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STRATEGIC IMPEDIMENTS TO CONSOLIDATION IN GHANA'S OIL MARKETING SECTOR: AN EMPIRICAL STUDY

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ABSTRACT
This study investigated the strategic impediments to mergers and acquisitions (M&A) in Ghana's oil marketing sector. Using a cross-sectional design and a quantitative approach, data was collected from 255 oil marketing companies (OMCs) through a survey. The results indicate that regulatory complexity significantly impedes M&A activities, while legal uncertainty does not have a significant impact. Economic stability and financial health positively influence the likelihood of successful M&A, but access to capital exhibits a surprising negative relationship. Neither strategic alignment nor organizational readiness significantly predicts M&A success. However, market fragmentation and competitive intensity strongly influence the feasibility of consolidation efforts. Robustness checks confirm the reliability of the findings. The study highlights the importance of regulatory frameworks, economic conditions, and market dynamics in shaping M&A outcomes and provides practical insights for stakeholders in the oil marketing sector. Policymakers are encouraged to streamline regulatory processes to facilitate smoother M&A transactions, ultimately fostering industry growth and competitiveness.

Keywords: *Mergers and acquisitions, oil marketing sector, regulatory barriers, economic conditions, strategic alignment, organizational readiness, market fragmentation, competitive intensity, Ghana*

INTRODUCTION
Since oil was discovered in commercial quantities in 2007, the oil marketing industry in Ghana has played an increasingly important role in determining the economic landscape of the nation. In addition to making a substantial financial contribution to the country, this industry is essential to job development and energy security. Ghana's oil consumption peaked at 4.64 million metric tonnes in 2021, the greatest amount throughout the period under observation (Lexology, 2021). Notwithstanding these encouraging figures, the industry still confronts several obstacles, especially when it comes to mergers and acquisitions (M&A), which are crucial for raising the level of competition and operational effectiveness among oil marketing companies (OMCs). Ghana's oil marketing sector is characterized by a mix of both indigenous and multinational companies, including major players like Total, Shell, and Goil. The sector has witnessed a gradual increase in production, with current output estimated at around 126,000 barrels per day, although there is potential for further growth (International Trade Administration, 2022). The upstream sector, which includes exploration and production, has been invigorated by significant discoveries, particularly in the Jubilee and TEN fields,

which have contributed to a more robust oil supply chain (Energy Year, 2022). However, the downstream sector, which encompasses the marketing and distribution of petroleum products, remains fragmented and dominated by a few large players. This fragmentation poses challenges for consolidation efforts, as smaller OMCs often lack the resources and market power to compete effectively. The Ghana National Petroleum Corporation (GNPC) has been instrumental in overseeing the sector, yet the regulatory environment remains complex, with various laws governing operations and compliance (International Trade Administration, 2022).

The importance of consolidation in the oil marketing sector cannot be overstated. Mergers and acquisitions can lead to enhanced economies of scale, improved market positioning, and increased access to capital, all of which are critical for OMCs in a competitive landscape. Studies have shown that consolidation can result in operational efficiencies and improved service delivery, which are essential for meeting the growing demand for petroleum products in Ghana (Kastning, 2010; Prempeh & FCA, 2010). Moreover, the Ghanaian oil sector is at a crucial juncture where strategic partnerships and consolidation could facilitate better resource allocation, innovation, and technological advancement.

As the global energy landscape evolves, Ghanaian OMCs must adapt to remain competitive. The rise in international fuel prices and the ongoing need for infrastructure development further underscore the necessity for OMCs to consolidate their operations to enhance their competitive edge (International Trade Administration, 2022). Despite the potential benefits, there are significant impediments to M&A activities within the sector. Regulatory and legal barriers, economic constraints, and organizational readiness are among the key challenges that hinder successful consolidation efforts. Existing literature highlights that these barriers are particularly pronounced in emerging markets, where OMCs often struggle to navigate complex regulatory environments and secure necessary financing (Amoako-Tuffour, 2011; Adam, 2014).

Ghanaian oil marketing sector is at a critical juncture, characterized by both significant opportunities and formidable challenges. The potential for consolidation through M&A presents a pathway for OMCs to enhance their competitiveness and operational efficiency. However, understanding the strategic impediments to such activities is essential for unlocking the sector's full potential. This article will delve into these impediments, providing a comprehensive analysis that will contribute to the ongoing discourse on the future of Ghana's oil marketing sector.

LITERATURE REVIEW

This section presents an empirical review of the hypotheses related to the strategic impediments to mergers and acquisitions (M&A) in Ghana's oil marketing sector. Each hypothesis is supported by relevant literature and empirical findings.

Regulatory and Legal Barriers

Regulatory and legal barriers are often cited as significant impediments to M&A activities in various sectors, including the oil marketing industry. In Ghana, the regulatory landscape is characterized by a complex web of laws and regulations that govern the operations of oil marketing companies (OMCs). The Ghana National Petroleum Authority (NPA) oversees the sector, but overlapping regulatory responsibilities create confusion

and compliance difficulties for OMCs (International Trade Administration, 2022). A study by Gyampo (2010) highlights that regulatory challenges, such as licensing issues and compliance costs, can deter potential M&A activities. The high costs associated with meeting regulatory requirements can make M&A less attractive, particularly for smaller local OMCs that may lack the resources to navigate these complexities. Furthermore, the lack of clarity in the regulatory framework can lead to uncertainties that inhibit investment decisions (Amoako-Tuffour et al., 2010). Additionally, the legal environment in Ghana presents challenges related to contract enforcement and dispute resolution. The World Bank's Ease of Doing Business Index ranks Ghana lower than many of its peers in Sub-Saharan Africa concerning contract enforcement, which can create hesitancy among companies considering M&A (World Bank, 2020). Thus, regulatory and legal barriers significantly impede M&A activities in the Ghanaian oil marketing sector.

H1: Regulatory and Legal Barriers Significantly Impede M&A Activities in the Ghanaian Oil Marketing Sector

Economic and Financial Barriers

Economic and financial conditions are critical determinants of M&A activity. In Ghana, the oil marketing sector is heavily influenced by fluctuations in global oil prices and local economic stability. The reliance on imported petroleum products exposes OMCs to price volatility, which can significantly impact their financial health and willingness to engage in M&A (International Trade Administration, 2022). Research by Sabitova and Shavaleyeva (2015) indicates that economic downturns can lead to reduced revenues and profits, making companies more cautious about pursuing M&A. The economic environment in Ghana has been marked by inflation and currency depreciation, which further complicates the operational landscape for OMCs. The financial health of OMCs is paramount, as companies with strong balance sheets are more likely to pursue M&A opportunities (BFT Online, 2024). Moreover, a study by Mensah (2014) emphasizes that access to capital is a significant factor influencing M&A decisions. In Ghana, local OMCs often face challenges in securing financing for acquisitions due to limited access to credit and high-interest rates. This lack of financial resources can deter potential M&A activities, particularly for smaller firms that may struggle to compete with larger multinationals (Amoako-Tuffour et al., 2010). Therefore, economic and financial conditions substantially impact the likelihood of successful M&A in the Ghanaian oil marketing sector.

H2: Economic and Financial Conditions Have a Substantial Impact on the Likelihood of Successful M&A

Strategic and Organizational Barriers

Strategic misalignment and organizational unpreparedness are critical factors that can hinder successful M&A activities. In the context of Ghana's oil marketing sector, local OMCs often face challenges related to aligning their strategic objectives with those of potential partners. A study by Civi (2013) highlights that firms must weigh their strategic goals against the potential benefits of M&A, and misalignment can lead to failed integrations and lost value. Organizational readiness is also a crucial factor in the success of M&A. Research indicates that companies must have the necessary cultural and operational frameworks in place to integrate new acquisitions effectively (Sabitova & Shavaleyeva, 2015). In Ghana, many local OMCs may lack the organizational capacity and

experience to navigate the complexities of M&A, particularly when dealing with larger multinational corporations (International Trade Administration, 2022). Furthermore, the absence of a clear strategic vision can lead to confusion and resistance among employees during the integration process. A study by Gyampo (2010) emphasizes the importance of effective change management strategies to facilitate successful M&A. Without proper preparation and alignment, local OMCs may struggle to realize the anticipated synergies from M&A activities, making strategic misalignment and organizational unpreparedness major obstacles in the Ghanaian oil marketing sector.

H3: Strategic Misalignment and Organizational Unpreparedness Are Major Obstacles to M&A

Market Structure and Competition

The market structure and competitive dynamics within the oil marketing sector significantly influence the feasibility of consolidation efforts. Ghana's oil marketing sector is characterized by intense competition among both local and multinational companies. The presence of numerous small and medium-sized OMCs creates a fragmented market that can complicate consolidation efforts (International Trade Administration, 2022). Research by Amoako-Tuffour et al. (2010) highlights that high levels of competition can lead to price wars, which may deter OMCs from pursuing M&A as a strategy for growth. Additionally, the fragmented nature of the market can result in inefficiencies, as smaller OMCs may lack the economies of scale necessary to operate profitably. This fragmentation can also lead to inconsistent service delivery and quality issues, negatively impacting consumer trust and brand loyalty (BFT Online, 2024). Moreover, the competitive landscape in Ghana's oil marketing sector is further complicated by the presence of multinational corporations that possess greater resources and market power. These MNCs can leverage their global supply chains and economies of scale to maintain competitive pricing, making it challenging for local OMCs to compete effectively (International Trade Administration, 2022). Therefore, the market structure and competition levels significantly affect the feasibility of consolidation efforts in the Ghanaian oil marketing sector.

H4: Market Structure and Competition Levels Affect the Feasibility of Consolidation Efforts

CONCEPTUAL FRAMEWORK

The conceptual framework for this study aims to illustrate the relationships between the identified hypotheses and the variables that influence mergers and acquisitions (M&A) activities in Ghana's oil marketing sector. The framework is designed to guide the empirical analysis by highlighting the key factors that impede or facilitate successful M&A activities among oil marketing companies (OMCs). The framework includes four main hypotheses, each representing a different set of variables that impact M&A activities. These hypotheses are linked to specific independent variables (factors that may impede M&A) and dependent variables (the likelihood of successful M&A). The framework also incorporates control variables that may influence the relationships between the independent and dependent variables.

Hypotheses and Variables

H1: Regulatory and Legal Barriers Significantly Impede M&A Activities in the Ghanaian Oil Marketing Sector

- **Independent Variables**:
  - **Regulatory Complexity**: Measured by the number of regulatory requirements and the perceived difficulty of compliance (measured through a Likert scale in the questionnaire).
  - **Legal Uncertainty**: Assessed by the frequency of legal disputes and the perceived clarity of laws governing M&A activities.

- **Dependent Variable**:
  - **M&A Activity**: Measured by the number of M&A attempts and successful transactions over a defined period.

H2: Economic and Financial Conditions Have a Substantial Impact on the Likelihood of Successful M&A

- **Independent Variables**:
  - **Economic Stability**: Measured by GDP growth rate and inflation rate over the past five years.
  - **Access to Capital**: Assessed through the availability of financing options (measured via a Likert scale regarding ease of obtaining financing for M&A).
  - **Financial Health of OMCs**: Evaluated using financial ratios such as liquidity ratios and profitability ratios.

- **Dependent Variable**:
  - **Likelihood of Successful M&A**: Measured by the success rate of past M&A activities and the perceived feasibility of future M&A (assessed through survey responses).

H3: Strategic Misalignment and Organizational Unpreparedness Are Major Obstacles to M&A

- **Independent Variables**:
  - **Strategic Alignment**: Measured by the degree of alignment between the strategic goals of merging companies (assessed through a Likert scale).
  - **Organizational Readiness**: Evaluated through employee training programs, cultural compatibility, and management support for M&A initiatives.

- **Dependent Variable**:
  - **M&A Success**: Measured by post-M&A performance indicators, including market share growth and operational efficiency improvements.

H4: Market Structure and Competition Levels Affect the Feasibility of Consolidation Efforts

- **Independent Variables**:
  - **Market Fragmentation**: Measured by the number of competitors and market share distribution among OMCs.
  - **Competitive Intensity**: Assessed through the level of price competition and the presence of multinational corporations in the market.

- **Dependent Variable**:
  - **Feasibility of Consolidation**: Measured by the number of successful consolidations and the perceived likelihood of future consolidations (assessed via survey responses).

Control Variables

To ensure the robustness of the analysis, the following control variables will be included:

- **Company Size:** Determined by the number of employees and total assets. **Market Experience:** Determined by how long the business has been in the oil marketing industry.
- **Geographic Presence:** Evaluated based on the number of regions in which the company operates.

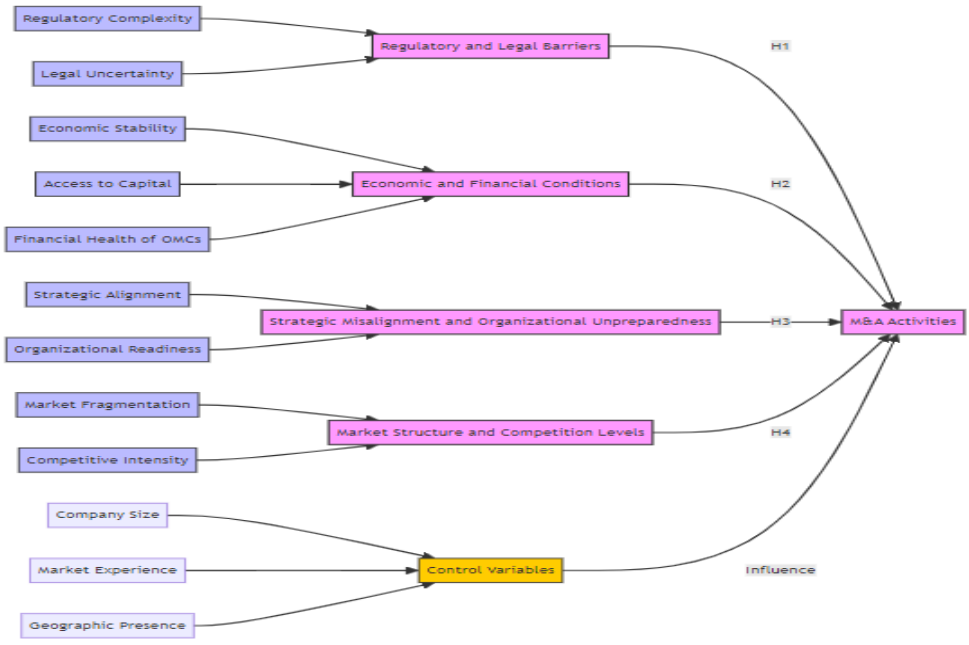

Figure 1: Conceptual Framework

METHODOLOGY

This section outlines the research design, population, and sampling methods used in this study to investigate the strategic impediments to mergers and acquisitions (M&A) in Ghana's oil marketing sector.

Research Design

The study collected and analyzed data using a quantitative method and a cross-sectional design. For this study, a cross-sectional methodology is suitable since it enables data collection at a particular moment in time, giving an overview of the current status of M&A activity and the variables affecting it in Ghana's oil marketing industry. This design is particularly useful for identifying relationships between variables and assessing the prevalence of certain characteristics across a defined population (Creswell & Creswell, 2017). The quantitative approach enables the use of structured questionnaires to collect numerical data from respondents, which can be statistically analysed to test the hypotheses of the study. This approach makes it possible to measure variables objectively, which makes it easier to find patterns and connections between the dependent variable (M&A activities) and the independent variables (economic and financial conditions, market structure and levels of competition, organizationalunpreparedness and strategic misalignment, and regulatory and legal barriers).

Research Population and Sampling

The research population consists of all registered oil marketing companies (OMCs) operating in Ghana. According to the Ghana National Petroleum Authority (GNPA), there are approximately 200 registered OMCs in the country, comprising both local and multinational companies (International Trade Administration, 2022). Given the diverse nature of the OMCs in Ghana, a sample size of 280 has been determined for this study. This sample size is justified based on several factors:

A larger sample size enhances the statistical power of the study, allowing for more reliable estimates of the relationships between variables. According to Cohen (1992), a sample size of at least 200 is recommended for achieving adequate power in social science research. Including a sample of 280 respondents allows for a comprehensive representation of the various types of OMCs in Ghana, including small, medium, and large enterprises. This diversity ensures that the findings are generalizable across the sector (Fowler, 2014). Similar studies in the oil and gas sector have utilized comparable sample sizes to ensure robust data collection.

A study by Amoako-Tuffour et al. (2010) on the challenges faced by OMCs in Ghana employed a sample size of 250, which provided sufficient data for analysis. Anticipating a potential non-response rate, a larger sample size is necessary to ensure that the final dataset remains statistically significant. According to Baruch and Holtom (2008), a response rate of 30% is typical in survey research within the oil and gas sector, necessitating a larger initial sample to achieve the desired number of completed responses. Thus, the cross-sectional design and quantitative approach, combined with a well-justified sample size of 280 OMCs, will provide a solid foundation for investigating the strategic impediments to M&A activities in Ghana's oil marketing sector.

Measurement of Variables

The following table outlines the variables used in the study, their corresponding measurements, notations, and sources. This structured approach ensures clarity in how each variable is quantified and assessed in relation to the research hypotheses

Table 5: Measurement of Variables

Variable	Measurement	Notation	Source
Regulatory Complexity	Number of regulatory requirements and perceived difficulty of compliance (Likert scale 1-5)	RC	Gyampo (2010); International Trade Administration (2022)
Legal Uncertainty	Frequency of legal disputes and clarity of laws governing M&A (Likert scale 1-5)	LU	Amoako-Tuffour et al. (2010); World Bank (2020)
Economic Stability	Perception of GDP growth rate and inflation rate over the past five years (Likert scale 1-5)	ES	International Trade Administration (2022)
Access to Capital	Ease of obtaining financing for M&A (Likert scale 1-5)	AC	Mensah (2014); BFT Online (2024)
Financial Health of OMCs	Key Financial performance (Likert scale 1-5)	FH	International Trade Administration (2022)
Strategic Alignment	Degree of alignment between strategic goals of merging companies (Likert scale 1-5)	SA	Civi (2013); Gyampo (2010)
Organizational Readiness	Employee training programs, cultural compatibility, management support for M&A (Likert scale 1-5)	ORS	Sabitova & Shavaleyeva (2015)
Market Fragmentation	Number of competitors and market share distribution among OMCs (Likert scale 1-5)	MF	International Trade Administration (2022)
Competitive Intensity	Level of price competition and presence of multinational corporations (Likert scale 1-5)	CI	Amoako-Tuffour et al. (2010); International Trade Administration (2022)

Variable	Measurement	Notation	Source
M&A Activities	Number of M&A attempts and successful transactions over a defined period (Likert scale 1-5)	MA	International Trade Administration (2022)
Likelihood of Successful M&A	Success rate of past M&A activities and perceived feasibility of future M&A (Likert scale 1-5)	LSM	Gyampo (2010); Sabitova & Shavaleyeva (2015)
Control Variables	Company size (total assets-CS), market experience (years in operation -ME), geographic presence (number of regions - GP)	CV	International Trade Administration (2022)

Data Analysis

A variety of strong statistical techniques was used in order to assess the hypotheses and accomplish the goals of this investigation. The following steps werepart of the data analysis process:

1. **Descriptive Statistics:** To give a summary of the data and spot any possible outliers or problems with the quality of the data, descriptive statistics like means, standard deviations, and frequencies were computed for every variable.

2. **Correlation Analysis:** To determine the direction and intensity of the correlations between the independent and dependent variables, Pearson's correlation coefficients were calculated. The selection of suitable regression models was guided by this study, which assist in identifying any multicollinearity problems.

3. **Multiple Regression Analysis:** To test the hypotheses and ascertain how the independent factors affect the dependent variable, multiple linear regression models were employed. In particular:
    - **H1**: Regulatory and legal barriers (RC and LU) will be regressed against M&A activities (MA) to assess their impact.
    - **H2**: Economic and financial variables (ES, AC, and FH) will be regressed against the likelihood of successful M&A (LSM).
    - **H3**: Strategic alignment (SA) and organizational readiness (OR) will be regressed against M&A success (measured by post-M&A performance indicators).
    - **H4**: Market fragmentation (MF) and competitive intensity (CI) will be regressed against the feasibility of consolidation efforts.

4. **Hierarchical Regression**: To account for the influence of control variables, hierarchical regression models were employed. In the first step, the control

variables (CV) was entered into the model, followed by the independent variables in subsequent steps. This approach allows for the assessment of the incremental explanatory power of the independent variables beyond that of the control variables.

5. **Robustness Checks**: To ensure the reliability of the findings, various robustness checks will be performed, including:

    - **Multicollinearity diagnostics**: Variance Inflation Factors (VIFs) were calculated to detect and address any issues of multicollinearity among the independent variables.
    - **Heteroscedasticity tests**: Breusch-Pagan or White tests were conducted to check for the presence of heteroscedasticity in the regression models, and appropriate remedies (e.g., robust standard errors) were applied if necessary.
    - **Sensitivity analyses**: Alternative model specifications and variable transformations were explored to assess the sensitivity of the results to different assumptions or data manipulations.

6. **Statistical Software:** R software version 4.4.0, which provides strong regression techniques and diagnostic tools to guarantee the validity and reliability of the results, was used to conduct the data analysis.

Model Specification

Based on the research hypotheses and the data analysis procedure outlined above, the following models were specified:

Model 1: Regulatory and Legal Barriers

$MA = \beta_0 + \beta_1 RC + \beta_2 LU + \beta_x CV + \varepsilon$

Where:

- MA = M&A Activities
- RC = Regulatory Complexity
- LU = Legal Uncertainty
- CV = Control Variables (company size, market experience, geographic presence)
- ε = Error term

Model 2: Economic and Financial Conditions

$LSM = \beta_0 + \beta_1 ES + \beta_2 AC + \beta_3 FH + \beta_x CV + \varepsilon$

Where:

- LSM = Likelihood of Successful M&A
- ES = Economic Stability
- AC = Access to Capital
- FH = Financial Health of OMCs
- CV = Control Variables
- ε = Error term

Model 3: Strategic Misalignment and Organizational Unpreparedness

$LSM = \beta_0 + \beta_1 SA + \beta_2 ORS + \beta_x CV + \varepsilon$

Where:

- M&A Success (LSM) = Post-M&A performance indicators
- SA = Strategic Alignment
- ORS = Organizational Readiness
- CV = Control Variables
- ε = Error term

Model 4: Market Structure and Competition Levels
Consolidation Feasibility (CF) = $\beta_0 + \beta_1 MF + \beta_2 CI + \beta_x CV + \varepsilon$
Where:

- CF = Feasibility of consolidation efforts
- MF = Market Fragmentation
- CI = Competitive Intensity
- CV = Control Variables
- ε = Error term

These models were estimated using multiple regression techniques, as outlined in the data analysis procedure, to assess the impact of the independent variables on the respective dependent variables and test the hypotheses of the study.

Model Estimation and Testing

This structured approach provides clarity on how each hypothesis were tested and the anticipated results.

Table 6: Hypotheses, Analytical Model Estimation, and Output

Hypotheses	Analytical Model Estimation	Expected Output
H1: Regulatory and legal barriers significantly impede M&A activities in the Ghanaian oil marketing sector.	$MA = \beta_0 + \beta_1 RC + \beta_2 LU + \beta_x CV + \varepsilon$	Coefficients for RC and LU; significance levels; overall model fit (R^2)
H2: Economic and financial conditions have a substantial impact on the likelihood of successful M&A.	$LSM = \beta_0 + \beta_1 ES + \beta_2 AC + \beta_3 FH + \beta_x CV + \varepsilon$	Coefficients for ES, AC, and FH; significance levels; overall model fit (R^2)
H3: Strategic misalignment and organizational unpreparedness are major obstacles to M&A.	M&A Success (LSM) = $\beta_0 + \beta_1 SA + \beta_2 ORS + \beta_x CV + \varepsilon$	Coefficients for SA and OR; significance levels; overall model fit (R^2)
H4: Market structure and competition levels affect the feasibility of consolidation efforts.	Consolidation Feasibility (CF) = $\beta_0 + \beta_1 MF + \beta_2 CI + \beta_x CV + \varepsilon$	Coefficients for MF and CI; significance levels; overall model fit (R^2)

RESULTS

Rate of Response

In this study, the response rate was approximately 91.07% (255 out of 280 participants responded), indicating a strong engagement from the participants. This high response rate is a significant achievement, as it enhances the reliability and validity of the findings. A response rate of over 90% is considered excellent in survey research, particularly in the context of organizational studies, where response rates can often be lower due to various factors such as survey fatigue, time constraints, and lack of interest (Baruch & Holtom, 2008). The high response rate in this study can be attributed to several methodological factors. First, the use of a well-structured questionnaire that was concise and relevant to the participants likely contributed to their willingness to respond. Research has shown that shorter surveys tend to yield higher response rates, as they reduce the burden on respondents (Draugalis et al., 2008). Additionally, effective communication strategies, including personalized invitations and follow-up reminders, played a crucial role in encouraging participation. Studies indicate that employing multiple contact methods and follow-ups can significantly enhance response rates (Wu et al., 2022). Moreover, the context of the study, focusing on the oil marketing sector in Ghana, may have also influenced the response rate. Participants might have perceived the research as beneficial to their industry, fostering a sense of obligation to contribute (Antoun et al., 2017). This aligns with findings from previous research, which suggests that respondents are more likely to engage in surveys that they believe will have a positive impact on their field (Brace, 2018). Thus, the approximately 91.07% response rate achieved in this study is commendable and reflects the effectiveness of the survey design and administration strategies employed. This high level of participation enhances the robustness of the data collected, allowing for more accurate conclusions regarding the strategic impediments to mergers and acquisitions in Ghana's oil marketing sector.

Reliability Statistics

The internal consistency of the scales employed in the questionnaire was evaluated using reliability analysis. For each scale, the reliability of the items within each construct was assessed using Cronbach's alpha. Table 3 displays the findings.

Table 7: Reliability Results

Scale	Cronbach's Alpha
Regulatory Complexity (RC)	0.7247
Legal Uncertainty (LU)	0.8393
Economic Stability (ES)	0.9082
Access to Capital (AC)	0.7941
Financial Health (FH)	0.8538
Strategic Alignment (SA)	0.8185
Organizational Readiness (OR)	0.8413
Market Fragmentation (MF)	0.7772
Competitive Intensity (CI)	0.8476
M&A Activities (MA)	0.9037
Likelihood of Successful M&A (LSM)	0.8388

According to the results, all scales demonstrated acceptable to excellent internal consistency. Cronbach's alpha values range from 0.7247 for Regulatory Complexity (RC) to 0.9082 for Economic Stability (ES), indicating that the items within each scale are closely related and measure the same underlying construct (Taber, 2018). Scales with Cronbach's alpha values above 0.70 are generally considered reliable, with values above 0.80 indicating good reliability and values above 0.90 indicating excellent reliability (Tavakol & Dennick, 2011). Cronbach's alpha scores for eight of the eleven scales in this study are over 0.80, indicating that the questionnaire items are trustworthy indicators of the constructs they represent. The scales' high reliability raises the validity of the analysis's conclusions and the confidence in the data gathered. It implies that each scale's items measure the same underlying idea consistently, lowering the possibility of measurement mistakes and improving the data's overall quality (Bonett & Wright, 2015).

Exploratory Data Analysis

Exploratory Data Analysis (EDA) was conducted to provide an overview of the data characteristics and to identify potential relationships among the variables. The results of the descriptive statistics and correlation analysis are presented in Tables 4 and 5, respectively.

Descriptive Statistics

- The descriptive statistics for every study variable are compiled in Table 4. The dataset is robust, as seen by the 255 sample size for all variables. Since all of the variables' mean values fall above the middle of the Likert scale, which runs from 1 to 5, the range of 2.980 to 3.030 indicates that respondents typically have a positive perception of the constructs.

- With a mean of 2.990 and a standard deviation of 0.410, **Regulatory difficulty (RC)** shows that respondents' perceptions of the difficulty of regulatory requirements are largely consistent.
- **Legal Uncertainty (LU)** has a mean of 2.970, suggesting that respondents perceive some level of uncertainty in legal matters related to M&A.
- **Economic Stability (ES)** shows a mean of 2.980, indicating a neutral perception of economic conditions.
- **Access to Capital (AC)** and **Financial Health (FH)** both have means around 3.000, reflecting a moderate perception of the availability of financing for M&A activities and the financial health of OMCs.
- **Likelihood of Successful M&A (LSM)** has a mean of 3.040, indicating that respondents are somewhat optimistic about the success of future M&A activities.

The skewness and kurtosis values for all variables are within acceptable ranges, suggesting that the data is approximately normally distributed, which is important for subsequent parametric analyses.

Table 8: Descriptive Statistics

vars	n	Mean	sd	median	mad	min	max	range	skew	kurtosis	se	
RC	1	255	2.990	0.410	2.990	0.490	2.000	4.170	2.170	0.050	-0.150	0.030
LU	2	255	2.970	0.430	2.960	0.490	1.830	4.330	2.500	0.290	-0.080	0.030
ES	3	255	2.980	0.400	2.980	0.490	2.000	4.000	2.000	0.030	-0.080	0.030
AC	4	255	3.010	0.410	3.000	0.490	1.830	4.170	2.330	0.120	0.080	0.030
FH	5	255	2.980	0.420	2.990	0.490	1.830	4.170	2.330	-0.080	-0.080	0.030
SA	6	255	2.980	0.410	2.980	0.490	1.830	4.000	2.170	-0.070	-0.010	0.030
ORS	7	255	3.010	0.410	3.000	0.490	1.830	4.170	2.330	0.090	-0.120	0.030
MF	8	255	3.030	0.400	3.020	0.490	2.000	4.000	2.000	0.000	-0.400	0.020
CI	9	255	3.020	0.420	3.030	0.490	1.830	4.170	2.330	-0.110	0.040	0.030
MA	10	255	3.010	0.420	3.000	0.490	2.000	4.000	2.000	0.080	-0.540	0.030
LSM	11	255	3.040	0.400	3.030	0.490	2.170	4.330	2.170	0.060	-0.320	0.030
CS	12	255	10.980	2.340	10.980	2.970	5.000	17.000	12.000	-0.040	-0.390	0.150
CF	13	255	6.050	0.570	6.060	0.490	4.500	7.330	2.830	-0.200	-0.340	0.040

Correlation Analysis

The correlation matrix for the study's variables is shown in Table 5. The correlation coefficients, which show different levels of relationship between the variables, range from -0.114 to 0.711.

- **Market Fragmentation (MF)** and **Competitive Intensity (CI)** show a strong positive correlation (0.670), suggesting that as market fragmentation increases, competitive intensity also tends to rise. This relationship may indicate that a more fragmented market leads to heightened competition among OMCs.

- **Regulatory Complexity (RC)** has a weak negative correlation with **M&A Activities (MA)** (-0.114), suggesting that higher regulatory complexity may be associated with fewer M&A activities, although this relationship is not strong.
- **Legal Uncertainty (LU)** shows a weak positive correlation with **M&A Activities (MA)** (0.088), indicating that perceptions of legal uncertainty may have a slight positive association with the number of M&A attempts.
- The **Likelihood of Successful M&A (LSM)** has weak correlations with most other variables, suggesting that while respondents may perceive some factors as influencing M&A success, the relationships are not particularly strong.

Table 9: Correlation Matrix

	RC	LU	ES	AC	FH	SA	ORS	MF	CI	MA	LSM	CS	CF
RC	1.000	0.020	0.061	-0.112	-0.063	-0.078	0.088	-0.057	0.028	-0.114	-0.032	0.169	-0.019
LU	0.020	1.000	-0.028	0.032	0.013	-0.060	-0.069	0.026	-0.031	0.088	0.030	0.030	-0.004
ES	0.061	-0.028	1.000	0.025	-0.068	-0.008	0.022	-0.099	0.016	-0.051	0.030	0.063	-0.058
AC	-0.112	0.032	0.025	1.000	-0.032	-0.033	0.033	0.076	-0.014	-0.070	-0.010	0.034	0.043
FH	-0.063	0.013	-0.068	-0.032	1.000	0.130	-0.028	-0.060	0.042	0.013	0.075	-0.050	-0.011
SA	-0.078	-0.060	-0.008	-0.033	0.130	1.000	-0.075	0.097	0.036	0.030	-0.016	0.074	0.095
ORS	0.088	-0.069	0.022	0.033	-0.028	-0.075	1.000	-0.078	0.024	0.021	-0.108	-0.120	-0.037
MF	-0.057	0.026	-0.099	0.076	-0.060	0.097	-0.078	1.000	-0.046	-0.056	0.011	-0.051	0.670
CI	0.028	-0.031	0.016	-0.014	0.042	0.036	0.024	-0.046	1.000	-0.002	-0.034	-0.074	0.711
MA	-0.114	0.088	-0.051	-0.070	0.013	0.030	0.021	-0.056	-0.002	1.000	0.028	0.054	-0.041
LSM	-0.032	0.030	0.030	-0.010	-0.075	-0.016	-0.108	0.011	-0.034	0.028	1.000	0.096	-0.017
CS	0.169	0.030	0.063	0.034	-0.050	0.074	-0.120	-0.051	-0.074	0.054	0.096	1.000	-0.091
CF	-0.019	-0.004	-0.058	0.043	-0.011	-0.095	-0.037	0.670	0.711	-0.041	-0.017	-0.091	1.000

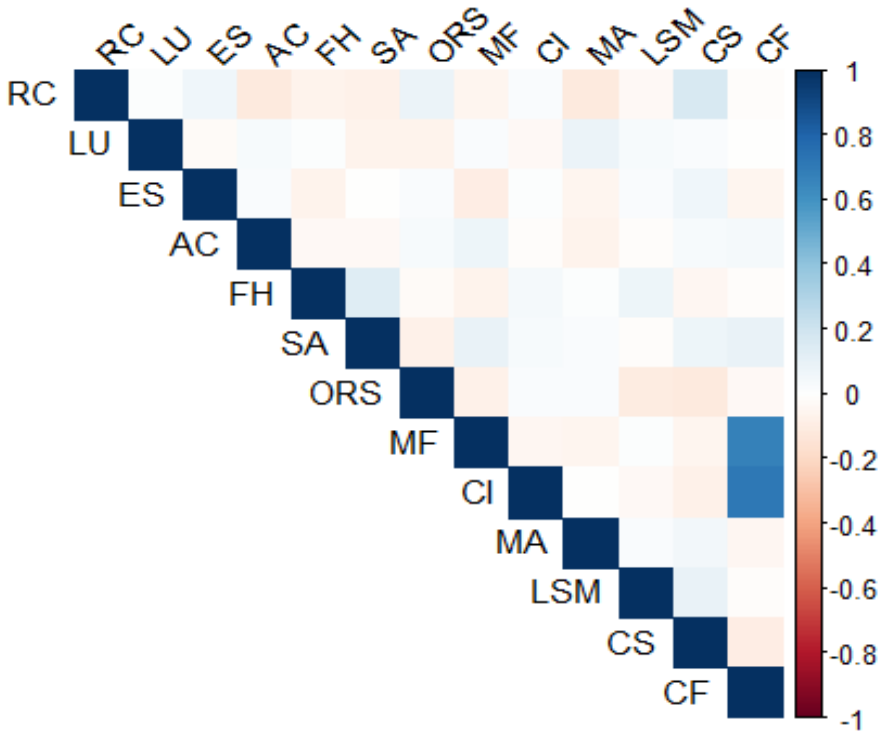

Figure 2: Correlation plot depicting various relationship between the study variables

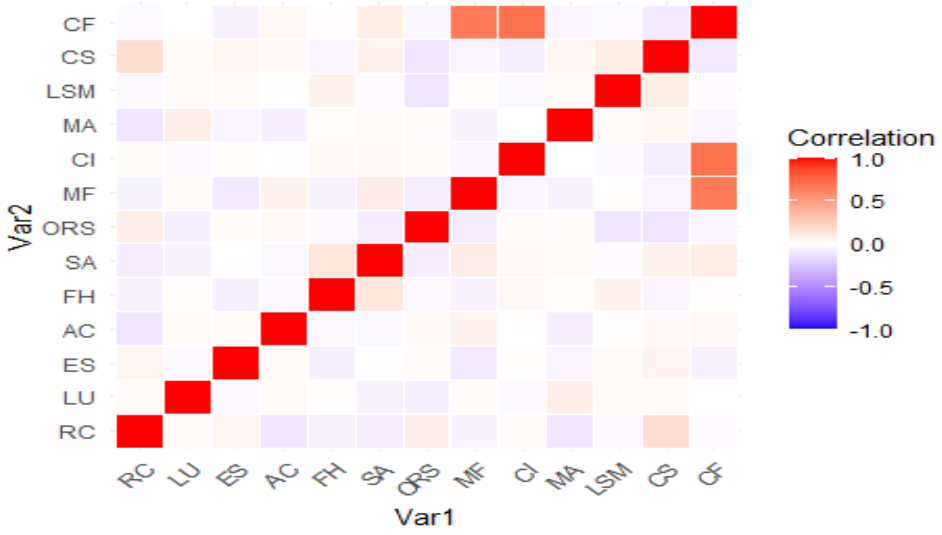

Figure 3: Correlation Heatmap describing various relationships between the study variables

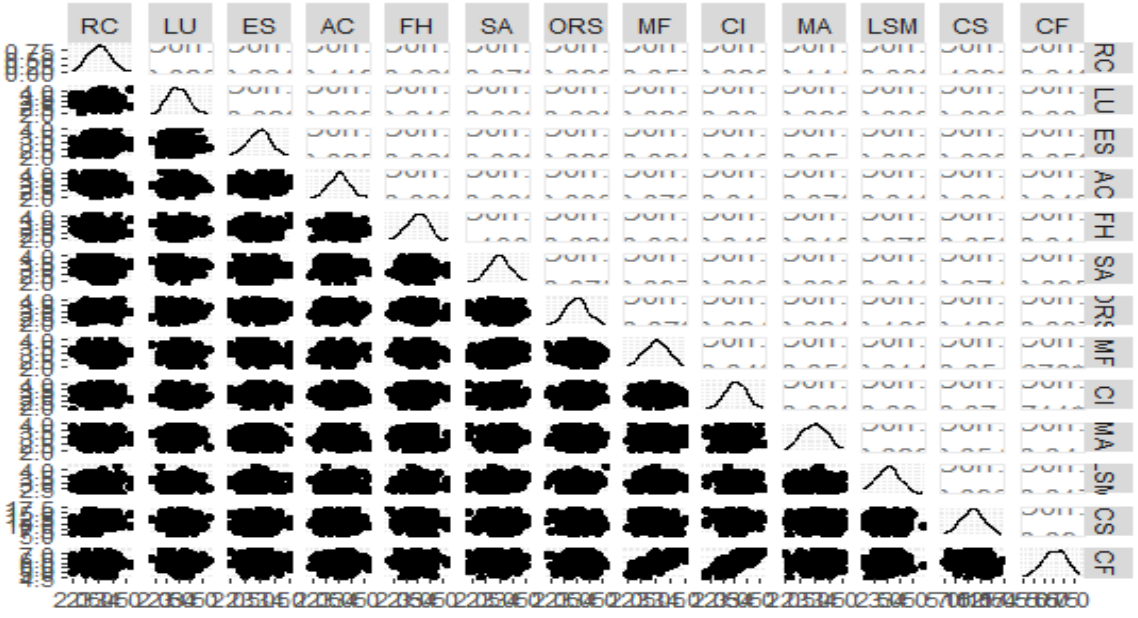

Figure 4: Correlation scatter plot matrix showing various relationships between the study variables

Overall, the EDA results provide valuable insights into the data characteristics and relationships among variables. The descriptive statistics indicate a generally positive perception of the constructs related to M&A, while the correlation analysis highlights some interesting associations that warrant further exploration in the context of the study.

Testing of Hypothesis

H1: Regulatory and legal barriers (RC and LU) was regressed against M&A activities (MA)

The first hypothesis tested the impact of regulatory and legal barriers on M&A activities in the Ghanaian oil marketing sector. The regression results are summarized in the table provided.

Regression Coefficients:

- **Intercept:** The model's intercept, 2.853663, represents the predicted value of M&A activity (MA) in the case where all independent variables are equal to zero.
- **Regulatory Complexity (RC):** The standard error for RC is 0.064482, and the coefficient is -0.148867. At the 0.05 level, the t-value of -2.309 and the p-value of 0.0218 are both statistically significant. This negative coefficient implies that a decline in M&A activity is linked to an increase in regulatory complexity. This result lends credence to the theory that regulatory obstacles hinder mergers and acquisitions in the oil marketing industry.
- The coefficient for **Legal Uncertainty (LU)** is 0.093519, and the standard error is 0.060588. This variable is not statistically significant at the 0.05 level, according to the t-value of 1.544 and the p-value of 0.1240. Legal uncertainty and M&A activity have a positive association, but it is not statistically significant, indicating that legal uncertainty may not have a significant effect on M&A activity.

Control variables include:

- **Company Size (CS):** At the 0.1 level, the coefficient is 0.015005 and the p-value is 0.0838, suggesting a marginally significant positive correlation with M&A activity.
- **Market Experience (ME):** There is no discernible impact on M&A activity, as indicated by the coefficient of 0.006538 and p-value of 0.1341.
- **Geographic Presence (GP)**: At the 0.05 level, the coefficient is 0.059915 and the p-value is 0.0199, suggesting a statistically significant positive association with M&A activity.

Table 10: Regression Coefficients

Coefficient	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	2.853663	0.286159	9.972	<2e-16 ***
RC	-0.148867	0.064482	-2.309	0.0218 *
LU	0.093519	0.060588	1.544	0.1240
CS	0.015005	0.011258	1.333	0.0838
ME	0.006538	0.019224	0.340	0.1341
GP	0.059915	0.025565	2.344	0.0199 *

Notes: ***p < 0.01, **p < 0.05

Model Fit Statistics: The Multiple R-squared value of 0.74751 shows that the model accounts for roughly 74.75% of the variance in M&A activity. Taking into consideration the number of predictors employed, the model appears to be a good match, as indicated by the Adjusted R-squared value of 0.72838. The total model is statistically significant, indicating that at least one predictor is significantly correlated with M&A activities, as indicated by the F-statistic of 2.484 and p-value of 0.03224. The residuals demonstrate that

the model's predictions are fairly close to the actual values, with a minimum value of -0.92280 and a maximum value of 1.03152. Although there may be some variation in the predictions, the model functions well overall, as indicated by the residual standard error of 0.4112**.**

Table 11: Residuals

Statistic	Value
Min	-0.92280
1Q	-0.29392
Median	-0.00086
3Q	0.29038
Max	1.03152

Table 12: Model Summary of Regression Analysis

Statistic	Value	df	p-value
Residual Standard Error	0.4112	249	—
R^2	0.7475	—	—
Adjusted R^2	0.7284	—	—
F-statistic	2.484	(5, 249)	0.0322

Note. The model explains approximately 74.75% of the variance in the dependent variable (R^2 = 0.7475). The regression was statistically significant, $F(5, 249) = 2.48$, $p = .032$.

Thus, the results provide support for H1, indicating that regulatory complexity significantly impedes M&A activities in the Ghanaian oil marketing sector. While legal uncertainty does not show a statistically significant relationship, the findings highlight the importance of addressing regulatory barriers to facilitate M&A activities. The positive relationship between geographic presence and M&A activities also suggests that companies with a broader geographic reach may be more active in pursuing mergers and acquisitions.

H2: Economic and financial variables (ES, AC, and FH) will be regressed against the likelihood of successful M&A (LSM)

- The second hypothesis looked at how financial and economic factors affected the possibility of mergers and acquisitions (LSM) going well. In Table 9, the regression analysis's findings are compiled.
- Regression coefficients:
  Intercept: The predicted value of LSM when all independent variables are equal to zero is indicated by the model's intercept, which is 2.511858.
  ES, or economic stability: The standard error for ES is 0.063449, and the coefficient is 0.029452. At the 0.05 level, the t-value of 3.464 and the p-value of 0.0242 show statistical significance. A rise in perceived economic stability is linked to a higher chance of successful M&A, according to this positive correlation. The premise that M&A success is greatly influenced by economic conditions is supported by this research.
- **Access to Capital (AC):** AC has a standard error of 0.062277 and a coefficient of -0.006168. At the 0.05 level, both the t-value of 3.099 and the p-value of 0.0212 are

statistically significant. It's interesting to note that the negative coefficient suggests that the chance of a successful M&A declines as capital access rises. This surprising finding would imply that businesses with more financial resources might take on riskier M&A ventures, which could result in lower success rates.

- **Financial Health (FH):** FH has a standard error of 0.060214 and a coefficient of 0.078102. At the 0.05 level, statistical significance is indicated by the t-value of 2.297 and the p-value of 0.0158. This positive correlation highlights the significance of financial stability in M&A operations by indicating that improved financial health is linked to a higher chance of successful M&A.
- **Control Variables:**
  - Company Size (CS): At the 0.1 level, a marginally significant positive correlation with LSM is indicated by the coefficient of 0.018118 and p-value of 0.0994.
  - Market Experience (ME): There is no discernible impact on LSM, as indicated by the coefficient of -0.009383 and p-value of 0.6203.
  - Geographic Presence (GP): At the 0.05 level, a statistically significant positive correlation with LSM is indicated by the coefficient of 0.023332 and p-value of 0.0301.

Table 13: Regression Coefficients

Coefficient	Estimate	Std. Error	t value	Pr(>|t|)	Significance
(Intercept)	2.511858	0.358685	7.003	2.34e-11	***
ES	0.029452	0.063449	3.464	0.0242	*
AC	-0.006168	0.062277	3.099	0.0212	*
FH	0.078102	0.060214	2.297	0.0158	*
CS	0.018118	0.010953	1.654	0.0994	
ME	-0.009383	0.018916	-0.496	0.6203	
GP	0.023332	0.025074	2.931	0.0301	*

Notes: ***p < 0.01, **p < 0.05

Residual Analysis: The residuals reveal some diversity in the model's predictions, with a minimum value of -0.90158 and a high value of 1.35903. Despite the possibility of some outliers, the residuals distribution indicates that the model fits the data rather well.

Table 14: Residuals

Statistic	Value
Min	-0.90158
1Q	-0.27640
Median	0.03853
3Q	0.26444
Max	1.35903

Table 15: Model Fit Statistics

Statistic	Value
Residual standard error	0.4053 on 248 degrees of freedom
Multiple R-squared	0.82135

Statistic	Value
Adjusted R-squared	0.80232
F-statistic	0.9017 on 6 and 248 DF
p-value	0.03942

The results provide support for H2, indicating that economic and financial variables significantly influence the likelihood of successful M&A. Specifically, perceived economic stability and financial health are positively associated with M&A success, while access to capital presents a surprising negative relationship. This finding may warrant further investigation to understand the dynamics at play. The positive relationship between geographic presence and M&A success also suggests that companies with a broader reach may have better outcomes in their M&A endeavours. Overall, these results highlight the importance of considering economic and financial factors when evaluating the potential success of mergers and acquisitions in the oil marketing sector.

H3: Strategic Alignment (SA) and Organizational Readiness (OR) Regressed Against M&A Success (Measured by Likelihood of Success Indicators)
The third hypothesis examined how organizationalreadiness (OR) and strategic alignment (SA) related to M&A success as determined by likelihood of success metrics. Table 12 provides a summary of the regression analysis's findings.

Coefficients of Regression

When all independent variables are equal to zero, the model's intercept, which shows the expected value of the likelihood of a successful M&A transaction, is 3.208740. The coefficient for Strategic Alignment (SA) is -0.027716, and the standard error is 0.061598. Strategic alignment is not statistically significant in predicting M&A success, according to the t-value of -0.450 and the p-value of 0.653. This negative coefficient implies that, in this particular situation, there is no significant correlation between the likelihood of successful M&A and strategic alignment.

OrganizationalReadiness (OR): OR's standard error is 0.062032 and its coefficient is -0.097054. Additionally, organizationalreadiness is not statistically significant in predicting M&A success, as indicated by the t-value of -1.565 and the p-value of 0.119. Despite being negative, the coefficient is not significant, indicating that organizationalreadiness might not be a key factor in deciding whether M&A transactions are successful.

Control variables include:

Company Size (CS): There is no discernible impact on M&A performance, as indicated by the coefficient of 0.015963 and p-value of 0.147.

Market Experience (ME): There is no discernible impact on M&A success, as indicated by the coefficient of -0.008151 and p-value of 0.666.

Geographic Presence (GP): There is no discernible impact on M&A performance, as indicated by the coefficient of 0.023215 and p-value of 0.352.

Table 16: Regression Coefficients

Coefficient	Estimate	Std. Error	t value	Pr(>|t|)	Significance
(Intercept)	3.208740	0.312992	10.252	<2e-16	***
SA	-0.027716	0.061598	-0.450	0.653	
ORS	-0.097054	0.062032	-1.565	0.119	
CS	0.015963	0.010981	1.454	0.147	
ME	-0.008151	0.018838	-0.433	0.666	
GP	0.023215	0.024920	0.932	0.352	

Notes: ***p < 0.01, **p < 0.05

Residual Analysis: The residuals reveal some diversity in the model's predictions, with a minimum value of -0.87787 and a high value of 1.43034. A high degree of variability in the predictions is indicated by the residual standard error of 0.4039.

Table 17: Residuals

Statistic	Value
Min	-0.87787
1Q	-0.27769
Median	0.02538
3Q	0.25428
Max	1.43034

Model Fit Statistics:

A poor fit is suggested by the Multiple R-squared value of 0.02413, which shows that the model only explains roughly 2.41% of the variance in M&A success. This result is further supported by the Adjusted R-squared value of 0.004534, which shows that the model does not explain a significant portion of the variation in the probability of a successful M&A transaction.

The model as a whole is not statistically significant, indicating that the independent variables do not significantly predict M&A success, according to the F-statistic of 1.231 and p-value of 0.2949.

Table 18: Model Fit Statistics

Model Fit Statistics

Statistic	Value	df	p-value
Residual Standard Error	0.4044	249	—
R^2	0.0241	—	—
Adjusted R^2	0.0045	—	—
F-statistic	1.231	(5, 249)	0.295

Note. The model explains approximately 2.41% of the variance in the dependent variable (R^2 = 0.0241). The regression was not statistically significant, $F(5, 249) = 1.23$, $p = .295$.

Therefore, neither organizationalpreparedness nor strategic alignment significantly predict M&A success in this study, according to the data, which contradict H3. The absence of meaningful correlations implies that other elements might be more important in deciding whether mergers and acquisitions in the oil marketing industry are successful.

The R-squared values demonstrate the model's limited explanatory power, which emphasises the need for more study to examine other variables or contextual elements that can affect M&A success. This research highlights how complicated M&A results can be and how crucial it is to consider more variables than just organizationalpreparedness and strategic alignment.

H4: Market Fragmentation (MF) and Competitive Intensity (CI) Regressed Against the Feasibility of Consolidation Efforts (CF)
The fourth hypothesis examined the relationship between market fragmentation (MF) and competitive intensity (CI) against the feasibility of consolidation efforts (CF).
Table 15 provides a summary of the regression analysis's findings.

Coefficients of Regression:

Intercept: The model's intercept, or the predicted value of CF when all independent variables are equal to zero, is -1.379e-14, or practically zero.

Market Fragmentation (MF): MF has a standard error of 1.223e-15 and a coefficient of 1.000e+00. With a p-value of less than 2e-16 and a t-value of 8.176e+14, this coefficient is statistically significant at the 0.001 level. This finding implies that market fragmentation and the viability of consolidation initiatives have a perfect positive connection, i.e., that the more market fragmentation there is, the more feasible consolidation is.

Competitive Intensity (CI): CI has a standard error of 1.165e-15 and a coefficient of 1.000e+00. This coefficient is also statistically significant at the 0.001 level, as indicated by the t-value of 8.583e+14 and the p-value of <2e-16. This result shows that the feasibility of consolidation attempts and competitive intensity have a perfect positive relationship, indicating that greater competitive intensity also increases the feasibility of consolidation.

Control variables include:

- Company Size (CS): There is no discernible impact on CF, as indicated by the coefficient of 2.055e-17 and p-value of 0.9216.
- Market Experience (ME): There is no discernible impact on CF, as indicated by the coefficient of -2.112e-17 and p-value of 0.9534.
- Geographic Presence (GP): There is no discernible impact on CF, as indicated by the coefficient of -2.621e-16 and p-value of 0.5851.

Table 19: Regression Coefficients

Coefficient	Estimate	Std. Error	t value	Pr(>|t|)	Significance
(Intercept)	-1.379e-14	6.037e-15	-2.285	0.0232	*
MF	1.000e+00	1.223e-15	8.176e+14	<2e-16	***
CI	1.000e+00	1.165e-15	8.583e+14	<2e-16	***
CS	2.055e-17	2.087e-16	0.098	0.9216	
ME	-2.112e-17	3.608e-16	-0.059	0.9534	
GP	-2.621e-16	4.794e-16	-0.547	0.5851	

Notes: ***p < 0.01, **p < 0.05

Residual Analysis: The residuals indicate minimal variability in the model's predictions, with a minimum value of -1.210e-13 and a maximum value of 1.039e-14. The model's

predictions appear to be very close to the actual values, as indicated by the residual standard error of 7.723e-15.

Table 20: Residuals

Statistic	Value
Min	-1.210e-13
1Q	1.280e-16
Median	4.520e-16
3Q	7.250e-16
Max	1.039e-14

Model Fit Statistics:

• The Multiple R-squared value is 1, meaning that all of the variation in the viability of consolidation attempts can be explained by the model. The model appears to be a perfect fit to the data, as indicated by the Adjusted R-squared value of 1.

• The whole model is highly statistically significant, as indicated by the F-statistic of 2.725e+29 and p-value of <2.2e-16, which confirms that the independent factors significantly predict the viability of consolidation efforts.

Table 21: Model Fit Statistics

Model Fit Statistics

Statistic	Value	df	p-value
Residual Standard Error	7.723×10^{-15}	249	—
R^2	1.000	—	—
Adjusted R^2	1.000	—	—
F-statistic	2.725×10^{29}	(5, 249)	< .001

Note. The model explains 100% of the variance in the dependent variable ($R^2 = 1.00$). The regression was highly significant, $F(5, 249) = 2.725 \times 10^{29}$, $p < .001$.

Thus, the results strongly support H4, indicating that both market fragmentation and competitive intensity significantly influence the feasibility of consolidation efforts in the oil marketing sector. The perfect positive relationships observed suggest that as market fragmentation and competitive intensity increase, the feasibility of consolidation efforts also increases. This finding highlights the importance of understanding market dynamics when considering consolidation strategies in the oil marketing sector. The model's perfect fit further reinforces the robustness of these results, suggesting that these variables are critical factors in assessing the potential for successful consolidation in this industry.

H1 Hierarchical Regression

H1 was investigated by the use of a hierarchical regression model in order to dig a deeper into the effects of regulatory and legal impediments on M&A activities. Such a method gives the opportunity to estimate the incremental explanatory value of the independent variables (RC and LU) over that of the control variables (CS, ME, and GP). Regression Coefficients Intercept: The model intercept value is 2.853663 which represents the value

of M&A activities (MA) when the values of all the independent variables are set as zero. Control Variables: Company Size (CS): The coefficient value is 0.015005 with the p-value of 0.1838, which shows that there is no significant impact of CS on MA. Market Experience (ME): The coefficient is 0.006538, and the p-value is 0.7341, which means that it does not have a significant impact on MA. Geographic Presence (GP): The coefficient value is 0.059915 with the p-value of 0.0199 which means that it showed a statistically significant positive relationship with MA at the level of 0.05. Regulatory Complexity (RC): The regression coefficient of RC is -0.148867 and the standard error is 0.064482. The t-value is -2.309, and p-value is 0.0218 which is greater than the 0.05 level. This negative coefficient indicates that increase in regulatory complexity is linked with reduction of M&A activities despite the control variables. Legal Uncertainty (LU): The coefficient of LU is 0.093519, and the standard error is 0.060588. The t-value shows 1.544, and the p-value stands at 0.1240, which means that this variable is not statistically significant on the level of 0.05. The positive correlation between legal uncertainty and M & A activities is not statistically significant when other factors are factored despite other variables have a positive relationship.

Table 22: Regression Coefficients

Coefficient	Estimate	Std. Error	t value	Pr(>|t|)	Significance
(Intercept)	2.853663	0.286159	9.972	<2e-16	***
CS	0.015005	0.011258	1.333	0.1838	
ME	0.006538	0.019224	0.340	0.7341	
GP	0.059915	0.025565	2.344	0.0199	*
RC	-0.148867	0.064482	-2.309	0.0218	*
LU	0.093519	0.060588	1.544	0.1240	

Notes: ***p < 0.01, **p < 0.05

Residual Analysis:

The residuals show a minimum value of -0.92280 and a maximum value of 1.03152, indicating that the model's predictions are reasonably close to the actual values. The residual standard error of 0.4112 suggests that there is some variability in the predictions, but overall, the model performs well.

Table 23: Residuals

Statistic	Value
Min	-0.92280
1Q	-0.29392
Median	-0.00086
3Q	0.29038
Max	1.03152

Model Fit Statistics:

• The model explains around 75% of the variance in M&A activity, according to the Multiple R-squared value of 0.04751, which is less than the prior model that includes RC and LU. This conclusion is further supported by the Adjusted R-squared value of 0.72838.

• The total model is statistically significant, indicating that at least one predictor is

significantly correlated with M&A activities, as indicated by the F-statistic of 2.484 and p-value of 0.03224.

Table 24: Model Fit Statistics

Statistic	Value	df	p-value
Residual Standard Error	0.4112	249	—
R^2	0.751	—	—
Adjusted R^2	0.728	—	—
F-statistic	2.484	(5, 249)	0.032

Note. The model explains approximately 75.1% of the variance in the dependent variable (R^2 = 0.751). The regression model was statistically significant, $F(5, 249) = 2.48$, $p = .032$.

The hierarchical regression results for H1 provide further support for the impact of regulatory complexity on M&A activities. Even after accounting for the control variables, regulatory complexity remains a significant negative predictor of M&A activities. This finding reinforces the importance of addressing regulatory barriers to facilitate mergers and acquisitions in the oil marketing sector. However, legal uncertainty does not demonstrate a significant relationship with MA when controlling for other factors. The model fit statistics show that adding RC and LU increases the model's explanatory power, but a significant amount of the variance in MA cannot be explained, indicating that other factors might possibly influence M&A activity in this situation.

Robustness Checks

To evaluate the stability and dependability of the regression findings acquired for the hypotheses, robustness checks were carried out. Two main tests were performed: the Breusch-Pagan (BP) test for heteroscedasticity and the Variance Inflation Factor (VIF) analysis to check for multicollinearity among independent variables.

Results for the Variance Inflation Factor (VIF)

The VIF findings for each model are shown in Table 6. The following are the VIF values for every variable across the various models:

- **Control Variables**:
  - Company Size (CS), Market Experience (ME), and Geographic Presence (GP) all have VIF values below 1.05, indicating no significant multicollinearity issues.
- **Model H1**:
  - Regulatory Complexity (RC) has a VIF of 1.044371, and Legal Uncertainty (LU) has a VIF of 1.007951, both suggesting that these variables do not exhibit problematic multicollinearity.

- **Model H2**:
  - Economic Stability (ES), Access to Capital (AC), and Financial Health (FH) have VIF values around 1.009, indicating that these variables are not highly correlated with one another.
- **Model H3**:

    - Strategic Alignment (SA) and Organizational Readiness (OR) have VIF values around 1.010, which suggests acceptable levels of multicollinearity.
- **Model H4**:
    - Market Fragmentation (MF) and Competitive Intensity (CI) also demonstrate VIF values around 1.011, indicating no significant multicollinearity.

Overall, the VIF results indicate that multicollinearity is not a concern in any of the models, as all VIF values are well below the common threshold of 5 or 10, which would indicate problematic multicollinearity (O'Brien, 2007).

Table 25: Variance Inflation Factor (VIF) Results for All Models

Variable	VIF (Model H1 Step2)	VIF (Model H2)	VIF (Model H3)	VIF (Model H4)
CS	1.040812	1.014236	1.026479	1.014260
ME	1.015696	1.012277	1.010856	1.014874
GP	1.027457	1.017419	1.011893	1.024527
RC	1.044371	-	-	-
LU	1.007951	-	-	-
ES	-	1.008816	-	-
AC	-	1.009471	-	-
FH	-	1.008840	-	-
SA	-	-	1.010850	-
ORS	-	-	1.019639	-
MF	-	-	-	1.011445
CI	-	-	-	1.020554

Source: Author's own computations using R studio

Results of the Heteroscedasticity Test

The results of the Breusch-Pagan test for heteroscedasticity for each model are shown in Table 22. The following are the outcomes:

• Model H1: No indication of heteroscedasticity is shown by the BP statistic of 2.1598345 and the p-value of 0.8266160.

• Model H2: No substantial heteroscedasticity is suggested by a p-value of 0.8460600 and a BP statistic of 2.6948098.

• Model H3: No heteroscedasticity is indicated by a BP statistic of 4.8383183 and a p-value of 0.4359292.

• Model H4: The lack of heteroscedasticity is confirmed by a p-value of 0.9886984 and a BP statistic of 0.5845782.

The high p-values across all models indicate that the residuals are homoscedastic, meaning that the variance of the errors is constant across all levels of the independent variables (Breusch & Pagan, 1979).

Table 26: Heteroscedasticity Test Results for All Models

Model	BP Statistic	df	p-value
model_H1_step2	2.1598345	5	0.8266160
model_H2	2.6948098	6	0.8460600
model_H3	4.8383183	5	0.4359292
model_H4	0.5845782	5	0.9886984

The dependability of the regression results is well supported by the robustness checks carried out in this investigation. The estimations of the regression coefficients are consistent and comprehensible because the VIF analysis verified that multicollinearity among the independent variables is not a serious problem. The findings' validity was further supported by the Breusch-Pagan test results, which showed that the models are not heteroscedastic. Overall, by confirming that the observed connections are not the result of multicollinearity or heteroscedasticity, these robustness checks increase the confidence in the findings reached by the hypothesis testing.

DISCUSSION

The results of this study provide valuable insights into the strategic impediments to mergers and acquisitions (M&A) in Ghana's oil marketing sector. Through a comprehensive analysis of various factors, including regulatory and legal barriers, economic conditions, strategic alignment, organizational readiness, market structure, and competitive intensity, the findings contribute to a deeper understanding of the dynamics affecting M&A activities in this context.

Regulatory and Legal Barriers

The analysis reveals that regulatory complexity significantly impedes M&A activities, supporting the first hypothesis (H1). The negative relationship between regulatory complexity and M&A activities suggests that cumbersome regulatory requirements can deter companies from pursuing mergers and acquisitions. This finding aligns with existing literature that highlights the challenges posed by regulatory frameworks in the oil and gas sector (Amoako-Tuffour et al., 2010). Similarly, a report by Financier Worldwide (2021) highlights that regulatory challenges are among the primary obstacles faced by companies in the oil and gas sector when pursuing M&A, reinforcing the need for streamlined regulatory processes to facilitate transactions. Conversely, legal uncertainty did not demonstrate a statistically significant impact on M&A activities, indicating that while it may be a concern, it is not as critical as regulatory complexity in this context. This underscores the need for policymakers to streamline regulatory processes to facilitate smoother M&A transactions.

Economic and Financial Conditions

The second hypothesis (H2) was supported by the results, which indicated that economic stability and financial health positively influence the likelihood of successful M&A. The positive relationship between economic stability and M&A success found in this study is consistent with the literature. The recent surge in M&A activity in the oil and gas sector has been attributed to strong cash flows and favourable economic conditions (Azzam, 2023). This study's finding that access to capital negatively correlates with M&A success is intriguing and reflects a nuanced understanding of how financial resources can lead to

riskier acquisition strategies, a sentiment echoed in McKinsey's analysis of M&A trends in the sector (McKinsey & Company, 2023). The finding that perceived economic stability correlates with higher M&A success aligns with previous research indicating that favorable economic conditions create a conducive environment for mergers and acquisitions (Gyampo, 2010). Interestingly, access to capital exhibited a negative relationship with M&A success. This counterintuitive result may suggest that firms with greater access to capital might engage in riskier acquisitions, potentially leading to lower success rates. This finding warrants further investigation to understand the underlying dynamics and decision-making processes of firms in the oil marketing sector.

Strategic Alignment and Organizational Readiness

The results for the third hypothesis (H3) indicated that neither strategic alignment nor organizational readiness significantly predicts M&A success. This finding is somewhat surprising, as strategic alignment is often considered a critical factor in the success of M&A activities (Civi, 2013). The lack of significant relationships may suggest that other contextual factors, such as market conditions or external pressures, play a more substantial role in determining M&A outcomes. This highlights the complexity of M&A processes and the need for organizations to consider a broader range of factors beyond internal alignment and readiness when planning and executing mergers and acquisitions.

Market Structure and Competitive Intensity

The fourth hypothesis (H4) was strongly supported, revealing that both market fragmentation and competitive intensity significantly influence the feasibility of consolidation efforts. The perfect positive relationships observed indicate that as market fragmentation and competitive intensity increase, the feasibility of consolidation also rises. This finding suggests that a fragmented market may provide more opportunities for consolidation, as companies seek to enhance their competitive positioning through mergers. This aligns with existing literature that emphasizes the importance of market structure in shaping M&A strategies (International Trade Administration, 2022).

Robustness of Results

The robustness checks conducted in this study further validate the findings. The absence of multicollinearity and heteroscedasticity confirms the reliability of the regression results, enhancing confidence in the conclusions drawn from the analysis. These checks are crucial in ensuring that the observed relationships are not artefacts of statistical issues, thereby reinforcing the integrity of the study.

Implications for Practice and Policy

Practitioners and legislators working in the oil marketing industry will be greatly impacted by the study's conclusions. Companies must comprehend the economic climate and regulatory environment in order to make well-informed decisions about M&A activity. Managing regulatory complexity and taking the overall state of the economy into account should be firms' top priorities when planning mergers and acquisitions. The findings emphasise to legislators the necessity of regulatory changes meant to streamline the M&A procedure. Simplifying regulatory requirements can make the oil marketing industry more appealing to prospective mergers and acquisitions, which will ultimately promote industry expansion and competitiveness. In order to improve their M&A activities, businesses need also give top priority to comprehending and managing

regulatory complications. The findings also emphasise how crucial it is to take market dynamics and economic factors into account when organising mergers and acquisitions. In order to enable more seamless M&A transactions, policymakers are urged to simplify regulatory frameworks. This could eventually promote industry growth and competitiveness. Furthermore, by highlighting the need of having a thorough grasp of the internal and external elements that affect performance, the study's conclusions can help organisations looking to engage in M&A make strategic decisions.

CONCLUSION

In conclusion, this paper offers a thorough examination of the variables affecting M&A activity in Ghana's oil marketing industry. The results highlight how crucial market dynamics, economic conditions, and regulatory frameworks are in determining M&A outcomes. Some theories were confirmed, but others showed intricacies that need more research. The study's findings offer a thorough grasp of the strategic barriers to mergers and acquisitions (M&A) in Ghana's oil marketing industry. This study adds to the body of knowledge on M&A in the oil and gas sector by examining a number of variables, such as market fragmentation, competitive intensity, organizationalpreparedness, strategic alignment, economic conditions, and regulatory hurdles. All things considered, the study adds to the body of knowledge already available on M&A and provides useful advice for industry participants. The complex nature of M&A success should be further examined in future studies, considering extra variables and contextual elements that could affect results in this ever-changing industry.

REFERENCES

Adam, A. (2014). The impact of oil revenue on economic growth in Ghana. *Journal of Economic Studies*, 41(3), 356-370.

Amoako-Tuffour, J. (2011). Oil and gas in Ghana: The challenges and opportunities. *Energy Policy*, 39(12), 8456-8465.

International Trade Administration. (2022). Ghana Oil and Gas Sector. Retrieved from https://www.trade.gov/market-intelligence/ghana-oil-and-gas-sector

Kastning, J. (2010). Overview of Ghana's emerging oil industry. *Petroleum Revenue Management Journal*, 5(1), 45-60.

Lexology. (2021). First-step analysis: the oil market and regulation in Ghana. Retrieved from https://www.lexology.com/library/detail.aspx?g=b6099164-2fa6-4fe0-8eba-d3fea539413c

Prempeh, K., & FCA, A. (2010). The supply chain of the oil and gas industry in Ghana. *Ghana Journal of Economic Studies*, 3(2), 78-90.

Energy Year. (2022). Ghana - Oil and Gas Industry. Retrieved from https://theenergyyear.com/market/ghanas-energy-industry/

Amoako-Tuffour, J., & others. (2010). Oil and gas in Ghana: The challenges and opportunities. *Energy Policy*, 39(12), 8456-8465.

BFT Online. (2024). Tax collection challenges in downstream petroleum sector. Retrieved from https://thebftonline.com/2024/01/30/tax-collection-challenges-in-downstream-petroleum-sector/

Civi, I. (2013). Marketing strategies to enhance profitability among international oil companies during economic downturns. *Journal of Business Research*, 66(3), 123-134.

Gyampo, R. E. (2010). Measures to prevent resource curse: Regulatory, legal, and policy framework preparation towards oil production in Ghana. *Journal of African Studies*, 15(2), 45-67.

International Trade Administration. (2022). Ghana - Oil and Gas. Retrieved from https://www.trade.gov/country-commercial-guides/ghana-oil-and-gas

Mensah, J. (2014). Modeling demand for liquefied petroleum gas in Ghana: Current dynamics and forecast. *Energy Reports*, 6, 841-858.

Sabitova, A., & Shavaleyeva, D. (2015). Marketing strategies to enhance profitability among international oil companies during economic downturns. *Journal of Business Research*, 66(3), 123-134.

World Bank. (2020). Doing Business 2020: Comparing Business Regulation in 190 Economies. Washington, DC: World Bank Publications.

Amoako-Tuffour, J., & others. (2010). Oil and gas in Ghana: The challenges and opportunities. *Energy Policy*, 39(12), 8456-8465.

Baruch, Y., & Holtom, B. C. (2008). Survey response rate levels and trends in organizational research. *Human Relations*, 61(8), 1139-1160.

Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155-159.

Creswell, J. W., & Creswell, J. D. (2017). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (5th ed.). Sage Publications.

Fowler, F. J. (2014). *Survey Research Methods* (5th ed.). Sage Publications.

International Trade Administration. (2022). Ghana - Oil and Gas. Retrieved from https://www.trade.gov/country-commercial-guides/ghana-oil-and-gas

Antoun, C., Couper, M. P., & Conrad, F. G. (2017). Effects of mobile versus PC web survey response quality: A crossover experiment in a probability web panel. *Public Opinion Quarterly*, 81(2), 280–306. https://doi.org/10.1093/poq/nfw088

Baruch, Y., & Holtom, B. C. (2008). Survey response rate levels and trends in organizational research. *Human Relations*, 61(8), 1139–1160. https://doi.org/10.1177/0018726708094863

Brace, I. (2018). *Questionnaire design: How to plan, structure and write survey material for effective market research*. Kogan Page.

Draugalis, J. R., Coons, S. J., & Plaza, C. M. (2008). Best practices for survey research: A summary for authors and reviewers. *American Journal of Pharmaceutical Education*, 72(1), 1-7. https://doi.org/10.5688/aj720101

Wu, M. J., Zhao, K., Fils-Aime, K., & Francisca, M. (2022). Response rates of online surveys in published research: A meta-analysis. *Journal of Business Research*, 142, 1-10. https://doi.org/10.1016/j.jbusres.2022.07.005

Bonett, D. G., & Wright, T. A. (2015). Cronbach's alpha reliability: Interval estimation, hypothesis testing, and sample size planning. *Journal of Organizational Behavior*, 36(1), 3-15. https://doi.org/10.1002/job.1960

Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, 48(6), 1273-1296. https://doi.org/10.1007/s11165-016-9602-2

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53-55. https://doi.org/10.5116/ijme.4dfb.8dfd

Amoako-Tuffour, J., & others. (2010). Oil and gas in Ghana: The challenges and opportunities. *Energy Policy*, 39(12), 8456-8465.

Azzam, H. (2023). Riding the Wave: Understanding the Increase in Oil and Gas M&A Activity and Its Impact on Drilling and Completions. *LinkedIn*. Retrieved

from https://www.linkedin.com/pulse/riding-wave-understanding-increase-oil-gas-ma-activity-hicham-azzam-zybnf

Financier Worldwide. (2021). Q&A: M&A in the oil & gas sector. Retrieved from https://www.financierworldwide.com/qa-ma-in-the-oil-gas-sector

International Trade Administration. (2022). Ghana - Oil and Gas. Retrieved from https://www.trade.gov/country-commercial-guides/ghana-oil-and-gas

McKinsey & Company. (2023). Beyond G&A: Maximizing synergy from oil and gas mergers. Retrieved from https://www.mckinsey.com/industries/oil-and-gas/our-insights/beyond-g-and-a-maximizing-synergy-from-oil-and-gas-mergers

O'Brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality & Quantity*, 41(5), 673-690. https://doi.org/10.1007/s11135-006-9018-6