Examining the effect of leadership styles on organizational effectiveness in the oil and gas sector: does knowledge acquisition capacity matter?

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Abstract

Purpose – The purpose of this study is to investigate the relationship between leadership styles and organizational effectiveness in the oil and gas industry, with a particular focus on the moderating role of knowledge acquisition capacity (KAC).

Design/methodology/approach – Using a survey research design, data was collected from 322 respondents comprising faculty employees in the upstream, midstream and downstream of the oil and gas sector in Ghana. The data were analyzed by using the ordinary least squares approach to structural equation modelling with the use of SPSS and Amos software.

Findings – The findings contribute to the existing body of knowledge by confirming the positive associations between transformational and transactional leadership styles and organizational effectiveness. Moreover, the study highlights the significant moderating role of KAC, shedding light on the interaction between leadership styles and the ability to acquire and integrate external knowledge.

Originality/value – By investigating the influence of KAC, which represents a company's ability to acquire and integrate external knowledge, this study provides a deeper understanding of how leadership styles interact with knowledge acquisition to shape organizational effectiveness. The study makes a contribution to the upper-echelon theory and a practice-knowledge contribution for managers in the oil and gas industry in Ghana.

Keywords Leadership styles, Organizational effectiveness, Knowledge acquisition capacity matter, Transformational leadership, Transactional leadership

Paper type Research paper

Introduction

Organizational effectiveness has become a key area in the world of human service companies in recent years (Ali and Anwar, 2021) and the oil and gas industry is no different. Many organizations have focused on building up the capacities of their employees to function well in dynamic contexts since scientists and scholars feel that effectiveness is the key to all organizational analysis (Lewis *et al.*, 2009). Organizational effectiveness, according to (Tojari *et al.*, 2011), relates to how seamlessly, efficiently, and goal-directed an organization's internal operations are. One major factor that influences or affects organizational effectiveness is effective leadership (Mitra, 2020). In other words, effective leadership contributes to organizational effectiveness, according to Golabdost and Rezaei (2016).

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Studies (Chang *et al.*, 2015; Ali and Anwar, 2021) have been conducted to establish the impact of Leadership styles on organizational effectiveness. Tojari *et al.* (2011) investigated the influence of leadership styles and organizational culture on effectiveness in the sporting sector. The findings of their study revealed that transformational (Judge and Piccolo, 2004) leadership has a strong positive significant impact on organizational effectiveness. However, the Tojari *et al.* (2011) study established that transactional leadership had a direct negative impact on organizational effectiveness. A meta-analytic research on transformational-transactional leadership theory explains that, management by exception – passive (one form of transactional leadership dimensions) has a negative, nonzero relationships with the following leadership criteria: follower job satisfaction, follower leader satisfaction, follower motivation, leader job performance, group or organization performance, and rated leader effectiveness (Judge and Piccolo, 2004). Among the various facets encompassing transactional leadership, such as contingent reward, management by exception – active, and management by exception – passive, it was notable that contingent reward leadership demonstrated validity levels akin to those observed in transformational leadership. While there was a marginal difference in overall validities (0.39 vs. 0.44, respectively), contingent reward leadership exhibited higher validity coefficients in three out of six criteria compared to transformational leadership (Judge and Piccolo, 2004). In the same research, it is noteworthy that other leadership styles (including management by exception – active, management by exception – passive, and laissez-faire) also displayed predictive abilities concerning the criteria, albeit with relatively modest coefficient estimates. It is important to highlight that management by exception – passive leadership indicated negative correlations with the leadership criteria, with several correlations failing to achieve statistical significance.

It is important to note that most of the studies highlighted above were done in different sectors. It is therefore an open question if leadership will have a similar effect on organizational effectiveness within the oil and gas industry in Ghana and to what degree will this resultant effect impact the general performance of firms in the oil and gas industry.

Knowledge acquisition capability (KAC) is important within this context because firms learn from both their internal and external business environment, and it is therefore important that firms put in place mechanisms that help them to effectively integrate their newly acquired knowledge with their existing knowledge so as to come up with new innovative solutions. The term "Knowledge Acquisition Capacity" describes a company's capacity to locate and obtain fresh knowledge from outside sources (Zahra and George, 2002). Knowledge is a vital resource for organizations since it enhances the organization's ability to create, renew, and recombine in achieving set goals and sustain competitive advantage in a changing environment (Xie *et al.*, 2018). Knowledge is a critical resource for maintaining valued history, learning new techniques, addressing problems, developing core competencies, and beginning new scenarios for individuals and organizations (Liao *et al.*, 2009). Organizations do not operate in isolation; rather they operate within a vast, dynamic, and turbulent environment. Hence, leaders require external knowledge to enhance internal resources in achieving its performance and survival. To accomplish this, firms need to develop the capability to identify, assess, and obtain external knowledge considered germane to its business activities (Chen *et al.*, 2012; Kavusan *et al.*, 2016).

Some empirical studies have been done on KAC and its attendant consequences on organizational effectiveness or performance (Kavusan *et al.*, 2016; Xie *et al.*, 2018). However, from Ghanaian perceptive studies of this kind is rare, most especially in the oil and gas industry. Also, prior studies have not looked at the effect of leadership styles on organizational effectiveness with "knowledge acquisition capacity" as the moderator. It is against this background that, this study focused on the impact of leadership styles on organizational effectiveness in the oil and gas industry with knowledge acquisition capacity

serving as a moderator. The study is premised on the upper echelon theory and contingency theory. The impact of transactional and transformational leadership on organizational effectiveness is highly valued by the upper-echelon hypothesis. While the contingency theory illustrates how the KCA plays an interactive fit in the leadership and organizational effectiveness debate, both transactional and transformational leadership.

This study contributes to the upper-echelon theory by explaining the relationship between transactional, and transformational leadership and organizational effectiveness. Also, the moderating effects of knowledge acquisition capacity in leadership and organizational effectiveness link investigated by this study contributes to the Contingency theory. More specifically, the study makes the following theoretical contributions. First, the study contributes to the upper-echelon theory by examining the relationship between transformational and transactional leadership styles and organizational effectiveness. The study contributes to the existing body of knowledge by specifically investigating the impact of leadership styles, namely transformational and transactional leadership, on organizational effectiveness. The findings of this study support previous research that has found a positive relationship between transformational leadership and organizational effectiveness (Bass and Avolio, 1994; Chiun Lo *et al.*, 2009). Additionally, the study provides insights into the relationship between transactional leadership and organizational effectiveness, showing a positive association between the two (Xirasagar *et al.*, 2005).

Second, the study further illuminates the role of knowledge acquisition capacity and bridging the gap in the upper-echelon theory. One of the key contributions of the study is to focus on the KAC as a moderator in the relationship between leadership styles and organizational effectiveness. This study fills a gap in the literature by examining the moderating role of knowledge acquisition capacity (KAC) in the relationship between leadership styles and organizational effectiveness. Previous studies have not extensively explored the influence of KAC in this context, and this study addresses that limitation. The findings suggest that KAC moderates the relationship between both transformational and transactional leadership styles and organizational effectiveness. While prior research has explored the impact of leadership styles on effectiveness, the role of KAC as a moderating factor has been largely neglected (Bass and Avolio, 1994; Chiun Lo *et al.*, 2009; Xirasagar *et al.*, 2005). Our findings underscore the significance of KAC as a critical variable that influences how leadership styles translate into organizational outcomes. By demonstrating the moderating effect of KAC, our study enriches the upper-chelon theory's applicability and relevance. The upper-echelon theory posits that the characteristics and experiences of senior management influence organizational outcomes (Hambrick and Mason, 1984). However, previous research within this framework has predominantly focused on personal attributes of senior executives. Out study extends the theory by considering the organizational capacity of KAC as a critical factor determining outcomes. This broadens our understanding of how leadership at the upper echelons interacts with organizational capacities, highlighting the interplay between leadership, knowledge management, and effectiveness. By incorporating KAC as a moderating factor, this study provides a deeper understanding of how leadership styles and KAC interact to influence organizational effectiveness.

Third, this research has practical implications for the oil and gas industry. The findings suggest that adopting effective leadership styles, such as transformational and transactional leadership, can enhance organizational effectiveness in this sector. This knowledge can inform the refinement of leadership practices and guide the management of oil and gas companies. By incorporating suitable and appropriate leadership styles based on the study's findings, the industry can increase profitability and ensure sustainability, benefiting both investors and the overall economy. Furthermore, the study highlights the importance of knowledge acquisition for leaders in the industry to enhance internal resources and achieve

firm performance and survival. This understanding can guide leaders in their efforts to obtain and integrate external knowledge relevant to the oil and gas business activities.

Finally, the study carries practical implication for the oil and gas sector. The findings suggest that leaders in this sector should not only focus on adopting effective leadership styles but also prioritize the development of Knowledge Acquisition Capacity. This dual focus empowers organizations to harness the full potential of their leadership and knowledge management practices, ultimately leading to enhanced organizational effectiveness, profitability, and sustainability.

Literature review and theory development

Theoretical review

The upper echelon theory contends that a company's senior management team strongly influences organizational outcomes (Hambrick and Mason, 1984). In other words, senior executives make decisions that affect the results of their companies by basing them on their unique interpretations of the strategic challenges they encounter, which in turn are shaped by their backgrounds, core beliefs, and personalities. Two well-known leadership philosophies are transactional leadership and transformational leadership. Because the leader-follower interactions are founded on a series of trades and rewards, transactional leadership has typically been conceived as a cost/benefit exchange process. In this leadership style, managers make expectations clear and give rewards to workers when objectives are met (Bass, 1985). Transactional leaders encourage subordinates to meet performance expectations by offering rewards from without. Transactional leadership is characterized by close observation of subordinates' conduct and prompt corrective measures (Bass *et al.*, 2003). By promoting employees' compliance behavior in favor of the leader's decisions that are related to innovation, transactional leadership fosters creativity (Elenkov and Manev, 2005).

On the other hand, leaders that follow a transformational leadership approach hope to motivate people through charisma to go above and beyond what is expected. Such leadership entails emotionally engaged interactions between leaders and followers (Bass, 1990; Raffo and Williams, 2018). The fundamental leadership quality of charisma is something that followers notice and respond to (Conger, 1999). This study recognizes that charisma is a crucial element of transformative leadership (Joy and Sherry, 2003). This technique is frequently used in the literature to evaluate charismatic leadership as an essential component of transformative leadership (Waldman *et al.*, 2004). Beyond a transaction based on rules and regulations, transformational leadership entails a human connection between leaders and their followers (Yammarino *et al.*, 1997). A charismatic leader conveys high performance standards, articulates an inspiring goal based on vision, values, and beliefs, and motivates followers to reach their objectives (Waldman *et al.*, 2004). More crucially, transformational leaders may alter their followers' perceptions of the nature of their work, present an alluring future vision, foster a strong sense of collective identity among followers, and improve both individual and group self-efficacy to achieve motivational results (House, 1977). Transformational leaders can encourage their team members to experiment with new technology and creative ideas (Chen *et al.*, 2012). They inspire others by inspiring their followers, primarily through communicating high expectations and enhancing people's intelligence, knowledge, and learning capacity (Bass *et al.*, 2003). To assure organizational effectiveness, transformational leadership also fosters employee creativity (Bass *et al.*, 2003), team innovation (Eisenbeiss *et al.*, 2008), and job performance (Gong *et al.*, 2009).

Although the link between transformational leadership and organizational performance has been proven (Chen *et al.*, 2012), there is still debate regarding the link between transactional leadership and organizational effectiveness. To maintain organizational

effectiveness, transactional leadership on the one hand assists in promoting followers' compliance behavior (Elenkov and Manev, 2005). However, other empirical researches do not demonstrate a connection between transactional leadership and creativity, which promotes organizational effectiveness (Jung, 2001). Lowe *et al.* (1996) conducted a meta-analysis encompassing 22 published and 17 unpublished studies. Their analysis focused on five dimensions of both transformational and transactional leadership. Transformational leadership dimensions demonstrated overall validities ranging from 0.71 (charisma) to 0.60 (intellectual stimulation). In contrast, transactional leadership exhibited overall validities of 0.41 (contingent reward) and 0.05 (management by exception). The study noted slightly higher validities for leaders in public organizations, irrespective of their organizational level. However, when assessing leader effectiveness through organizational measures like performance appraisals, validities notably decreased, ranging from 0.35 (charisma) to 0.05 (management by exception). Despite this decline, charisma and individualized consideration still displayed noteworthy validities, albeit lower, and these findings were consistent across various studies. Similarly, a study by Judge and Piccolo (2004) extensively explored transformational, transactional, and laissez-faire leadership, drawing data from 87 sources with 626 correlations. Transformational leadership exhibited an overall validity of 0.44, consistently valid across various study designs. Contingent reward (0.39) and laissez-faire (0.37) leadership followed in validity, while management by exception showed inconsistent correlations with criteria. Surprisingly, contingent reward leadership displayed stronger connections with certain criteria compared to transformational leadership. Additionally, transformational leadership showed strong correlations with contingent reward (0.80) and laissez-faire (0.65) leadership. Although transformational and contingent reward leadership generally predicted criteria, transformational leadership did not predict leader job performance.

By defining the boundary condition of leadership, it may be possible to partially explain the conflicting results. The effects of two different leadership styles on organizational success, according to the researchers, depend on an organization's KAC.

Hypothesis development

Transformational leadership and organizational effectiveness. A transformational leader is one who develops their team members' capacity for innovation and new idea generation, which improves organizational effectiveness (Bass and Avolio, 1994). According to (Tojari *et al.*, 2011), an organization's efficiency is determined by how smoothly, effectively, and purposefully its internal processes are carried out. The upper echelon theory led academics to the conclusion that a company's senior management team strongly influences organizational outcomes (Hambrick and Mason, 1984). This theory supports the premise that transformational leadership actively improves organizational success by increasing subordinates' capacity for original thought and innovative action. Through fostering intrinsic drive, transformational leaders can greatly stimulate their team members' creative potential (Bass and Avolio, 1994) which leads to organizational effectiveness. Since fresh consumer and market knowledge further broadens employees' viewpoints, which aids in deepening their thinking and advancing their innovative tendencies, knowledge received from the external environment significantly supports employees' creative behavior fostering organizational effectiveness. According to study by (Chiun Lo *et al.*, 2009), transformational leadership significantly increased organizational effectiveness. In his research (Ipinmoroti, 2002) looked at 169 athletes who competed in the Nigeria Colleges of Education Games in June 2005. The findings show that coaches' transformational leadership style significantly affected how satisfied athletes were with their performances. As a result, athletes who rate their coaches as being highly transformational were more likely to be happy with their

performance task. Additionally, Haider and Riaz, 2010 study's findings demonstrated that both transformational and transactional leadership significantly improve organizational effectiveness. Additionally, through imitating transformational leaders, staff members can emulate critical thinking abilities and creative strategies (Bass and Avolio, 1994). The researchers of this study suggest that as a result:

H1. There is a positive relationship between transformational leadership and organizational effectiveness.

Transactional leadership and organizational effectiveness. Transactional Leadership, also known as managerial leadership, focuses on the role of supervision, organization, and group performance; transactional leadership is a style of leadership in which the leader promotes compliance of his followers through both rewards and punishments (Odumeru and Ogbonna, 2013). Unlike Transformational leadership, leaders using the transactional approach are not looking to change the future, they are looking to merely keep things the same. These leaders pay attention to followers' work in order to find faults and deviations. This type of leadership is effective in crisis and emergency situations, as well as when projects need to be carried out in a specific fashion Odumeru and Ogbonna (2013). When objectives are met, leaders under the transactional leadership paradigm reward their staff (Bass, 1985). The smoothness, effectiveness, and goal-directedness of an organization's internal operations are referred to as organizational effectiveness, according to (Chelladurai and Haggery, 1991). According to the basic tenets of the upper echelon theory, senior executives have an impact on the results of their companies by making decisions based on their unique interpretations of the strategic situations they face, which are in turn influenced by their experiences, values, and personalities (Hambrick and Mason, 1984). In practice, transactional leadership ensures the achievement of organizational effectiveness in that it has typically been viewed as a cost-benefit exchange process since the connections between the leader and the followers are based on a sequence of rewards and trades. Transactional leaders encourage subordinates to meet performance expectations by offering external rewards, which ensures organizational effectiveness. According to research by (Xirasagar *et al.*, 2005), transformational, transactional, and laissez-faire leadership together account for 68% of the difference in evaluated effectiveness, 66% of satisfaction, and 71% of extra effort from subordinates. This empirical review demonstrates a positive correlation between transactional leadership and organizational effectiveness. Transactional leadership is characterized by close observation of subordinates' conduct and prompt corrective measures (Bass *et al.*, 2003). By promoting employees' compliance behavior in support of the leader's innovation-relevant actions, transactional leadership fosters innovation (Elenkov and Manev, 2005), which ensures organizational effectiveness. The researchers contend as a result that:

H2. There is a positive relationship between transactional leadership and organizational effectiveness.

Moderating effects of knowledge acquisition capacity. Transformational leadership. The term "knowledge acquisition capacity" describes a company's capacity to locate and obtain fresh knowledge from outside sources (Zahra and George, 2002). One of these abilities that is acknowledged as being crucial to organizational performance is the capacity for knowledge acquisition (Lane *et al.*, 2001). It assists businesses in identifying, interpreting, and pursuing environmental possibilities as well as acquiring and accumulating external knowledge (Zahra and George, 2002). The interactive fit argument, often known as "fit-as-moderation," puts forth the idea that a firm's performance may be attributed to how well its strategic actions meet the internal and external environmental conditions (Venkatraman, 1989). A company's internal source, KAC, affects organizational performance by identifying

opportunities and setting up resources, procedures, and routines (Eisenhardt and Martin, 2000).

Beyond an interaction based on rules and regulations, transformational leadership entails a human connection between leaders and their followers (Yammarino *et al.*, 1997). In order to ensure organizational effectiveness, transformational leaders can encourage their team members to experiment with new technologies and creative ideas (Chen *et al.*, 2012). This can be done successfully by ensuring higher KAC, which would allow for the acquisition of new knowledge from both inside and outside sources. By inspiring their followers, transformational leaders ensure organizational effectiveness. This is done primarily through the communication of high expectations and stimulation of people's intelligence, knowledge, and learning ability (Bass, 1990). With a higher KAC, followers are able to accomplish more by acquiring a wealth of external knowledge which is utilized to achieve high organizational effectiveness. When considered, the researchers suggest that:

H3. The positive relationship between transformational leadership and organizational effectiveness will be stronger when knowledge acquisition capacity is higher than low.

Transactional leadership. Input from the external world is necessary for successful product development in order to interpret, apply, and perfect internal knowledge resources (Verona, 1999). A focus firm's knowledge base can be increased by acquiring external knowledge, but it can also help enterprises make better use of their existing knowledge (Ahuja and Katila, 2001). Additionally, as was already said, gathering external data and client input is essential to the efficiency of a firm. Knowledge gained from the outside environment aids individuals in developing their creative ideas and critical thinking skills to increase organizational effectiveness. It is a useful tool that aids staff in achieving company objectives and winning the approval of transactional executives. Employee motivation to work hard to achieve organizational effectiveness goals is therefore increased by making the goals more attainable and less dangerous. According to the transactional leadership model, leaders set clear expectations and give praise when objectives are met (Bass, 1985). As a result of the motivation from leaders, subordinates may be more effective in achieving organizational effectiveness quickly when subjected to motivational praise. This is due to the fact that with high KCA, the subordinates would be exposed to more knowledge from both internal and external sources, facilitating their job and ensuring organizational performance. The researchers contend as a result that:

H4. The positive relationship between transactional leadership and organizational effectiveness (Figure 1) will be stronger when knowledge acquisition capacity is high rather than low.

Methodology

Measurement instrument

We modified the transformative leadership evaluation criteria proposed by (Den Hartog *et al.*, 2007). The scale mainly gauges how charismatic a leader is thought to be by the workforce. The ratings ranged from one (Strongly Disagree) to five on a five-point scale (Strongly Agree). While recent criticisms have highlighted limitations in charisma-based leadership measures, it is important to note that these scales continue to be widely used in empirical research (Antonakis *et al.*, 2016).Transformational leadership, including the charisma dimension, remains a fundamental construct in leadership theory (Bass and Riggio, 2006). The charisma

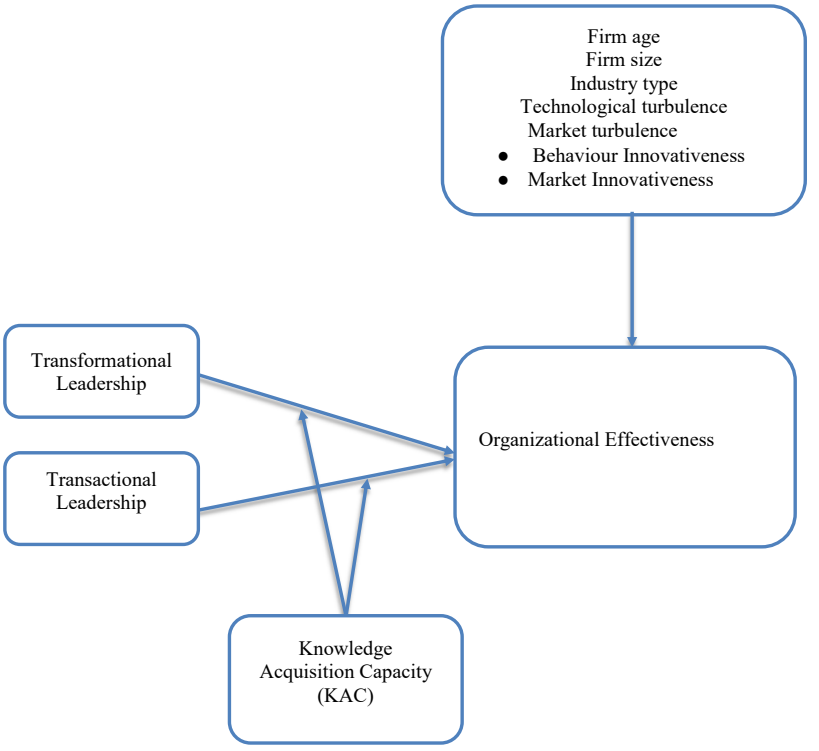


Figure 1.
Conceptual model

Source(s): Authors' own conceptualization from summarized literature

component, which focuses on the inspirational and emotional aspects of leadership, is important for motivating employees and achieving organizational goals and outcomes (House, 1977).We utilized dependent incentives and punishments-focused transactional leadership metrics (Hartog *et al.*, 1997). Rewards and penalties are based on effort put out and performance level attained under this style of leadership. The measures for organizational effectiveness are adopted from (Lucianetti *et al.*, 2017), which ask the respondents to evaluate features of the firm's new products or services introduced to the market. The four components assess how much an organization has integrated new aspects into its management and production processes, such as new technology, management approaches, and production techniques. A four-item scale developed by (Jansen *et al.*, 2005) is used to measure the moderating variable, knowledge acquisition capacity, and it is used to assess an organization's capacity to learn from the outside world.

We used firm size, firm age, industry type, and technological turbulence as control variables to account for the impact of extraneous influences. We used a dummy variable to measure firm size (Large scale = 1; Small scale = 2). To determine the sort of industry, we constructed a dummy variable (high-tech industry = 1; low-tech industry = 0). The length of time the company has been in business is how we calculated the age of the company. We adapted (Jaworski and Kohli, 1993) instruments to measure technological turbulence because it is known to be a significant element that affects organizational effectiveness (Zhou and Wu, 2010).

Sample and data collection

We selected the Ghanaian oil and gas sector for the study for two reasons. First, Ghana offers a rich backdrop for this investigation because of the infant oil and gas sector, primarily made of multinationals, with majority operating on Build-Operate-Transfer models. The organizational leadership dynamics in this context is unique based on the different models the industry players use to survive in this very volatile and nascent environment. It is also generally acceptable that oil and gas companies must continuously integrate new knowledge into their existing knowledge base to ensure organizational performance if they are to thrive and preserve economies of scale in the industry (Li *et al.*, 2009). This makes the study context very crucial and unique for this study. Second, due to the traditional emphasis on hierarchy in terms of culture, managers in Ghana's oil and gas sector display a significant degree of power distance. Compared to managers in developed economies, developing economies' managers maybe more dictatorial or transactional (Casimir and Waldman, 2007). Based on the study characteristics, it is evident that the population of the study is unknown. As contended by (Hair *et al.*, 2009), the minimum sample size for unknown populations is 100 (Hair *et al.*, 2009). Specially for this study a minimum sample size of 250 was selected to improve the validity of the results. As a result, Ghanaian leaders are crucial to the success of their enterprises. The survey was conducted in English from senior executives from the oil and gas industry in Ghana. Based on the study's goals, senior to top management were sampled for the study. A few exceptions were made. In other words middle management personnel who were acting in senior level capacities were also sampled purposively to participate in this study. We solicited feedback and suggestions from a pretest group of twenty senior managers in order to evaluate the face validity and gauge the informants' comprehension of the survey items. We conducted in-person, on-site interviews to get our data. A respectable market research company offered a directory from which 400 oil and gas companies were chosen at random. In order to get their assistance and identify important informants, we initially called these companies on the phone. We were able to administer and retrieve questionnaires to 332 of the 400 oil and gas companies we contacted because certain critical informants were either unavailable or reluctant to take part in the study. Therefore we accrued a response rate of 83%. There is no proof of non-response bias, according to a comparison of respondents and non-respondents in terms of early responses and late responses (within the three-month data collection period), which indicated no significant discrepancies. One of the authors called thirty respondents at random after the fieldwork to confirm that the interviews had been performed and found no proof of cheating.

On average, the informants had ten years of industry experience and 6.6 years of tenure in their firm, which implies that our informants are knowledgeable about both their firm and their industry. The majority of these industrial companies are privately owned (67.4%), with an average age of 13.1 years and a staff size of 236.

Results and analysis. Measurement model assessment. For this study's measurement model, eight model fit indices were used to assess the overall goodness of fit of the model. These were the ratio of χ^2 to the degrees-of-freedom (d.f.), root mean square error of approximation (RMSEA), normed fit index (NFI), comparative fit index (CFI), goodness-of-fit index (GFI), Tucker Lewis Index (TLI), Incremental Fit Index (IFI) and Standardized Root Mean Residual (SRMR). It can observe from Table 1 that all the model indices were within the accepted levels; this confirms that the measurement model as a good fit with the data collected. Reliability, convergent validity and discriminant validity indices were calculated to further assess the model. The results presented in Table 1 indicates that the latent variables considered for this study are reliable. This conclusion was based on the Cronbach's alpha and composite validity values obtained. The Cronbach's alpha and composite validity obtained for the latent variables were all higher than the 0.7 threshold set by Henseler *et al.* (2009).

Operational measures of construct
Model fit indexes: $\chi^2 = 342.077$; d.f. = 144; χ^2/d.f. = 2.376; RMSEA = 0.064; GFI = 0.998; AGFI = 0.966; CFI = 0.918; NFI = 0.968; IFI = 0.919; TLI = 0.903

Latent variable	Indicator variable	Standardized factor loadings (λ)	α	CR	AVE	√ AVE
Transformational Leadership	TRF5	0.720	0.830	0.847	0.527	0.726
	TRF4	0.757				
	TRF3	0.811				
	TRF2	0.721				
	TRF1	0.606				
Transactional Leadership	TRC4	0.841	0.826	0.834	0.627	0.792
	TRC2	0.794				
	TRC1	0.738				
Knowledge Acquisition Capacity	KAC4	0.580	0.635	0.688	0.366	0.605
	KAC3	0.774				
	KAC2	0.414				
	KAC1	0.596				
Organizational Effectiveness	OEM7	0.671	0.822	0.822	0.399	0.632
	OEM6	0.658				
	OEM5	0.668				
	OEM4	0.667				
	OEM3	0.604				
	OEM2	0.566				
	OEM1	0.579				

Source(s): Authors' own work

Table 1. Convergent and discriminant validity indicators

The convergent validity and discriminant validity procedure was used to determine the validity of constructs used for this study, As shown in Table 1, the loadings for the measures of each constructs from the confirmatory factor analysis results, were all relatively large and positive above 0.50. The squared of these loadings, indicate the communality of the measure, or the variance that the measure has in common with the construct. When the communality measures are standardized, the average communality of a block of indicators is referred to as average variance extracted (AVE) (Fornell and Larcker, 1981). The criterion for establishing validity is that the AVE measures should exceed 0.50 to ensure that, on the average, the measures share at least half of their variation with the latent variable (Fornell and Larcker, 1981). As shown in Table 1, the AVE criterion was met for all the latent variables. Again, the correlation between latent constructs in the study was used as the main focus for discriminant validity. The discriminant validity of the constructs was assessed as Fornell and Larcker (1981) suggest, comparing the squared root of the AVE with the correlations among construct. The results showed that the squared root of the AVE in were significantly greater than correlation among latent variable which supports the discriminant validity of the construct.

Structural model assessment. Having verified the measurement model, the structural model was assessed next (see Table 2 and Figure 2). Bootstrapping procedure was performed to ascertain significance of each estimated path. H_1 was supported as transformational leadership was found to have a significant positive effect on organizational effectiveness ($\beta = 0.668$; p-value = 0.000). H_2 was supported as Transactional leadership was found to have a significant positive effect on organizational effectiveness ($\beta = 0.048$; p-value = 0.003). Again, the results showed that the interaction between transformational leadership and knowledge acquisition capacity was negative and significantly related to organizational effectiveness ($\beta = -0.024$, p-value = 0.072). Moreover, the results showed that the interaction

Hypothesis	Structural path	β	S.E	*p*	Hypothesis results
H1	Transformational Leadership → organizational effectiveness	0.668	0.068	0.000***	Supported
H2	Transactional Leadership → organizational effectiveness	0.048	0.016	0.003**	Supported
H3	TRL & KAC → organizational effectiveness	−0.024	0.013	0.072*	Not Supported
H4	TRA * KAC → organizational effectiveness	−0.045	0.016	0.005**	Supported

Note(s): TRL = Transformational Leadership, TRA = Transactional Leadership, KAC = Knowledge Acquisition Capacity
***$p < 0.001$; **$p < 0.01$; and *$p < 0.05$
Source(s): Authors' own work

Table 2. Structural paths showing hypotheses test results

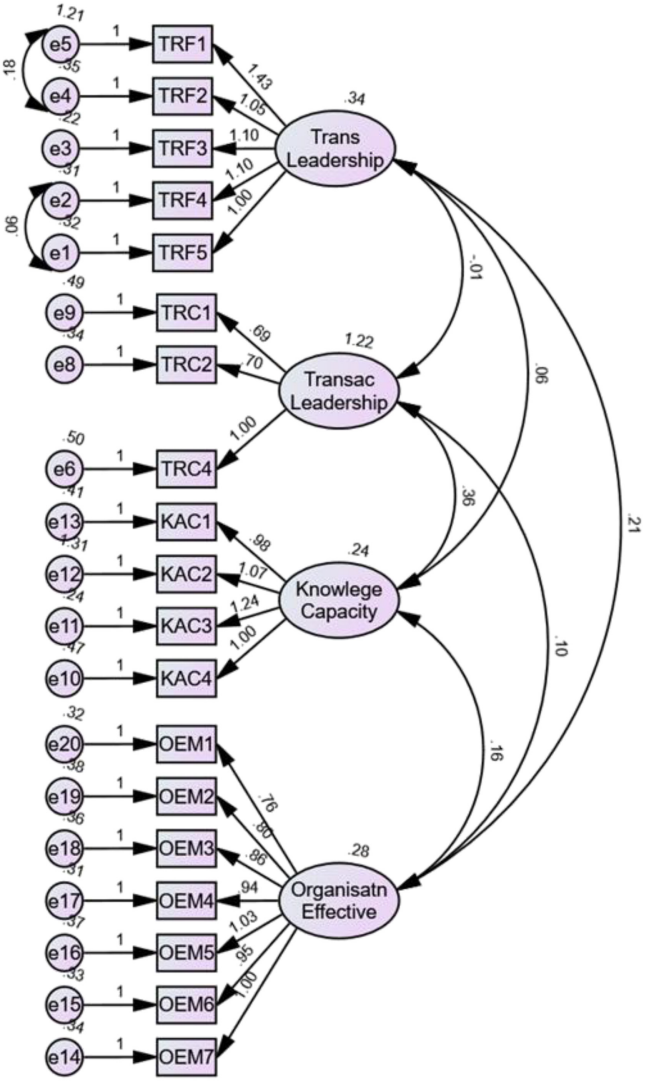
between transactional leadership and knowledge acquisition capacity was negative and significantly related to organizational effectiveness (β = −0.045, *p*-value = 0.005).

Discussion and theoretical implications

Discussions

The main aim of this study was to examine the effect of leadership styles on organizational effectiveness in the oil and gas sector. The study by far establish whether knowledge acquisition capacity matters in the relationship between leadership styles and organizational effectiveness (Figure 3). The leadership styles considered for the study were transformational and transactional leadership. The results disclosed that all the four (4) proposed hypotheses, were significant, which, to a large extent, support the hypothesized model. It is significant to note from the results that transformational leadership was found to have a significant positive effect on organizational effectiveness. This revelation is consistent with the findings of Bass and Avolio (1994) and Chiun Lo *et al.* (2009). According to study by (Chiun Lo *et al.*, 2009), transformational leadership significantly increased organizational effectiveness. However, Tojari *et al.* (2011) findings is incoherent with this study's results regarding the transformational leadership and organizational effectiveness nexus. To Tojari *et al.* (2011), transactional leadership had a direct negative impact on organizational effectiveness but have an indirect good impact through organizational culture. The study also found a positive relationship between transactional leadership and organizational effectiveness. This outcome is consistent with findings of Xirasagar *et al.* (2005). Transactional leadership is characterized by close observation of subordinates' conduct and prompt corrective measures (Bass *et al.*, 2003).

It is imperative to state that in attempt to ascertain the effect of leadership styles on organizational effectiveness, the moderating effects of knowledge acquisition capacity was established. As result, two hypotheses were proposed. These were; first *"the positive relationship between transformational leadership and organizational effectiveness will be stronger when knowledge acquisition capacity is higher than low"*. The second state that "*The positive relationship between transactional leadership and organizational effectiveness will be stronger when knowledge acquisition capacity is high rather than low"*. The result from showed that the second moderated hypothesis (H4) was supported. Results for H3 showed a very interesting twist of finding – the results showed that the interaction between transactional leadership and knowledge acquisition capacity was negative and significantly related to organizational effectiveness. The results suggest that knowledge is a critical factor for performance, however its application in different leadership dimensions matter. Specifically,



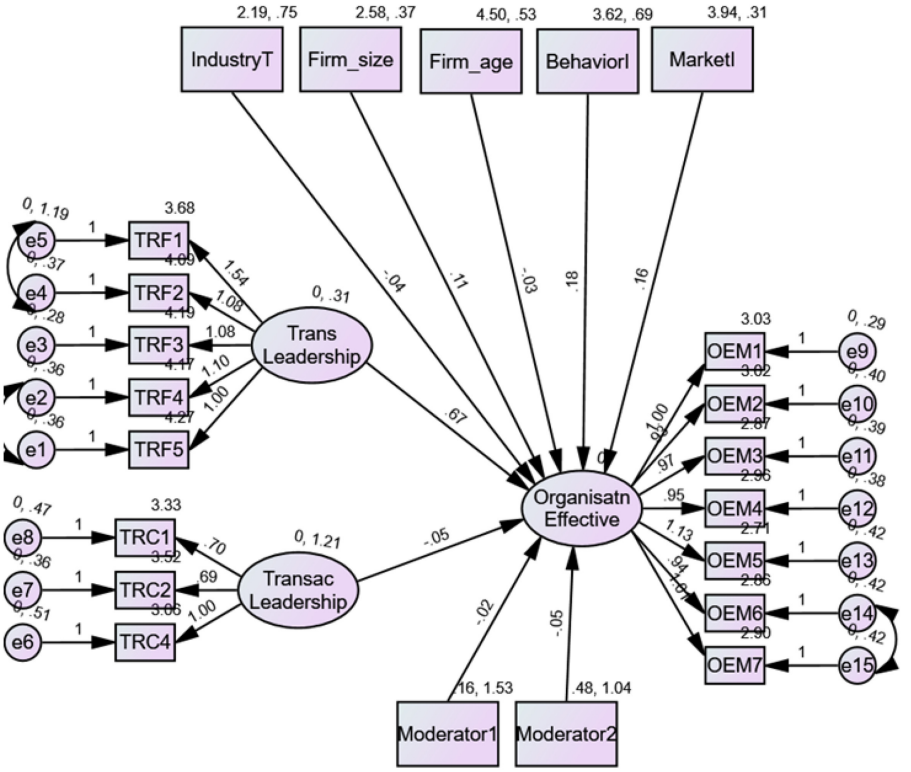
Source(s): Authors' own calculations

Figure 2.
The measurement model

when KAC moderates the relationship between transactional leadership and organizations effectiveness, the effect is significant but negative. This may imply that internal or external knowledge distorts laid down exchanges between the different actors. As a result, with high KAC and a need for greater praise, subordinates would be more effective in achieving organizational effectiveness quickly.

Theoretical implications

This research makes some theoretical contributions. First of all, the study's empirical findings provide support for other studies on the link between leadership and organizational



Source(s): Authors' own calculations

Figure 3.
The structural equation model

effectiveness (Bass and Avolio, 1994; Chiun Lo *et al.*, 2009; Xirasagar *et al.*, 2005). Studies (Tojari *et al.*, 2011; Chang *et al.*, 2015; Ali and Anwar, 2021; Chiun Lo *et al.*, 2009; Ipinmoroti, 2002; Haider and Riaz, 2010; Bass *et al.*, 2003, Elenkov and Manev, 2005) have been conducted to establish the impact of Leadership styles on organizational effectiveness. However, these studies have generally held back from testing Knowledge Acquisition Capability (KAC) in the leadership styles and organizational effectiveness nexus, which is a fundamental concept in the upper echelon theory and contingency theory. The contingency theory illustrates how the KCA plays an interactive fit in the leadership and organizational effectiveness debate, both transactional and transformational leadership. The upper echelon theory contends that a company's senior management team strongly influences organizational outcomes (Hambrick and Mason, 1984). Hence, the impact of transactional and transformational leadership on organizational effectiveness is highly valued by the upper-echelon hypothesis. Unfortunately, this aspect of these two (2) theories have not been looked at in previous studies. Therefore, this gap has been filled in this present study. The argument is that Knowledge Acquisition Capability (KAC) is the backbone of the relationship between leadership styles and organizational effectiveness. Knowledge Acquisition Capability (KAC) is important within this context because leaders learn from both their internal and external business environment (Zahra and George, 2002). Knowledge is a vital resource for organizations since it enhances the organization's ability to create, renew, and recombine in achieving set goals and sustain competitive advantage in a changing environment

(Xie *et al.*, 2018). Knowledge is a critical resource for maintaining valued history, learning new techniques, addressing problems, developing core competencies, and beginning new scenarios for individuals and organizations (Liao *et al.*, 2009). Organizations don't operate in isolation; rather it operates within a vast, dynamic, and turbulent environment. Hence, leaders require external knowledge to enhance internal resources in achieving firm performance and survival. To accomplish this, firm leaders need to develop the capability to identify, assess, and obtain external knowledge considered germane to its business activities (Chen *et al.*, 2012; Kavusan *et al.*, 2016). The result from this study satisfied that the Knowledge Acquisition Capability moderates significantly the relationship between transformational leadership and organizational effectiveness suggesting that leaders require external knowledge to enhance internal resources in achieving firm performance and survival.

Practical implications

In the world of human service companies in recent years, Organizational effectiveness has become a hot topic, and the oil and gas industry is no different (Kotabe *et al.*, 2011). Given the importance of oil and gas industry to the economic and social development of Ghana, there is the need to ensure that all oil and gas companies are sustainable. Any insolvency may adversely affect the investors' capital in particular and the economy in general. One of the factors that may affect the successful operations of oil and gas companies is bad leadership by both the Board and Management. The study will help the industry to adopt and incorporate leadership styles that influence optimum organizational performance. Again, the findings can be used for refinement of the leadership style of Management in managing the oil and gas industry. Upon adoption of good leadership styles in the oil and gas industry based on the findings, the sector will increase its profitability and ensure sustainability. The study will therefore help society to benefit from the corporate social responsibilities provided by the sector as a result of the incorporation of suitable and appropriate leadership styles that ensure profitability and sustainability.

The findings of this study hold significant practical implications for the development of effective management strategies within the oil and gas sector and, more broadly, for management practices across various industries.

First, study underscores the importance of leadership styles, particularly transformational and transactional leadership, in driving organizational effectiveness. For management development, this suggests that organizations should invest in training and development programs that cultivate these leadership styles among their leaders. Leadership development workshops, coaching, and mentorship programs can be designed to help managers acquire and enhance these critical leadership skills. Second, the moderating role of knowledge acquisition capacity (KAC) emphasizes the need for managers to prioritize continuous learning and knowledge integration. Management development initiatives should include components that foster KAC, such as encouraging leaders to engage in external networking, staying updated on industry trends, and fostering a culture of knowledge sharing within organizations. Third, the study's results indicate that the relationship between leadership styles and organizational effectiveness varies depending on the level of KAC. This suggests that management development efforts should focus on helping leaders adapt their leadership approaches to the specific knowledge needs of their organizations. Training programs can teach managers how to assess KAC levels and adjust their leadership styles accordingly.

Given the focus on the oil and gas sector in Ghana, this study's findings are especially pertinent for the industry in terms of relevance of the findings. The sector's unique challenges, such as technological volatility and the need for continuous knowledge integration, make effective leadership and knowledge acquisition critical. Management development programs tailored to the oil and gas industry can use these findings to improve

leadership quality, embrace technological change and cultivate a learning culture. In other words, the sector can prioritize leadership development to ensure that its leaders exhibit the necessary skills, including charisma, inspirational qualities, and transactional efficiency, to navigate the complexities of the industry effectively.

Similarly, with the industry's reliance on technology, management development should encompass training on adopting and integrating new technologies. Leaders need to understand the role of technology in knowledge acquisition and organizational effectiveness. Lastly, the study's emphasis on KAC suggests that organizations in the sector should create a culture of continuous learning. Management development initiatives should encourage employees, especially leaders, to seek and apply new knowledge from external sources.

Limitations and suggestions for future research

We acknowledge the potential for common source bias in our study, as each manager was rated by a single respondent. This inherent limitation arises when data on multiple constructs are collected from a single source, potentially leading to inflated associations or shared methods variance. In our case, respondents rated leadership styles, knowledge acquisition capacity and organizational effectiveness within their respective organizations, which may introduce source bias. To address this problem future studies could employ multi-rater assessments, also known as 360-degree feedback to mitigate common source bias. Also, future research should consider longitudinal studies to overcome common source bias by tracking leadership styles KAC and organizational effectiveness over time. The outcomes of this study may perhaps be limited on the grounds that it was done in Ghana. In other words, the analysis presented in this study was executed at the back of Ghana's data, therefore the findings might not represent the whole continent or the global outlook. This is because the economic dynamics of countries differ from one another. As this study considered quantitative approach, the researchers suggest that further studies should consider mixed method.

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Appendix
Survey instruments

Transformational Leadership

Please indicate your level of agreement or disagreement on a scale of 1- 5 where :

1=Strongly Disagree, 2=Disagree. 3=Neutral, 4=Agree and 5=Strongly Agree.

No.	Statement	Strongly Disagree				Strongly Agree
TRF 1	Our leader sets a good example	**1**	**2**	**3**	**4**	**5**
TRF 2	Our leader has a clear vision on the future opportunities of the group	**1**	**2**	**3**	**4**	**5**
TRF 3	Our leader demonstrates high levels of competence in work behaviors	**1**	**2**	**3**	**4**	**5**
TRF 4	Our leader projects a convincing, powerful, and dynamic presence in his actions at work	**1**	**2**	**3**	**4**	**5**
TRF 5	Our leader provides a good role-model for me to follow	**1**	**2**	**3**	**4**	**5**

Transactional Leadership

1=Strongly Disagree, 2=Disagree. 3=Neutral, 4=Agree and 5=Strongly Agree.

No.	Statement	Strongly Disagree				Strongly Agree
TRC 1	Our leader points out what I will receive if I do what is required	**1**	**2**	**3**	**4**	**5**
TRC 2	Our leader tells me what to do to be rewarded for my efforts	**1**	**2**	**3**	**4**	**5**
TRC 3	Our leader is alert for failure to meet standards	**1**	**2**	**3**	**4**	**5**
TRC 4	Our leader works out agreements with me on what I will receive if I do what needs to be done	**1**	**2**	**3**	**4**	**5**

Knowledge acquisition capacity

1=Strongly Disagree, 2=Disagree. 3=Neutral, 4=Agree and 5=Strongly Agree.

No.	Statement	Strongly Disagree				Strongly Agree
KAC 1	Our firm regularly visits suppliers and customers to acquire new knowledge	**1**	**2**	**3**	**4**	**5**
KAC 2	We collect industry information through informal means (e.g. lunch with industry friends, talks with trade partners)	**1**	**2**	**3**	**4**	**5**
KAC 3	Our firm periodically organizes special meetings with customers or third parties to acquire new knowledge	**1**	**2**	**3**	**4**	**5**
KAC 4	Our employees regularly approach third parties such as accountants, consultants, or tax consultants	**1**	**2**	**3**	**4**	**5**

Technological turbulence

Please indicate your level of agreement or disagreement on a scale of 1- 5 where :

1=Strongly Disagree, 2=Disagree. 3=Neutral, 4=Agree and 5=Strongly Agree.

No.	Statement	Strongly Disagree				Strongly Agree
TT 1	The technology in our industry is changing rapidly	**1**	**2**	**3**	**4**	**5**
TT 2	Technological changes provide big opportunities in our industry	**1**	**2**	**3**	**4**	**5**
TT 3	A large number of new product ideas have been made possible through technological breakthroughs in our industry	**1**	**2**	**3**	**4**	**5**
TT 4	Technological developments in our industry are rather minor	**1**	**2**	**3**	**4**	**5**

Behavior innovativeness

1=Strongly Disagree, 2=Disagree. 3=Neutral, 4=Agree and 5=Strongly Agree.

No.	Statement	Strongly Disagree				Strongly Agree
BHI 1	Individuals who do things in a different way are accepted and tolerated in this unit	**1**	**2**	**3**	**4**	**5**
BHI 2	In this organization, people are encouraged to think and behave in original and novel ways	**1**	**2**	**3**	**4**	**5**
BHI 3	In this organization, people are willing to try new ways of doing things and seek unusual, novel solutions	**1**	**2**	**3**	**4**	**5**
BHI 4	One gets a lot of support from managers if one wants to try new ways of doing things	**1**	**2**	**3**	**4**	**5**

Market innovativeness

Please indicate your level of agreement or disagreement on a scale of 1- 5 where :

1=Strongly Disagree, 2=Disagree. 3=Neutral, 4=Agree and 5=Strongly Agree.

No.	Statement	Strongly Disagree				Strongly Agree
MIM 1	The new products and services of this organization often beat new competitors	**1**	**2**	**3**	**4**	**5**
MIM 2	In new product and service introduction, this organization is often at the cutting edge of technology	**1**	**2**	**3**	**4**	**5**
MIM 3	In comparison with its competitors, this organization's most recent product marketing program is revolutionary in the market	**1**	**2**	**3**	**4**	**5**

Organizational Effectiveness

1=Strongly Disagree, 2=Disagree. 3=Neutral, 4=Agree and 5=Strongly Agree.

No.	Statement	Strongly Disagree				Strongly Agree
OEM 1	My organization aligns and executes strategies in a way that meets financial goals and is consistent with its core values	**1**	**2**	**3**	**4**	**5**
OEM 2	My organization focuses on people and organizations to identify and meet customer expectations	**1**	**2**	**3**	**4**	**5**
OEM 3	My organization engages people to achieve organizational objectives	**1**	**2**	**3**	**4**	**5**
OEM 4	My organization builds leadership capacity for now and the future	**1**	**2**	**3**	**4**	**5**
OEM 5	My organization enhances workplace productivity and performance culture	**1**	**2**	**3**	**4**	**5**
OEM 6	My organization encourages and nurtures innovative thinking and behaviors	**1**	**2**	**3**	**4**	**5**
OEM 7	My organization turns innovations and promising ideas into business successes	**1**	**2**	**3**	**4**	**5**

DEMOGRAPHIC INFORMATION

1. Gender

Male [ ] Female [ ]

2. Age

Less than 20 years [ ] 20 – 25 years [ ] 26 – 30 years [ ] 31 – 35 years [ ]
36 – 40 years [ ] 41 – 45 years [ ] 46 – 50 years [ ] 51 – 55 years [ ]
56 years above [ ]

3. Highest Level of Education

O' Level [ ] Basic School Certificate [ ] High School Certificate [ ] Bachelor's Degree [ ]
Master's Degree [ ] Doctorate Degree [ ]

4. Professional Qualification

ACCA [ ] ICA [ ] CIB [ ]

Other, please specify……

5. Current Position

Junior Staff [ ] Senior Staff [ ] Management Staff [ ]

6. Number of Years in Current Position

Less than one year [ ] 1 – 3 years [ ]
4 – 6 years [ ] 7 -10 years [ ] 10 years above [ ]

7. Industry Type

Downstream [ ] Mid- Stream [ ] Upstream [ ]

8. Firm size

Small scale [ ] Medium scale [ ] Large scale [

9. Firm age

Less than one year [ ] 1 – 3 years [ ]
4 – 6 years [ ] 7 -10 years [ ] 10 years above [ ]

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