

A mediation role of sustainable supply chain in e-procurement of ADNOC the largest energy company in UAE

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Abstract

Procurement practices remain one of the success factors in oil and gas industry. Weak procurement performance is the main reason for the delay in distribution, growth failures, and delivery of goods. Current strategies for constructing effective supply chains have shifted because of technological advancements. Indeed, corporations' enthusiasm for the use of the internet and information technology in the process of procurement motivates researchers to examine the impact of electronic procurement on the supply chain and overall procurement performance. In order to optimize the procurement process in oil and gas sector, Abu Dhabi National Oil Company (ADNOC) the largest energy company in United Arab Emirates (UAE) adopted e-procurement as the main way for bidding and solicitation of goods so that to achieve effective sustainable supply chain. However, it is still unclear to what extent e-procurement enhances the procurement of goods with the aid of supply chain. Based on this gap, the aim of this study is to examine the model fit of a conceptual framework that construct these three variables and testing the significance of correlations between e-procurement, sustainable supply chain, and procurement performance. The study employed a descriptive survey design and quantitative methodology. The employees working in tendering, procurement and evaluation committees, as well as the three-level of management, were purposively. Based on a sample of 376 questionnaires in ADNOC, we empirically investigate through using AMOS-SEM analysis. The result revealed that the three constructs (e-procurement, sustainable supply chain, and procurement performance) have significant and positive correlations. Based on this finding, it is highly recommended to focus on supply chain to foster the impact of e-procurement towards procurement performance of ADNOC. The outcome of this study provided an empirical evidence to the leaders in ADNOC and other oil and gas company that e-procurement is an essential success factor for sustainable supply chain and raising the effectiveness of procurement process, which in turn ensure swift delivery of energy products to consumers. Furthermore, the researcher anticipates that the findings and policy recommendations derived from this study will be of significant value to the oil company's stakeholders in general, both in the United Arab Emirates and throughout the world.

Keywords: E-Procurement, sustainable supply chain, procurement performance, ADNO,UAE.

1. Introduction

When it comes to purchasing in large organisations, procurement is a collection of activities carried out by human resources

management in order to promote effective management for a wide range of organisational functions (Walter et al. 2019). It is the foundation for the success of any organisation.

Proper procurement practises result in competitive sales and economic growth, as well as the acquisition of high-quality materials. The primary objectives of procurement are related to quality, risk reduction (financial and technical), building organisational integrity, and protecting the organisation from competitive pressures (Walter et al. 2019). Hence, procurement is vital to developing the performance of organizations and enhances strategies for business success. Current strategies for constructing effective supply chains have shifted because of technological advancements. Indeed, corporations' enthusiasm for the use of the internet has led researchers to seek appropriate strategies to deal with the flexible and dynamic character of logistical networks, and e-procurement is frequently utilized (Chibani, et al. 2018). Procurement performance boosts management efficiency and competitiveness. Thereby, it is vital to focus on the strategic factors that affect the performance of the procurement process. Whereas e-procurement adoption is the major determinants of procurement performance as well as influencing the ability of an organization to recognize the procurement goal (Aketch and Karanja, 2013)

It is critical for the oil and gas industry's development to have efficient electronic procurement practises in place in order to achieve a high level of procurement performance and make the best use of organisational resources possible (Kim, et al. 2018). In large companies operating in the oil and gas sector, poor procurement performance resulted in financial losses due to the delivery of substandard materials and the squandering of internal and external resources (Senait et al. 2017). Whereas a decline in profitability could be attributed to ineffective procurement (Migai. 2010). Thus, it is necessary to examine the factors that contribute to the success of e-procurement practises such as e-design, e-sourcing, e-evaluation, and e-negotiation and to quantify their impact on procurement performance in the oil and gas industry.

Weak procurement output is a major setback for companies working in gas and oil industry. According to (Kim, et al. 2018), the reason for the delay in distribution, growing failures, and delivery of products of bad quality or no delivery is inefficient procurement. In the private sector, weak procurement efficiency has been troublesome due to conventional

procurement practices, inefficient personnel, poor coordination of procurement operations, lack of e-procurement, lack of quality assurance measures and sound legislation (Juma, 2010). Contracting operations are typically ignored, weak coordination, absence of free competition and accountability. In the different procurement procedures, collusion can also exist.

The shortage of skilled and experienced procurement professionals able to plan and manage procurement in different private organizations is widespread. Inflexible and bureaucratic procurement processes lead to contract extensions, higher expenses and the absence of equal competition, which all have a detrimental effect on procurement and achievement. Various issues resulting from internal and external influences in the entities have an impact on private sector procurement. Recruiting and attracting expertise in the sourcing sector is one of the biggest challenges for businesses still struggling with the existing dynamic price pressures (Berger and Humphrey, 2009). According to Dale, (2010), procurement is only being carried out as a compliment rather than an integral part of corporate processes in most organizations. Consequently, this influences the degree of distribution of capital and expenditure in the procurement function of the private sector.

In UAE, plenty of state assets are directed towards the procurement of merchandise and ventures, with a point of guaranteeing that the full cycle is finished proficiently (Kiragu, 2012). Notwithstanding, there reports of disappointment with the entire or part of the procedure of procurement, which is said to in this manner obstruct effective usage of government ventures. Apparently, this disappointment is broadly accused of the wasteful administration of the procurement work. In the ADNOC, the activities are damaged with wasteful aspects coming about because of postponements of endorsement of purchase requisition / purchase order which causing delay, and clients do not want to wait for long time. Subsequently no empirical research has investigated the indirect effect of e-procurement on procurement performance in the context of UAE's oil and gas industry (Mian, et al., 2019). The review of literature shows that ineffective application of e-procurement practices (i.e. e-design, e-sourcing, e-evaluation, e-negotiation) will

affect the sustainability of supply chain, as well as the whole procurement performance.

2. Theoretical literature and hypothesis development

Kaplan and Norton (1996) established the Balanced Scorecard (BSC) for businesses to focus on the internal capabilities that can help organisations improve performance and gain a competitive edge over competitors. SSC and e-procurement are critical internal factors for any organisation because they are intangible resources that enable businesses to measure their supply chain and procurement performance (Ogwang, 2017) more accurately.

2.1 Procurement in oil and gas industry

The United Arab Emirates (UAE) is working to achieve a more sustainable future (EIA, 2017). The UAE Energy Strategy 2050 intends to quadruple the share of clean and nuclear energy in the total energy mix while reducing the carbon footprint of power generation by 70%. By the end of 2019, the government wants 10% of all citizens to have access to the internet. But there are some barriers to energy innovation that is sustainable. Oil and gas companies operate in dynamic and complex environments, where they face constant challenges especially in terms of supply and demand. In general, the oil and gas industry is a unique organizational characteristics directly impact the design of procurement processes and practices as well as organizational performance (Senait, et al. 2017). A successful procurement strategy is not only a financial plan to control the budget, but also the workflow and development schedules, while keeping it in line with the goals of the business (Mian et al., 2019). With the volatile oil and gas production market, procurement plays an important role in ensuring budget allocation for the supply of goods and services, ensuring on-site delivery on schedule and cost savings without jeopardizing quality and safety. Many extremely complex goods and services that need to be purchased, as many experts in the oil and gas industry are already aware. Therefore, a successful procurement policy plays a key role in achieving this objective (Kiplel et al., 2018).

Over the last two decades, a diverse group of suppliers and contractors has frequently been chosen to provide a variety of goods and

services for oil and gas related projects (Van Weele, 2006). As businesses outsource more of their project operations, or even entire projects, and procure more resources and materials from external specialists and suppliers, it becomes increasingly necessary to select and manage their project's supply of goods and services (Sepehri, 2017). The contentious and growing sustainability concerns within the UAE's oil and gas industry have underscored the importance of conducting a systematic analysis of the external and internal organisational factors affecting sustainable procurement in the oil and gas industry. As a result, critical sustainability challenges such as rising energy consumption, waste, depletion of natural resources, economic downturns, and oil price fluctuations have an effect on the procurement process in the UAE's oil and gas industry (Bak, 2018).

These studies identified several factors, including cost, environmental procurement, top management support, advanced technology, infrastructure, environmental crises, investment costs, a lack of clear standards and appropriate regulations, and cultural and social differences (Aigheyisi and Edore, 2017). It is evident that companies in the oil and gas industry are still searching for ways to boost operating efficiency and reduce investment. This is valid irrespective of oil price fluctuations. Strategies and best practices for oil and gas procurement will play a pivotal role in achieving greater operational and financial performance.

2.2 Procurement performance

When it comes to procurement performance, it is a process in which procurement develops criteria based on strategic planning goals in order to determine the outcomes and quality of actions (Vaidya et al., 2003). Some scholar suggested that developing the qualifications of human resources increases the efficiency of procurement performance (Kavua & Ngugi, 2014). While Rotich (2011) acknowledged that measuring procurement performance agitates procurement manager, and as a result, investigating factors that impact oil and gas business continuity is necessary for this industry's sustainability.

2.3 E-procurement

A definition of e-Procurement provided by the World Bank (2020) is "the use of information technology in conducting procurement

relationships with suppliers for the procurement of goods and services." In the procurement industry, the term "e-procurement" refers to the use of electronic methods, typically over the internet, to complete transactions between awarding bodies and suppliers, such as when they buy or sell items (Rotich and Okello, 2019). It is defined as the process by which governments use information and communication technology, such as the internet to procure goods, works, and services for the public good and service. This is referred to as "public e-procurement" (Rotich and Okello, 2019). If buyers have doubts or negative expectations about the reliability and competency of the provider in e-procurement systems, they will be hesitant to use e-procurement for purchasing, according to the empirical findings of (Truong, 2019). Buyer distrust also keeps them from deepening supplier integration by sharing operational and logistics information, as well as participating in the creation and acquisition of new products, which would otherwise be possible. In various parts of the world, the use of e-procurement has resulted in benefits such as increased efficiency, cost savings, shortened procurement processes, reduced corruption, improved compliance, and standardisation of procurement procedures (Tutu et al., 2019). Electronic procurement has now risen to the top of the priority list for many public sector organisations working in the field of electronic government. Institutions have taken steps to use and adopt e-procurement in their procurement processes, and they are continuing to do so. According to (Birks et al., 2001), this new process has many things that make it work that could help people want to use it. If these things are used correctly, they could help people want to use the process. It can save money, be more efficient, and be easier to control. Some of the reasons why e-procurement is becoming more popular. As a result, e-procurement also makes public procurement procedures more transparent and easier for people to apply for jobs, which leads to more economic growth around the world (Peris et al., 2013). There are many benefits to using an e-Procurement system, such as more transparency, contract awards, online bid submission, and better participation by tenderers because they have better information and easier access to opportunities. This is according to a report from the Asian Development Bank (ADB) in 2013.

Some other benefits include faster procurement activities because of an online system, better tools to fight corruption and fraud, and less printing of hard copies to keep track of business transactions, among other things. E-procurement operations are expected to help solve most of the problems that both contractors and suppliers have when they try to get contracts. Hence, (Bokpe, 2013), claimed that e-procurement system also takes care of any fraudulent or corrupt practices that come up in the procurement process because of human interaction..Based on these claims and arguments, this theoretical discussion and debate, along with the current empirical proof, leads to the following hypothesis:

H1. E-procurement has a significant effect on procurement performance.

2.4 Sustainable supply chain

When manufacturing factories were established in the 1980s, their owners had complete control over their production (Pounder et al. 2013) and had access to all relevant information regarding manufacturing limits, timetables, and expenses. Firms operating in a global environment are currently confronted with significant vulnerabilities, making it difficult for them to meet strict deadlines (Pounder et al. 2013). During the previous decade, analysts concentrated on supply chain management (SCM) issues, such as lowering costs and/or improving the response time of the various parties involved in the manufacturing supply chain (Figure 1). (Habib, 2019). According to Khan et al. et al. (2020), supply chain risks can arise from a variety of events, such as supply shortages, which make disruptions inevitable in the supply chain.

According to Khan and Dong (2017), SCM (supply chain management) is critical to any enterprise's long-term success in the global market. At the same time, businesses are under increasing pressure to incorporate green practises into their SC (supply chain) operations in order to achieve greater socio-environmental sustainability. Sustainability has gained popularity in recent years as a result of an increase in socio-environmental problems, such as climate change, air pollution, and various pollution-related health diseases, as well as increased awareness of these issues (Khan et al., 2019). Supply chain operations that are integrated with the concept of

sustainability allow the firm to develop what is known as a 'competitive advantage' in the market (Raut et al., 2019).

The fundamental approach to managing the processes and activities of the entire supply chain during a crisis is called sustainable supply chain management (SCM) (Novira, 2021). As a result, sustainable supply chains must be managed seriously, with a series of appropriate alternative strategies being developed to increase their resilience capabilities (Hobbs, 2020). Sustainable supply chain is used to describe or label the linkage of various companies which turns series of basic materials, goods or services into finished product for their client. Today almost all manufacturers and companies worked in production of goods, and even those in energy sectors such as O&G companies linked to an organized supply chain for connecting the main contractor, designers, engineers, surveyors, sub-contractor, cost engineers, suppliers, including the clients to one part of the supply chain (Abubakar et al, 2020). Over the years, supply chain management has become a hot topic, involving the strategic alignment of roles and processes inside a business. However, there have been significant debates and arguments over the proper design of the types of integration that would lead to improve the result on the performance after adoption supply chain management (Vikas et al., 2017). The review of literature reveals that sustainable procurement could be enhanced through supply chain management (Sanchez-Flores et al., 2020). Some researchers found a significance correlation between strategic procurement and supplier integration in large scale manufacturing sector (Chenini et al., 2020). Procurement is a significant part of the supply chain because of the critical impact of purchasing activities on revenues, costs, and operational efficiencies (Ross, 2016).

In the same context Kepher et al. (2018) examined the impact of supplier chain management on procurement performance. According to their study, they found four factors account for around 81 percent of improvements in procurement performance, such as buyer-supplier integration, supplier quality management, supplier training, and supplier collaboration. Because suppliers are such an important component of organizations,

managing supplier performance is crucial to procurement success (Kepher et al., 2018). In the same vein, the study of Mutua & Moronge (2018) revealed that supply chain practices have significant effect on procurement performance of state corporation. Moreover, the result of their study showed four supply chain practices of distribution management, inventory management, outsourcing, and procurement planning have positive and significant effect on procurement performance. It is evident that supply chain management have a direct impact on procurement performance in various industries, especially in large organizations like O&G companies. The findings from previous studies reveal that firms adopting supply chain in their management strategy will have better procurement performance. Based on this claim, this study will examine the following hypothesis statement.

H2: E-procurement has a significant effect on sustainable supply chain.

H3: Sustainable supply chain has a significant effect on procurement performance.

2.5 Mediating role of sustainable supply chain

Currently, the importance of a sustainable supply chain is greater than ever because risks can disrupt sustainable operations, lowering a company's performance. However, risk management practises that integrate with supply chain management can mitigate these dangers, resulting in improved performance for the organisation (Muzzammil et al., 2019). Procurement is frequently performed under unpredictable supply conditions and high degree of uncertainty which increase the degree of risk on the supply chain (Aghajanian & Shevchenko-Perepy, 2018). Thereby, the relationship between e-procurement, procurement performance is hypothesized to be mediated according to the following hypothesis statement.

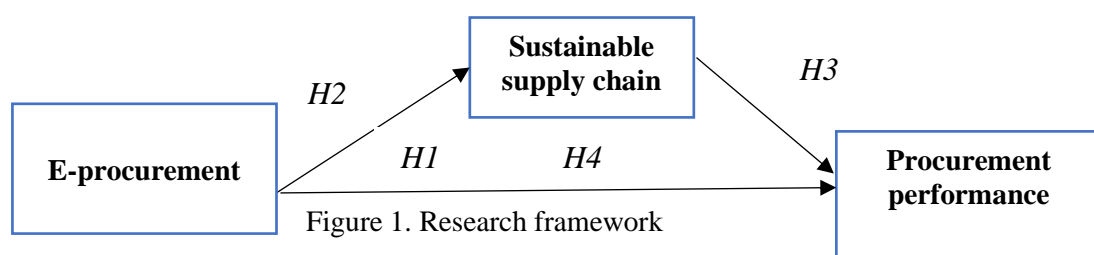
H4: SSC mediates the relationship between e-procurement and procurement performance.

2.5 Theoretical gap

Theoretically, scholars have carried out various studies of the Balanced Scorecard theory (BSC). The review of literature shows that the adoption of BSC's perspective in O&G sector

is limited (Lyu, et al., 2016; Al-Qubaisi & Ajmal, 2018), other scholars have been more questioning about the role of BSC on procurement performance, and are trying to prove the more clear-cut relationship between BSC and organizational performance (Aminaimu & Yudi, 2019), while in UAE there is a lack of empirical studies for the theoretical assertion of BSC on supply chain and procurement in O&G companies. Thus, this study established the association between BSC and supply chain performance at O&G companies, and the challenges faced in implementation of the Balanced Scorecard in

ADNOC. Thereby, the aim is filling this gap and extending the knowledge on BSC in O&G industry, explaining the relationship between the BSC and procurement performance. However, Figure 1 shows conceptual research model that has been designed with the reference of previous literature. It shows e-procurement on left hand side, whereas procurement performance on the right-hand side. Both extremes has been connected with the arrows which show the relationship dimension amidst the variables through sustainable supply chain as mediator. Finally, there are four hypotheses identified in Figure 1.



3. Research methodology

The investigation planned for setting up the impact of improving the procurement performance of ADNOC on procurement performance in the UAE. The questionnaire responses are directly filed in the computer program (SPSS) for analysis. The primary data obtained using questionnaires aimed to collect data from middle and top-level administrators and staff. To assess the answers of the participants, a closed-ended questionnaire and the Likert scale (1-5) were used. During the survey stage, the researcher delivered questionnaires to a sample of 400 ADNOC respondents. The final number of valid questionnaires used in the analysis was 376 in total. The survey process was carried out with the help of purposive sampling. Secondary data from reports and previous studies, on the other hand, provided more evidence about the impact of procurement success factors on procurement performance. It has been decided to use structural equation modelling (SEM) for testing

and assessing the fit of the conceptual framework's hypotheses and model. SEM is a statistical technique that combines factor analysis and multiple regression analysis. It is used to investigate the structural relationships between measured variables and latent constructs (Tarka, 2017). SEM has been used in the sciences, business, and other fields so as in this study (Bollen and Pearl, 2013).

3.1 Demographic analysis

Individuals employed by ADNOC are described by the demographic information collected in this study. These data are presented in the form of frequencies, and percentages are used to compare the categories of each demographic classification between each other. Results of the demographic survey are presented in Table 1, which includes information about the respondents' gender and age, as well as their educational qualifications and work experience.

Table 1: The demographic profile of the staff and managers

Demographics	Level	Frequency	Percentage (%)
Gender	Male	248	66.0
	Female	128	34.0
Age	20-29 years	90	23.9
	30-39 years	114	30.3

	40-49 years	102	27.1
	Above 50 years	70	18.6
Academic Qualification	Bachelor	270	71.80
	Master	74	19.60
	PHD	32	8.51
Work Experience	1-5 years	74	19.7
	5-10 years	57	15.2
	10-15 years	78	20.7
	More than 15 years	167	44.4

The analysis of demographic data reveals the percentages of respondents' opinions on a variety of questions pertaining to gender, age, academic qualification, and work experience, amongst other factors. When it comes to gender, the ADNOC has a higher proportion of males than females in its ranks (66%). Employees between the ages of 30 and 39 years old make up the largest proportion of the workforce, while those over the age of 60 constitute the smallest proportion. According to the data on academic qualification, employees with a master's degree account for the greatest number (46.8%), while those with only a bachelor's degree account for the smallest proportion (7.3%). Based on this result, it can be concluded that the level of education in this

organisation is relatively high. In terms of work experience, the results show that employees with middle occupational experience (10-15 years) make up the largest percentage of the organization's workforce, whereas new employees (1-5 years) make up the smallest percentage of the company's workforce.

3.2 Reliability test

Throughout this study, the reliability coefficient alpha ranged from 0.00 to 1.00 (Cronbach, 1951), with a higher value indicating that the test score was more reliable overall. The following table 2 shows the results of the reliability test conducted in the large-scale study:

Table 2: Reliability cronbach's alpha coefficients

Variable name	Items	Cronbach's Alpha Coefficient	Reliability degree
E-Procurement	20	0.881	Very Good
Sustainable supply chain	20	0.865	Very Good
Procurement performance	10	0.791	Good
Overall all items	50	0.937	Excellent

The magnitudes of reliability coefficients indicated in Table 2 indicate that the data collected from the survey is consistent enough to be used for data analysis. The results also indicate that the overall reliability of primary data is "Excellent" (Cronbach's alpha coefficient = 0.937), which is consistent with previous findings. Data analysis is typically performed at a reliability of 0.70 or higher, which is the standard cut-off point (Cohen, 1988).

3.3 Convergent validity

The output of the simulation, as shown in Table 3, reveals that the magnitude of AVE for all dimensions falls within the standard threshold (AVE 0.50), under the condition that the composite reliability is less than 0.7. (Fornell and Larcker, 1981). According to this finding, the observed variables (indicators) linked to the dimensions of the constructs defined in this study, such as risk management, e-procurement, sustainable supply chain, and

procurement performance, are highly correlated with one another within their parent dimension, whereas otherwise the parent dimension is poorly explained by the indicators linked to that dimension. Thus, each dimension is sufficient to convey enough variance to cause indicators

to converge into one single dimension, as demonstrated by this result. Based on this discovery, those indicators are effective measures of each dimension, and they will be used to construct the measurement model for each of the variables in the model.

Table 3: The amount of AVE and composite reliability of dimensions

Variable	Dimensions	Number of indicators	AVE ≥ 0.5	Square root of AVE	Composite Reliability ≥ 0.7
Sustainable supply chain	Environmental Costs	5	0.578	0.760	0.873
	Rapidity	5	0.609	0.780	0.886
	Supply Costs	5	0.529	0.727	0.844
	Adaptability	5	0.552	0.743	0.859
E-Procurement	E-Design	5	0.515	0.717	0.841
	E-Sourcing	5	0.569	0.754	0.868
	E-Negotiation	5	0.510	0.713	0.838
	E-Evaluation	5	0.514	0.717	0.840
Procurement performance	Delivery Time	4	0.514	0.717	0.806
	Supply Quality	4	0.605	0.778	0.859

4. Results

4.1 Testing of research hypotheses

The Critical Ratio (C.R.) is used to validate each hypothesis in this study, as well as to determine the significance level of unstandardized regression coefficients, in order to justify the hypotheses tested. The coefficient of reliability (C.R.) is calculated by dividing an estimate by its standard error (Hair et al., 2017).

Two criteria are used to validate the hypotheses in this study (Chen et al., 2012): (1) if the correlation coefficient is greater than 1.96 for a specific relationship, the hypothesis should be accepted; otherwise, the hypothesis should be rejected, and (2) if the estimate path coefficient for a relationship is significant at the 0.05 cut-off point (Sig. less than 0.05), the hypothesis should be accepted.

Table 4: Hypothesis validation and significance of direct relationships

Hypothesis	Hypothesis Statement	C.R	Result	Sig. ≤ 0.05
Hypothesis 1	E-procurement has a significant effect on procurement performance	2.779	Validated	0.005
Hypothesis 2	E-Procurement has a significant effect on sustainable supply chain	3.867	Validated	0.000
Hypothesis 3	Sustainable supply chain has a significant effect on procurement performance	2.604	Validated	0.009

Therefore, from a statistical standpoint, the degree of association between e-procurement, a sustainable supply chain, and procurement

performance will be acceptable. As a result, the relationships between the constructs in this study are not based on chance, but on statistical

evidence rather than probability. The hypothesis statements in Table 4 are evaluated in accordance with the magnitude of the critical ratio (C.R.) and the level of significance that they contain. Upon examination of the output data, it becomes clear that all direct relationships between the constructs are statistically significant (Sig. 0.05). E-procurement has a significant impact on procurement performance, according to Hypothesis (1) (Sig. = 0.005, C.R = 2.779 1.96), and on sustainable supply chain, according to Hypothesis (2) (Sig. = 0.000, C.R = 3.867 1.96), according to Hypothesis (1) (Sig. At the end of the day, Hypothesis (3) states that "a sustainable supply chain has a significant effect on procurement performance" (Sig. = 0.009, C.R. = 2.6041 1.96) is supported by the data. Based on these findings, it can be concluded that Hypotheses 1, 2, and 3 have been accepted

rather than rejected. While the hypotheses that are diametrically opposed to these are rejected (Null-Hypotheses). The three constructs (e-procurement, sustainable supply chain, and procurement performance), when compared to a conceptual framework, show significant and positive correlations (i.e., direct effects).

The outcome of mediation model (e-procurement - sustainable supply chain - procurement performance) is shown in Table 5. It is evident that the standardized indirect (mediated) effect of e-procurement on procurement performance = 0.291, and the standardized total (direct and indirect) effect of e-procurement on procurement performance = 0.694. That is, due to both direct (unmediated) and indirect (mediated) effects of e-procurement on procurement performance.

Table 5: The summary of the indirect effects

Types of effect	Sig.	Effect	Lower bound	Upper bound	0 out of interval
Standardized indirect effect	0.018	0.291	0.078	0.680	Yes
Unstandardized indirect effect	0.024	0.213	0.041	0.488	Yes
Standardized total effect	0.014	0.694	0.391	0.958	Yes
Unstandardized total effect	0.010	0.506	0.265	0.771	Yes

A sustainable supply chain is hypothesised (H4) to be a mediator between procurement performance and e-procurement. As a result, a sustainable supply chain has a significant partial mediation role in the relationship between e-procurement and procurement performance, and another partial mediation role in the relationship between e-procurement and procurement performance.

4.2 Analysis for structural equation modelling

As mentioned previously, SEM is used to assess the conceptual framework's model fit. According to the output in Figure 2, the magnitudes of the fit indices are consistent with the SEM cut-off values. PCLOSE = 1.00 (perfectly non-significant) and RMSEA = 0.029 (0.08), respectively, indicate a high degree of model fit to the empirical data.

Furthermore, because CMIN/DF = 1.324 (3.00), CFI = 0.959 (0.80), and TLI = 0.956 (0.80), and the standard range for both TLI and CFI should be between zero and one, TLI and CFI values near 1.00 indicate a high degree of model fit (McDonald and Ho, 2002). By examining the values of these fit indices, we can determine whether the proposed conceptual framework fits the empirical data adequately. Additionally, when the standardised weights of the variables are compared, it is discovered that all correlations are greater than 0.30 (Beta = 0.70, 0.45, and 0.76) between the exogenous and endogenous variables (i.e., e-procurement, sustainable supply chain, and procurement performance). This result demonstrates moderate strength relationships and validates the mediation role of sustainable supply chain (Chen et al., 2001).

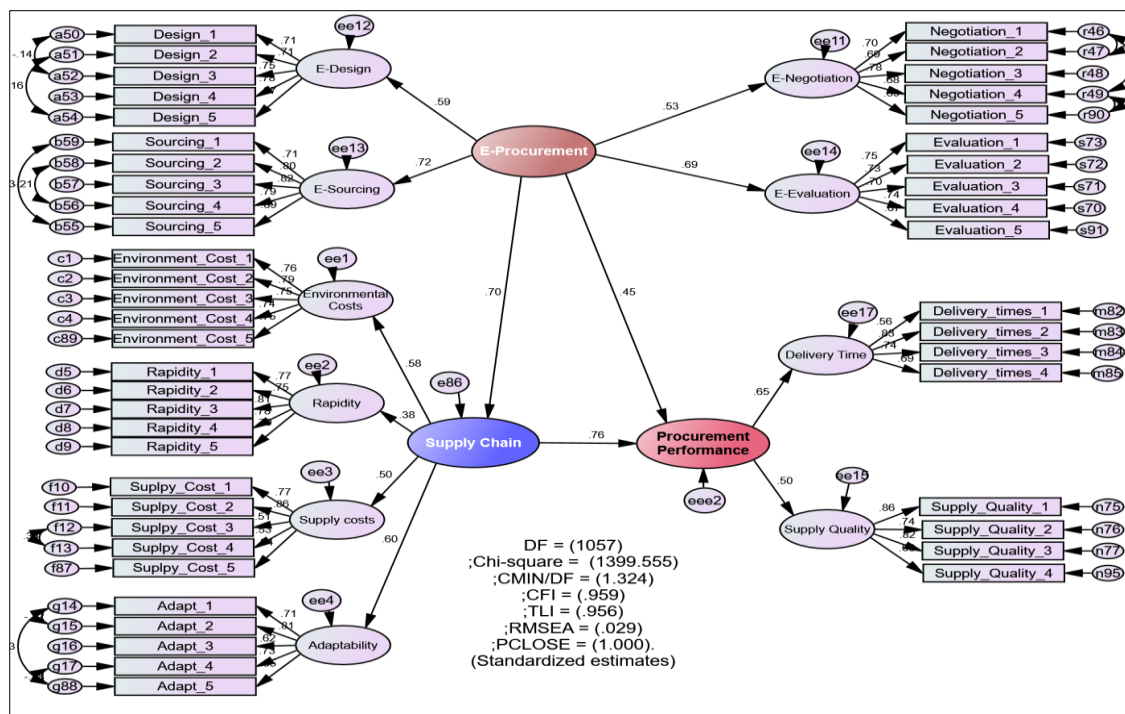


Figure 2. The structural model fit indices

5. Discussion

The direct and indirect relationships between e-procurement, a sustainable supply chain, and procurement performance were examined in this study. Additionally, this study demonstrated the utility of SEM in analysing correlations between these three variables, determining the mediation relationship, and testing the study's hypotheses. The results indicate that significant correlations exist between endogenous and exogenous variables when critical ratio (CR) values are analysed. Along with correlation analysis, the model's goodness of fit was evaluated. Elimination of non-significant endogenous variables strengthened the SEM overall. According to the study, ADNOC, the UAE's largest oil company, has embraced some aspects of electronic procurement applications. Notable is the fact that the ADNOC already utilised e-tendering, e-quotations, and e-sourcing. However, ADNOC has not implemented electronic maintenance and repair, electronic reverse auctioning, or web-based enterprise resource planning. Additionally, the study noted that the ADNOC's greatest challenges when utilising an e-market provider were insufficient funding, the organization's inability to manage change, and a lack of employee training on how to use the system. Additionally, it was evident that e-procurement had alleviated the major

traditional procurement problems of lack of accountability, maximised economy and efficiency, reduced time spent sourcing commodities, and lower administration costs.

6. Conclusion and Recommendations

This study sought to find the influence of e-procurement practices on procurement performance with the mediation influence of sustainable supply chain in oil and gas industry by investigating these variables in ADNOC the largest oil company in UAE. Based on literature review and the methodology adopted in this study, the result shows that e-procurement practices (e-design, e-sourcing, e-evaluation, e-negotiation) has significant effect on procurement performance. The three constructs (e-procurement, sustainable supply chain, and procurement performance) have strong, significant, and positive correlations. Based on this result it is highly recommended to focus on e-procurement in order to ensure swift delivery of oil and gas products. In addition, the findings of this study provided empirical evidence to the leaders in ADNOC and other companies working in O&G sector that e-procurement is a critical success factor for a sustainable supply chain and increasing the effectiveness of the whole procurement process, ensuring the timely delivery of energy products to consumers. Furthermore, the researcher

suggests that the findings and policy recommendations will be of vital assistance to the oil company's stakeholders in general, both in the UAE and around the world.

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