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Challenges Affecting Performance of Supply Chain Systems in the Petroleum Industries in Kenya

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Purpose – This paper aims to establish the challenges affecting performance of supply chain systems (SCS) and the fuel shortages due to poor forecasting of stock levels in the petroleum industries.

Abstract
The purpose of this study was to establish the challenges affecting performance of supply chain systems in the petroleum industries in Kenya. The study was used to exam several parameters that affected' Supply chain performance in Kenya resulting to often oil shortages. This has been occasioned by globalization which was intensifying competition and increased the mobility of high skilled personnel yet oil companies depend on the staff for success and sustainability. Specifically, the objectives of the study was to establish whether how these factors; level of skills, information and communication technology has effect on supply chain systems, This is a conceptual paper and the methodology used is analytical data after collection from the sample size targeted by the researcher in which in depth literature review is done to highlight how companies can incorporate performance of supply chain tools in their supply chains systems. The study was conducted using a survey design. A census of all the registered 73 oil companies was conducted. Data was collected by use of instruments. This involved both structured and semi-structured questions. Data was analyzed mainly by use of descriptive and inferential statistic such as mean and standard deviation. This was more than the generally recommended sample size of 100 cases for statistical data analysis (Kothari, 2011). Inferential statistics including correlation, multiple regressions enter method and multiple regressions (Stepwise) for moderation analysis. Qualitative and Quantitative data was put into categories based on themes that was aligned to thesis objectives and was integrated in the findings.
Keywords: Supply chain systems, level of skills, information communication and technology

Introduction

1.1

Petroleum products are used across the entire economy in every country. Gasoline and diesel are the primary fuels used in road transport. Oil is used in power generation, accounting for 11 percent of total electricity generated in Africa in 2007 (IEA 2009a). Adequate and reliable supply of transport services and electricity in turn are essential for economic development. Households use a variety of petroleum products: kerosene for lighting, cooking, and heating water; liquefied petroleum gas (LPG) for cooking and heating; and gasoline and diesel for private vehicles as well as captive power generation. Gunasekaran et al,(2001,observes that fuel shortages are far more common when fuel suppliers cannot fully recover costs with reasonable returns and cut back on fuel acquisition and sales, or when they decide to pursue higher return opportunities elsewhere, such as exports, diversion, and out smuggling. Shortages have occurred in many countries with artificially low prices, including Argentina, Bangladesh, Cameroon, China, Egypt, Gabon, Ghana, India, Indonesia, the Islamic Republic of Iran, Iraq, Kazakhstan, Malawi, Mozambique, Nepal, Nigeria, Pakistan, Russia, Senegal, Syria, Togo, and the Republic of Yemen. Fuel shortages can get to the point where some consumer groups start asking governments to remove fuel price subsidies (Gay & Airasian, 2003). This occurred in Ghana, where the expansion of the 18 automotive LPG market and large price subsidies have both been blamed for acute LPG shortages, prompting commercial LPG vehicle drivers to ask the government for subsidy removal so as to ensure reliable supply (All Africa, 2011e). Ghana raised the price of LPG by 50 percent in February, 2013.

1.1.1 Fuel Shortages

Fuel shortages can invite panic buying and hoarding, worsening the shortages. Even when supplies are adequate, rumors or prospects of imminent price increases may prompt panic buying by consumers while sellers hold back selling. If a pricing mechanism is based on an average over a fixed period of time of benchmark world prices and adhered to strictly, it might be relatively easy to predict when the next round of price increases is likely to occur. The Xinhua News Agency (2012a) has partially blamed hoarding by refiners and traders before price increases for fuel shortages. This behavioral response to the price adjustment mechanism is said to be one of the reasons the government of China is reconsidering the current formula. Where fuel prices are adjusted infrequently, rumors of a price hike could be even more damaging because the public would fear a large price increase. For

example in January 2012 in Kenya and Egypt, panicked motorists forming long lines when rumors about a price increase spread were blamed for serious fuel shortages (AFP, 2012a). Consumers fighting over scarce fuel supplies have led to scuffles, injuries, and even deaths (Maheshwarkar and Sohani, 2013).

Although not related to pricing policies, events outside the country (such as those in transit countries), events outside the petroleum sector (especially power), or protection provided to inefficient domestic refineries can lead to fuel shortages. Two land-locked countries Rwanda and Uganda rely on Kenya as a transit country for fuel supply, and supply disruptions in Kenya are inevitably transmitted to these markets. Power shortages in Kenya have shut down refinery and oil pipeline operation, leading to fuel shortages in all three countries. Power shortages also increase demand for diesel for backup power generation, and diesel fuel shortages can occur if the demand increase is large enough. In Zambia, where the sole domestic refinery is protected with high import tariffs, unscheduled or longer than planned refinery closures for maintenance and repair have frequently led to fuel shortages (Bacon and Kojima, 2011).

Barrow (2013), observes that fuel shortages are far more common when fuel suppliers cannot fully recover costs with reasonable returns and cut back on fuel acquisition and sales, or when they decide to pursue higher return opportunities elsewhere, such as exports, diversion, and out smuggling. Shortages have occurred in many countries with artificially low prices, including Argentina, Bangladesh, Cameroon, China, Egypt, Gabon, Ghana, India, Indonesia, the Islamic Republic of Iran, Iraq, Kazakhstan, Malawi, Mozambique, Nepal, Nigeria, Pakistan, Russia, Senegal, Syria, Togo, and the Republic of Yemen. Fuel shortages can get to the point where some consumer groups start asking governments to remove fuel price subsidies (Delai & Takahashi (2013) and Agami et al (2012). This occurred in Ghana, where the expansion of the 18 automotive LPG market and large price subsidies have both been blamed for acute LPG shortages, prompting commercial LPG vehicle drivers to ask the government for subsidy removal so as to ensure reliable supply (All Africa, 2011e). Ghana raised the price of LPG by 50 percent in February, 2013.

1.2 Oil Pricing

The prices of internationally traded fuels and food surged until mid-2008, fell sharply, and then began rising again, reversing much of the price fall by 2011. By one measure, the prices on the world market have nearly doubled since 2005. The fiscal breakeven price of oil needed to balance the budget in major oil exporters has risen sharply in recent years, making the prospect of prolonged periods of low prices unlikely in the future. Equally important, the marginal cost of oil production in 2011 was US$92 a barrel for the 50 largest listed oil companies and could rise further if it continues to follow the long-term trend (Wall Street Journal, 2012). Similarly, long-term growth in global demand for food and continuing U.S. ethanol demand for maize and European Union (EU) biodiesel demand for vegetable oils are expected to keep prices of maize, oilseeds, and many other crops at historically high levels (Chadha & Gagandeep, 2013).

Many governments in developing countries control petroleum product prices. In the face of mounting subsidies, a number of governments seriously explored options for pricing reform in the period leading up to mid-2008. The budgetary pressure to press on with reform subsided briefly following the price collapse in late 2008, but those governments that had done little were caught by rising prices again soon thereafter (Billy Gray et al,2023). To the extent that price increases on the world market have been transmitted to the domestic market, soaring prices have led to calls on governments across the world to take action, ranging from providing greater safety nets to the poor and increasing the minimum wage to releasing oil from strategic reserves, reducing taxes, and granting outright price subsidies (Bowersor et al, 2010). Given the high share of household expenditure on food in some low-income countries, the food share can be as high as half or more, and even in middle-income countries it is typically 20 to 30 percent (WB ,2012b) rising food prices have made fuel price reform, politically difficult under any circumstances, all the more challenging. Conversely, rising fuel prices have compounded the political difficulties of reducing food price subsidies, as households face rapidly increasing expenditures on other basic goods. As a result, some countries have seen people taking to the streets to protest both high food and energy prices.

Price transmission to the domestic market has differed markedly from country to country. In the case of petroleum products, aside from price differences due to transportation costs and differences in fuel quality, international crude oil and petroleum product prices are broadly uniform across all regions, so that differences in government pricing policies account for much of the differences in end user prices. The price differences are significant: a recent price survey showed that the retail prices of four petroleum products in 65 developing countries in January, 2012 varied by two orders of magnitude, with the lowest prices found predictably mostly in major net oil exporting countries (Kojima, 2012). Chadha & Gagandeep, (2013), as in the years immediately

following rising oil prices in 2004, which saw suspension of pricing policies linked to world price movements, some governments responded to high oil prices in 2011 and 2012 by freezing prices. Many interlinked developments have affected costs, availability, and prices paid for petroleum products in recent years: Recent high oil prices have exacerbated the poor financial states of the national oil companies in some countries with price subsidies, leading to the inability to procure petroleum products on time, acute fuel shortages, and high black market prices; Fuel price subsidies in the face of high world prices have increased incentives for diversion to black markets and smuggling to neighboring countries. Delai & Takahashi (2013) observed that smuggling and black marketing can push up domestic prices markedly above the official prices; Power shortages in a number of countries have increased demand for diesel for emergency power generation, causing diesel fuel shortages in some markets and higher diesel prices. A growing cause of power shortage is declining rainfall, leading to falling hydropower generation in East Africa and elsewhere; Piracy in the Gulf of Aden and the Indian Ocean has increased insurance costs, led to shipping delays, and at times caused fuel shortages in East Africa; The challenges to the authorities mounted by citizens across the Middle East and North Africa since 2010 have stalled and sometimes reversed petroleum price reforms in several countries against the backdrop of declining perceived state legitimacy (Bowersox et al,2010).

Oil forms a major source of energy in Kenya and world at large for it contributes about 40% of world energy consumption. Kenya's petroleum market has 73 major players and hundreds of independents. The oil sector has become highly competitive and is being characterized by price wars and low sales margins. Industry data shows that petroleum dealers are currently selling retail price between Sh115.55 per litre to Sh115.80 per litre for super, Kerosene 87.12 to Sh 89.15 per litre for every litre of diesel 108.50 to 109.20 respectively (Muhammad, 2013). Kenyan Oil sector was liberalized in October 1994. It is regulated by Ministry of Energy through the Energy Act of 2006 and enforcement is done by Energy Regulatory Commission (ERC). Part IV of the Act (Petroleum and Natural Gas) deals with the issuance of business licenses for importation, storage, refining, exportation, sale and resale, transportation of petroleum and natural gas (Anderson, 2013).

1.3 Statement of the Problem

Studies available show that supply chain systems that can creatively and innovatively exploit the benefit of oil companies in improving performance up to 80 percent depending on the extent of adherence to supply chain requirements needs to have clear performance strategy (Zhu et al, 2013). These problems of often oil shortages resulted to this study to disclose challenges affecting performance of supply chain systems in the petroleum industries in Kenya. (Fugate et al, 2010 & Luthra et al, 2013) observed that the studies available have largely remained far below the expected standards which was intended to meet this expectation of the oil companies. It's noteworthy that procurement efficiency and effectiveness cannot be achieved unless they are pursuant in tandem with the goals of supply chain performance. For instance supply chain goals revolve around embracing the five rights i.e. right quality, right quantity, right source, right time and right price respectively so as to maintain stock level inventory often, with longer term strategy goal revolving around the ultimate customer satisfaction, controlling of shortages, competency in skills and timely delivery of oil products to retailers (Meyer, 2010).

1.4: General Objectives

The general objective of this study was to establish the challenges affecting performance of supply chain systems in the petroleum industries in Kenya; Specific Objectives: To establish the extent to which level of skills affects performance of supply chain systems in the petroleum companies in Kenya; To determine the effects of information and communication technology on performance of supply chain systems in the petroleum industries in Kenya.

1.5: Skills Theory

The skills theory grew from the obvious flaw in the trait approach; traits are relatively fixed. This meant that trait theory was not particularly useful for developing new leaders who lack those traits. Skills theorists sought to discover the skills and abilities that made leaders effective. Similar to trait theory, skills theories are leader-centric, focused on what characteristics about leaders make them effective. The two primary theories to develop from a skills approach were Katz's three-skill approach and Mumford's skills model of leadership (Yang et al, 2013).The three-skill approach argued that effective leadership required three skills: technical, human and conceptual skills. Technical skill refers to proficiency in a specific activity or type of work. Human skill refers to being able to work with people and conceptual skill refers to the ability to work with broad concepts and ideas. The three-skill approach asserted that, while all skills were important for leaders, their level of importance varies depending on the organizational level of leaders. As leaders move through the levels of the organization (from lower to upper), skill importance moves from technical to human to conceptual (Fischer and Rose, 2001). More complex than the three-skill approach, the skills model of leadership outlined five components of effective

leadership: competencies, individual attributes, leadership outcomes, career experiences and environmental influences (Maheshwarkar and Sohani, 2013)

1.6: Socio-Technical Systems Theory of Acceptance

The socio-technical systems perspective has become influential in the analysis of the organizational impact of technology. Originating in work carried out by the Tavistock Institute in London (Yang et al,2013) on the introduction of mining technology in Britain, socio-technical systems theory views any organization as an open system of interdependent sub-units, transforming inputs to desired outputs. As the theory has moved on from its original psychodynamic model of human behavior, the term "socio-technical" has become synonymous with almost any analysis of a configuration of technology and users, though its use in the present chapter is linked more closely to the researchers and theoreticians who have developed the concept (Tseng and Chiu,2013)

A fundamental tenet of socio-technical systems thinking is that a technology on its own (in the form of its technical capability) has little meaning for purposes of organizational analysis, being truly comprehensible only in terms of the context in which it is embedded and, by extension, the organizational goals or transformations that it serves or enables . Moving beyond a concern with one user and an interface, socio-technical systems theory argues that a network of social relationships surround all working practices (cooperation among workers over the course of a task, supervisory relationships, and general social interaction) (Yang et al,2013).The gainful employment of any technology hinges on the ability and willingness of users to employ it for worthwhile tasks (i.e., those deemed central to the organization's goals). Accordingly, any technology cannot be analyzed or understood in isolation of the goal-oriented organization it is intended to support. In order to jointly optimize both the social and technical attributes of any organization, allowance must be taken at the engineering level of the social dynamics of any organization or sub-unit within it (Allcott and Wozny 2010).

Literatures

2.1: Level of Skills

Together, the Dynamic Development Research Group (DDRG) has built an approach to understanding and analyzing variation and order in the organization of people's behavior, especially in cognition and emotion, which is called dynamic skills. Contrary to prevailing psychological approaches, which tend to limit people to one narrow model, dynamic skill portrays much of the rich complexity and diversity in human behavior. This theory provides a toolkit of concepts and methods for analyzing the changes in behavior that occur with development, learning, context, and emotion. Through its analysis of the natural variation in human behavior, skill theory provides powerful tools for relating cognitive and emotional development to brain development. Dynamic skill provides tools for predicting and explaining many such changes and relating them to changes in the organization of cortical functioning in the brain. The tools have proven useful for explaining changes arising from development, learning, emotion, and context. They facilitate specification of developmental levels, skill transformations, context, support, domain, emotional script, and person in social situations. A range of developmentally appropriate methods are used to assess both change and continuity. Skill provides a toolbox and blueprints with which to analyze development (or other types of change in organization) in any domain and thus to facilitate education, clinical intervention, and all sorts of practical activities focusing on change (Chadha & Gagandeep, 2013)

2.2: Information and Communication Technology

The ICT revolution is reaching new milestones and is stimulating growth in other services. The mobile phone revolution has continued, with subscriptions peaking at 25.3 Million at the end of June 2011, which is more than the number of adults in Kenya. Since June, 2010, subscriptions increased by more than 25 percent. In the same period, internet users increased by 60 percent, climbing to 12.5 Million (Foster et al, 2011). This indicates that the data revolution is now also in full swing. A key factor in the growth of internet usage is the new affordable tools, including smart phones and social networking applications with both internet and mobile interface that are proving increasingly popular, especially among the urban youth. The sector has also generated additional innovations, including M-banking, linking mobile money with personal bank accounts, M-credit, and M-insurance, which are expanding the reach of financial services to previously unbanked segments of the population (Barrow, 2013). Increased oil prices, together with global warming, are economy. In particular, the oil industry itself has an impact on the use of information and communication technologies (ICTs) in the global economy. Foster et al (2011) observes that higher oil prices increase the risk of squeezing information technology (IT) budgets in oil-using industries. In particular, they can affect oil-importing developing countries with regard to their increased consumption and their often limited capacity to respond to oil price shocks. On the other hand, increased revenues of energy producers give oil-producing countries an opportunity to increase their investments in IT (Barrow, 2013). At the same time they will increase support for high-tech energy conservation efforts and for the production of alternative renewable energy sources (Chadha & Gagandeep, 2013).

ICTs play a major role in increasing productivity and cutting costs in many sectors of the economy (USDA, 2012a). And given the expectation of high oil prices for long periods of time, the question arises equitable distribution of this valuable energy resource are possible, inter alia, through the active use of modern ICTs. To what extent can ICTs help increase efficiency? In the production and allocation of crude oil and its products .ICTs and modern petroleum technologies (which are also becoming information intensive technologies) provide new opportunities to improve economic performance at all stages of the oil supply chain (Gist, 2013). These will be through the technologies of production of crude oil and downstream operations of oil product. For example, in upstream operations, ICTs and related technologies may provide possibilities for expanding proven crude oil reserves, improving the rate of crude oil extraction from existing wells, and providing further means to discover new wells, and so forth (Foster et al, 2011).

Understanding to what extent new ICTs and related technologies might help to extend the lifespan of provide more predictability about future oil supply; it could also be a stabilizing factor helping to allay investors and consumers' fears, and could contribute to putting downward pressure on oil prices (Sakhuja & Jain 2012). The use of ICTs in the oil industry is not only relevant for international oil companies (IOCs) in their competitive drive to stay in the forefront of technological progress, but also has also direct implications for National Oil Companies (NOCs) in Organization Petroleum Exporting Countries (OPEC) and other oil-exporting countries. Unlike in the 1970's, the major national oil companies in the OPEC region as well as in other countries have matured, accumulated considerable compete with IOCs also in the use of ICTs. However, they still have to address issues such as the lack of skilled human resources, and the need for increased knowledge of cutting-edge technologies, and business processes. The NOCs in some developing countries face the challenge of keeping up with new technologies, including ICTs. But more importantly toward upgrade these technologies by technological capabilities (Azevedo et al, 2011).

3.1 Research Design

The aim of the study was to establish the challenges affecting performance of supply chain systems in the oil companies in Kenya and to achieve this, a researcher used descriptive research design, (Meyer,2010) states that descriptive studies are more formalized and typically structured with clearly stated evaluative questions. It serves a variety of research objectives such as descriptive of phenomenon or characteristics associated with a subject population, estimates of proportions of population that have these characteristics and discovery of associations among different variables. The design enabled the study to combine both qualitative and quantitative research approaches. Qualitative approaches enables collection of data form of words rather than numbers. It provides verbal descriptions rather than numerical (Kothari, 2011). Mugenda and Mugenda (2003), states that qualitative methods can be used to gain more in depth information that may be difficult to convey quantitatively. Quantitative approach strives for precision by focusing on items that can be counted into predetermined categories and subjected to statistical analysis (Taylor,2013).The use of these two approaches reinforces each other (Zhu et al,2013). The research used this approach because the data collected used the main questionnaire was quantitative and was analyzed using statistics. Qualitative on the other hand involve interpretation of phenomena without depending on numerical measurement or statistical methods (Styles et al, 2012). As noted in Creswell,(2009) mixed research is an approach that combines or associates both qualitative and quantitative research methods: Enables mutual corroboration of each other via the use of multiple sources of collecting data, contextualizes the analysis by providing richer details and initiates new lines of thinking through attention and surprises, turning ideas around and providing fresh insights.

3.2: Pilot Test

Kothari (2011) observes that Pilot testing involves conducting a preliminary test of data collection tools and procedures to identify and eliminate problems, allowing programs to make corrective changes or adjustments before actually collecting data from the target population. The suitability of the questionnaire for this study was tested by first administering it on 73 heads of procurement, the total number of respondents. They were asked to evaluate the questions for relevance, comprehension, meaning and clarity. Pilot test enables the researcher to ascertain the validity and reliability of the instrument. A typical pilot test involves administering instruments to a small group of individuals that has similar characteristics to the target population, and in a manner that simulates how data was collected when the instruments are administered to the target population (Sidola et al, 2012)

Multiple Regressions Analysis

Multiple regressions are an extension of simple linear regression. It is used when we want to predict the value of a variable based on the value of two or more other variables. According to (Carver, 2009) and The Federation of American Societies for Experimental Biology (2014), the variable we wanted to predict was called the dependent variable (or sometimes, the outcome, target or criterion variable). The variables we used to predict the value of

the dependent variable was called the independent variables (or sometimes, the predictor, explanatory or regress or variables).

3.4: Data Analysis and Presentation

Since the study was both quantitative and qualitative in nature, both descriptive statistics and inferential statistic was employed. Inferential or statistical induction means the use of statistics to make inferences concerning some unknown aspects of a population from a sample of the population. Taylor (2014) observes that the intent is to give estimation or it gives prediction after taking a sample of the needed population. Once data is collected it's checked for completeness. The data from the field will be then coded first according to themes research methinks on the study. Meyer (2010) states that analysis was done with the aid of the statistical package of social science (SPSS) using version 20 which is an America association with certainty of the result statistical mode required.

Discussion

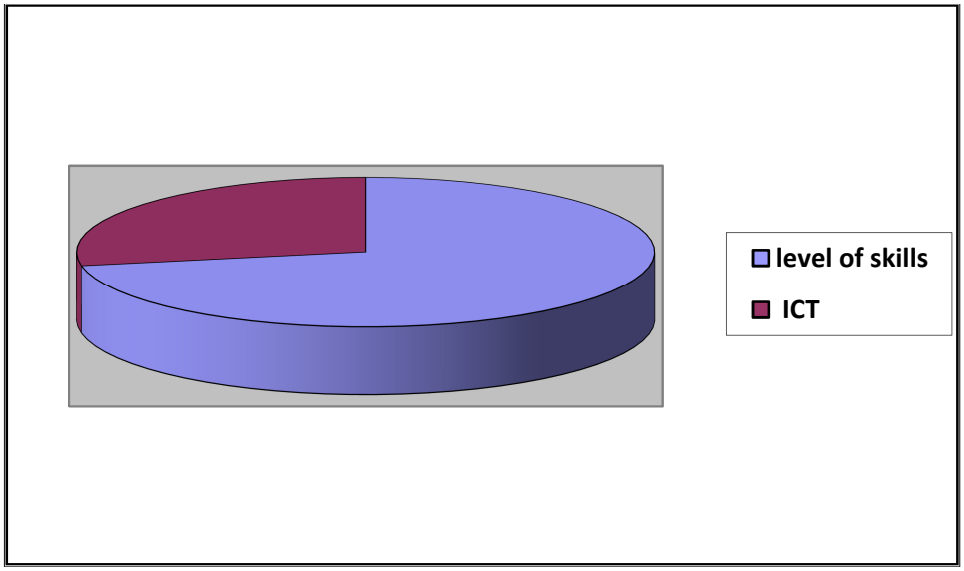

Figure 3.1: Level of skill Performance

Perception Whether Level of Skills Affects Performance

Majority 72% (53) indicated that level of skills when well embraced to staffs can increase performance in the supply chain systems. Also a high percentage 86% of the respondents indicated that level of skills was the main reason why oil companies were not performing, hence the need to embrace it. This tallies with earlier studies carried by (Zhu et al, 2013), which indicated that lack of skills had contributed to poor performance in service delivery in the supply chain. The written response and exit interview indicated that were not well embraced in most of the petroleum industry, leading to poor forecasting, shortages and even complaints from the ultimate customers. The three-skill approach which argues that effective leadership required three skills: technical, human and conceptual skills. Technical skill refers to proficiency in a specific activity or type of work. Human skill refers to being able to work with people and conceptual skill refers to the ability to work with broad concepts and ideas. This is in consistent with the findings of (Tseng & Chiu, 2013)) who established that although both National and Internal registered oil company are in business, majority 75% are not encouraging their staff to go for further studies to boast their level of skills.The senior procurement officer corroborated the findings that some of those who had left were due to either poor payment or management policy, hence search of green pasture. The respondents suggested that for delivery of services, all oil companies should endeavor to encourage their employees to get more skills towards efficiency and effectiveness service delivery. They can also give loans/advances to staff who are willing to work in their company to go to further training in that matter.

3.5: Finding the effect of performance of supply chain systems on ICT

From the result, most of the respondents, 78.95(58) indicated that they had less than five computers, while the remaining 21.05% (15) had between 5-10 computers. Majority 89.91% of the respondents did not indicate whether they have any measures in place to embrace e-procurement in their company and 10.09% have embrace e-sourcing by customizing their systems to enhance proper forecasting on their stock levels. Majority 64.93% of the respondents indicated that the lowest ICT qualifications their colleagues have was certificates and the remaining 35.07% respondents indicated that they hold 1st degree respectively. Majority 78.37% of the

companies/respondents were not encouraging their staff to go for further studies, while the remaining 21.63% of the companies/ respondents indicates that they are really embracing their employees to go for further studies towards efficiency and effectiveness on service delivery. Majority 98.01% of the respondents indicated that E-transaction is good as it can bring transparency, efficient and more importantly service delivery between the upstream and downstream within the supply chain systems through proactive forecasting of stock levels. The remaining 1.99% respondents indicated that e-transaction has very little impact in their company. This means nearly that all the respondents were in agreement that e- procurement, but were not enhancing its implementation, as they preferred the old way of doing things.

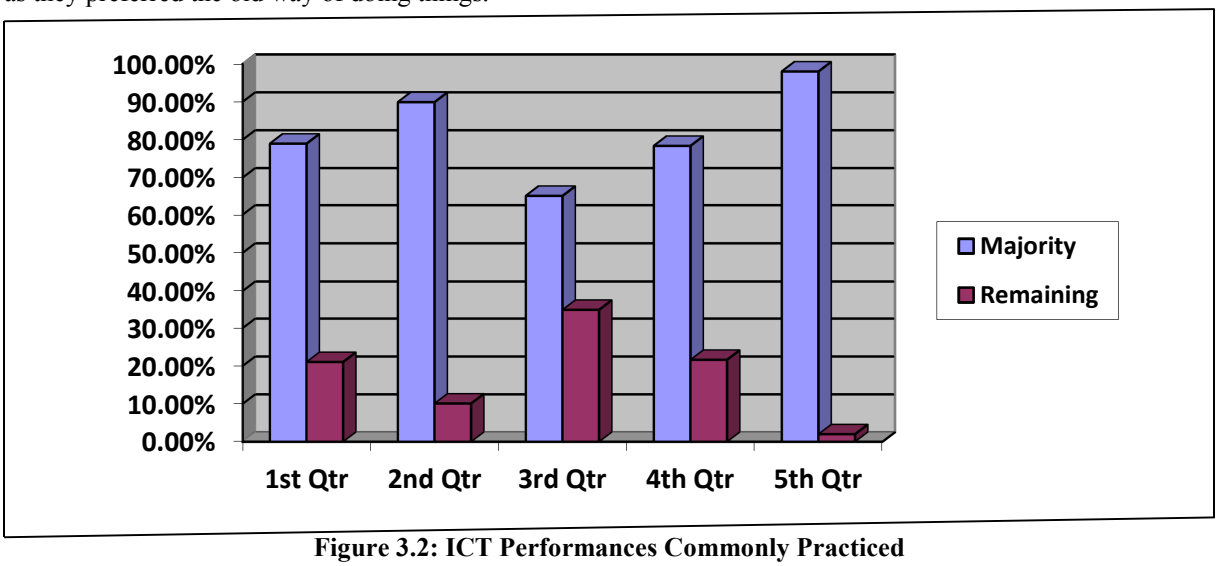

Figure 3.2: ICT Performances Commonly Practiced

Perception Whether ICT Affects Performance of Supply Chain Systems

Majority of the respondents 79.2% (58) were of the opinion that ICT used by the oil companies do not influence performance. About 20.8% (15) felt that ICT has an impact, hence it can affect performance. When asked about the percentage of retentions occasioned by the performance, majority 62.3% (45) respondents indicated 1-25%. About 26-50%, 18.2% indicated 51-75% and only 2.8% indicated 76-100% respectively. Written response and interviews indicated that senior procurement officers were not satisfied with effect of ICT and how it's affecting their performance. The study established that performance was not adequate in the registered oil companies. Other favourable aspects related to performance that were cited included lack of relevant skills form the staff, failure to use open tendering systems, failure to do proper forecasting of stock levels and responding to issues was slow instead of being proactive with firsthand information towards prudent decision making. This findings on the performance aspects on supply chain systems are in consistent with the findings of (Schrettle,et al, 2013) who established that similar aspect such as lack of competency in decision making and failure to disseminate to ultimate customers regularly especially in this volatile world may result to dissatisfaction a among the oil staff in the petroleum industries.

The interview with the senior procurement officer indicated that performance was not cited as reason for leaving by those who left. Further they showed that staffs were not involved in decision making through integrations in their company meetings resulting to fuel shortages and other short comings can be discussed/ addressed. Then other Staffs will be informed thereafter the outcome through memos and circulars. The respondents suggested that the oil company management to establishes other means of involvement in decision making other than through committees systems, impartiality in treatment of employees should be practiced always, managers should listen and act promptly to staff issues, encourage more studies on the area if ICT to enhance dynamic skills especially employees of the lower cadre.

3.5: Summary

Performance of supply chain is vital to the success of any petroleum industries in Kenya. It reflects supply chains performance's efficiencies and effectiveness. Literature indicates that performance of the oil industries can give customer satisfaction on timeliness from the upstream to the down streams in the supply chain systems. This was anchored on the fundamental reasoning that the level of skills are critical resource for petroleum industries and their performance is of paramount importance because of the responsibility these companies play in the development on the country.

Therefore, the purpose of this study was to establish the challenges affecting performance of supply chain systems in the petroleum industries in Kenya. The specifics objective was to establish the extent to which level of skills affects performance of supply chain systems in the petroleum companies in Kenya, to determine the effects of information and communication technology on performance of supply chain systems in the petroleum industries in Kenya, to establish the extent to which cost of crude oil affects performance of supply chain systems in the petroleum industries in Kenya, to examine the effect of tendering systems on performance of supply chain systems in the petroleum industries in Kenya, to determine the moderating effect of legal and regulatory environment in the oil companies on the, relationship between level of skills, information and communication technology, cost of crude oil and tendering systems in the oil industries in Kenya. Employees performance was also measured using level of skills.

Determine the effects of information and communication technology on performance of supply chain systems in the petroleum industries in Kenya**;** (Taylor, 2014) and (Addy,2012), established that firsthand information in the supply chain systems is a boaster competence towards proactive forecasting against fuel shortages .Also, information may be one way a company can measure its service delivery, whether they get it at the right time to make prudent decision in their daily service delivery to customers or its worthwhile. In petroleum industries scenario information and communication technologies was singled out as major issue and one that has often led to poor forecasting in the petroleum industries. Therefore, this study sought to establish effects of information and communication technology on performance of supply chain systems in the petroleum industries in Kenya.

The findings in the descriptive statistics showed that majority of the respondents (78.95 %) which was high in percentage, indicated that number of computers was not adequate to meet their needs and similar high percentage of (21.05%) indicated that they had not put any measures to embrace e-procurement in the companies. When compared generally majority (21.65%) indicated that most companies had not customized their documents to enable them to do any online transactions. Majority, (89.5%) had obtained degree level of education but were satisfied with what they doing so longer as they were making profits compared to the other companies (%) disagreed that information and communication technology was key to proper forecasting in the petroleum industries, hence the need to encourage their staff to go for further studies. Majority (91.3%) believe that e-transaction can bring efficiency and effectiveness to inbound and outbound customers. Qualitative analysis indicated that Information and communication technology was one of the reasons why there was often fuel shortages and cited lack of dissemination at the right time as a major aspect. The networking often goes off and this results to a paradigm shift to manual transaction. Other aspect that were cited include Information and Communication Technology skills, academic qualification of (1.37 %) which was to match with the international registered companies. Correlation analysis on oil companies' basis indicated that performance was positively and significantly related to Information and Communication Technology. Computers were negatively and significantly related to intention to leave in most companies. However, the academic qualification in most (56.1%) was not significant as they were comfortable with the little salary's they earn. The result also shows that ICT had a positive significant relationship with intention to leave however, the relationship was moderate. This means that the higher the ICT dissemination less the intention to leave among the ICT staff in (%) of all the oil companies.

3.6: Conclusions

The study was set out establish the challenges affecting performance of supply chain systems in the petroleum industries in Kenya. The study generally concluded that mixtures of challenges affect performance of both national and international ERC registered oil companies. These were either intrinsic and extrinsic variables influence intention to leave of employees a s exemplified by level of skills which is an intrinsic and crude oil price as extrinsic variable which were identified as predictors of service delivery through supply chain systems. The study further concluded that current trends such as timeliness forecasting, proactive stock level management, IT, just in time delivery and e-procurement has not been well embraced by the registered oil companies. Most of these companies' as confirmed from qualitative data, did not have performance policies or strategy and hence had not made performance of their staff apriority despite the current market competition in the level of skills. Finally, the needs to emphasize the
importance of e- sourcing throughout the supply chain systems so as to achieve a competitive in the business markets

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