

Appiah, Michael Karikari; Bayu Taufiq Possumah; Nur Azura Sanusi

## Article

# Identifying and prioritizing factors of the formation of investment strategy in the Ghana's downstream oil and gas industry

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\*Corresponding author: Michael  
Karikari Appiah, Economics, Universiti  
Malaysia Terengganu, MALAYSIA.  
E-mail: [kofikarikari@yahoo.com](mailto:kofikarikari@yahoo.com)

Reviewing editor:  
Albert W. K. Tan, Asia Pacific  
Graduate Institute, Shanghai Jiao  
Tong University, SINGAPORE

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## OPERATIONS, INFORMATION & TECHNOLOGY | RESEARCH ARTICLE

# Identifying and prioritizing factors of the formation of investment strategy in the Ghana's downstream oil and gas industry

Michael Karikari Appiah<sup>1,2\*</sup>, Bayu Taufiq Possumah<sup>2</sup> and Nur Azura Sanusi<sup>2</sup>

**Abstract:** We present a new model to identify and prioritize factors affecting small and medium enterprises (SMEs) investment intentions by integrating existing models. Structured questionnaire is used to sample respondents from the Ghanaian SMEs between 2017 and 2018. Data analyses have been conducted using variance-based Smart Partial Least Square (SmartPLS) technique. The major findings of the study are that macro environment factors, resource competitive strategies and oil and gas policy-specific factors are the significant determinants of SMEs investment intentions. Again, the study revealed that the resource competitive strategies significantly mediate the relationship between macro environment factors, industry force, oil and gas policy support and investment intentions. These results are robust

### ABOUT THE AUTHORS

Michael Karikari Appiah (Ph.D.) is a Lecturer at the School of Sustainable Development, University of Environment and Sustainable Development in Ghana. Michael does research in energy economics, environmental economics and policy, renewable energy resources and technologies, development economics, management and sociology. His current project is "Modelling SMEs Investment Strategies to Enhance Participation in Oil and Gas Industry".

Bayu Taufiq Possumah (Ph.D.) is senior lecturer at the School of Social and Economic Development, Universiti Malaysia Terengganu, Malaysia. His research interests include; economics, Islamic finance and econometrics.

Nur Azura Sanusi is working as full Professor and a senior lecturer at the School of Social and Economic Development, Universiti Malaysia Terengganu, Malaysia. Her research interests include; economics, Islamic finance and econometrics.

Dr. Nizam Ahmat (Ph.D.) is senior lecturer at the School of Social and Economic Development, Universiti Malaysia Terengganu, Malaysia. His research interests include; economics, transportation and econometrics.

Michael K. Appiah: Email: [makarikari@uesd.edu.gh](mailto:makarikari@uesd.edu.gh)

Bayu T. Possumah: Email: [bayu@umt.edu.my](mailto:bayu@umt.edu.my)

Nur A. Sanusi: Email: [nurazura@umt.edu.my](mailto:nurazura@umt.edu.my)

Nizam Ahmat: Email: [nizamahmat@umt.edu.my](mailto:nizamahmat@umt.edu.my)

### PUBLIC INTEREST STATEMENT

Small and medium enterprises (SMEs) represent 92 percent of total businesses in Ghana but less than 5 percent are currently participating in the Ghana's oil and gas sector largely due to appropriate investment strategies. In this view, identifying and prioritizing factors that affect SMEs' investment in the downstream oil and gas sector is crucial to all major stakeholders in the sector. We report that external business forces, internal business resources as well as oil and gas investment support policy will enhance SMEs participation in the downstream oil and gas industry. Besides, policy makers have been informed by the findings of the study to renew commitment and provide the needed framework to investors to enhance indigenous participation in the industry.

and consistent with resource-based view, theory of constraint and theory of strategic positioning. Moreover, these results contribute new knowledge towards developing investment strategy for the downstream oil and gas industry. Besides, these findings have managerial implications needed by policy makers to renew commitment and provide the needed framework to investors to enhance indigenous participation in the industry.

**Subjects:** Economics; Political Economy; Environmental Economics; Finance; Industry & Industrial Studies

**Keywords:** Integrated model; RBV; theory of constrain; theory of strategic positioning; Ghana

**JEL Classifications:** D02; O17; P31

## 1. Introduction

Small and medium businesses (SMBs) are the engine of growth and epitome of socio-economic growth across developed and developing economies. SMBs are defined in terms of quantitative and qualitative indicators. Quantitatively, SMBs are classified in terms of investment capital, fixed assets, number of employees and sales while qualitative indicators such as legal status, industry structure, business location and ownership structure are also useful to classify SMBs (Ayaggari et al., 2013; Lawal & Ijaiya, 2007; Onugu, 2011). The Ghana Statistical Service classified SMBs using quantitative attributes (Abor & Quartey, 2010; K. M. Appiah et al., 2018a; MK. Appiah et al., 2021).

Ghana being a low middle income country has huge potentials to transform and grow its economy through industrialization, innovation, job creation and ultimately ensuring equitable distribution of wealth. The 2013 local content regulation was formulated with the fundamental aim of optimizing locally produced materials, personnel, goods and services as well as financing, which are enshrined in the petroleum industry value chain and can best be measured in monetary terms (K. M. Appiah et al., 2018a; Appiah et al., 2018b). The petroleum sub sector policy directions are intended to guide the development and management of the emerging oil and gas sector as enabler of oil and gas sector for socio-economic transformation. The government has core mandate of ensuring that the exploitation and utilization of Ghana's oil and gas endowment are sustained and optimized for the overall benefit and welfare of Ghanaians both present and future. Major obstacles in meeting the local content policy goal are how to achieve optimal participation of local content in the oil and gas industry, and how to enhance national development through jobs and employment creations. These notwithstanding the actual participation of still remains record low (K. M. Appiah et al., 2018a; MK. Appiah et al., 2021).

Despite Government's legislative efforts of augmenting indigenous companies participation in the oil and gas value chain hitherto local participation remains record low. Previous studies provided mixed and fragmented results. Most of these studies focussed on internal factors (Abuka et al., 2006; Adusei & Appiah, 2011; K. M. Appiah et al., 2018a; Quartey et al., 2017; Wamono et al., 2012), external factors (Abor & Quartey, 2010; Aryeetey, 1994; Ayaggari et al., 2013; Caesar & Vilar, 2010; K. M. Appiah et al., 2018a; Quartey et al., 2017; Thompson et al., 2010), industry policies (Adamchak, 1997; Anderson et al., 2007; Georgellis & Wall, 2004; Lah, 2017; K. M. Appiah et al., 2018a) and oil and gas policy environment (Adamchak, 1997; Anderson et al., 2007; Appiah et al., 2018c; Brown et al., 2007; Georgellis & Wall, 2004; Inamete, 1993; Lah, 2017; Malone, 2005) to determine investment behaviours of small and medium businesses. However, these previous studies largely ignored the integration of all these factors in a single study.

The main purpose of this paper is to present a new model to identify and prioritize factors affecting SMEs' investment intentions by integrating Resource-Based View, Theory of Constraint and theory of strategic positioning. We argue further that the combined effect of these factors effectively determines SMEs' investment intentions. The mixed and fragmented results previously

reported in this area may be due to one or combination of the following possible: 1) Previous studies did not integrate the major constructs instead they were studied in isolation i.e. internal factors, external factors, industry policies and perceived risk and constraints were mostly studied in isolation, 2) Previous studies focussed on different sub dimensions using different methodological approach and 3) the constructs were studied under different geographical context at different time period. We contribute new empirical knowledge to fill this gap. The paper is organized into six distinctive sections as follows: 1) presents the introductory section of the paper covering the significance of the study, main purpose and the research problem, 2) presents the theoretical and empirical reviews, 3) presents the methodology of the study, 4) presents the results and discussions of the study finally and 5) presents the conclusions and the implications of the study.

## **2. Literature review (theoretical and empirical)**

### **2.1. Investment intention**

As previously reported (Soderlund & Ohman, 2003; Clark-Murphy & Soutar, 2008; K. M. Appiah et al., 2018a; Appiah et al., 2018b, 2018c; MK. Appiah et al., 2021) investment intentions of firms are severally determined. Soderlund and Ohman (2003) defined investment intentions using wants, plans and expectations. These authors believed that wants and plans are critical to firm's decisions to invest required financial and other commitment (plans) as well as the need for such a commitment. Soderlund and Ohman argued further that the overall expectations from the investment have a significant impact on the investor's intentions to invest. Relatedly, a study by Appiah et al. (2018b, 2018c) reported that investment intentions can be best explained in terms of resources at the disposal of the firms in question. Arguing further the authors stipulated that factors such as external funding, competitive rivalry, financial resources, information access, policy support and market accessibility are fundamental to firms' investment. Baker and Haslem (1973) asserted that investment intentions are influenced by the quality of management, firm's economic outlook and economic status of the industry in the long term. Besides, investment intentions have equally been defined in terms of risk (Clark-Murphy & Soutar, 2008). Similarly, financial and non-financial factors have also been used as critical determinants of investment intentions (Nagy & Obenberger, 1994).

### **2.2. Macro environment factors**

Empirically, recent studies (K. M. Appiah et al., 2018a; MK. Appiah et al., 2021; Quartey et al., 2017) have revealed that there exists relationship between the macroenvironment and investment intention. Specifically, Appiah et al. (MK. Appiah et al., 2021) asserted that macro-economic variables such as economic, political, socio-cultural and legal environment have been found to exert strong influence on investment intentions and business performance in general. Moreover, the theory of strategic positioning argues that the business environment is extensively influenced by external factors like political, economic, social, technological and among others, stakeholders and expectations (Johnson et al., 2008). Johnson et al. (2008) believe that the macro-external factors as well as competitors, market systems, control the business environment and industry factors hence the need for the strategic positioning theory. The researcher limited the discussion in this study to strategic positioning theory in relation to the macro-environmental factors. The macro-environment is the element that influences every aspect of the business (Johnson et al., 2008). In relation to this, Itani et al. (2014) as cited in Litavniec and Znotina (Litavniec & Znotina, 2015) affirms the argue that the external business environment is made up of factors like the prevailing political conditions in the country, the economic status of the country, the socio-cultural factors, technological factors, environmental factors and legal framework (PESTEL). The theory has been adopted and used by several researchers like Johnson et al. (2008); Snyman and Saayman (2009); Menzies and Orr (2010); Göndör and Nistor (2012) and Litavniec and Znotina (Litavniec & Znotina, 2015). From the presentation above we argue that:

*H1 the lower the macro environment forces the higher SMEs investment intentions*

### **2.3. Industry forces**

The Porter's five forces were used as a proxy to assess the investment behaviour of SMEs in the Ghanaian oil and gas downstream industry. The Porter's framework gives a clear understanding of the investment practices of SMEs in the oil and gas industry. The competitive advantage of organizations is underpinned by five main forces; the bargaining power of suppliers, the bargaining power of customers, the bargaining power of consumers, competitive to rivalry and the threat of new entries (Porter, 1980a; Passemard & Kleiner, 2000; MK. Appiah et al., 2021). The Porter's forces provide a greater insight to identify and analyze the competitive factors that influence the business industry (Porter, 1980a). The main rationale behind industry forces is that, companies also use internal resources to achieve a success. The internal resources of the company determine how companies react to market signals to be able to effectively manage the operations of the business (Kim et al., 2004). The competition within an industry is governed by five main forces; the bargaining power of suppliers, the bargaining power of customers, the bargaining power of consumers, competitive to rivalry and the threat of new entries. The forces that control an environment influence its market environment (Hibbets et al., 2003; Appiah et al., 2019; MK. Appiah et al., 2021). Researchers like Kim and Oh (Kim et al., 2004) and Olsen and Roper (1998) indicated that, the bargaining power of suppliers in the Ghanaian oil and gas sector is low due to the involvement of other suppliers. On this base, the researcher considered all the forces like the bargaining power of oil and gas suppliers, the bargaining power of oil and gas customers, the bargaining power of consumers, competitive rivalry and the threat of new oil and gas entries. Assessing these forces simply determines whether the forces are enough to guarantee businesses a competitive edge in the oil and gas downstream industry. We hypothesize based on the above that:

*H2 the lower the industry environment forces the higher SMEs investment intentions.*

### **2.4. Policy environment and investment intentions**

Studies have confirmed that indigenous education has a significant effect on the growth and development of companies (Adamchak, 1997; Anderson et al., 2007; Brown et al., 2007; Georgellis & Wall, 2004; Inamete, 1993; Lah, 2017; Malone, 2005). In line with that, Fullerton et al. (2014) considered how the various levels of educational achievements influence income performance and stated that, educational achievements directly relate to income benefits. Similarly, the level of achievement in terms of education positively influences a firm. Previously, studies have confirmed that, a company's capabilities influence their decisions and choices. Strachan et al. (2000) emphasized how policy environment determine the performance of businesses. Using a spatial panel approach, Georgellis and Wall (2004) highlighted the impact that government policy environment has on entrepreneurship. Macro-environmental factors like inflation, interest rates, foreign direct investments, taxation and others have a toll on the investment decisions of SMEs. In the same way, Christensen and Goedhuys (2004) reported that national conditions influence the behaviour of SMEs and determine their performance. Christensen and Goedhuys indicated that, the policy environment is a major obstacle to SMEs and new businesses, and these obstacles are in the areas of labour cost, taxation and labour regulations. Nwaizugbo et al. (2013) elaborated that, there is a need for stable business environment to ensure business growth. Inferring from the above we hypothesize that:

*H3 the higher the Oil and gas policy environment the higher SMEs investment intentions*

### **2.5. Resource competitive strategies**

Beiger Wernerfelt developed the Resource-Based View Theory (RBV) in 1984, and this theory was adopted to determine SMEs' resource competitive strategies, which foster the participation in the

downstream Ghanaian oil and gas industry. The fundamental principles of the resource-based view theory is that, companies gain competitive edge through the internal resources at their disposal. Barney (2001) argues that, to be able to gain a competitive advantage through the internal resources of a company, the resource must be rare, must not be imitable, valuable, cannot be substituted and immobile. The resources can be either tangible or intangible. Tangible resources may include human resources, physical resources like plant, equipment, machine etc., financial resources, technological resources and other tangible assets. The intangible resources are those resources that cannot be touched like skills, knowledge, capability and reputation and others. One of the most important factors projected by the RBV is the core competency of a firm coupled with its resources, which equals competitive advantage (Connor, 2002). The bases for the RBV theory differ from the arguments made by Michael Porter's five forces model that have formed the foundations of neoclassical economics. The RBV draws its perspective from three different areas; the traditional perspective, the competitive perspective and the contemporary perspective. The study adopted the RBV theory to explain the resource competitive strategies of SMEs in the downstream sector of the Ghanaian oil and gas industry. Drawing from the above, we propose that:

*H4 the higher the resource competitive strategies the higher the SMEs investment intentions*

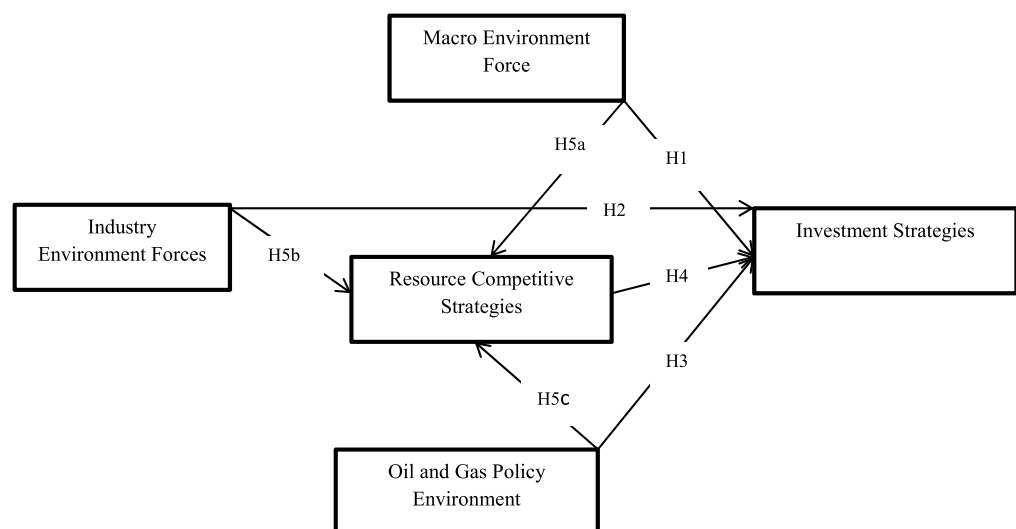
*H5 there is mediating effect of resources competitive strategy on the relationships between macro environment, industry forces oil and gas policy and investment strategy*

### 3. Methodology

#### 3.1. Research design

The study used quantitative research approach. This approach involves the use of numbers and estimation to measure the degree of occurrences (Figure 1). This research approach was used due to the following reasons; it fulfils the collection of numerical data, it conforms to the objectivity conception of social reality, and it was based on positivist's epistemology (Fox & Bayat, 2007). With respect to the research design, explanatory design was used. This study purposely was conducted to present a new model to identify and prioritize factors affecting SMEs' investment intentions by integrating RBV Theory, Theory of Constraint and theory of

**Figure 1. Research framework and hypotheses.**



strategic positioning. A cross survey was employed for this study since data were collected at a single time period i.e November 2017 to May 2018 unlike longitudinal, which requires time series data.

### **3.2. Population and sampling design**

The study sampled SMEs registered with the National Board for Small Scale Industries (NBSSI) in Ghana. Specifically, SMEs who were into services, retailing and manufacturing industries. The study followed J. F. Hair et al. (2011) guidelines and procedures for selecting the respondents. That is, rule of ten was utilized. The rule of ten technically suggested that the minimum sample size must be ten (10) times higher than the total number of structural paths directed at the latent constructs i.e investment intentions. Following this rule, 50 minimum cases were enough as sample size for the study. Meanwhile 475 cases have been used in the present study. In terms case selection, stratified sampling technique was used in selecting the cases. For instance, using participants' industry as strata, cases were selected randomly. This sampling technique is robust i.e. it reduces sampling error and ensures greater representatives.

### **3.3. Measurement instruments**

Macro environment factor was measured using four sub-constructs; namely political, economic, socio-cultural and legal environment factors (Johnson et al., 2008). The resource competitive strategies were measured using three dimensions viz; entrepreneurial competency, financial resources and knowledge sharing consisting of 14 items (Islam et al., 2011). Sixteen items were used to measure industry environment forces (Johnson et al., 2008; Tavitiyaman, 2009), six items were used to measure oil and gas policy environment (K. M. Appiah et al., 2018a). The investment intentions were measured using six items (Islamoglu et al., 2015; Li, 2013; Soderlund & Ohman, 2003).

### **3.4. Administration of the research instruments**

The questionnaires for the study were pre-tested before the actual survey was conducted. Thus, 10% (48) of the estimated 475 sample size was used. This was done to ensure that there was content validity, face validity and construct validity. The pretesting allowed modifications of the data collection instruments. The 5-point likert scale ranged from Strongly Agree to Strongly Disagree and was coded 1 to 5. The study also covered some SME profiles such as including business age, investment capital, fixed assets, business size and legal status of business.

### **3.5. Analytical tool for structural model**

Partial Least Squares (PLS) method was used for the data analysis, and the testing of the path hypothesis used the SmartPLS software 3.2.8 (Ringle et al., 2015). This technique is mostly used when the main goal of the study is to explain the variance of the target constructs. Since the determinants of SMEs' investment intention are distribution free, exploratory in nature and focus in prediction (Chin, 2010; Ringle et al., 2005). Two approaches were deployed using PLS-SEM analyses i.e measurement estimation (outer) model and the structure (inner) model (Chin, 2010; J. F. Hair et al., 2011).

### **3.6. Structural equation modeling specifications**

This study builds on Tabachnick and Fidell (2007) basic algorithmic design and some extensions developed by Lohmoller (1989) as cited in Hooper et al. (2008). In order to simplify the notation of the model and in line with conventional descriptions of PLS, we assume that latent and manifest variables are standardized so that the location parameters can be discarded in the following equations. Within the scope of structural equation modelling, the econometric model for the measurement model can be stated as follows: The formula for the first latent variable (Macro Environment Factors (MEF) that modelled as 20 indicators is formulated as:

### 3.7. Greek notation

$$Q1 = \lambda_1 \zeta_1 + \delta_1$$

$$Q2 = \lambda_2 \zeta_1 + \delta_2$$

$$Q3 = \lambda_3 \zeta_1 + \delta_3$$

$$Q4 = \lambda_4 \zeta_1 + \delta_4$$

$$Q5 = \lambda_5 \zeta_1 + \delta_5$$

$$Q6 = \lambda_6 \zeta_1 + \delta_6$$

$$Q7 = \lambda_7 \zeta_1 + \delta_7$$

$$Q8 = \lambda_8 \zeta_1 + \delta_8$$

$$Q9 = \lambda_9 \zeta_1 + \delta_9$$

$$Q10 = \lambda_{10} \zeta_1 + \delta_{10}$$

$$Q11 = \lambda_{11} \zeta_1 + \delta_{11}$$

$$Q12 = \lambda_{12} \zeta_1 + \delta_{12}$$

$$Q13 = \lambda_{13} \zeta_1 + \delta_{13}$$

$$Q14 = \lambda_{14} \zeta_1 + \delta_{14}$$

$$Q15 = \lambda_{15} \zeta_1 + \delta_{15}$$

$$Q16 = \lambda_{16} \zeta_1 + \delta_{16}$$

$$Q17 = \lambda_{17} \zeta_1 + \delta_{17}$$

$$Q18 = \lambda_{18} \zeta_1 + \delta_{18}$$

$$Q19 = \lambda_{19} \zeta_1 + \delta_{19}$$

$$Q20 = \lambda_{20} \zeta_1 + \delta_{20}$$

### current notation (specific)

$$Q1 = \lambda_1 \text{ MEF} + \delta_1 \text{ (4.1a)}$$

$$Q2 = \lambda_2 \text{ MEF} + \delta_2 \text{ (4.1b)}$$

$$Q3 = \lambda_3 \text{ MEF} + \delta_3 \text{ (4.1 c)}$$

$$Q4 = \lambda_4 \text{ MEF} + \delta_4 \text{ (4.1d)}$$

$$Q5 = \lambda_5 \text{ MEF} + \delta_5 \text{ (4.1e)}$$

$$Q6 = \lambda_6 \text{ MEF} + \delta_6 \text{ (4.1 f)}$$

$$Q7 = \lambda_7 \text{ MEF} + \delta_7 \text{ (4.1 g)}$$

$$Q8 = \lambda_8 \text{ MEF} + \delta_8 \text{ (4.1 h)}$$

$$Q9 = \lambda_9 \text{ MEF} + \delta_9 \text{ (4.1i)}$$

$$Q10 = \lambda_{10} \text{ MEF} + \delta_{10} \text{ (4.1 j)}$$

$$Q11 = \lambda_{11} \text{ MEF} + \delta_{11} \text{ (4.1k)}$$

$$Q12 = \lambda_{12} \text{ MEF} + \delta_{12} \text{ (4.1 l)}$$

$$Q13 = \lambda_{13} \text{ MEF} + \delta_{13} \text{ (4.1 m)}$$

$$Q14 = \lambda_{14} \text{ MEF} + \delta_{14} \text{ (4.1 n)}$$

$$Q15 = \lambda_{15} \text{ MEF} + \delta_{15} \text{ (4.1o)}$$

$$Q16 = \lambda_{16} \text{ MEF} + \delta_{16} \text{ (4.1p)}$$

$$Q17 = \lambda_{17} \text{ MEF} + \delta_{17} \text{ (4.1q)}$$

$$Q18 = \lambda_{18} \text{ MEF} + \delta_{18} \text{ (4.1 r)}$$

$$Q19 = \lambda_{19} \text{ MEF} + \delta_{19} \text{ (4.1s)}$$

$$Q20 = \lambda_{20} \text{ MEF} + \delta_{20} \text{ (4.1 t)}$$

The formula for the second latent variable (Industry Environment Factors (IEF)) that modeled as 18 indicators is formulated as:

$$Q21 = \lambda_1 \zeta_2 + \delta_{21}$$

$$Q21 = \lambda_1 \text{ IEF} + \delta_{21} \text{ (4.2a)}$$

$$Q22 = \lambda_2 \zeta_2 + \delta_{22}$$

$$Q22 = \lambda_2 \text{ IEF} + \delta_{22} \text{ (4.2b)}$$

$$Q23 = \lambda_3 \zeta_2 + \delta_{23}$$

$$Q23 = \lambda_3 \text{ IEF} + \delta_{23} \text{ (4.2 c)}$$

$$Q24 = \lambda_4 \zeta_2 + \delta_{24}$$

$$Q24 = \lambda_4 \text{ IEF} + \delta_{24} \text{ (4.2d)}$$

$$Q25 = \lambda_5 \zeta_2 + \delta_{25}$$

$$Q25 = \lambda_5 \text{ IEF} + \delta_{25} \text{ (4.2e)}$$

$Q26 = \lambda_6 \zeta_2 + \delta_{26}$	$Q26 = \lambda_6 \text{ IEF} + \delta_{26} \text{ (4.2 f)}$
$Q27 = \lambda_7 \zeta_2 + \delta_{27}$	$Q27 = \lambda_7 \text{ IEF} + \delta_{27} \text{ (4.2 g)}$
$Q28 = \lambda_8 \zeta_2 + \delta_{28}$	$Q28 = \lambda_8 \text{ IEF} + \delta_{28} \text{ (4.2 h)}$
$Q29 = \lambda_9 \zeta_2 + \delta_{29}$	$Q29 = \lambda_9 \text{ IEF} + \delta_{29} \text{ (4.2i)}$
$Q30 = \lambda_{10} \zeta_2 + \delta_{30}$	$Q30 = \lambda_{10} \text{ IEF} + \delta_{30} \text{ (4.2 j)}$
$Q31 = \lambda_{11} \zeta_2 + \delta_{31}$	$Q31 = \lambda_{11} \text{ IEF} + \delta_{31} \text{ (4.2k)}$
$Q32 = \lambda_{12} \zeta_2 + \delta_{32}$	$Q32 = \lambda_{12} \text{ IEF} + \delta_{32} \text{ (4.2 l)}$
$Q33 = \lambda_{13} \zeta_2 + \delta_{33}$	$Q33 = \lambda_{13} \text{ IEF} + \delta_{33} \text{ (4.2 m)}$
$Q34 = \lambda_{14} \zeta_2 + \delta_{34}$	$Q34 = \lambda_{14} \text{ IEF} + \delta_{34} \text{ (4.2 n)}$
$Q35 = \lambda_{15} \zeta_2 + \delta_{35}$	$Q35 = \lambda_{15} \text{ IEF} + \delta_{35} \text{ (4.2o)}$
$Q36 = \lambda_{16} \zeta_2 + \delta_{36}$	$Q36 = \lambda_{16} \text{ IEF} + \delta_{36} \text{ (4.2p)}$
$Q37 = \lambda_{17} \zeta_2 + \delta_{37}$	$Q37 = \lambda_{17} \text{ IEF} + \delta_{37} \text{ (4.2q)}$
$Q38 = \lambda_{18} \zeta_2 + \delta_{38}$	$Q38 = \lambda_{18} \text{ IEF} + \delta_{38} \text{ (4.2 r)}$

The formula for the third latent variable (Resource Competitive Strategies (RCS)) that modelled as 13 indicators is formulated as:

$Q39 = \lambda_1 \zeta_3 + \delta_{39}$	$Q39 = \lambda_1 \text{ RCS} + \delta_{39} \text{ (4.3a)}$
$Q40 = \lambda_2 \zeta_3 + \delta_{40}$	$Q40 = \lambda_2 \text{ RCS} + \delta_{40} \text{ (4.3b)}$
$Q41 = \lambda_3 \zeta_3 + \delta_{41}$	$Q41 = \lambda_3 \text{ RCS} + \delta_{41} \text{ (4.3 c)}$
$Q42 = \lambda_4 \zeta_3 + \delta_{42}$	$Q42 = \lambda_4 \text{ RCS} + \delta_{42} \text{ (4.3d)}$
$Q43 = \lambda_5 \zeta_3 + \delta_{43}$	$Q43 = \lambda_5 \text{ RCS} + \delta_{43} \text{ (4.3e)}$
$Q44 = \lambda_6 \zeta_3 + \delta_{44}$	$Q44 = \lambda_6 \text{ RCS} + \delta_{44} \text{ (4.3 f)}$
$Q45 = \lambda_7 \zeta_3 + \delta_{45}$	$Q45 = \lambda_7 \text{ RCS} + \delta_{45} \text{ (4.3 g)}$
$Q46 = \lambda_8 \zeta_3 + \delta_{46}$	$Q46 = \lambda_8 \text{ RCS} + \delta_{46} \text{ (4.3 h)}$
$Q47 = \lambda_9 \zeta_3 + \delta_{47}$	$Q47 = \lambda_9 \text{ RCS} + \delta_{47} \text{ (4.3i)}$
$Q48 = \lambda_{10} \zeta_3 + \delta_{48}$	$Q48 = \lambda_{10} \text{ RCS} + \delta_{48} \text{ (4.3 j)}$
$Q49 = \lambda_{11} \zeta_3 + \delta_{49}$	$Q49 = \lambda_{11} \text{ RCS} + \delta_{49} \text{ (4.3k)}$
$Q50 = \lambda_{12} \zeta_3 + \delta_{50}$	$Q50 = \lambda_{12} \text{ RCS} + \delta_{50} \text{ (4.3 l)}$
$Q51 = \lambda_{13} \zeta_3 + \delta_{51}$	$Q51 = \lambda_{13} \text{ RCS} + \delta_{51} \text{ (4.3 m)}$

Finally, the formula for the fourth latent variable (Oil and Gas Policy Environment (OGPE)) that modelled as 6 indicators is formulated as:

$$Q52 = \lambda_2 \zeta_4 + \delta_{52} \quad Q52 = \lambda_2 \text{ RCS} + \delta_{52} \quad (4.4a)$$

$$Q53 = \lambda_2 \zeta_4 + \delta_{53} \quad Q53 = \lambda_2 \text{ RCS} + \delta_{53} \quad (4.4b)$$

$$Q54 = \lambda_3 \zeta_4 + \delta_{54} \quad Q54 = \lambda_3 \text{ RCS} + \delta_{54} \quad (4.4c)$$

$$Q55 = \lambda_4 \zeta_4 + \delta_{55} \quad Q55 = \lambda_4 \text{ RCS} + \delta_{55} \quad (4.4d)$$

$$Q56 = \lambda_5 \zeta_4 + \delta_{56} \quad Q56 = \lambda_5 \text{ RCS} + \delta_{56} \quad (4.4e)$$

$$Q57 = \lambda_6 \zeta_4 + \delta_{57} \quad Q57 = \lambda_6 \text{ RCS} + \delta_{57} \quad (4.4f)$$

As indicated in the first to fourth latent variables, the observed variables are denoted by Q1 to Q57,  $\lambda$  represents the factor loadings or observed variables under latent variables where  $\delta$  denotes the error measurement of the model. In addition to the above, to determine the second latent observed variable for investment intentions (II), the formula was stipulated in the equation below: The general notation of the formula is written as:

$$\eta_1 = \lambda_{11} \zeta_1 + \lambda_{21} \zeta_2 + \lambda_{31} \zeta_3 + \lambda_{41} \zeta_4 + \delta_1 \quad (4.5a)$$

The above formula can be written in reflective measurement model-specific notation as:

$$\text{II} = \lambda_{11} \text{MEF}_1 + \lambda_{21} \text{IEF}_2 + \lambda_{31} \text{RCS}_3 + \lambda_{41} \text{OGPE}_4 + \delta_1 \quad (4.5b)$$

The formula for formative measurement model is given as:

$$\eta_1 = \square_{11} \zeta_1 + \square_{21} \zeta_2 + \square_{31} \zeta_3 + \square_{41} \zeta_4 + \zeta \quad (4.6a)$$

The above formula can be written in formative measurement model-specific notation as:

$$\text{II} = \square_{11} \text{MEF} + \square_{21} \text{IEF} + \square_{31} \text{RCS} + \square_{41} \text{OGPE} + \zeta \quad (4.6b)$$

The formula for first structural model with two dependent variables using Greek notation can be set up as follows:

$$Y_1 = \square_{11} \eta_1 + \square_{12} x_1 + \square_{21} x_2 + \square_{31} x_3 + \square_{41} x_4 + \zeta \quad (4.7a)$$

We formulate the formula for the first endogenous variables as follows:

$$\text{INVINT} = \square_{11} \text{MEF} + \square_{21} \text{IEF} + \square_{31} \text{RCS} + \square_{41} \text{OGPE} + \zeta \quad (4.7b)$$

Then, we formulate the formula for the second endogenous variables as follows:

$$\text{RCS} = \square_{11} \text{MEF} + \square_{21} \text{IEF} + \square_{31} \text{OGPE} + \zeta \quad (4.7c)$$

As shown above, the observed variables are donated by  $\eta_1$  (exogenous variable),  $x_1$  until  $x_4$  donated observed variables (exogenous variable),  $\square$  is an estimated value of the second and observed variable ( $x_1$  to  $x_4$ ) to latent variable (Endogenous variable— $y_1$ ) and  $\zeta$  denoted the error measurement of the model.

## 4. Results and discussions

### 4.1. Exploratory factor analysis (EFA)

Under this section, the EFA is conducted to determine the suitability of the data set for statistical modelling. There are some basic requirements for conducting EFA, and as suggested by F. Hair et al. (2014), the matrix data should have sufficient inter items correlation. The principal component analysis (PCA) with direct Oblimin rotation was utilized to check the dimensionality of the scales to further reduce weaker variables for robust analysis. As established in extant literature, a large number of statistical indices have been recommended to determine the suitability of factor analysis. These include Kaiser-Meyer-Olkin (KMO), Bartlett's Tests of Sphericity (BTOS), Measure of Sample Adequacy (MSA), and eigenvalues were used to check the appropriateness of the data for PCA. In this study, PCAs have been conducted for the following constructs; macro-environment factors, industry environment forces, oil and gas policy environment, resource competitive strategies and investment intention. In all cases, poor factor loading items were removed, and cross loading were also removed to enhance the quality of the model.

### 4.2. EFA for macro environment forces

As indicated in Table 1, EFA results showed that the overall Kaiser-Meyer-Olkin value was 0.905 and Bartlett's Tests of Sphericity score was highly significant ( $p$ -value  $< 0.01$ ). Moreover, as it can be observed from the reproduced structure matrix, no item was removed based on the communalities' results ranged from 0.92 to 0.613, which exceeded the recommended minimum value suggested by F. Hair et al. (2014) which is 0.5 or better. The Oblimin rotation with Kaiser normalization results further indicated that macro environment forces produced three factors with eigenvalue exceeding 1. These three factors accounted for 59.303% of the total variances in the items. These three factors have factor loadings ranging between 0.92 and 0.74 thus exceeding the minimum recommended value of 0.6 (Sekaran & Bougie, 2010). The factors were accepted for showing satisfactory and reliability. The extracted factors were named accordingly. The first factor had 11.861 eigenvalue, which accounted for 59.30% of the variance, which included ten items relating to economic and legal environment forces. The second factor had an eigenvalue = 2.65, which accounted for 13.22% of the total variation included five items relating to socio-cultural forces. The third factor had an eigenvalue of 1.153, which accounted for 5.77% of the total variance included in five items relating to political forces. From the presentation above, three out of the four original names had been retained. The factor 1 is economic environment, factor 2 is socio-cultural and factor 3 is political forces. As shown in Table 1, the macro environment forces results had indicated the appropriateness of the EFA.

### 4.3. EFA for resource competitive strategies

As indicated in the Table 2, EFA results showed that the overall Kaiser-Meyer-Olkin value was 0.865, and Bartlett's Tests of Sphericity score was highly significant ( $p$ -value  $< 0.01$ ). Again, the communalities' results ranged from 0.676 to 0.501, which exceeded the recommended minimum value suggested by F. Hair et al. (2014) which is 0.5 or better.

The Oblimin rotation with Kaiser normalization results further indicated that resource competitive strategies produced two factors with eigenvalue exceeding 1. These two factors accounted for 58.23% of the total variances in the items. These two factors have factor loadings ranging from 0.94 to 0.607 thus exceeding the minimum recommended value of 0.6 (Sekaran & Bougie, 2010). The factors were accepted for showing satisfactory and reliability. The extracted first factor had eigenvalue = 7.57, which accounted for 58.23% of the variance, which included 10 items relating to entrepreneurial financing. The second factor had an eigenvalue = 1.42, which accounted for 10.92% of the total variation included 4 items relating to knowledge sharing. The factors had retained their names for instance factor 1 is entrepreneurial financing and factor 2 is knowledge sharing. As shown in Table 2, the resource competitive strategies' results had indicated the appropriateness of performing EFA.

**Table 1. EFA on macro environment forces**

	Component		
	1	2	3
Exchange rates have impact on this industry	<b>.926</b>	.424	-.412
Unemployment rate has impact on this industry	<b>.919</b>	.433	-.404
Inflation rate has impact on this industry	<b>.894</b>	.421	-.427
General economic climate has impact on this industry	<b>.888</b>	.434	-.389
Interest rates have impact on this industry	<b>.879</b>	.424	-.457
Occupational health and safety have impact on this industry	<b>.877</b>	.323	-.428
Professional code of conduct has impact on this industry	<b>.863</b>	.459	-.589
Business regulatory requirements have impact on this industry	<b>.835</b>	.351	-.571
Labour laws have impact on this industry	<b>.834</b>	.336	-.429
Licences renewal has impact on this industry	<b>.804</b>	.348	-.579
Government support for local businesses has impact on this industry	<b>.745</b>	.519	-.537
I tend to avoid talking to strangers	.390	<b>.917</b>	-.532
I prefer specific instructions to broad guidelines	.404	<b>.902</b>	-.521
I prefer a routine way of life to an unpredictable one full of change	.408	<b>.850</b>	-.498
I would not describe myself as a risk-taker	.390	<b>.841</b>	-.404
I do not like taking too many chances to avoid making a mistake	.439	<b>.793</b>	-.190
Government restrictions on migrations have impact on this industry	.592	.555	<b>-.943</b>
Government legislations have impact on this industry	.604	.552	<b>-.937</b>
Stability of political systems have impact on this industry	.651	.599	<b>-.858</b>
Government restrictions of security control have impact on this industry	.665	.563	<b>-.810</b>
Eigenvalue	11.861	2.645	1.153
% of Variance	59.303	13.224	5.767
Cronbach alpha	0.966	0.916	0.938

KMO = 0.905;  $\chi^2 = 12,391.307$ ; df = 190; p-value = 0.000

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

#### 4.4. EFA for industry environment forces

As indicated in Table 3, EFA results showed that the overall Kaiser-Meyer-Okin value was 0.956 showing that the items were interrelated, and they shared common factors and Bartlett's Tests of Sphericity score was highly significant (p-value < 0.01) pointing to the significance of the correlation matrix and therefore the appropriateness for factor analysis.

The communalities extraction values ranged from 0.813 to 0.504, which exceeded the recommended minimum value suggested by F. Hair et al. (2014) which is 0.5 or better. The Oblimin rotation with Kaiser normalization results further indicated that industry environment forces produced a single factor with eigenvalue of 9.55. The component pattern matrix loadings for the items generally ranged from 0.822 to 0.71, again indicating that the data matrix was suitable for

**Table 2. EFA for dimensions of resource competitive strategies**

	Component	
	1	2
I have an ambitious goal with clear vision and mission	<b>.901</b>	.563
We keep reports on the sales, purchase and income statement	<b>.896</b>	.614
We make use of public financial support and grants	<b>.873</b>	.519
We have accounting systems to manage our operations	<b>.844</b>	.482
Our employees share expertise from education and training	<b>.829</b>	.482
I have leadership managerial skills and decision-making skills	<b>.829</b>	.469
Our company has a good financial base and cash resources	<b>.821</b>	.445
Our employees share business knowledge from partners	<b>.709</b>	.446
I am innovative and proactive	<b>.607</b>	.499
Our employees share business knowledge obtained informally	.536	<b>.940</b>
Our employees share know-how from experience with each other	.521	<b>.928</b>
I am autonomous, competitive aggressor and risk taker	.557	<b>.859</b>
I am motivated and have high confident to run my business	.554	<b>.632</b>
Eigenvalue	7.569	1.420
% of Variance	58.225	10.923
Cronbach alpha	0.925	0.847

KMO = 0.865;  $\chi^2 = 5686.122$ ; df = 78; p-value = 0.000

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

factor analysis thus exceeding the minimum recommended value of 0.6 (Sekaran & Bougie, 2010). Since the items were unidimensional, the extracted solution could not be rotated.

#### 4.5. EFA for oil and gas policy environment

As shown in Table 4, EFA results indicated that the Kaiser-Meyer-Oklins value was 0.836 showing that the items were interrelated and they shared common factors. Bartlett's Tests of Sphericity score were highly significant (p-value < 0.01) pointing to the significance of the correlation matrix and therefore the appropriateness for factor analysis. The communalities extraction values ranged from 0.77 to 0.64, which exceeded the recommended minimum value suggested by F. Hair et al. (2014), which is 0.5 or better.

The Oblimin rotation with Kaiser normalization results further indicated that oil and gas policy environment produced a single factor with eigenvalue of 4.32. The component pattern matrix loadings for the items generally ranged from 0.87 to 0.79, again indicating that the data matrix was suitable for factor analysis thus exceeding the minimum recommended value of 0.6 (Sekaran & Bougie, 2010). Since the items were unidimensional, the extracted solution could not be rotated.

#### 4.6. EFA for investment intentions

As shown in Table 5, EFA results indicated that the Kaiser-Meyer-Oklins value was 0.87 showing that the items were interrelated and they shared common factors. Bartlett's Tests of Sphericity score was highly significant (p-value < 0.01) pointing to the significance of the correlation matrix and therefore the appropriateness for factor analysis. The communalities extraction values ranged

**Table 3. EFA for industry environment forces**

	Component
	<b>1</b>
The strength of suppliers have impact on this sector	.822
Substitutes product of suppliers has impact on this sector	.817
Large capital requirement affect new entrant in this sector	.811
The competition in my area is less fierce.	.803
Threat of suppliers establishing retail outlets have impact on this sector	.799
Large number of suppliers has impact on this industry	.792
The oil and gas sector has fewer competitors.	.784
Brand loyalty makes it difficult for new entrant to enter this sector	.783
Access to distribution channels can affect new entrant in this sector	.782
Buyers demand for high quality product has impact in this sector	.759
Buyer's abilities to force down prices have impact in this sector	.759
High product differentiation leads to competition in this sector	.751
Buyer's abilities to switch to competing brands have impact in this sector	.750
It is difficult for new SME entrants to enter the sector	.713
Specialized knowledge can affect new entrant in this sector	.712
High barriers leads to competition in this sector	.708
Eigenvalue	9.546
% of Variance	59.660
Cronbach alpha	0.956

KMO = 0.956;  $\chi^2 = 5508.021$ ; df = 120; p-value = 0.000

Extraction Method: Principal Component Analysis.

Components extracted

from 0.74 to 0.61 which exceeded the recommended minimum value suggested by F. Hair et al. (2014) which is 0.5 or better. The Oblimin rotation with Kaiser normalization results further indicated that oil and gas policy environment produced a single factor with eigenvalue of 3.9. The component pattern matrix loadings for the items generally ranged from 0.86 to 0.78, again indicating that the data matrix was suitable for factor analysis thus exceeding the minimum recommended value of 0.6 (Sekaran & Bougie, 2010). Since the items were (unidimensional) singly extracted, the solution could not be rotated.

#### 4.7. Convergent validity and discriminant validity

Convergent validity and discriminant validity were used to assess the model effectiveness. The study had assessed convergent validity using Average Variance Extracted (AVE  $\geq 0.5$ ) and composite reliability (C.R  $\geq 0.70$ ) as suggested by Fornell and Larcker (1981). F. Hair et al. (2014) suggested that rho\_A values can be used to further assess CR scores. As demonstrated in Table 6, all the AVEs were greater than 0.50 i.e. the AVEs ranged from 0.549 to 0.663. The CR values were greater than the recommended minimum value of 0.70 i.e the CR values ranged from 0.88 to 95 establishing a satisfactory AVE and CR. Using Fornell and Larcker (1981) guidelines the square roots of the AVE constructs must be higher than

**Table 4. EFA on oil and gas policy environment**

	Component
	1
There are financial assistances for businesses in this sector	.877
There is a local employment policy in this sector	.870
Local businesses have readily access to business opportunities in this sector	.866
There is a local workforce education policy in this sector	.842
There is a local business skill and expertise development policy in this sector	.838
There are existences of local business incubators in this country	.797
Eigenvalue	4.324
% of Variance	72.059
Cronbach alpha	0.922
KMO = 0.836; $\chi^2 = 2143.605$ ; df = 15; p-value = 0.000	
Extraction Method: Principal Component Analysis.	
Components extracted	

**Table 5. EFA for investment intentions**

	Component
	1
Our company will invest in oil and gas due to high probability	.862
Our company plan to invest in the oil and gas sector	.808
Our company would like to invest in the oil and gas sector	.799
Our company intend to invest in the oil and gas sector	.796
Our company is likely to invest in the oil and gas business	.793
Our company want to invest in the oil and gas sector	.783
Eigenvalue	3.910
% of Variance	65.171
Cronbach alpha	0.893
KMO = 0.868; $\chi^2 = 1540.315$ ; df = 15; p-value = 0.000	
Extraction Method: Principal Component Analysis.	
Components extracted	

the inner constructs. As illustrated in Table 6 the square roots of the AVE constructs were higher than the correlation of the inner constructs. Furthermore, rho\_A values were of the range 0.903 to 0.983. Having achieved satisfactory discriminant validity and convergent validity, the present study proceeded with the path estimation.

#### 4.8. Hypothesis testing

Table 7 presents the results of the partial least square and hypothesized testing. The survey results showed that six (6) out of the seven (7) hypotheses are confirmed as indicated in Table 5.18. The predictive power of the model was 84.3% and 73.4%, respectively, for resource competitive strategies and investment intentions. The model had been empirically supported. Thus, macro environment forces (political, economic, legal environment and socio-cultural factors), industry environment forces (threat of entry, power of customers, power of suppliers and competitive

**Table 6. Convergent validity and discriminant validity Fornell-Larcker criterion**

Construct	CR	AVE	rho_A	Mean	Std. D	1	2	3	4	5
1	0.953	0.549	0.960	3.02	0.95	<b>0.741</b>				
2	0.892	0.583	0.903	3.62	0.98	0.307	<b>0.764</b>			
3	0.954	0.536	0.983	3.23	1.07	-0.111	0.255	<b>0.732</b>		
4	0.922	0.663	0.925	3.42	0.91	0.428	0.779	0.166	<b>0.814</b>	
5	0.940	0.549	0.944	3.39	0.90	0.411	0.853	0.204	0.914	<b>0.741</b>

Note: Square Root of Average Variance Extraction (AVE) shown on diagonal in italic; CR = Composite Reliability

Industry Environment Forces = 1; Investment Intention = 2; Macro Environment Forces = 3; Oil and Gas Policy Environment = 4; Resource Competitive Strategies = 5

**Table 7. Partial least squares results and hypothesis testing**

Hypothesis Path	Path Coefficient ( $\beta$ )	T Statistics	p—Values	Results
MEF -> II	0.081	3.601	0.000*	Supported
MEF -> RCS	0.082	2.926	0.004*	Supported
IEF -> II	-0.044	1.353	0.177	Not Supported
IEF -> RCS	0.107	3.280	0.001*	Supported
RCS -> II	0.660	10.898	0.000*	Supported
OGPE -> II	0.153	2.889	0.004*	Supported
OGPE -> RCS	0.798	33.317	0.000*	Supported
<b>Model Fitness</b>		<b>R Square</b>	<b>R Square Adjusted</b>	
Investment Intentions		0.738	0.736	
Resource Competitive Strategies		0.843	0.842	

\* $p < 0.01$ , \*\* $p < 0.05$ , \*\*\* $p < 0.1$

Macro Environment Forces = MEF; Industry Environment forces = IEF; Resource Competitive Strategies = RCS; Oil and Gas Policy Environment = OGPE; Investment Intentions = II

rivalry) and oil and gas policy environment forces exert significant influence on resources competitive strategies. Likewise, macro environment forces, oil and gas policy environment forces and resources competitive strategies exert significant influence on SMEs' investment intentions in Ghana's downstream oil and gas sector.

H1 is supported macro environment forces significantly ( $\beta = 0.081$ ,  $p < 0.000$  and T-statistics 3.601) relate to SMEs investment intentions in Ghana's downstream oil and gas sector; H2 is not supported industry environment forces insignificantly ( $\beta = -0.044$ ,  $p > 0.000$  and T-statistics = 1.353) relate to SMEs investment intentions in Ghana's downstream oil and gas sector; H3 is supported oil and gas policy environment significantly ( $\beta = 0.153$ ,  $p < 0.005$  and T-statistics = 2.889) relate to SMEs investment intentions in Ghana's downstream oil and gas sector; H4 is supported resource competitive strategies significantly ( $\beta = 0.660$ ,  $p < 0.005$  and T-statistics = 10.898) relate to SMEs investment intentions in Ghana's downstream oil and gas sector.

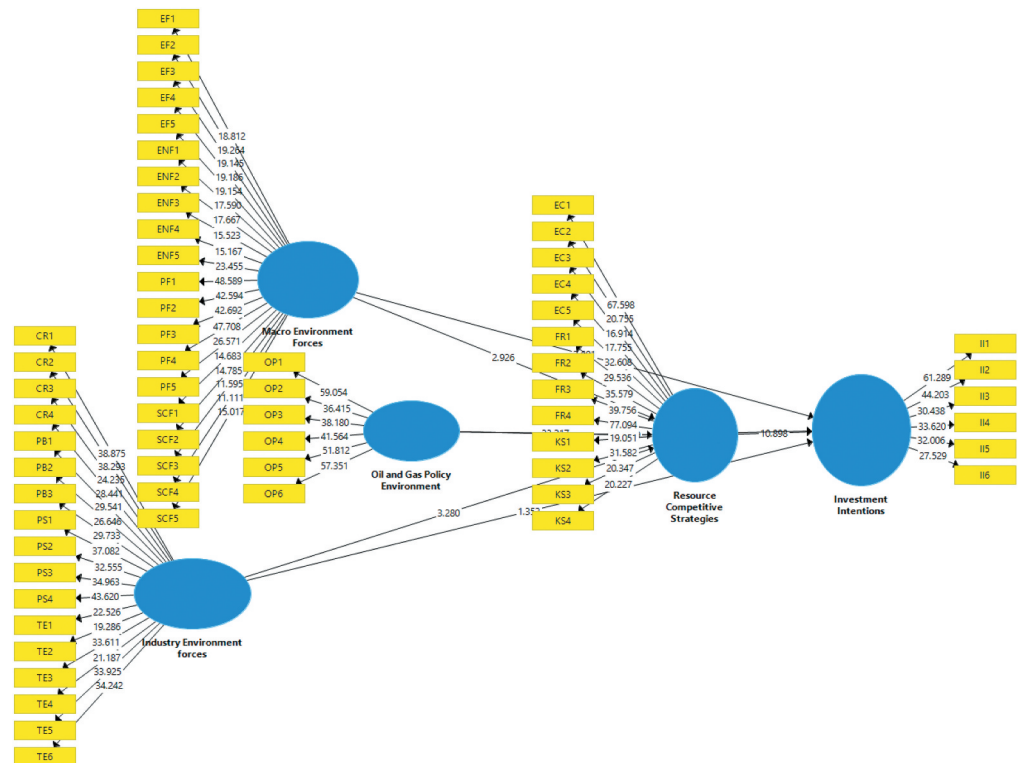
#### 4.9. Mediating role of resource competitive strategies

Table 8 presents the mediating role of resource competitive strategies on macro environment forces, industry environment forces and oil and gas policy environment. There are three hypotheses that are tested with these regard. The H8 is supported resource competitive strategies significantly ( $\beta = 0.054$ ,  $p < 0.006$  and T-statistics = 2.781) and mediated the relationship between macro environment forces and investment intentions. The H9 is supported resource competitive strategies significantly ( $\beta = 0.070$ ,  $p < 0.001$  and T-statistics = 2.781) and mediated the relationship between industry environment forces and investment intentions. The H10 is supported resource competitive strategies significantly ( $\beta = 0.526$ ,  $p < 0.000$  and T-statistics = 0.000) mediate the relationship between oil and gas policy environment and investment intentions Figure 2 and 3.

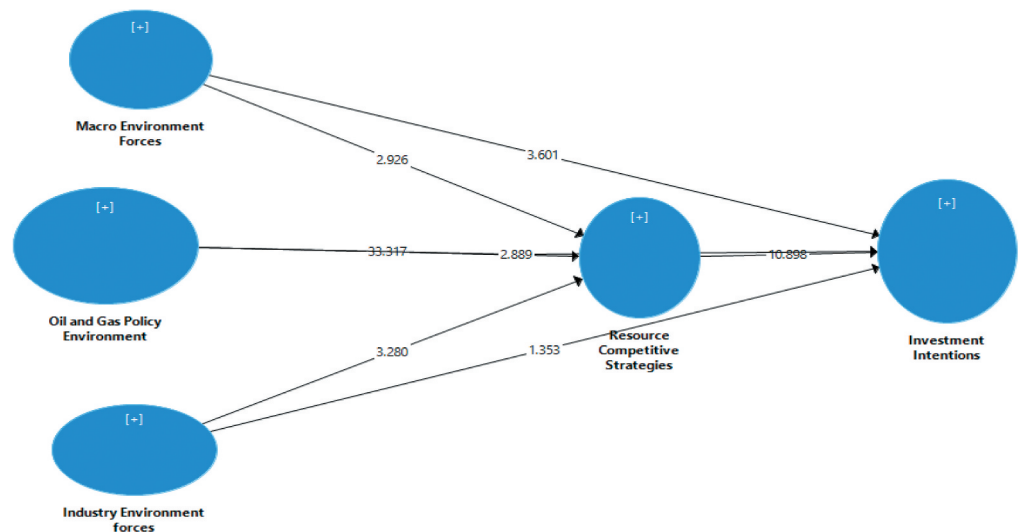
#### 4.10. Confirmatory factor analysis

Traditional statistical methods usually use a single statistical test to determine the significance of the analysis. However, structural equation modelling (SEM), and in particular CFA, relies on multiple statistical tests to determine the fit of the model to the data. The chi-square test indicates the size of the difference between the expected and observed covariance matrices. A chi-square value close to zero indicates a small difference between expected

**Figure 2. Investment strategy structural model.**



**Figure 3. The hypothesized results.**



and observed covariance matrices. In addition, the probability level should be greater than 0.05, if the chi-square is close to zero. As indicated in Table 9, five main criteria were used to determine the overall model fit for the structural model. Namely, Chi-square/degree of freedom ( $\chi^2/\text{d.f.}$ ) standardized mean square values (SRMR), Normed Fit Index (NFI), Geodesic Distance (d\_G), Geodesic Distance (d\_G) and Squared Euclidean Distance (d\_uls). SmartPLS had provided 3.0 as recommended minimum value for chi square test and 0.080 as the

**Table 8. Mediating role of resource competitive strategies**

Hypothesis Path	Path Coefficient (β)	T Statistics	p Values	Results
IEF -> RCS -> II	0.070	3.205	0.001*	Supported
MEF -> RCS -> II	0.054	2.781	0.006*	Supported
OGPE -> RCS -> II	0.526	10.283	0.000*	Supported

\* $p < 0.01$ , \*\* $p < 0.05$ , \*\*\* $p < 0.001$

**Table 9. Model fit indices for subscale from confirmatory factor analysis**

Fit index	Saturated Model	Estimated Model	Recommendations
Chi square/degree of freedom( $\chi^2/d.f.$ )	2.355	2.355	Acceptable
Standardized root mean square residual (SRMR)	0.068	0.068	Acceptable
Normed Fit Index (NFI)	0.946	0.946	Acceptable
Geodesic Distance (d_G) Squared Euclidean Distance (d_uls)	0.335 0.345	0.335 0.345	Acceptable Acceptable

minimum value for SRMR. From the study, chi square for the study was 2.355 and 0.080 for SRMR, NFI was 0.946, d\_uls was 0.335 while d\_G was 0.345, which showed acceptable value for the proposed model (Hooper et al., 2008; Salloum et al., 2019). This indicates that the research model is of good fit.

## 5. Discussions

The study finds that H1 supports macro environment forces significantly ( $\beta = 0.081$ ,  $p < 0.000$  and T-statistics 3.601) and relates to SMEs investment intentions in Ghana's downstream oil and gas sector. Drawing from the theory Strategic positioning the business environment is extensively influenced by external factors like political, economic, social, technological and among others, stakeholders and expectations (Johnson et al., 2008). Johnson et al. (2008) belief that, the macro-external factors as well as competitors, market systems, control the business environment and industry factors hence the need for the strategic positioning theory. The researcher limited the discussion in this study to strategic positioning theory in relation to the macro-environmental factors. The macro-environment is the elements that influence every aspect of the business (Johnson et al., 2008). To this end, the study has established that the theory of strategic positioning is consistent with the findings of the study.

The study finds that H2 does not support industry environment forces insignificantly ( $\beta = -0.044$ ,  $p > 0.000$  and T-statistics = 1.353) and relates to SMEs investment intentions in Ghana's downstream oil and gas sector. Relating the findings to previous studies, Porter argues that the five forces model provides a greater insight to identify and analyze the competitive factors that influences the business industry (Porter, 1980a). The main rationale behind industry forces is that, companies also use internal resources to achieve a success (Kim et al., 2004; MK. Appiah et al., 2021). The competitiveness within an industry is governed by five main forces; the bargaining power of suppliers, the bargaining power of customers, the bargaining power of consumers, competitive to rivalry and the threat of new entries. Thus, forces that control an environment influence its market environment (Hibbets et al., 2003). The results have failed to show consistency with the Porter's five forces model.

The study finds that H3 supported oil and gas policy environment significantly ( $\beta = 0.153$ ,  $p < 0.005$  and T-statistics = 2.889) and relate to SMEs investment intentions in Ghana's downstream oil and gas sector, which is again consistent with the theory of strategic positioning. Previously, studies have reported that, policy environment influences business decisions and choices. Appiah et al. (K. M. Appiah et al., 2018a) and Strachan et al. (2000) emphasized how policy environment determines behavioural performance of businesses. Using a spatial panel approach, Georgellis and Wall (2004) highlighted the impact that government policy environment have on entrepreneurship. Macro-environmental factors like inflation, interest rates, foreign direct investments, taxation and others have a toll on the investment decisions of SMEs. In the same way, Christensen and Goedhuys (2004) reported that national conditions influence the behaviour of SMEs and determine their performance. Christensen and Goedhuys indicated that, the policy environment is a major obstacle to SMEs and new businesses, and these obstacles are in the areas of labour cost, taxation and labour regulations.

The study finds that H4 is supported resource competitive strategies significantly ( $\beta = 0.660$ ,  $p < 0.005$  and T-statistics = 10.898) relate to SMEs investment intentions in Ghana's downstream oil and gas sector which is consistent with the RBV theory. The study finds H5 is supported there is mediating effect of resources competitive strategy on the relationships between macro environment, industry forces oil and gas policy and investment strategy. The H5a is supported resource competitive strategies significantly ( $\beta = 0.054$ ,  $p < 0.006$  and T-statistics = 2.781) mediate the relationship between macro environment forces and investment intentions. The H5b is supported resource competitive strategies significantly ( $\beta = 0.070$ ,  $p < 0.001$  and T-statistics = 2.781) mediate the relationship between industry environment forces and investment intentions. The H5c is supported resource competitive strategies significantly ( $\beta = 0.526$ ,  $p < 0.000$  and T-statistics = 0.000) mediate the relationship between oil and gas policy environment and investment intentions. These results corroborate with previous reports. As an example instance Barney (2001) argues that, to be able to gain a competitive advantage a company resource must be rare, must not be imitable, valuable, cannot be substituted and immobile. These resources can be either tangible or intangible. Tangible resources may include human resources, physical resources like plant, equipment, machine etc., financial resources, technological resources and other tangible assets. The intangible resources are those resources that cannot be touched like skills, knowledge, capability and reputation and others. Businesses that amass these resources have the capacity to control the market and gain competitive edge over its competitors. One of the most important factors projected by the RBV is the core competency of a firm coupled with its resources, which equals competitive advantage (Connor, 2002).

## 6. Conclusions and implications

This study has been conducted to identify and prioritize factors affecting Small and Medium Enterprises (SMEs) investment intentions by integrating RBV Theory, Theory of Constraint and theory of strategic positioning. The major findings of the study are that macro environment factors, resource competitive strategies and oil and gas policy-specific factors were significant determinants of SMEs investment intentions. Again, the study revealed that the resource competitive strategies significantly mediate the relationship between macro environment factors, industry forces oil and gas policy support and investment intentions. These results are robust and consistent with resource-based view, theory of constraint and theory of strategic positioning. Moreover, these results contribute new knowledge towards developing investment strategy for the downstream oil and gas industry. Besides, these findings are important for policy makers to renew commitment and provide the needed framework to investors to enhance indigenous participation in the industry. SMEs can also be massively supported by the government of Ghana, World Bank Group, International Monetary Fund (IMF) to successfully partake in the oil and gas business.

## 7. Suggested areas for further studies

This study focused entirely on SMEs, which are basically made up micro, small and medium enterprises. The study suggests that future studies should take large firms into consideration .

Particularly, comparative studies between the large firms and SMEs must be considered to ascertain the variability in investment intentions in the oil and gas sector. Besides, this study covered all the SMEs industry in Ghana. It is suggested that future researchers concentrate on specific industries and determine their investment intentions and compare the results. Geographically, this study is limited to Ghanaian SMEs; this could be replicated in other oil-producing countries such as Nigeria, Uganda, Russia, Ukraine, Denmark, Indonesia and Malaysia. Moreover, it is suggested that future studies should take into consideration the size of the company, industry differences, country-specific factors amongst other pertinent issues with regards to investment intentions in the oil and gas sector.

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#### Author details

Michael Karikari Appiah<sup>12</sup>  
 E-mail: [kofikarikari@yahoo.com](mailto:kofikarikari@yahoo.com)  
 ORCID ID: <http://orcid.org/0000-0002-3350-9597>  
 Bayu Taufiq Possumah<sup>2</sup>  
 Nur Azura Sanusi<sup>2</sup>

<sup>1</sup> University of Environment and Sustainable Development, Somanya, Ghana.

<sup>2</sup> School of Social and Economic Development, Universiti Malaysia Terengganu, Malaysia.

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