonstrating that capacity building and firm capabilities are critical drivers of local content participation among domestic firms.

Keywords: *Local content participation, capacity building, firm capabilities, domestic firms, oil and gas sector, Uganda.*

1. Introduction

Local content participation has become a central policy objective in petroleum-producing countries because it promotes domestic participation in oil and gas activities, stimulates industrial development, enhances technology transfer, and increases the retention of sector benefits within local economies. Countries such as Norway, Brazil, and Malaysia have successfully utilized local content policies to strengthen domestic firms and increase national participation in petroleum value chains (Tsani et al., 2024). Across Africa, governments have increasingly adopted local content frameworks to ensure that extractive industries contribute to employment creation, enterprise development, and broader economic transformation (Hilson & Ovadia, 2020). These initiatives seek to maximize the developmental benefits derived from natural resource exploitation by increasing the utilization of local suppliers, labor, and services within oil and gas operations. (Hilson & Ovadia, 2020).

In Africa, local content has become a major development strategy in countries such as Nigeria, Ghana, Angola, and Mozambique, where governments have introduced policies aimed at increasing domestic participation in petroleum supply chains (Hilson & Ovadia, 2020). Despite these efforts, many African countries continue to experience low levels of local firm participation due to limited technological capacity, inadequate access to finance, and weak operational capabilities among domestic enterprises (Tsani et al., 2024). Existing evidence suggests that local firms often face difficulties in meeting the technical and quality standards required by multinational oil companies, thereby limiting their ability to benefit from sector investments (Hilson & Ovadia, 2020). Consequently, understanding the factors that influence local content participation remains a critical concern for policymakers and industry stakeholders across the continent (Tsani et al., 2024).

Within East Africa, recent oil and gas discoveries have intensified efforts to promote local content as a mechanism for ensuring that petroleum investments contribute to domestic economic development. Countries

such as Uganda, Tanzania, and Kenya have introduced local content policies and supplier development initiatives to enhance the participation of domestic firms in petroleum activities. However, studies indicate that many local firms in the region continue to face challenges associated with inadequate skills, weak production capacity, limited infrastructure, and insufficient financial resources. These challenges constrain the ability of domestic enterprises to effectively participate in oil and gas procurement opportunities and reduce the overall level of local content participation within the sector (Tsani et al., 2024).

In Uganda, local content promotion has become a key component of the country's petroleum development strategy (Republic of Uganda, 2013). The Government of Uganda has established several policy and institutional interventions, including the National Supplier Database, supplier development programs, and local content requirements intended to increase the participation of Ugandan firms in the oil and gas sector. (Petroleum Authority of Uganda, 2025). These initiatives are intended to ensure that domestic firms benefit from petroleum investments through increased procurement opportunities, employment creation, and business growth (Petroleum Authority of Uganda, 2025). The expectation is that greater utilization of local firms and locally available resources will contribute to industrial development and sustainable economic transformation.

Despite these interventions, local content participation among domestic firms remains below national expectations (Petroleum Authority of Uganda, 2025). Although a growing number of Ugandan firms are registered on the National Supplier Database, only a limited proportion actively participate in oil and gas procurement activities (Petroleum Authority of Uganda, 2025). Several studies have reported that domestic firms continue to face challenges related to limited technical expertise, inadequate financing, weak infrastructure, and insufficient operational capacity required to compete within the petroleum supply chain (Tsani et al., 2024). Consequently, a significant share of sector expenditure continues to accrue to foreign suppliers and internationally established companies rather than domestic enterprises (Petroleum Authority of Uganda, 2025). This situation limits the extent to which Uganda can realize the intended economic benefits associated with local content policies (Hilson & Ovadia, 2020).

Existing literature suggests that capacity building is an important mechanism for enhancing the participation of domestic firms in complex and highly technical industries such as oil and gas (Anzolin & Pietrobelli, 2020). Capacity building involves initiatives such as training, knowledge transfer, access to finance, and skills development that improve the ability of firms to perform effectively and compete for available opportunities (Tsani et al., 2024). Studies have shown that firms that receive adequate training and knowledge support are better positioned to understand industry requirements, comply with operational standards, and participate in procurement activities (Anzolin & Pietrobelli, 2020). Similarly, access to financial resources enables firms to invest in equipment, technology, and operational improvements necessary for participation in the petroleum value chain (Uganda Bankers Association, 2024).

Firm capabilities have also been identified as critical determinants of organizational performance and competitiveness (Tsani et al., 2024). Firm capabilities refer to the production capacity, infrastructure, human resources, and capital resources that enable organizations to deliver products and services efficiently (Anzolin & Pietrobelli, 2020). In the oil and gas sector, firms are expected to demonstrate strong operational capabilities to satisfy requirements relating to quality, safety, reliability, and timely delivery of goods and services (Chuwa, 2023). Firms possessing stronger capabilities are therefore more likely to secure procurement opportunities and participate effectively in local content activities (Hilson & Ovadia, 2020).

Although previous studies have acknowledged the importance of capacity building and firm capabilities, limited empirical evidence exists regarding their influence on local content participation among domestic firms operating in Uganda's oil and gas sector. Much of the existing literature has focused on policy implementation, regulatory frameworks, and local content legislation, while relatively little attention has been directed toward understanding the firm-level factors that determine actual participation in local content activities. Consequently, there remains a limited understanding of the extent to which capacity building and firm capabilities contribute to local content participation among Ugandan firms participating in the petroleum sector (Tsani et al., 2024).

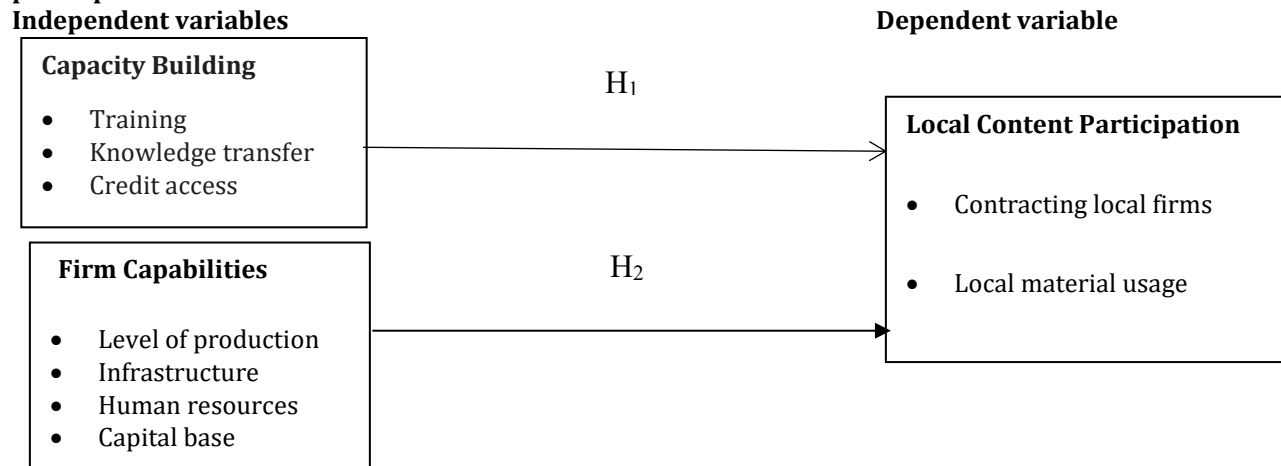
This study, therefore, examined the determinants of local content participation among domestic firms operating in Uganda's oil and gas sector, with a specific focus on the influence of capacity building and firm capabilities. The study was based on the argument that local content participation depends not only on the availability of policy opportunities but also on the ability of firms to develop the competencies, resources, and operational capabilities required to exploit those opportunities effectively.

Aim of the Study

This study aimed to examine the determinants of local content participation among domestic firms operating in Uganda's oil and gas sector.

Conceptual Framework

Figure 1: Capacity building, firm capabilities, government regulations compliance and local content participation



Source: Adopted from Hanson & Nwakile (2025)

Theoretical Foundation

This study was anchored in the Resource-Based Theory (RBT) developed by (Barney, 1991). The theory posits that organizational performance and competitiveness are influenced by the possession and effective utilization of valuable, rare, inimitable, and non-substitutable resources (Barney, 1991). According to the theory, firms achieve superior outcomes when they develop unique resources and capabilities that enable them to respond effectively to market opportunities and environmental challenges (Rugman & Verbeke, 2012). Resources such as knowledge, skills, infrastructure, technology, financial capital, and human competencies are considered strategic assets that can enhance organizational performance and competitiveness (Madhok & Li, 2013).

The Resource-Based Theory was considered relevant to this study because local content participation within Uganda's oil and gas sector depends largely on the ability of domestic firms to develop and utilize resources necessary for participation in petroleum supply chains (Hansen, 2020). Capacity building initiatives such as training, knowledge transfer, and access to finance enhance the resource base of firms by improving knowledge, skills, and operational readiness required for participation in oil and gas activities (Medani, 2022). Similarly, firm capabilities reflected through production capacity, infrastructure, human resources, and capital resources represent strategic assets that determine the ability of firms to compete for procurement opportunities within the sector (Jaworska, 2023).

The theory further suggests that firms possessing stronger resources and capabilities are more likely to achieve better performance outcomes than firms with weaker resource bases (Rosetti & Choi, 2015). Within the context of Uganda's oil and gas sector, domestic firms with higher levels of capacity building and stronger operational capabilities are expected to participate more effectively in local content activities through increased utilization of local suppliers, local labor, and locally available materials (Alinda et al., 2022). The theory, therefore,

provides a suitable foundation for explaining how capacity building and firm capabilities influence local content participation among domestic firms operating in Uganda's oil and gas sector (Wang & Ahmed, 2021).

2. Literature Review and Hypothesis Development

Capacity Building and Local Content Participation

Capacity building is widely recognized as a fundamental driver of local content development in the oil and gas industry because it enhances the ability of domestic firms to participate effectively in petroleum value chains. It refers to the deliberate process through which organizations develop the technical knowledge, managerial competencies, technological capabilities, institutional systems, and financial capacity required to undertake industry activities and compete within complex business environments. In the petroleum sector, capacity building encompasses supplier development programs, workforce training, technology and knowledge transfer, business mentoring, and access to financial resources that strengthen the competitiveness of local enterprises (Hanson & Nwakile, 2025).

Training equips domestic firms with the technical and managerial competencies required to comply with procurement procedures, health and safety regulations, quality assurance systems, and environmental standards established by international oil companies. Knowledge and technology transfer further enable local suppliers to acquire operational expertise, modern production techniques, and industry best practices through collaboration with multinational corporations, thereby improving their capacity to deliver goods and services that satisfy petroleum industry requirements (Tsani et al., 2024). Likewise, access to finance enables firms to invest in production facilities, modern equipment, technological innovations, and skilled personnel necessary for meeting contractual obligations and expanding their participation in oil and gas supply chains (Hanson & Nwakile, 2025).

The relationship between capacity building and local content participation has received considerable attention within the extractive industry literature. Tordo et al. (2013) argue that local content policies achieve better outcomes when governments and industry stakeholders invest continuously in supplier development and institutional capacity enhancement. Similarly, Owusu & Vaaland (2021) contend that strengthening the capabilities of domestic suppliers improves their competitiveness and increases their participation in procurement opportunities within extractive industries. Tsani et al. (2024) further observe that investments in capacity building promote sustainable local industrial development by enabling indigenous firms to undertake increasingly sophisticated activities across petroleum value chains.

Despite Uganda's local content policy framework, domestic firms continue to experience limitations associated with inadequate technical expertise, insufficient financial resources, and limited technological capabilities, which reduce their ability to satisfy the operational standards required by petroleum operators (Sen, 2018). These challenges constrain the participation of local enterprises in oil and gas procurement despite the availability of local content opportunities. Consequently, firms that possess stronger capacity-building mechanisms through continuous training, knowledge transfer, technological development, and improved financial capability are more likely to increase their participation in local content activities than firms with limited capacity development initiatives. Drawing on the reviewed literature, the following hypothesis was formulated:

H1: Capacity building has a positive and significant influence on local content participation among domestic firms operating in Uganda's oil and gas sector.

Firm Capabilities and Local Content Participation

Firm capabilities refer to an organization's ability to integrate, deploy, and utilize its available resources efficiently to achieve strategic objectives and sustain competitive advantage within dynamic business environments (Cusumano et al., 2020; Teece et al., 1997). These capabilities include production capacity, technological competence, financial strength, organizational infrastructure, and human resource expertise that enable firms to meet customer requirements and respond effectively to market opportunities (Cusumano et al., 2020). Within the oil and gas industry, strong firm capabilities are essential because suppliers must consistently satisfy stringent quality, safety, environmental, and delivery requirements established by multinational petroleum companies (Hansen et al., 2020).

Production capability enables firms to manufacture goods and deliver services in the quantities and quality required by petroleum operators, while technological capability facilitates operational efficiency, innovation, and compliance with international industry standards (Cusumano et al., 2020). Human resource capability ensures the availability of skilled technical personnel capable of executing specialized petroleum activities, whereas financial capability enables firms to invest in modern production equipment, infrastructure, certification processes, and business expansion necessary for participation in petroleum procurement. Collectively, these capabilities strengthen the competitiveness of domestic firms and improve their ability to secure contracts within oil and gas supply chains.

Existing literature suggests that firm capabilities constitute an essential determinant of successful local content implementation. Hansen et al., (2020) argue that domestic enterprises possessing stronger organizational and operational capabilities are more likely to integrate successfully into extractive industry value chains because they can consistently satisfy procurement requirements. Likewise, Owusu & Vaaland (2021) maintain that enhanced firm capabilities improve the competitiveness of indigenous suppliers and facilitate greater participation in local procurement activities. Tsani et al., (2024) further emphasize that strengthening firm capabilities remains central to achieving sustainable local content outcomes because capable domestic firms are better positioned to respond to technological change, industry expansion, and evolving sustainability requirements.

In Uganda, however, many domestic firms continue to experience capability gaps characterized by inadequate production systems, limited technological infrastructure, insufficient financial resources, and shortages of specialized technical personnel, which reduce their competitiveness within the petroleum industry (Sen, 2018). These constraints limit the ability of indigenous firms to comply with procurement standards and compete effectively with experienced international suppliers. Therefore, firms possessing stronger production, technological, financial, and human resource capabilities are expected to demonstrate higher levels of local content participation than firms with relatively weaker organizational capabilities.

Guided by the reviewed literature, the following hypothesis was formulated:

H2: Firm capabilities have a positive and significant influence on local content participation among domestic firms operating in Uganda's oil and gas sector.

3. Methodology

Research Design

The study adopted a mixed-methods cross-sectional research design. The mixed methods approach was adopted because it enabled the collection and integration of quantitative and qualitative data to obtain a more comprehensive understanding of the determinants of local content participation among domestic firms operating in Uganda's oil and gas sector (Creswell, 2018). Quantitative data were used to establish the nature and strength of the relationships among the study variables, while qualitative data were used to explain the observed statistical relationships by capturing participants' experiences, perceptions, and contextual factors influencing local content implementation. The integration of the two strands provided a broader understanding of the phenomenon than either approach could achieve independently. The cross-sectional design was considered appropriate because data were collected from respondents at a single point in time, allowing the researcher to examine the relationships between capacity building, firm capabilities, and local content participation (Saunders et al., 2023).

Study Population

The study targeted 346 domestic firms registered on the National Supplier Database maintained by the Petroleum Authority of Uganda. These firms constituted the population because they represented organizations eligible to participate in oil and gas procurement activities and local content initiatives within Uganda's petroleum sector (Petroleum Authority of Uganda, 2025).

Sample Size and Sampling Procedure

Using Yamane's (1967) formula, a sample size of 280 firms was determined from the population of 346 firms. The firms were selected using simple random sampling to provide each firm with an equal chance of participation in the study. Within each participating firm, three respondents, namely the Procurement Officer,

Accountant, and National Content Officer, were purposively selected because of their involvement in procurement activities, financial management, and local content implementation, respectively. In addition, Chief Executive Officers were purposively selected for key informant interviews because of their strategic knowledge regarding firm participation in Uganda's oil and gas sector (Yamane, 1967).

Data Collection Methods and Instruments

Quantitative data were collected using structured questionnaires administered to Procurement Officers, Accountants, and National Content Officers. The questionnaire was designed using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Qualitative data were collected through semi-structured interviews conducted with Chief Executive Officers. The interviews provided deeper insights into how capacity building and firm capabilities influence local content participation among domestic firms operating within Uganda's oil and gas sector (Creswell, 2018).

Measurement of Variables

Capacity building was measured using training, knowledge transfer, and access to credit. Firm capabilities were measured using production capacity, infrastructure, human resources, and capital base. Local content participation was measured using contracting local firms and local material usage. These dimensions were adopted based on existing literature relating to local content development and domestic firm participation in extractive industries (Alinda et al., 2022; Medani, 2022).

Data Quality Control

Data quality control procedures were undertaken to ensure that the data collected were accurate, complete, valid, reliable, and suitable for statistical analysis. This process is essential because poor-quality data may lead to biased statistical estimates and incorrect conclusions (Saunders et al., 2019). After data collection, all returned questionnaires were checked for completeness, consistency, and coding accuracy before data entry into SPSS Version 27.0. The dataset was screened for missing values, outliers, validity, reliability, and the assumptions underlying regression analysis. Missing data accounted for less than 5% of the responses and were therefore considered acceptable for statistical analysis (Tabachnick & Fidell, 2019). Standardized residuals and boxplots indicated that no extreme outliers were present. The results of the data quality assessment are summarized in Table 1.

Table 1: Summary of Data Quality Assessment

Test	Indicator	Recommended Threshold	Obtained Value
Content Validity	Overall CVI	≥ 0.80	0.87
Construct Validity	KMO	≥ 0.60	0.847–0.901
Construct Validity	Bartlett's Test	$p < 0.05$	$p < 0.001$
Reliability	Overall Cronbach's Alpha	≥ 0.70	0.886
Normality	Shapiro–Wilk Test	$p > 0.05$	0.076–0.093
Multicollinearity	Tolerance	> 0.20	0.702–0.741
Multicollinearity	VIF	< 5.00	1.349–1.425
Linearity	Scatter Plots	Linear pattern	Positive linear relationship
Homoscedasticity	Residual Scatter Plot	Random dispersion	Random distribution around zero

The results presented in Table 1 indicate that the questionnaire possessed acceptable validity and reliability. The overall Content Validity Index (CVI) of 0.87 exceeded the recommended threshold of 0.80, while the overall Cronbach's Alpha coefficient of 0.886 exceeded the recommended minimum of 0.70, confirming that the instrument was both valid and reliable. Furthermore, all regression assumptions were satisfied. The Shapiro–Wilk test confirmed normality, tolerance and VIF values indicated the absence of multicollinearity, scatter plots confirmed linearity, and the residual plot demonstrated homoscedasticity. Collectively, these results indicate that the dataset was suitable for parametric tests.

Common Methods Variance

To assess the presence of common method variance (CMV), Harman's single-factor test was performed using Principal Component Analysis. The results are presented in Table 2.

Table 2: Common Methods Variance Assessment: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	11.697	17.723	17.723	11.697	17.723	17.723
2	5.428	8.224	25.947	5.428	8.224	25.947
3	3.733	5.656	31.603	3.733	5.656	31.603
4	2.031	3.077	34.680	2.031	3.077	34.680
5	1.493	2.262	36.942	1.493	2.262	36.942
6	1.400	2.121	39.063	1.400	2.121	39.063
7	1.341	2.033	41.095	1.341	2.033	41.095
8	1.301	1.971	43.066	1.301	1.971	43.066
9	1.276	1.933	45.000	1.276	1.933	45.000
10	1.217	1.844	46.843	1.217	1.844	46.843
11	1.195	1.811	48.654	1.195	1.811	48.654
12	1.158	1.754	50.408	1.158	1.754	50.408
13	1.150	1.743	52.151	1.150	1.743	52.151
14	1.108	1.679	53.830	1.108	1.679	53.830
15	1.073	1.626	55.456	1.073	1.626	55.456
16	1.055	1.599	57.056	1.055	1.599	57.056
17	1.039	1.574	58.630	1.039	1.574	58.630
18	.998	1.512	60.142			
19	.960	1.455	61.597			
20	.942	1.428	63.025			
21	.915	1.386	64.411			
22	.894	1.355	65.766			
23	.867	1.313	67.079			
24	.856	1.297	68.376			
25	.831	1.259	69.635			
26	.826	1.251	70.886			
27	.795	1.205	72.091			
28	.772	1.169	73.260			
29	.763	1.157	74.417			
30	.754	1.142	75.559			
31	.744	1.127	76.685			
32	.721	1.092	77.778			
33	.710	1.075	78.853			
34	.688	1.043	79.895			
35	.657	.996	80.891			
36	.644	.976	81.867			
37	.618	.936	82.803			
38	.599	.907	83.710			
39	.582	.882	84.593			
40	.562	.852	85.444			
41	.552	.837	86.281			
42	.535	.810	87.091			
43	.516	.782	87.873			
44	.495	.750	88.623			
45	.484	.734	89.357			
46	.481	.728	90.086			
47	.456	.691	90.777			
48	.436	.660	91.437			
49	.426	.646	92.083			
50	.419	.634	92.717			
51	.401	.607	93.325			
52	.384	.582	93.907			

53	.378	.573	94.480
54	.371	.562	95.042
55	.353	.535	95.577
56	.334	.506	96.083
57	.318	.482	96.566
58	.310	.469	97.035
59	.292	.442	97.477
60	.290	.439	97.916
61	.259	.392	98.308
62	.258	.390	98.699
63	.227	.344	99.043
64	.224	.340	99.383
65	.213	.322	99.705
66	.195	.295	100.000

Extraction Method: Principal Component Analysis.

The results indicate that the first unrotated factor accounted for 17.723% of the total variance, which is well below the commonly accepted threshold of 50%. This suggests that common method variance is unlikely to be a significant concern in the study, indicating that the relationships among the study variables were not substantially influenced by common method bias.

Data Analysis

Quantitative data were analyzed using the Statistical Package for Social Sciences (SPSS) Version 26. Descriptive statistics including frequencies, percentages, means, and standard deviations were used to summarize the characteristics of respondents and study variables. Pearson correlation analysis was conducted to establish the existence, direction, and strength of relationships among the study variables. Hierarchical regression analysis was subsequently performed to determine the predictive influence of capacity building and firm capabilities on local content participation. Qualitative data obtained from interviews were analyzed using thematic analysis, where responses were organized into themes aligned with the study objective and variables (Braun & Clarke, 2022).

Ethical Considerations

Ethical approval was obtained from the relevant institutional authorities before the commencement of data collection. Permission to collect data was obtained from the Petroleum Authority of Uganda and participating firms. Respondents were informed about the purpose of the study and their participation was voluntary. Confidentiality and anonymity were maintained throughout the research process, and information obtained from respondents was used strictly for academic purposes.

4. Results and Discussion

Response Rate

The study targeted 346 firms registered on the National Supplier Database of the Petroleum Authority of Uganda. Out of the targeted firms, 280 participated in the study, representing a response rate of 81%. Additionally, 841 questionnaires were completed and returned out of the 1,038 questionnaires distributed, representing a questionnaire response rate of 81%. Furthermore, 18 out of the targeted 21 Chief Executive Officers participated in the interviews, representing an interview response rate of 85.7%. These response rates were considered adequate for statistical analysis and interpretation because they exceeded the minimum response rate generally recommended for survey-based studies (Groves et al., 2021). The high response rate further reduced the likelihood of non-response bias and enhanced the credibility of the study findings.

Characteristics of Firms

The majority of firms were located in the Central Region, accounting for 235 (83.9%). Most firms had operated for between 5 and 10 years, representing 97 (34.6%). Service provision constituted the dominant business activity, accounting for 121 (43.2%) firms. Small enterprises employing between 10 and 49 employees represented the largest category with 122 (43.6%) firms. Most firms were private limited companies,

accounting for 176 (62.9%). In addition, 98 (35.0%) firms reported that they had never supplied goods or services to the oil and gas sector. These findings suggest that although many domestic firms have positioned themselves to participate in petroleum activities, actual integration into the oil and gas supply chain remains limited. The large proportion of firms without prior supply experience highlights the continued need to strengthen the capabilities and preparedness of domestic firms if local content objectives are to be achieved.

Correlation Analysis

Pearson correlation analysis was conducted to establish the existence, strength, and direction of the relationships among the study variables before regression analysis. Correlation analysis was important because it provided preliminary evidence regarding whether capacity building and firm capabilities were associated with local content participation and therefore warranted further investigation through predictive modelling.

Table 3: Pearson Correlation Matrix (N = 280)

Items	1	2	3	4	5	6	7	8	9	10	11
Capacity Building-1	1										
Training-2	.878**	1									
Knowledge Transfer-3	.832**	.662**	1								
Credit Access-4	.806**	.550**	.455**	1							
Firm Capabilities-5	.166**	.150**	.143**	.126*	1						
Production-6	.170**	.153**	.162**	.115*	.895**	1					
Infrastructure-7	.129*	.120*	.095	.108*	.883**	.736**	1				
Human Resources-8	.125*	.107*	.110*	.097	.882**	.712**	.709**	1			
Local content participation-9	.501**	.467**	.452**	.345**	.417**	.354**	.380**	.365**	1		
Contracting Local Firms-10	.454**	.429**	.424**	.294**	.425**	.363**	.387**	.372**	.940**	1	
Local Material Usage-11	.489**	.451**	.427**	.356**	.360**	.303**	.328**	.315**	.941**	.769**	1

** Correlation is significant at the 0.01 level (1-tailed)

* Correlation is significant at the 0.05 level (1-tailed)

The results revealed that capacity building has a positive and statistically significant relationship with local content participation ($r = .501$, $p < .01$). The magnitude of the correlation indicates a moderate positive association, suggesting that improvements in training, knowledge transfer, and access to credit are associated with corresponding increases in local content participation. The finding implies that firms that continuously invest in developing employee competencies, facilitating knowledge acquisition, and improving access to financial resources are more likely to participate in local content activities through contracting local firms and utilizing locally available materials.

The findings can be interpreted through the Resource-Based Theory, which posits that organizational outcomes are influenced by the possession and development of valuable resources and capabilities that enhance competitiveness and performance. (Barney, 1991). Capacity building represents an important mechanism through which firms acquire strategic resources in the form of knowledge, skills, and financial capacity. As these resources accumulate, firms become better positioned to satisfy procurement requirements and compete effectively within the oil and gas sector. The positive correlation therefore suggests that firms possessing stronger capacity-building initiatives are more capable of transforming available opportunities into actual participation in local content activities. The findings support Medani (2022), who argued that capacity development enhances organizational effectiveness, and Ahmed, (2022), who observed that investments in skills and knowledge improve organizational participation and performance.

Despite the positive relationship observed, the moderate correlation coefficient ($r = .501$) suggests that capacity building alone does not guarantee increased local content participation. Other factors beyond

organizational training and knowledge acquisition may influence firms' participation in local content activities. For example, government procurement policies, contract qualification requirements, firm size, access to technology, regulatory compliance costs, and the competitiveness of international suppliers may either facilitate or constrain local firms regardless of their level of capacity development. Furthermore, firms already participating successfully in oil and gas contracts may subsequently receive additional training, mentoring, and financial support from industry stakeholders, suggesting the possibility of reciprocal rather than strictly one-way relationships. Therefore, while the findings support the proposed relationship, they should not be interpreted as evidence that capacity building is the sole determinant of local content participation.

The results further revealed that firm capabilities have a positive and statistically significant relationship with local content participation ($r = .417$, $p < .01$). This finding indicates that firms possessing stronger production capacity, infrastructure, human resources, and capital resources are more likely to engage in local content activities. The positive association suggests that operational readiness and organizational competence increase the ability of firms to satisfy the technical, quality, and delivery requirements associated with oil and gas procurement opportunities.

From the perspective of the Resource-Based Theory, firm capabilities represent strategic assets that enable organizations to create value and sustain competitive advantage. (Madhok & Li, 2013). Production systems, infrastructure, skilled personnel, and financial resources constitute valuable organizational resources that enhance the ability of firms to compete for contracts and participate effectively in petroleum supply chains. The positive relationship observed in this study, therefore, provides empirical support for the theory by demonstrating that firms with stronger resource bases are more likely to achieve higher levels of local content participation. The finding is consistent with Jaworska, (2023), who argued that organizational capabilities are essential determinants of competitiveness, and Wang & Ahmed, (2021), who observed that capabilities improve the ability of firms to exploit market opportunities. Although firm capabilities were positively associated with local content participation, the correlation was moderate ($r = .417$), indicating that operational capabilities alone may not be sufficient to explain successful participation. Some firms possessing adequate infrastructure, skilled personnel, and production capacity may still experience limited participation because of procurement practices that favor experienced international contractors, limited access to market information, lengthy certification processes, or financing constraints. Conversely, smaller firms with relatively limited capabilities may secure contracts through strategic partnerships, subcontracting arrangements, or government-supported local content initiatives. These considerations suggest that contextual and institutional factors may also influence local content outcomes alongside internal organizational capabilities. The significant positive relationships among the study variables provided preliminary support for the proposed hypotheses and justified further examination through regression analysis.

Regression Analysis

Hierarchical regression analysis was conducted to determine the predictive influence of capacity building and firm capabilities on local content participation. Capacity building was entered in Model 1, followed by firm capabilities in Model 2. This approach enabled the researcher to determine the individual contribution of capacity building and the additional contribution made by firm capabilities in explaining variation in local content participation.

Table 4: Model Summary
Model Summary^c

Model Summary										
Model	R	R Square	Adjusted Square	R-Std. Error of Estimate	Change Statistics					Sig. Change
					Change	F Change	df1	df2		
1	.501 ^a	.251	.248	.791340505077735	.251	93.253	1	278	.000	
2	.605 ^b	.366	.361	.729597952784280	.115	50.043	1	277	.000	

a. Predictors: (Constant), Capacity Building

b. Predictors: (Constant), Capacity Building, Firm Capabilities

c. Dependent Variable: Local content participation

The model summary results show that capacity building alone explained 24.8% of the variation in local content participation (Adjusted $R^2 = .248$). This implies that differences in training, knowledge transfer, and access to credit account for nearly one-quarter of the observed variation in local content participation among domestic firms operating in Uganda's oil and gas sector. The remaining 75.2% of the variation was attributable to factors not included in the model.

Following the introduction of firm capabilities, the explanatory power of the model increased from 24.8% to 36.1% (Adjusted $R^2 = .361$). This indicates that capacity building and firm capabilities jointly explained 36.1% of the variation in local content participation, while 63.9% remained attributable to factors outside the model. The unexplained variation suggests that local content participation is influenced by additional organizational and environmental factors not examined in this study. These may include government enforcement of local content regulations, procurement transparency, firm experience within the petroleum sector, technological readiness, quality certification, market competition, strategic partnerships, and macroeconomic conditions. Consequently, while capacity building and firm capabilities make important contributions, they represent only part of the broader set of determinants influencing participation in Uganda's oil and gas value chain. The R^2 Change value of .115 further indicates that firm capabilities contributed an additional 11.5% towards explaining local content participation beyond the contribution of capacity building alone.

The findings suggest that local content participation is not determined by a single organizational factor but rather by a combination of organizational resources and capabilities. Consistent with the Resource-Based Theory, the results demonstrate that firms possessing stronger resource endowments and organizational capabilities are more likely to achieve superior outcomes in terms of participation in local content activities. The increase in explanatory power following the inclusion of firm capabilities further suggests that operational competence complements capacity-building efforts in enhancing firm participation within Uganda's oil and gas sector.

ANOVA Results

The ANOVA results are presented in Table 4, indicating whether the regression models are statistically significant. The F-statistic and corresponding significance values show whether the independent variables, when considered together, are associated with local content participation.

Table 5: ANOVA

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	58.397	1	58.397	93.253	.000 ^b
	Residual	174.089	278	.626		
	Total	232.486	279			
2	Regression	85.035	2	42.518	79.873	.000 ^c
	Residual	147.451	277	.532		
	Total	232.486	279			

a. Dependent Variable: Local content participation

b. Predictors: (Constant), Capacity Building

c. Predictors: (Constant), Capacity Building, Firm Capabilities

The ANOVA results indicate that both regression models were statistically significant. Model 1 was significant ($F = 93.253$, $p < .001$), confirming that capacity building significantly predicts local content participation. Similarly, Model 2 remained statistically significant ($F = 79.873$, $p < .001$), indicating that the combined effect of capacity building and firm capabilities significantly predicts local content participation among domestic firms operating in Uganda's oil and gas sector.

The statistical significance of both models demonstrates that the observed relationships are unlikely to have occurred by chance. The findings, therefore, provide empirical evidence that organizational resources and capabilities are important determinants of participation in local content activities. The results further reinforce the assumptions of the Resource-Based Theory, which argues that differences in organizational performance can be explained by differences in resource ownership and capability development among firms (Barney, 1991). Consequently, firms possessing stronger resource bases and operational competencies are more likely to achieve higher levels of participation within petroleum supply chains. Nevertheless, statistical significance should not be interpreted to mean that the proposed model completely explains local content participation. The significant F-statistics merely indicate that the independent variables collectively improve prediction beyond chance. Other unmeasured factors may equally contribute to firms' participation, highlighting the complexity of local content implementation within Uganda's oil and gas sector.

Regression Coefficients

The coefficient results are presented in Table 4.5, showing the direction and strength of the relationship between capacity building, firm capabilities and local content participation.

Table 6: Coefficients

		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.124	.200		5.621	.000
	Capacity_Building	.625	.065	.501	9.657	.000
2	(Constant)	.186	.227		.820	.413
	Capacity_Building	.554	.061	.444	9.152	.000
	Firm_Capabilities	.384	.054	.343	7.074	.000

a. Dependent Variable: Local content participation

The regression coefficients revealed that capacity building had a positive and statistically significant influence on local content participation ($\beta = .444$, $p < .001$). This finding implies that improvements in training, knowledge transfer, and access to credit significantly increase the likelihood of firms participating in local content activities. The positive coefficient indicates that firms investing in capacity-building initiatives are more likely to strengthen their readiness to satisfy procurement requirements and exploit opportunities available within the oil and gas sector.

The finding can be interpreted through the Resource-Based Theory, which suggests that investments in knowledge, skills, and financial resources create valuable organizational assets that enhance competitiveness and performance. Capacity-building initiatives therefore strengthen the internal resource base of firms and improve their ability to transform opportunities into tangible outcomes. The relatively strong coefficient suggests that the acquisition of knowledge and competencies may be more important than physical resources alone in promoting local content participation. The finding supports Medani, (2022), who argued that capacity development strengthens organizational effectiveness, and Ahmed, (2022), who observed that investments in human capital and organizational learning improve firm performance and participation. However, the positive influence of capacity building may vary across firms depending on their ability to translate acquired knowledge into operational improvements. Training programs that are not aligned with industry needs, inadequate follow-up support, and limited financial resources may reduce the practical benefits of capacity-building initiatives. Furthermore, firms already engaged in oil and gas activities may receive more opportunities for training and knowledge transfer than less experienced firms, suggesting that successful participation may itself contribute to further capacity development.

The results further revealed that firm capabilities had a positive and statistically significant influence on local content participation ($\beta = .343$, $p < .001$). This finding indicates that firms possessing stronger production

systems, infrastructure, human resources, and capital resources are more likely to participate in local content activities. The positive coefficient suggests that operational capabilities increase the ability of firms to satisfy industry standards, deliver quality goods and services, and compete effectively for procurement opportunities. Consistent with the Resource-Based Theory, firm capabilities represent strategic resources that enable organizations to achieve competitive advantage and superior performance outcomes. The findings, therefore, suggest that firms possessing stronger operational capabilities are better positioned to convert available market opportunities into actual participation within petroleum supply chains. The finding supports Jaworska, (2023), who emphasized the importance of organizational capabilities in achieving competitiveness, and Wang & Ahmed, (2021), who argued that firm capabilities enhance organizational effectiveness and market participation. It is also important to recognize that strong firm capabilities do not automatically translate into successful local content participation. External barriers, including stringent procurement requirements, high compliance costs, limited access to finance, delays in certification, and competition from well-established international suppliers, may limit the ability of capable domestic firms to secure contracts. Therefore, improvements in firm capabilities should be accompanied by supportive policy and institutional interventions to maximize their contribution to local content development.

A comparison of the standardized beta coefficients indicates that capacity building ($\beta = .444$) exerts a stronger influence on local content participation than firm capabilities ($\beta = .343$). This finding suggests that although operational capabilities are important, investments in training, knowledge transfer, and access to finance contribute more substantially towards improving local content participation. The implication is that domestic firms may first require adequate knowledge, skills, and financial preparedness before they can effectively utilize their operational capabilities to participate in oil and gas activities. The findings therefore support H1 and H2 and confirm that capacity building and firm capabilities are significant predictors of local content participation among domestic firms operating in Uganda's oil and gas sector. Although capacity building emerged as the stronger predictor, the difference between the standardized coefficients ($\beta = .444$ versus $\beta = .343$) should be interpreted cautiously because both variables contribute significantly to explaining local content participation. The findings, therefore, suggest complementarity rather than substitution. Capacity-building initiatives are likely to be most effective when accompanied by investments in production infrastructure, technology, and organizational systems that enable firms to apply newly acquired knowledge in practice.

Qualitative Findings

Capacity Building and Local Content Participation

The qualitative findings revealed that capacity building plays a critical role in enhancing local content participation among domestic firms operating in Uganda's oil and gas sector. Participants explained that training programs, knowledge transfer initiatives, and access to finance improve the ability of firms to understand procurement requirements, comply with industry standards, and compete for available opportunities within the petroleum sector. Several participants noted that capacity-building initiatives have increased awareness of operational procedures, quality requirements, and safety standards necessary for participation in oil and gas activities.

Participants further observed that knowledge transfer initiatives facilitated through interactions with international oil companies provide local firms with opportunities to acquire technical expertise and industry-specific competencies. However, respondents emphasized that the effectiveness of capacity-building programs is often constrained by limited access to financial resources required to operationalize acquired knowledge and skills. These findings support the quantitative results, which demonstrated that capacity building positively influences local content participation. The findings further reinforce the Resource-Based Theory by suggesting that knowledge, skills, and financial resources constitute strategic assets that enhance the ability of firms to participate in local content activities.

Participants also highlighted several challenges that reduced the effectiveness of capacity-building initiatives. These included limited funding to implement acquired knowledge, irregular training opportunities, inadequate post-training support, and difficulties accessing affordable credit. Some respondents observed that although training programs improved awareness, many firms lacked the financial and technological capacity required

to compete successfully for large procurement contracts. These observations suggest that capacity building alone may not be sufficient unless complemented by broader institutional and financial support mechanisms. Beyond confirming the statistical findings, participants explained that the quality of capacity-building programs differed considerably across firms. While some firms benefited from continuous technical mentoring and supplier development initiatives, others reported that training opportunities were irregular and largely concentrated among firms that had already established relationships with international oil companies. Participants further noted that knowledge acquired through training could not always be translated into improved participation because many firms lacked the financial resources and equipment required to implement new skills. These observations help explain why some firms continue to experience low levels of local content participation despite receiving training.

Firm Capabilities and Local Content Participation

Participants indicated that firm capabilities significantly influence participation in local content activities within the oil and gas sector. Production capacity, infrastructure, human resources, and financial resources were identified as critical determinants of a firm's ability to secure contracts and deliver goods and services within the petroleum industry. According to participants, firms possessing stronger operational capabilities are more likely to satisfy industry requirements relating to quality, safety, reliability, and timely delivery.

Several participants emphasized that inadequate infrastructure, limited production systems, and shortages of specialized technical expertise continue to constrain the participation of many domestic firms. Participants further noted that firms with stronger organizational capabilities are better positioned to compete with foreign suppliers and take advantage of procurement opportunities created within the oil and gas sector. These findings corroborate the quantitative results, which revealed that firm capabilities significantly influence local content participation. The findings are also consistent with the Resource-Based Theory, which argues that organizational performance is influenced by the possession and effective utilization of valuable resources and capabilities.

Respondents further explained that even firms possessing adequate production facilities and skilled personnel sometimes encountered barriers beyond their control, including complex procurement procedures, limited access to information regarding bidding opportunities, and strong competition from established foreign contractors. These findings demonstrate that local content implementation is shaped not only by internal organizational capabilities but also by the broader regulatory and market environment.

The qualitative findings provided explanations for the statistical relationships observed in the quantitative analysis. While the regression results established that capacity building significantly influenced local content participation, interview participants explained that the effectiveness of capacity-building initiatives depended on the consistency of training programs, access to finance, and opportunities to apply acquired knowledge. Similarly, although firm capabilities were found to be significant predictors of local content participation, participants highlighted procurement barriers and institutional constraints that limited the ability of capable firms to secure contracts. These qualitative findings demonstrate that successful local content implementation depends not only on organizational resources but also on the broader operating environment.

5. Conclusion

The study examined the determinants of local content participation among domestic firms operating in Uganda's oil and gas sector, with particular focus on the influence of capacity building and firm capabilities. The findings revealed that capacity building and firm capabilities have positive and statistically significant influences on local content participation. Capacity building emerged as the strongest predictor, suggesting that investments in training, knowledge transfer, and access to finance significantly enhance the participation of domestic firms in local content activities. Firm capabilities were also found to contribute significantly to local content participation, indicating that production capacity, infrastructure, human resources, and capital resources are important for effective participation within petroleum supply chains. The study concludes that strengthening organizational resources and capabilities is essential for increasing local content participation and improving the integration of domestic firms into Uganda's oil and gas sector.

Study Implications

The findings have important theoretical and practical implications. Theoretically, the study provides empirical support for the Resource-Based Theory by demonstrating that organizational resources and capabilities significantly influence local content participation. The findings suggest that firms possessing stronger knowledge resources, financial capacity, infrastructure, and operational capabilities are more likely to participate in local content activities. Practically, the findings imply that policymakers and industry stakeholders should prioritize interventions that strengthen capacity-building initiatives and firm capabilities if the objectives of local content policies are to be realized. The study, therefore, highlights the importance of developing both human and organizational capabilities as a means of increasing domestic participation in petroleum value chains.

Recommendations

Based on the findings that capacity building and firm capabilities significantly influence local content participation, the study recommends that the Petroleum Authority of Uganda (PAU), the Ministry of Energy and Mineral Development, and international oil companies establish structured supplier capacity development programs targeting domestic firms. These programs should include certified technical training, procurement compliance workshops, mentorship arrangements, and technology transfer initiatives conducted at least twice a year. Their effectiveness should be monitored using indicators such as the number of firms trained, certification completion rates, and the percentage increase in local firms prequalified for oil and gas contracts. To improve access to finance, the study recommends that the Uganda Development Bank, commercial financial institutions, and relevant government agencies develop affordable financing facilities specifically designed for domestic suppliers participating in the oil and gas sector. These financing mechanisms should be introduced within two years and assessed using indicators such as the number of firms accessing credit, the value of loans disbursed, repayment rates, and the proportion of financed firms that successfully secure petroleum procurement contracts.

The study also recommends that domestic firms strengthen their production systems, infrastructure, human resources, and capital resources through phased organizational capacity improvement plans implemented over a three- to five-year period. Progress should be monitored using measurable indicators including production capacity, quality certifications obtained, the number of skilled personnel employed, investment in production infrastructure, and the number and value of contracts secured within the petroleum sector.

The study further recommends that the Petroleum Authority of Uganda, industry associations, international oil companies, and domestic firms strengthen collaboration through regular supplier forums, joint ventures, subcontracting arrangements, and supplier development initiatives held at least once every quarter. Progress should be assessed using indicators such as the number of partnership agreements established, joint ventures formed, contracts awarded to local firms, the proportion of locally sourced materials used, and changes in overall local content participation.

Study Limitations

The study was limited to domestic firms registered on the National Supplier Database of the Petroleum Authority of Uganda and therefore, may not fully capture the experiences of firms operating outside the database. The study also employed a cross-sectional design, which limited the ability to examine changes in local content participation over time. In addition, the study focused on capacity building and firm capabilities and did not examine other organizational, institutional, or environmental factors that may influence local content participation.

Areas for Further Research

Future studies should examine additional factors that influence local content participation among domestic firms operating in the oil and gas sector. Such factors may include access to market information, strategic partnerships, technological innovation, institutional support, and supply chain integration. Future researchers may also employ longitudinal research designs to examine how local content participation evolves as Uganda's petroleum sector progresses towards full-scale production. Comparative studies involving other petroleum-producing countries within Africa may further provide insights into factors that enhance domestic participation in oil and gas value chains.

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