

# Employee Adoption of E-Procurement and its Implication on Supply Chain in Developing Countries

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## ABSTRACT

The main objective of this study is to examine the adoption of e-procurement and its implication on supply chain of multinational Oil Companies using Ghana as a case study. The research employed the mixed research approach. Using a sample size of 37, data was collected and analysed. The research revealed that procurement activities in ENI oil Exploration Company involves effective planning, sourcing, and contract management. It also found that e-procurement has been adopted by employees in ENI oil Exploration Company to a large extent. Factors influencing the implementation of e-procurement in the supply chain of ENI are primarily user acceptance of new information system, as well as Information quality, trust, and risk perception. Mean ranking revealed that the major implication of e-procurement on the supply chain include centralized purchasing function, decrease in size of buying centre, altered vendors and suppliers relationship, ability to measure and monitor orders, sales personnel ability to check all sales related information on his/her computer and employees empowerment to manage purchasing and cost saving.

## General terms

Multinational Firms, Transaction Management

## Keywords

E-procurement, Supply Chain, Sourcing and Maverick buying practice

## 1 INTRODUCTION

### 1.1 Background

The growing importance of supply chain, rather than the manual system of procurement, necessitates that managers of multinational firms move beyond the usual transaction centered on purchasing where price and availability were the key factors to be considered in the purchase decision, [1].

Transformation of business dynamics in the world and continuous advancement in technologies has brought easy accessibility to reliable electronic support services with an equal demand in almost all business sectors worldwide. It is therefore evident that the focus of many organizations has now shifted towards e-procurement as an integrated supply chain support function to achieve strategic business objectives such as operational efficiencies, sustainability and profitability. The global economic downturn has also played a fundamental role in bringing this change in business dynamics, [2].

Procurement is a vital and expensive business activity for every organization [3]. It suffers from two chronic inefficiency problems:

- First, procurement is traditionally a labour-intensive activity as such managers spend more time on 'non-value added activities', [4].
- Second, traditional procurement process allows infamous maverick buying practice which represents a situation where employees make unplanned purchases from non-preferred suppliers at a higher price, [5].

In response, several Multinational oil companies have introduced e-procurement into their supply chain management. In the case of Ghana, there is lack of evidence pertaining to the adoption of e-procurement by multinational firms. This study seeks to find out the extent to which e-procurement is been adopted and accepted by employees in the multinational Oil Companies and its implication on their supply chain using ENI Oil Exploration Company Limited as a case study.

### 1.2 Objectives of the Study

This study seeks to examine the adoption of e-procurement, and its implication on the supply chain of multinational Oil Companies in Ghana. Specifically, the study will;

- Examine the existing procurement practices at ENI Oil Exploration Company.
- Assess the extent to which e-procurement has been adopted and accepted by employees in Company.
- Determine the actual implication of e-procurement on the supply chain of the Company.

## 2 LITERATURE REVIEW

### 2.1 E-procurement and supply chain

Procurement is the acquisition of goods, services or works from an external source. In procurement, it is necessary to ensure that the goods, services or works are appropriate and that they are procured at the best possible cost to meet the needs of the purchaser in terms of quality, quantity, time, and location [6]. [7] defines Supply chain as "the network of organisations involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services in the hand of the ultimate customer." According to certain definitions of Supply chains, there has to be more than one company involved in the chain in order for it to be defined as a Supply chain. [8] explains that at least two organisations are required to form a Supply chain.

A supply chain consists of all parties involved, directly or indirectly, in fulfilling a customer request. The supply chain

not only includes the manufacturer and suppliers, but also transporters, warehouses, retailers, and customers themselves. Within each organization, such as manufacturer, the supply chain includes all functions involved in receiving and filling a customer request, new product development, marketing, operations, distribution, finance, and customer service [7]. Customers form an integral part of the supply chain.

## 2.2 Concept of E-procurement

To improve the procurement process, many organizations have started to use electronic procurement innovations (EPIs). EPIs, when acquired and deployed, change how an organization conducts procurement. Core procurement processes which include supplier selection, order placement, order fulfilment, payment and settlement are supported

through EPIs that have been developed to address such functions [9]. Traditionally, if a buyer needed some specific product or service, he or she had to investigate, qualify, and negotiate with several potential suppliers before selecting one. To facilitate this process, the online reverse auction was introduced to enable temporal and geographical convenience, reduced cost of contact, provide instant feedback and privacy.

## 2.3 Benefits of E-procurement

E-procurement has a number of potentials and this has been proven in previous studies, [5]. E-procurement enables companies to decentralize operational procurement processes and centralize strategic procurement processes as a result of the higher supply chain transparency provided by E-procurement systems.

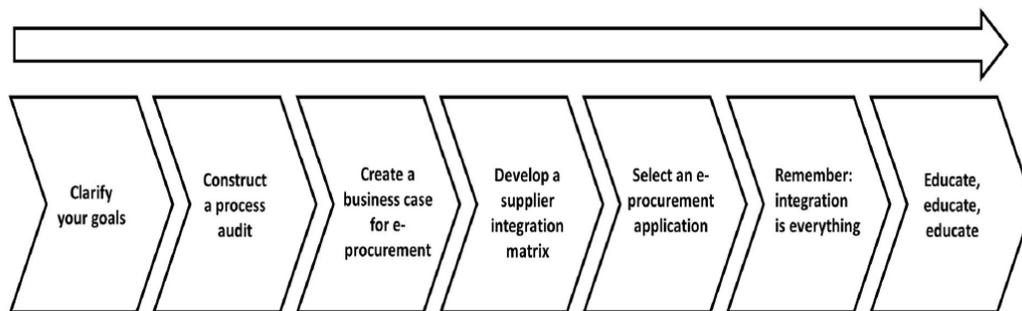


Figure 1 : Roadmap for e-procurement implementation [1]

## 2.4 Theories of supply chain

In reviewing literature, it was identified that supply chain does not have specific theories that have been attributed entirely to it. Like supply chain management, it is guided by theories that have existed for a very long time. These theories include Transaction Cost Economics Theory, Network Perspective, Social Network Theory, Resource Based View, Principle-Agent Theory, Game Theory, Systems Theory and Strategic Choice Theory.

## 2.5 E-procurement Adoption

There is a debate about how recently e-procurement has emerged, [10] & [11]. The use of the Internet in e-Procurement provides several advantages over earlier inter-organizational tools such as Electronic Data Interchange that was introduced in 1960s. Other tools introduced later include Enterprise Resource Planning (ERP) in the 1970s and thereafter commercial use of the Internet in 1980s. The World Wide Web with multimedia capabilities followed in the 1990s.

Implementing e-procurement solution is not as simple as many businesses think [12]. To succeed in e-procurement implementation, [13] proposed a seven step roadmap for business managers as in the

Figure 1 above.

## 2.6 Implication of the e-procurement on the supply chain of Firms

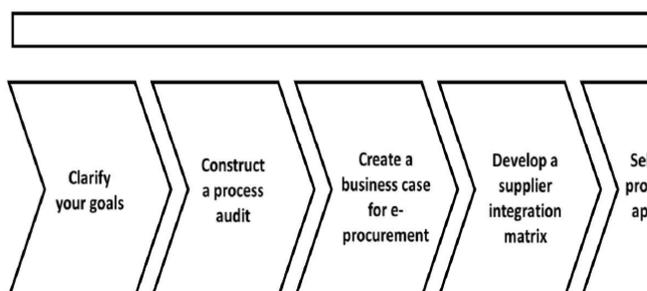
Many organisations (including multinational firms) are adopting e-procurement due to its ability to streamline the supply chain network.

E-procurement eliminates all necessary cost in the supply chain and helps the organisation to save resources. E-procurement system makes it possible for organisations (multinationals) to measure and monitor orders and their details such as: processing time, the time an order was sent, and current status.

Cost saving, improved efficiency and control, are the three catalysts driving growth in the e-procurement area. It is also believed that there is more benefit to be gained by using e-commerce for sourcing, rather than for transaction management [1]. It is possible to reduce buying and service costs through product standardization. The single point of data entry into the system is an important benefit of e-procurement to multinational firms that adopt such systems. Efficiency is also increased; because once the system is implemented there is no need to employ new people, even though the department has to process more orders.

## 2.7 Empirical Review

[14] conducted a study on the critical factors that influence e-procurement adoption success in the public sector and concluded that if e-Procurement initiatives in the public sector are to assist in development, then a wider discussion and agreement on what constitutes [15] on e-procurement adoption by European firms established that there are country differences with respect to e-procurement adoption, and that firms from countries with low uncertainty avoidance such as Germany and the UK are the early adopters of e-procurement,



while countries that are less reluctant to change such as Spain and France have lower adoption rates.

A study by [15] found that measurable benefits of supply chain management have not yet been realized due to general limited understanding of how supply chain management concept works within government environment. [11] found that applying electronic commerce to procurement activities increases purchasing speed intensively.

### 3 RESEARCH METHODOLOGY

#### 3.1 Research design

The research design employed for this research is the mixed approach: quantitative and qualitative approaches, [16] & [17]. This approach was adopted because it helped the researcher to pursue the research objectives. The qualitative approach assessed the opinion of employees in ENI oil Exploration Company whiles the quantitative approach assessed adoption of E-procurement in the Company to establish any trends developing in the supply chain of multinational companies.

#### 3.2 Population and sampling procedures

The target population comprised of employees at the head office of ENI oil Exploration Company in Ghana. The population is made up of forty (40) staff. The purposive sampling method was adopted in selecting respondents for the study. This sampling method is non-probability sampling in which objects in the sample are selected by the researcher based on certain criteria. Thus only some respondents who have some kind of knowledge [8] on procurement and supply chain were sampled.

Table 1 : Pre-qualification of potential suppliers

Responses	Frequency	Percent	Cumulative Percent
Yes	21	70.0	70.0
No	6	20.0	90.0
Not Sure	3	10.0	100.0
Total	30	100.0	

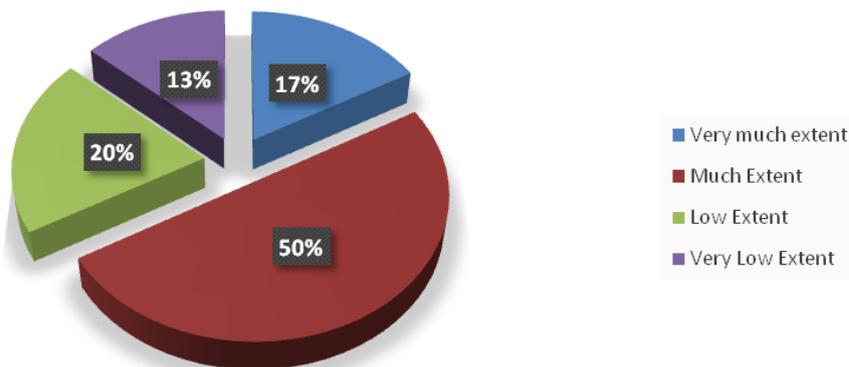


Figure 2 : Extent of E-procurement adoption

Respondents confirmed that it is essential for the company to respond varying user demands during procurement. On the extent to which e-procurement has been adopted by employees in ENI, 60% of the employees said, to a much

According to [18], purposive sampling technique is a practical and efficient tool which when used properly, can be just as effective as, even more efficient than, random sampling. A sample size of 37 was chosen for the study. This sample size relied on [19] sample size formula shown in Equation 1 below,

$$n = \frac{N}{1 + N(e)}$$

Equation 1 : Formula for Taro Sample Size

An error margin of 0.05% was considered and this resulted in the sample size of 37.

#### 3.3 Sources of data and Research Instrument

The data consisted of both primary and secondary data. The primary data was collected from the field at the head office of ENI Oil Exploration Company in Accra whiles the secondary data was collected from articles, books, journals, industry working paper, working paper and website of ENI Oil Exploration Company.

Research instrument used to collect data was questionnaire.

### 4 ANALYSIS AND DISCUSSION OF FINDINGS

#### 4.1 Current Procurement practices

Secondary documents from ENI Oil Company indicated that existing procurement activities include

- Planning
- Pre-qualification
- Contract management.

When asked whether the company considered the pre-qualification of potential suppliers during sourcing phase as essential, Majority of the respondents (70%) as in **Error! Reference source not found. Error! Reference source not found.** answered yes.

extent, illustrated in Figure 2 above. E-procurement has gained strategic significance in inter-functional and inter-organizational relationships and has appeared as the driving force behind several supply chain practices.

Table 2 : Factors influencing the adoption of e-procurement

Factors	Frequency	Percent	Cumulative Percent
User acceptance of new information system	9	30.0	30.0
Information quality	8	26.7	56.7

Trust	8	26.7	83.3
Risk perception	5	16.7	100.0
Total	30	100.0	

## 4.2 Reasons for Adoption of e-Procurement

On factors that influenced adoption of e-procurement and as in

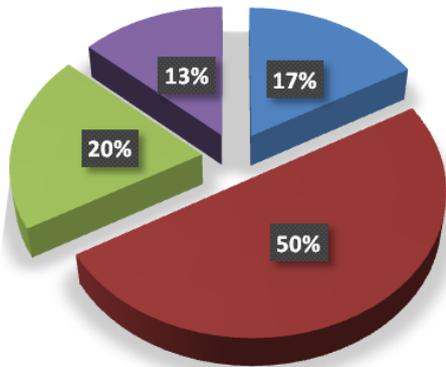


Figure 2 above, respondents mentioned user acceptance of Information systems, perceived risks associated with e-procurement, information quality and trust.

As in the Table 3 below, respondents confirmed user acceptance of Information Systems as the most influencing factor.

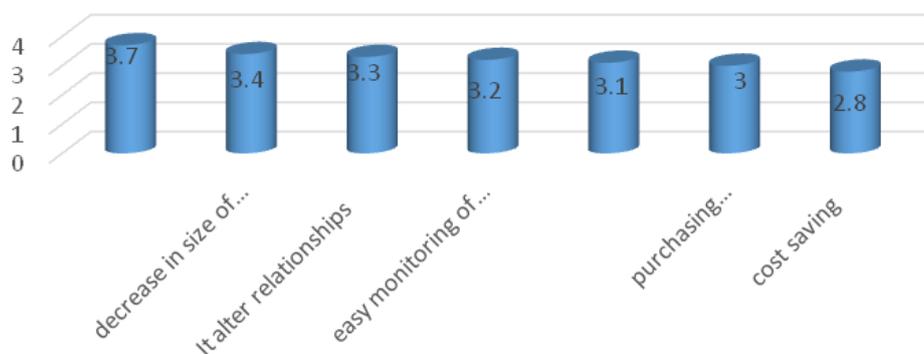
Comparatively, [12] said that user acceptance is often the pivotal factor determining the success or failure of information system.

When given some implications from literature, respondents ranked the implications as follows (Highest to lowest) as in Figure 3 below :

- Centralized purchasing function
- Buying centre may decrease in size
- Alters relationships with vendors and suppliers Measure and monitor orders
- Sales personnel ability to check needed information on computers
- Employees empowered to manage purchasing
- Cost saving

**Table 3 : User Acceptance as pivotal factor**

Responses	Frequency	Percent	Cumulative Percent
Yes	15	50.0	50.0
No	7	23.3	73.3
Not Sure	8	26.7	100.0
Total	30	100.0	



**Figure 3 : Mean Rankings**

Similarly, [20] in their study suggested that the buying center may decrease in size, it also include fewer hierarchical levels, and contain fewer functional areas when e-procurement is applied. Moreover, [21] in another study suggests that e-procurement leads to a centralized purchasing function and employees are more empowered to manage purchasing while adhering to the organization's rules. Furthermore, [22] stated that the introduction of e-procurement will influence the roles and skills required in the purchasing organization and will alter relationships with vendors and suppliers. Finally, [13] emphasized that cost saving, improved efficiency and control, are the three catalysts driving growth in the e-procurement area.

## 5 SUMMARY, CONCLUSION AND RECOMMENDATIONS

### 5.1 Summary of Findings

The purpose of the study was to assess the adoption and acceptance of E-procurement system on supply chain

Management practices by employees of multinational companies in the oil and gas in Developing Countries. The study in firstly assessed the existing procurement practices at ENI Oil Exploration Company, and revealed that procurement activities in ENI comprises of planning, sourcing, and contract management.

It also revealed that factors influencing e-procurement adoption include user acceptance of new information system, information quality, risk perception and trust with user acceptance of new information system being the most influencing factor. Generally the firm consider the pre-qualification of potential suppliers during the sourcing phase as essential. On implication of e-procurement on the supply chain, the mean rankings revealed that centralized purchasing function as the main implication of e-procurement on supply chain and cost savings as the least.

## 5.2 Conclusion

It can be concluded that the procurement activities in ENI Oil Company include planning, sourcing, and contract management and this is used by the firm to offer information on the purchase of goods and services, management of vendors, selection of suitable vendors, type of contract(s) used, and the partners involved at every stage of the procurement process.

It can also be concluded that E-procurement has been adopted and accepted by employees in ENI oil Exploration Company to a much extent. Factors influencing the implementation of e-procurement in the supply chain of ENI are primarily user acceptance of new information system, as well as Information quality, trust, and risk perception. Mean ranking above revealed that the major implication of e-procurement on the supply chain in the order below:

- Centralized purchasing function
- Decrease in size of buying centre
- Altered vendors and suppliers relationship
- Ability to measure and monitor orders
- Sales personnel ability check all sales related information on his/her computer
- Employees empowerment to manage their own purchasing, and cost saving

## 5.3 Recommendations

Cost saving was ranked lowest, considering the impact of e-procurement on supply chain. There is therefore the need for a company to develop strategies to be cost effective in implementing e-procurement.

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