

# The Influence of Competitive Advantage Analysis, Continuous Improvement on Organizational Performance: an Empirical Study on Petroleum Firms in Uae

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**Abstract:** *The present study adopts quantitative research design in its quest to achieve a credible study. As such, questionnaire was developed and used to elicit the respondents' opinion on the effects of strategic cost management on the UAE petroleum firms' competitiveness. 200 usable responses were analysed using SPSS software and PLS (Partial Least Squares) SEM-VB (Structural Equation Modelling-Variance Based) was employed to assess the research model. Purposive sampling technique was adopted to gather the required quantitative data in which selection procedure which is used for choosing settings or groups that are professional on a specific area of study. The variance explained was 60% and both competitive advantage analysis, and continuous improvement are found significant positive direct predictor of the performance of petroleum firms in the UAE.*

**Index Terms:** *Competitive advantage analysis; continuous improvement; performance; UAE.*

## I. INTRODUCTION

Ever since several decades, oil sector has represented the primary engine of economic activities as well as prosperity in the UAE and Arab countries. The factors like oil discovery, its potential to meet the energy needs of the world, has placed UAE and other Arab countries in order to integrate into the world economy (Al-moneef, 2006). As such, this sector has long ago become an important driver of the UAE's economy (Al-Ali, Ameen, Issac, Nusari, & Ibrahim Alrajawi, 2018; Al-Obthani, Ameen, Nusari, & Alrajawy, 2018; Al-Shamsi, Ameen, Isaac, Al-Shibami, & Sayed Khalifa, 2018; Haddad, Ameen, & Mukred, 2018). When oil and natural gas and associated production – both direct and indirect linkages – are taken into account, the sector has been contributing significantly to the UAE's gross domestic product (GDP); and it has also remained the sole contributor to the states revenue in the country (Mansell, Winter, Krzepkowski, & Moore, 2012). In addition, oil and gas sector has been creating employment opportunities, contributing to government revenues, directing larger part of their expenditures on local goods and services, contributing to the

country's foreign exchange reserves, and supplying energy to industry and commerce (Odularu, 2008). It is clear that the UAE is trying to become a leading technology centre based on the innovation strategy of the 4th Industrial Revolution (Alkhatari, Abuelhassan, Khalifa, Nusari, & Ameen, 2018; Ameen, Almari, & Isaac, 2019). Given that the UAE is expected to depend heavily on oil, natural gas, and associated industries in near term (Independent Statistics & Analysis, 2017), and the oil prices have witnessed sharp decline in the global oil market recently; it is important to know how petroleum industry in the UAE has been using strategic cost management techniques as competitive advantage analysis, continuous improvement, to enhance its performance, and ultimately contribute to the country's economic activities. With this in mind, the researcher empirically undertakes this research to investigate the influence of competitive advantage analysis, continuous improvement on the petroleum industry firms' performance in the UAE. By providing adequate answer to the yearning of previous researchers (Afonina, 2015; Iseri-Say, Toker, & Kantur, 2008) to carry out more research in this area, the present study is expected to be first of its kinds that look into the influence of competitive advantage analysis, continuous improvement on the UAE petroleum sector performance.

According to the Global Competitiveness Report (2018), the UAE is one of the top countries in the Arab world in term of innovation performance, yet it needs to compete more to reach a higher position among the western counterparts.

The study aims at evaluating the factors affecting performance of the UAE petroleum firms. This study attempts to achieve the following research objectives in order to examine:

- 1- the effect of Continuous improvement on firms' performance.
- 2- the effect of competitive advantage analysis.

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## II. LITERATURE REVIEW

### A. Continuous Improvement (CI)

The CI technique is a philosophy of improvement initiatives capable of increasing firms' successes and reduce failures (Juergensen, 2000). Bessant, Caffyn, Gilbert, Harding and Webb (1994) defined continuous improvement as "a company-wide process of focused and continuous incremental innovation." Moreover, some researchers, such as Caffyn (1999), have referred to continuous improvement as an "offshoot of existing quality initiatives like total quality management (TQM) or as a completely new approach of enhancing creativity and achieving competitive excellence in today's market." As noted in the literature, total quality can be achieved by organizations when they constantly pursuing continuous improvement through participation of all employees at all levels within the organization (Bhuiyan & Baghel, 2005). In most contemporary organizations, adopting technology is not only uses ICT to fill up some forms and records but rather it is also a tool that performs the process of identification, accumulation, analysis, measurement, preparation, interpretation and communication of the information used by management to plan (Ameen & Ahmad, 2011, 2013b, 2013c, 2014). It is used in evaluating and controlling within an organization and to assure appropriate use and accountability for their resources (Ameen & Ahmad, 2011, 2012, 2013a). Meanwhile, the main concept of continuous improvement technique is that firms' performances are bound to improve if there is improvement in quality, elimination of waste, and reduction in costs (Adam et al., 1997). Other studies that have claimed or used continuous improvement technique to investigate firms' performance are (AlMaryani & Sadik, 2012; Chang, 2005; Gharakhani, Rahmati, Farrokhi, & Farahmandian, 2013; Kovach, Cudney, & Elrod, 2011; Maletic, Maletic, & Gomiscek, 2012; Zin, Sulaiman, Ramli, & Nawawi, 2013). Similar to this study, the researcher has incorporated this variable into this study in order to investigate the UAE petroleum firms' performance. Consequently, the following hypotheses are proposed:

H1: Continuous improvement has a positive effect on firms' performance.

### B. Competitive Advantage Analysis (CAA)

The competitive aspect in the business environment has suggested that a particular firm has achieved competitive advantage if such firm can stay ahead of the potential and existing competitors (Porter, 1985). According to Baltzan (2017), competitive advantage surface from the values business has created for its customers; he also defined it as when a firm possess long-term, unique, and advantageous competitive position in relation to its competitors. In addition, he reiterated further that remained competitive is a key to success and at the same time, it determines other activities that are related to company's overall performance, such as innovation, cultural cohesion and the efficiency of implementation.

Furthermore, it is critical for organization to gain

competitive advantage over its competitors. According to Baltzan (2017), competitive advantage is temporary in nature since competitors often seek ways to imitate the competitive advantage gained. However, organizations must be busy to continually develop new competitive advantage in order to remain ahead of their competitors.

Meanwhile, several authors have claimed that competitive advantage analysis contributes to firms' performance (Bayraktar, Hancerliogullari, Cetinguc, & Calisir, 2017; Chen, Wu, Mao, & Li, 2017; Ma, 2000; Yasar, 2010). The researcher has included this technique into this study to know its effect on the UAE petroleum performance.

H2: Competitive advantage analysis has a positive effect on firms' performance.

## III. METHODOLOGY

### A. Proposed Conceptual Framework

The current study takes an approach to investigate the influence of competitive advantage analysis, continuous improvement technique on the UAE petroleum firms' performance. This approach to strategic cost management techniques enable firms to examine their costs patterns and strategic positions based on the firms' objectives, the organizational needs and capability, as well as customer requirements (see figure 1).

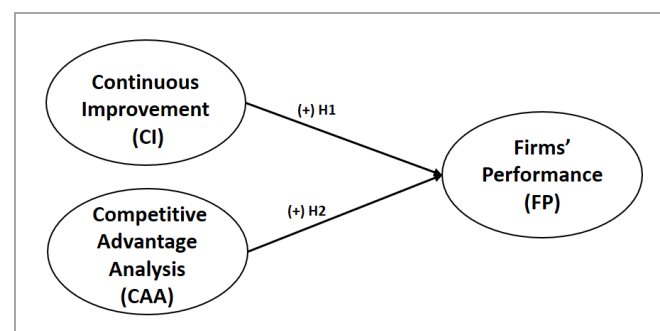


Figure 1: The proposed conceptual framework

### B. Development of Instrument and Data collection

The present study adopts quantitative research design in its quest to achieve a credible study. As such, questionnaire was developed and used to elicit the respondents' opinion on the effects of strategic cost management on the UAE petroleum firms' competitiveness. 200 usable responses were analysed using Statistical Package for Social Sciences (SPSS) and PLS (Partial Least Squares) SEM-VB (Structural Equation Modelling-Variance Based) was employed to assess the research model. Purposive sampling technique was adopted to gather the required quantitative data in which selection procedure which is used for choosing settings or groups that are professional on a specific area of study. Variables were measured using a Likert Scale which recommended in the previous studies (Aldholay, Isaac, Abdullah, &

Ramayah, 2018; Aldholay, Abdullah, Ramayah, Isaac, & Mutahar, 2018; Mutahar, Daud, Ramayah, Isaac, & Alrajawy, 2017).

#### IV. DATA ANALYSIS AND RESULTS

PLS SEM-VB method was employed to assess the research model by utilising the software SmartPLS 3.0 (Ringle, Wende, & Becker, 2015). A two-phase analytical technique (Anderson & Gerbing, 1988; Hair, Hult, Ringle, & Sarstedt, 2017) consisting of (i) measurement model analysis (reliability and validity) and (ii) structural model analysis (examining the conceptualised relationships) was employed after performing the descriptive assessment. This two-phase analytical technique consisting of a structural and a measurement model assessment is better than a single phase assessment (Schumacker & Lomax, 2004; Hair et al., 2010). While the model of measurement explains each parameter's measurement, the structural model describes the correlation between the parameters in this model (Hair et al., 2017).

##### A. Descriptive analysis

Table 1 shows that values of mean + SD. The responses were recorded in a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Continuous improvement scores the highest with mean 3.873 out of 5.0, with a standard deviation of 0.874.

##### B. Measurement Model Assessment

Construct reliability as well as validity (comprising discriminant and convergent validity) were used to examine the measurement model. The particular alpha coefficients of Cronbach were tested to determine the reliability of every core parameter in the measurement model (construct reliability). The quantities of all the unique alpha coefficients

of Cronbach in this research ranged from 0.919 to 0.970, which went beyond the proposed value of 0.7 (Kannana & Tan, 2005; Nunnally & Bernstein, 1994). Moreover, for inspecting construct reliability, all the CR (composite reality) values ranged from 0.939 to 0.975, which went beyond 0.7 (Werts, Linn, & Jöreskog, 1974; Kline, 2010; Gefen, Straub, & Boudreau, 2000). Thus, as Table 1 shows, construct reliability has been fulfilled as Cronbach's CR and alpha were rather error-free for all the parameters.

Analysis of indicator reliability was conducted by utilising factor loadings. When the related indicators are very similar, this is reflected in the construct and signified by the construct's high loadings (J. F. J. Hair et al., 2014). As per Hair et al. (2010), the exceeding of values beyond 0.70 suggests substantial factor loadings. Table 1 displays that all articles in this research had factor loadings greater than the suggested value.

All the AVE values ranged from 0.756 and 0.847, which went beyond the proposed value of 0.50 (J. F. Hair et al., 2010). Thus, all constructs have complied with the convergent validity acceptably (Table 1).

The degree to which the articles distinguish among concepts or measure different constructs is demonstrated by discriminant validity. Cross-loadings as well as Fornell-Larcker were employed to analyse the measurement model's discriminant validity. Generally, cross-loadings are employed as the initial step in examining discriminant validity of the markers (J. F. J. Hair et al., 2014) (Table 2).

Table 3 shows the outcomes for discriminant validity by employing the Fornell-Larcker condition.

Table 1: Mean, standard deviation, loading, cronbach's Alpha, CR and AVE

Constructs	Item	Loading (> 0.7)	M	SD	$\alpha(> 0.7)$	CR(> 0.7)	AVE(> 0.5)
Continuous Improvement (CI)	CI1	0.923					
	CI2	0.926					
	CI3	0.942					
	CI4	0.895	3.873	0.874	0.970	0.975	0.847
	CI5	0.923					
	CI6	0.938					
	CI7	0.894					
Competitive Advantage Analysis (CAA)	CAA1	0.857					
	CAA2	0.863					
	CAA3	0.864	3.669	0.874	0.919	0.939	0.756
	CAA4	0.886					
	CAA5	0.877					



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	FP1	0.881					
	FP2	0.903					
	FP3	0.836					
	FP4	0.859					
Firms' Performance (FP)	FP5	0.875	3.739	0.908	0.963	0.968	0.772
	FP6	0.913					
	FP7	0.837					
	FP8	0.874					
	FP9	0.927					

It was discovered that the AVEs' square root on the diagonals (displayed in bold) is bigger than the correlations among constructs (corresponding row as well as column values), suggesting a strong association between the concepts and their respective markers in comparison to the other

concepts in the model (Fornell & Larcker, 1981; Chin, 1998). According to Hair et al. (2017), this indicates good discriminant validity. Furthermore, the exogenous constructs have a correlation of less than 0.85 (Awang, 2014). Therefore, all constructs had their discriminant validity fulfilled satisfactorily.

Table 2: Results of discriminant validity by the cross loading

	CI	CAA	FP
CI1	<b>0.923</b>	0.597	0.658
CI2	<b>0.926</b>	0.611	0.672
CI3	<b>0.942</b>	0.605	0.647
CI4	<b>0.895</b>	0.590	0.606
CI5	<b>0.923</b>	0.592	0.617
CI6	<b>0.938</b>	0.600	0.673
CI7	<b>0.894</b>	0.589	0.698
CAA1	0.643	<b>0.857</b>	0.643
CAA2	0.543	<b>0.863</b>	0.602
CAA3	0.551	<b>0.864</b>	0.564
CAA4	0.576	<b>0.886</b>	0.640
CAA5	0.501	<b>0.877</b>	0.571
FP1	0.616	0.611	<b>0.881</b>
FP2	0.655	0.630	<b>0.903</b>
FP3	0.607	0.631	<b>0.836</b>
FP4	0.607	0.548	<b>0.859</b>
FP5	0.616	0.591	<b>0.875</b>
FP6	0.615	0.630	<b>0.913</b>
FP7	0.593	0.554	<b>0.837</b>
FP8	0.635	0.628	<b>0.874</b>
FP9	0.676	0.676	<b>0.927</b>

Key: CI: continuous improvement, CAA: competitive advantage analysis, FP: firms' performance.

Table 3: Results of discriminant validity by Fornell-Larcker criterion

	Factors	1	2	3
		CAA	CI	FP
1	CAA	<b>0.869</b>		
2	CI	0.650	<b>0.920</b>	
3	FP	0.697	0.711	<b>0.879</b>

Note: Diagonals represent the square root of the average variance extracted while the other entries represent the correlations. Key: CI: continuous improvement, CAA: competitive advantage analysis, FP: firms' performance.

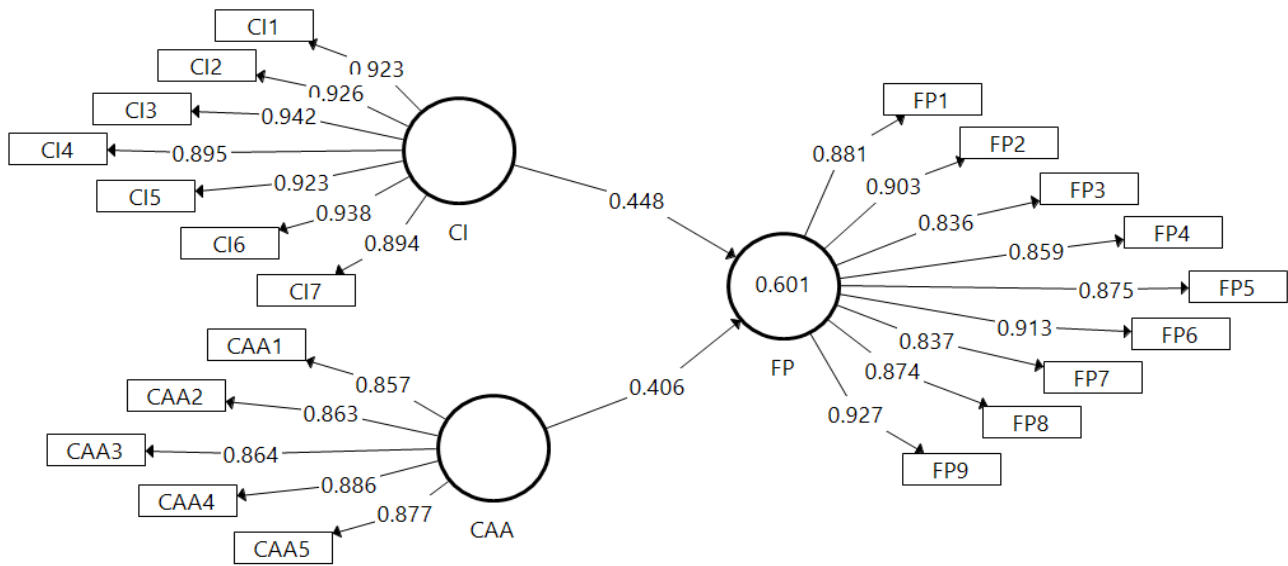
### C. Structural Model Assessment

The structural model can be tested by computing beta ( $\beta$ ),  $R^2$ , and the corresponding t-values via a bootstrapping

procedure with a resample of 5,000 (Hair, Hult, Ringle, & Sarstedt, 2017).







Key: CI: continuous improvement, CAA: competitive advantage analysis, FP: firms' performance  
 Figure 2: PLS algorithm results

Table 4: Structural path analysis result

Hypothesis	Relationship	Std Beta	Std Error	t-value	p-value	Decision	R <sup>2</sup>
H1	CI→FP	0.448	0.087	5.160	0.000	Supported	0.60
H2	CAA→FP	0.406	0.088	4.616	0.000	Supported	

Key: CI: continuous improvement, CAA: competitive advantage analysis, FP: firms' performance.

*Hypotheses Tests*

Figure 2 and Table 4 depict the structural model assessment, showing the results of the hypothesis tests, with 2 out of the 2 hypotheses are supported. Continuous improvement and competitive advantage analysis positively influence firms' performance. Hence, H1 and H2 are accepted with ( $\beta = 0.406, t = 4.616, p < 0.001$ ) respectively.

The strength of the relationship between exogenous and endogenous constructs are measured by the standardised path coefficients, which in this case show that the direct effects of continuous improvement on firms' performance is stronger than the influence of competitive advantage analysis on firms' performance.

Sixty percent of the variance in firms' performance is explained by continuous improvement and competitive advantage analysis. The values of R<sup>2</sup> have an acceptable level of explanatory power, indicating a substantial model (Cohen, 1988; Chin, 1998).

*Importance-Performance Map Analysis (IPMA)*

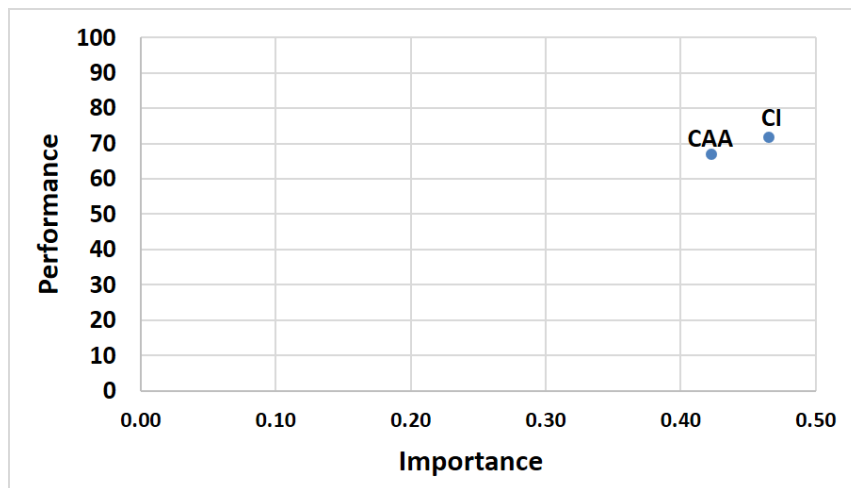
IPMA method was implemented with the firms' performance used as the outcome construct. According to Hair et al. (2017), the IPMA provides an estimation of the total effects corresponding to the importance of predecessor constructs in affecting the target construct (firms' performance); the average latent variable scores correspond to their performance, whereas the index values' (performance scores) calculation was achieved by rescaling the scores of the latent constructs to within a range from 0 (lowest performance) to 100 (highest performance). The results for total effects (importance) and index values (performance) of the IPMA of the outcome construct firms' performance is displayed in Tables 5.

Fig. 3 presents the priority map plot. It can be observed that value continuous improvement is crucial in determining the performance of the firm due to its high importance value.

Table 5: IPMA for firms' performance

Latent constructs	Total effect of the construct firms' performance (Importance)	Index values (Performance)
Continuous Improvement (CI)	0.465	71.78
Competitive Advantage Analysis (CAA)	0.423	66.83





Key: CI: continuous improvement, CAA: competitive advantage analysis  
Figure 3: IPMA (Priority Map) for firms' performance

## V. DISCUSSION

The main objective of this study is to examine the factors influencing petroleum firm performance in the UAE and had to main hypothesis to be tested and results are discussed below.

First, there is a significant direct influence of the continuous improvement on the firm performance with ( $\beta = 0.448$ ,  $t = 5.160$ ,  $p < 0.001$ ). Thus, H1 was supported. This result comes in line with previous studies such as (Iseri-Say et al., 2008; Kennedy & Affleck-Graves, 2001; Kovach et al., 2011; Terziovski, 2001; Zin et al., 2013). This can be explained and justified by the fact that, continuous improvement assists in maintaining the competitive advantage of the company and its market share and achieve its strategic objectives, lead to improving the quality of the company products, leads to a reduction in production costs, increase the value received by the customer. Hence, it will lead the petroleum company to be able to enhance management development, improve short-term performance, improve on financial performance, improve its ability to evaluate alternatives, improve its ability to avoid mistakes, achieved more return on investment compared to our competitors in other countries.

Second, the impact of competitive advantage analysis was found positive and significant on the petroleum firm performance in the United Arab Emirates. Thus, H2 was significantly supported. Moreover, The results are in line with prior studies such as (Alsoboa, Al-Ghazzawi, & Joudeh, 2015; Chenhall & Langfield-Smith, 1998; Clark, 1997; Fei & Isa, 2011) and can be justified by the fact that using competitive advantage analysis help petroleum company to assess the capabilities and potentials of the organization, helps in the assessment of the internal and external environment, analyse the strengths and weaknesses internally and opportunities and threats externally, and analysing competition forces, such as suppliers, investors, new competitors, alternative products, and competition with other organizations. Consequently, it will lead the petroleum company to be able to enhance management development,

improve short-term performance, improve on financial performance, improve its ability to evaluate alternatives, improve its ability to avoid mistakes, achieved more return on investment compared to our competitors in other countries.

Finally the two hypothesis of this study were statistically supported and their impact on the firm performance is significant, in addition, the variance explained of the performance through the continuous improvement and competitive advantage analysis is 60%.

## VI. IMPLICATIONS, LIMITATIONS AND FUTURE DIRECTIONS

One of the contributions of this study is that government agencies in UAE are able to understand more on the influence of advantage analysis, and continuous improvement on organizational performance which have contributed to the performance of petroleum firms in UAE, especially when making public decisions on cost reduction in oil sector. Since this is a means to an end, this study has provided opportunity to petroleum firms in UAE to know the strategic cost management techniques that they need to pay close attention to when making decisions. More importantly, the study also acts as a communication vehicle by which information about the influence of strategic cost management techniques on the petroleum firms' performance in UAE are disseminated.

One of the limitations of the current study is that, due to the time and cost constraints, the discussion and conclusion make in this study relied heavily on the quantitative data collected from 200 respondents through self-reports of the influence of competitive advantage analysis, and continuous improvement on the United Arab Emirate (UAE) petroleum firms' performance. The limited amount of the participant in both cases might biased the results and distort the representative picture of the influence of strategic cost management techniques on the United Arab Emirate (UAE) petroleum firms'



performance. As such, the researcher recommends that future studies should seek more data from the employees of petroleum firms. Maybe, doing this may show difference results.

## VII. CONCLUSION

The objective of this study was to investigate the factors influencing the petroleum firms' performance in the UAE. The proposed model suggested that continuous improvement, and competitive advantage analysis have a significant positive impact on the firm performance. Both

hypothesis were supported statistically. The study has shed some lights on new variables in the petroleum firm performance in the UAE. Continuous improvement, and competitive advantage analysis have explained 60% of the variance in the performance of petroleum firms in the United Arab Emirates. The findings of this study has presented several crucial implications of the impact of continuous improvement, and competitive advantage analysis on the firm performance.

## APPENDIX

### Appendix A

Instrument for variables

Variable	Measure	Source
Continuous Improvement (CI)	CI1: Continuous improvement assists in maintaining the competitive advantage of the company and its market share and achieve its strategic objectives.	(AlMaryani & Sadik, 2012; Gharakhani et al., 2013)
	CI2: Continuous improvements lead to improving the quality of the company products.	
	CI3: Continuous improvement assists in exploring the best ways to accomplish company activities.	
	CI4: Continuous improvement leads to a reduction in production costs.	
	CI5: Continuous improvement leads to increase the value received by the customer.	
	CI6: Leaders and stakeholders have mindsets and attitudes that are passionate about continuous improvement	
	CI7: Key leaders provide the necessary support and training that is specifically aimed to meet improvement goals.	
Competitive Advantage Analysis (CAA)	CAA1: This technique has help petroleum company to assess the capabilities and potentials of the organization.	(Bayraktar et al., 2017; Chen et al., 2017)
	CAA2: It has helped in the assessment of the internal and external environment.	
	CAA3: This technique has helped to analyze the strengths and weaknesses internally and opportunities and threats externally.	
	CAA4: The organization' competition strategy is determined, applied, and assessed continuously through this technique.	
	CAA5: It helps in analyzing competition forces, such as suppliers, investors, new competitors, alternative products, and competition with other organizations.	
Firms' Performance (FP)	FP1: Petroleum company has been able to achieve predicted trends.	(Alsoboa et al., 2015)
	FP2: Petroleum company has been able to enhance management development.	
	FP3: Petroleum company has been able to improve short-term performance.	
	FP4: Petroleum company has been able to improve long-term performance.	
	FP5: Petroleum company has been able to improve on financial performance.	
	FP6: Petroleum company has been able to improve its ability to evaluate alternatives.	
	FP7: Petroleum company has been able to improve its ability to avoid mistakes.	
	FP8: Petroleum company has been able to improve its budget process.	
	FP9: Petroleum company has achieved more return on investment compared to our competitors in other countries.	

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