

**EFFECT OF PROJECT SCOPE MANAGEMENT PRACTICES ON  
PERFORMANCE OF LIQUEFIED PETROLEUM GAS FIRMS IN KENYA**

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## DECLARATION

### Declaration by the Student

This research project is my own work and has not been submitted to any other university.

Signature: ..... Date: .....

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This research project has been submitted for examination with my approval as the University Supervisor.

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## **DEDICATION**

This study is dedicated to my family for their never-ending love and endurance. In particular my husband, Shadrack, and daughter, Chloe, from whom I stole time from.

## **ACKNOWLEDGEMENTS**

I wish to thank everyone who in one way or another gave me valuable support during my study. I thank God for His knowledge, wisdom and understanding that has seen me to the end of this course. I extend gratitude to my family members for the support both mental and financial for my study. In a special way I wish to thank to my Supervisor, Dr. Kingsford Rucha for his invaluable criticisms and patience that he gave me during the research period. I would not have done it without his support.

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## ABSTRACT

Project scope management is part of the process groups set out in the practice of project management. This research looked at the effect of project scope management practices on project performance in the Liquefied Petroleum Gas firms in Kenya. The research objectives aimed at determining the effect of project scope management practices on the measurement of project performance as well as establishing the challenges faced by Liquid Petroleum Gas companies in Kenya in adopting scope management practices. The study focused on Contingency Theory, Project Performance Theory and the Resource-based View theories and adopted a descriptive research methodology. Questionnaires were used to collect quantitative data from licensed (LPG) importers and wholesalers in Kenya. Census was carried out as the target population was sizeable and reachable. The data was analyzed, interpreted and findings displayed by tables and graphs. Further, correlation and regression were conducted to gain deeper insights. From the regression equation, project budgets, project quality and environmental factors had a significant positive effect on operational performance. The overall p-value was significant (0.03397,  $p < 0.05$ ), indicating that project scope management practices had a significant association with project performance. The overall coefficient of determination  $R^2$  was 0.1437 which means there was 14.37% positive variation in project performance index due to changes in project scope management practices and 85.67% is variation of the dependent variable due to other factors not in the model. The p-value of the correlation test between project budget and product & service quality is significant. The researcher thus concluded that the project budget and product & service quality are positively correlated with a correlation coefficient of 0.4211 and p-value less than 0.01. Moreover, the p-values of the running cost and project flexibility are both significant with correlation coefficients of 0.3452 and 0.3160, respectively at p-value  $< 0.05$ , thus project quality was found to be positively correlated with both the running cost and project flexibility measures of performance. The most common challenges for adopting Project Scope Management Practices were prerequisite adoption pointers within the industry mainly by EPRA the governing body, Tariff restrictions and customer capability.

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## **ABBREVIATIONS AND ACRONYMS**

**EPRA:** Energy and Petroleum Regulatory Authority

**GDP:** Gross Domestic Product

**GOK:** Government of Kenya

**KNYS:** Kenya National Youth Service

**KPC:** Kenya Pipeline Corporation

**LPG:** Liquefied petroleum Gas

**PMBOK:** Project Management Body of Knowledge

**RBV:** Resource Based View

## **CHAPTER ONE: INTRODUCTION**

### **1.1 Background of the Study**

Project scope management is one among the nine knowledge areas in line with Project management. It runs across all the five process groups which are planning, execution, monitoring and controlling as well as project adjournment. (Rijkswaterstaat, 2015) explains project scope management as the management of different project output factors in an effective manner to ensure different tasks occur as planned and meet the deadlines. According to (Turner, 2014), project scope management refers to the adoption of set out techniques to ensure only the required work is executed to save time and achieve the set objectives. Every project undertaken must have a specific scope, which includes the determination of the work that would be completed during the project's lifecycle (Harrison & Lock, 2017). It is important to note that scope can be both in regard to a project or a product. Project scope is the work done to deliver a product, service or result with specified characteristics whereas product scope refers to characteristics and functions that characterize a product, service or result.

Theories adopted for this study are contingency theory, project performance theory and Resource-based view theory, hereafter referred to as RBV. To note is that they are very relevant and applicable in the current day business world. Meredith and Mantel (2009) considered project scope management theory to entail the combination of time, cost, and quality to deliver client's needs and effective results. It also incorporates the management of work in the production of commodities that have specific functions and features. Project performance theory evaluates how organizations perform and social effects (McKinsey & Company, 2008). In the resource-based view (RBV) theory, an outsourcing decision on the

client industry's ability to invest in the internal resources to maintain a competitive advantage has to be made. According to (Lacity and Will, 2008) RBV deliberates the crucial and primary determinants of the firm performance, as the resources owned by an industry which aid in attaining a competitive advantage of the organization.

Liquefied Petroleum Gas, hereafter referred to as LPG, prices in Kenya are amongst the highest in developing countries and higher than that of its Sub Saharan African counterparts including Ghana, Morocco, Senegal, and South Africa. LPG consumption is often a function of wealth indicated by a country's Gross Domestic Product (GDP) per capita, LPG pricing, combination of LPG infrastructure and government interventions. The Northern Corridor (Kenya and Uganda) suffers from limited LPG penetration due to the above factors, and there is an extremely low level of LPG consumption per capita consequently. The household consumption of 3.7 kgs of LPG per year in Kenya ranks amongst the lowest in the developing countries.

### **1.1.1 Project Scope Management**

Project scope management takes place across the five distinct phases of any business which include the initiation process, scope planning, definition, verification and change control. Management of deliverables and practices is very important since they help the project managers allocate, just the right amount of work needed for completion of the project successfully and determining of the required resources (Kerzner, 2017). Having proper scope management strategies is therefore vital, no matter the company goals or the position in regard to size of the launched project across all industries. Since the output is always clearly defined, the use of performance indicators is imperative in the determination of the success of the project.

Adaptive techniques in ensuring that the constituents of the planned project involve what is required for successful completion of the undertaking. It expounds on what to consider or not consider in a project. Further, the scope may either refer to the product or the undertaken task. Product scope has the distinguishing traits and functional relationship between output and inputs that are inclusive in a product or service, the final output, and may include tangible single products and even complex output such as the construction of a building while project scope refers to all the works and /or activities that ought to be done in the delivery of specified brand commodities (Larson, 2014).

(Kokoyo, 2016) reported that the Kenya National Youth Service (KNYS) major slum upgrading projects in the slums of Nairobi such as Mathare and Mukuru failed to meet their expectations. KNYs had a false assumption that there was unused land that could be used in the building of organizational structures and facilities. The government did not take into account the over the year's developments for construction of new infrastructures. As such there was conflict of the private property developers. In line with product scope management, Maruti Suzuki India, New Delhi had a flop. They had to recall more than 500 vehicles in the domestic market manufactured and sold between 20th Jan 2018 and 14th July 2018 for heavy vehicles to check whether there was a defect in the assembly of fuel pumps. This ideally should have been taken care of in the production phase given the vehicle had a higher rating requirement. If any of the users been involved in an accident, for this reason, Suzuki would have lost millions in damages. Their management in an official recall of cars confirmed this. Therefore, regardless of the environment and the context a project is in, project scope management is imperative for the successful completion.

According to (Njoki, 2018), Central Bank of Kenya Governor cautioned people interested in investing in Tatu City to do so at their own risk, saying foreign investors have taken control. In the petition filed by residents of Kiambu County in 2016, Tatu City directors are being accused of evading tax amounting to Sh1.5 billion. Over thirteen hundred shareholders bought shares from Tatu City Limited and Kofinaf Company Limited in 2007 at a value of Two hundred Thousand (Shs. 200,000). The investment however did not take off and yet years later the investors are yet to be compensated for the losses despite the court giving an order for the same. Further in the proposal the two companies were to go public in trading. This however did not happen either. The land owners were also not spared and still not compensated to date. Sadly, across Kenya and probably across many developing countries no brilliant investments get to have success stories for one main reason, poor scope and environment study. This is the same for Konza city as well as Galana Irrigation projects. And most recently the Kimwarer Dam scandal at the Treasury office.

### **1.1.2 Project Performance**

Project performance refers to the final analysis of how well/ lack thereof a particular project relates in relation to pre-determined parameters (Kerzner, 2017). Because projects are not permanent in nature the favorable outcomes of an enterprise ought to be gauged on how the project is completed as required by the enterprise stakeholders according to limitations such as extended time, deadline, standard, financial expectation, and others. A test period is required to establish benefit realization of the complete project. For example, if an automation system is installed the operations team should be trained before taking over the facility. This way any defects can be resolved. The success of a projects is influenced by the last baselines that are normally confirmed by the authorized stakeholders. The last milestones as agreed by mandated stakeholders determine the project success. The measure

of the performance is done on a continuous basis, either when the project is in progress or can be done after the project completion.

In project performance, effective and efficient management and use of effective tools and procedures is vital. But how do you measure project performance? According to (Le-Hoai et al., 2003), there are five key determinants of the timely completion of projects which include material price escalation, lack of contract management, salaries payment difficulties to contractors, material procurement difficulties, and low technical performance. Other few factors include price fluctuation, lack of professional management, poor site management, and rising cost of materials. Challenge of timely projects completion in Africa and globally depends on the surrounding environment. (Ashley & Allan, 2016) identifies ineffective pre-project planning and incomplete project definition of deliverables as the most significant contributors to project failure. Further, unskilled contractors, scope of work changes, rework, and exclusion of key stakeholders in the projects as the contributors to prolonged project delays (Assaf & Al-Hejji, 2006).

According to (Chindambaran and Idrus, 2012) appointing a registered manager for projects tender and time management are essential elements for a timely project completion. Worth noting is that project performance is not only measured in terms of the overall costs but also includes vital aspects such as adherence to quality stipulations and time, flexibility to meet stakeholder needs, product and service expectations and to the least the speed of service delivery. Since all the requirements are specified before the commencement of the project, the measurement of the performance involves the comparison between the final output and the pre-determined qualifications.

Project performance is the final analysis of how well/ lack thereof a particular project relates in relation to pre-determined parameters. As projects are temporary by their very own nature, their success measures ought to be a measure of completion of the projects within the set limitations of scope, time, quality, cost, resources and risk as stipulated by project charters. To ensure project benefits are felt by all stakeholders, all projects must have a test period after commissioning of the same. This way any defects and functional issues are configured to rectification. The measure of the performance is done on a continuous basis; either when the project is in progress or can be done after the completion of the project (Kerzner, 2017).

### **1.1.3 Liquefied Petroleum Gas Firms in Kenya**

Liquefied Petroleum Gas is a mixture of gases consisting of hydrocarbon used in heating appliances and vehicles as a fuel. Normally, LPG is made through synthesizes by refining petroleum or wet natural gas which is derived entirely from decomposed organs. In the contemporary world, LPG is an alternative fuel being used. The Government of the Republic of Kenya has made great strides to address the challenges that continue to constrain the desired availability, penetration, and consumption of Liquefied Petroleum Gas (LPG) around the country. In Kenya, cooking gas is commonly used in urban areas households, but it is not used more than wood fuel county-wide because it is expensive (KPC, 2006).

LPG usage is challenged by the initial acquiring costs of equipment such as gas cylinders and the cookers. Before importation these equipment's are cheap, but there is heavy taxation on them due to their modest usage. For example, there was 30% direct taxation of the simplest equipment as of April 2000 by the government. Importantly, moderation of the tax by the government would result in lowering the tax making the commodities to be



cheaper hence abandonment in fuel and charcoal usage (Onuonga, 2008). Though there is an exemption of cylinders from duty, tax reduction leads to an increased usage of more efficient LPG which have economic impacts. Therefore, the Government through the elimination of tax impediment, adopts strategies that encourage usage of facilities such as cookers and regulators which aid usage of LPG (KPC, 2006).

The Kenyan Government has increased incentives for LPG use in Kenya and across the region. However, the consumption has generally been low due to multiple factors such as insufficient and unreliable supply in small parcel import tankers, inadequate storage and bottling facilities, bottlenecks on transport and at the Port of Mombasa and of late the Standard gauge railway. The Kenya Government provided tax exemptions on some appliances since 2006 that requires the industry to use unified cylinder valves. These deliberate actions and the commissioning of wholesale facilities in 2013 is credited with the growth of LPG Marketers and price decrease, for example, from Kenya Shillings 232 per kilogram to 110 per kilogram between December 2014 and September 2018. The new entrants' investments are mostly local Kenyan entrepreneurs. According to the Energy and Petroleum Regulatory Authority (EPRA), there are 42 importers, 41 storage and filling plants, 91 transporters, 89 wholesalers, and one registered retailer as of January 2019 (EPRA 2019).

The GOK Gazette supplementary notice 54 (Acts No. 11) states that where any LPG firms CAPEX towards the construction of LPG storage facilities exceeds capital of four billion shillings and a minimum of On-land storage capacity of fifteen thousand metric tons, then they are eligible to enjoy Investment Deduction. This is often at 10% due to the nature stipulated by the Kenyan Tax Act. In addition, such entities would enjoy exemptions on

Value added taxes, Import declaration form and Railways Development levy taxes. This would change the industry for the long term (Kenya National Energy Policy, 2016).

## **1.2 Research Problem**

According to (Pemsel & Wiewiora, 2013), the major function of a Project manager is managing the scope of works. Poor scope definition management is considered a major reason for a project failure. They further argue that, as a project manager the aim should be maximization of benefits as opposed to delivery of outcomes as per set scope. The project manager should then avoid resistant to scope change especially where the change generates an improved benefit. However, scope creep and gold plating are often risk factors from this approach. This is because the project resources often get allotted to other activity areas leading to scarcity and eventually project deliverables may not be achievable.

Globally, the factors that determine the development of the LPG market include developing new LPG supply sources, upgrades in logistic infrastructure, changing regulatory policies by the government; and contemporary markets development for LPG. There is increased usage of LPG as fuel mostly in residential industrial and commercial space in many third-world countries as there is an increase of ease of access to LPG, markets have few restrictions, introduction of more customers to LPG and expansion of infrastructure for transporting products.

There is a strong market prospect for the expansion of the LPG in traditional and current markets. The approximate use of LPG is 26% of the market share worldwide, and there is a likelihood of the total world market remaining the same or increasing. In the next five years, there is an expected increase of approximately 1.5 million tons per year of LPG regional consumption. In Africa, especially in North Africa, there is around 80% total

consumption of LPG. Over 70% of the total LPG African supply is accounted for by North African. Egypt and Algeria great suppliers of LPG in North Africa.

As Kenya tries to become a conservative economy as per Vision 2030, it has the challenge of achieving the energy requirements because of the increase in growth expectation to power the economy. For the achievement of vision 2030, energy is a key determinant. In the commercial sector, electricity and petroleum are the most used fuels. However, in Kenya, the most used fuel is wood. Apart from commercial sectors, other energy consuming zones are residential, manufacturing, and transport sectors (KIPPRA, 2010).

Previous studies done in Kenya on energy consumption were dismal in explaining the strategies adopted by the LPG firms to deal with the challenge of project scope practices as there have been no big investments activities in Kenya. (Kahira, 2006) in a study on the strategic responses of petroleum importing and marketing companies in Kenya, found out that major environmental factors have influenced the industry and it was imperative that they respond accordingly with key strategies. (Onuonga, 2008) concluded in a study on strategic implementation by major petroleum companies in Kenya that the industry was constantly adopting strategies that fit with the environmental changes which included marketing mix elements, product differentiation, and new technologies.

(Onserio, 2001) did a study on strategies of operations applied by large Kenyan scale manufacturing companies to have a favorable competitive edge. There is no known study on the strategies adopted by the LPG marketing companies to deal with the challenge of project scope management and performance in the Kenyan firms. This study was done based on this background to acquire the missing knowledge. This study evaluated the effect of having a well-developed project scope on the project performance. Licensed importers,

transporters, wholesalers, and filling plants were the main focus. The bulk handlers are the only interface between the LPG upstream importers and downstream (retailers and users) markets in Kenya and across East and Central Africa currently. There is only one Common User Manifold located at Miritini.

### **1.3 Research Objectives**

The objectives of this study were:

- i. To determine the effect of project scope management practices on the project performance of Liquid Petroleum Gas firms
- ii. To establish challenges of Project scope management by Liquid Petroleum Gas firms in Kenya

### **1.4 Value of the Study**

This study would add value to the project management discipline particularly regarding project scope management practices. By identifying the knowledge gap, the study would be a guide to future research within the same concept. Further, it would significantly enable the success of projects, particularly the ones in expansion phases. The business efficient and effective practices are very imperative when undertaking any work since they lay the foundation through which proper monitoring and execution of a project are achieved.

The research would also offer scholars a foundation into the emerging area of project scope management as an operational efficiency mechanism in the wider concept of project management. The study would serve as a backbone in developing policy guidelines for making changes in the institutional frameworks and policy interventions and form basis upon which policies in project scope management practices would be formulated. Policy

and regulations set out by the Government would be more informed and as such be favorable for companies that are engaged in the LPG sector.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

This chapter explores the theories which provide knowledge in relation to the concepts of project scope management practices, a review of the project performance and a summary of the literature around the concepts of Project Scope Management practices and that of Project Performance.

### **2.2 Theoretical Review**

The research was grounded on three key approaches, which are the contingency approach, project performance theory, and the resource-based view theory. Further, two models were incorporated, which was the index-based model as well as the project performance diagnostic models.

#### **2.2.1 Contingency Theory**

The contingent approach looks into projects of different classes but based on particular context factors, often referred to as the contingent-factors. Classes refer to the different sectors that have common organizational characteristics (Turner, 2014). A contingent model consists of three main project elements; project context, project organization, and project performance. It simply proposes that project context and project organization must fit together to facilitate project performance (Shehu & Akintoye, 2009). Project context includes the two main contingent factors which are location of the project and the project complexity. (Schwab, 2013) argued that the blend between the organizations resources in this case being human and non-human resources is to great extent influenced by the dispersion and location of project tasks and members as well as the project complexity levels as they affect the project performance. This approach argues that when a project

location and complexity are at certain degrees, the structural and technological characteristics are manipulated to a certain level that results in a successful project performance.

It argues that a middle ground exists between the universalistic management approach which assumes all organizations are the same and the every-case-is-different approach which treats all organizations as different. It suggests that one should identify common recurring settings and observe and establish how structures and behavioral processes perform in these specific settings. The contingency approach assumes that each way has varying effectiveness under all situations, where one way can be suitable for a certain situation than another (Shehu, 2009). He further argues that for high effectiveness of any business to be attained there ought to be a good match of the contingency factors alongside the structural factors which would allow better response to the environment.

Organizational contingency theory involves three variable types: Contingency/Context Variables, Structure/Organization Variables, and Performance/Criterion Variables (Phillips, 2013). Contingency variables include environmental complexity, organizational strategy, technology and organization size. Relationships are extended to include a conditional association of independent variables with dependent variables. It further assumes that the better the match or fit between the independent variables, the better their effect on the dependent variable. Project effectiveness means being able to achieve defined goals such as efficiency, profitability, employee satisfaction and/or higher innovation rate. It can be done by having a well set out system that is able to function well as well agreeable to all stakeholders' desires (Penrose, 2015).

### **2.2.2 Project Performance Theory**

Project performance analysis is very vital for any project as it is the one of the best ways through which, the stakeholders can be able to analyze what is happening in the project. The analysis of a project is normally subject to the impact that the project has as at a given time and over a fixed timeframe. According to (Parmenter, 2015), there are seven key performance indicators of any project: the indicators are subject to two common models, which is the index-based models and the project performance diagnostic models

The index-based model consists of indices, which dictate the successful implementation of a project regards to the project's time, cost, and quality objectives. The model includes six indices, all of which measure a particular parameter of the project's performance (Huang & Ying, 2013). The indices include the cost performance index (CPI), an indicator of cost efficiency of any project, the billing performance index (BPI), which shows the company's ability to receive claims and demands, Schedule Performance Index, Safety performance index, Quality Performance index and the Environment Performance index. The use of this model enables the researcher to know the extent to which certain parameters have been met. The Project Performance Diagnostic Model, however, consists of an array of key performance indicators tailor-made to suit the functions of a particular project. The model, therefore, helps in the giving of feedback pertaining to the project performance in a particular context (Huang & Ying, 2013).

The two models enable the analysis of the project in accordance with the seven Key Performance Indicators, which are expounded by (Parmenter, 2015). They include direct impact, bottom line impact, return on investment, on time, on budget, and last the stakeholder support and engagement. Direct impact is essentially the benefits/ lack thereof



that the project exudes on the various stakeholders. Normally, the impact of the project is measured through the analysis of the benefits realized before the execution of the project and its comparison with the results after the completion of the project. Bottom line refers to the increase in revenue and the subsequent reduction of the overall costs and expenses of carrying out a project.

A project is considered successful if it does not exceed the budget and contributes to a favorable return on investment. Normally, the two indicators are measured after the completion of a project and consequent analysis of how well they conform to the pre-determined budget and timeline (Lacity & Will, 2015). The timeliness of a project is very important since it ensures that the operations do not lag against the set schedules and that the stakeholders get to benefit from the project as they had anticipated. Every project has a timeline, which when met, illustrates the height of success as well as the efficiency of the project operations. Completing the project as per the budget is an additional advantage since it illustrates the efficiency of all the processes in the project. Lastly, the stakeholder perception about the overall project is a factor that should be taken into consideration, since it illustrates their satisfaction levels / lack thereof, of the project. The more impressed and satisfied the stakeholders are the higher and efficient the project is considered (Mintzer, 2002).

### **2.2.3 Resource-Based View (RBV)**

(Wetnerfelt, 1984), the founder of the resource-based view theory argued that an organizations resources are the determinants of its performance and may remain latent until the firm uses its capacities to develop a competitive advantage. The same suggestions were also supported by (Shrivastava, 1994). The resources of an organization can be either tangible or intangible and developed inside or outside an organization (Hall, 2012). The

commitment of resources entails the allocation of both the tangible and intangible resources for efficient production or to meet a niche that has value for a market segment (Gwaya, 2015).

RBV theory seeks to determine how a great positive result can be achieved related to other organizations in the same market and reveals that best performance is attainable by acquiring enough resources and exploiting them effectively to gain competitive advantage (Seloba, 2016). It is essential to understand the construct of these concepts and capture the relationship between RBV model and other theories. A resource must be rare to realize a sustainable competitive advantage. The resource is adequately scarce to develop a competitive advantage as long as the number of organizations possessing it is less than the number required to create a perfect competition (Zhu & Kraemer, 2015). Usually, the level of a company's international expansion influences the movement of assets abroad, knowledge about foreign markets, competitive strength and hence, the needs for cooperative internationalization to exploit or complement its current state (Penrose, 2015).

The pioneers of RBV hold claim that resources viewed as inimitable, rare, valuable, and non-substitutable can be sources of healthier financial performance and consequently sustainable competitive advantage. Hence, RBV is an effective approach for understanding competitive dynamics where resources are tangible and intangible assets connected to the organization in a temporary manner through physical and technological assets. The model categorizes capacities that originate from daily observations from coordination and interaction amongst the resources owned by the company (Yung & Yip, 2010). Further the theory suggests that companies have different resource endowments and how they develop, bundle, apply, and maintain results in superior performance and competitive advantage over time. The model shows that an organization's rare resources enable it to develop long-

lasting competitive capacities and competitive advantage. RBV theory is widely used by managers, particularly in project management. It enables them to utilize resources accordingly to align with the preferred strategy to derive the value of such resources and realize competitive advantage (Paulraj, 2011).

### **2.3 Project Scope Management Practices**

The project scope management practices involve setting up of a scope management framework documenting the validation, definition, and control of project scope. The goal of this process is to offer direction and guidance on the management of scope throughout the project.

#### **2.3.1 Project Budget**

Project budgeting occurs at the project planning phase. Budgeting is control where one measures actual costs against the budget (Neuhauser, 2014). The budget entails a parameter for the execution of a project. Whenever the projected schedule is affected, the costs are also proportionally affected. The cost for performance relates to the personnel of the task, the cost of any non-labor items required, and duration. Project managers are responsible for the budget estimation of a project. They should allocate the funds required for accomplishing all the projects, including the aspects of the project, internal and external human resource costs, travel, equipment, supplies, and materials. The much should be accurate and detailed than it was when it was a proposal (Blöndal, 2014).

(Kerzner, 2017) identified some techniques and tools for project budgeting that include professional and references materials, similar experiences in recently done work, industry and market surveys, estimation software and databases and knowledge of processes and operations and interviews with experts of the topic of interest. (Mintzer, 2012) identified

two potential ways for planning budget project: top-down and bottom up. Budgeting on a top-down approach begins with approximation of the entire project to the allocation of the money to various elements of the project. It starts with the top management to lower level strata. In contrast, the bottom-up method advocates beginning planning at the team members levels where they estimate all the works, including the miscellaneous, to calculate the total budget. This technique is prevalently applied in smaller projects undertaken by NGOs because it provides the manager with a comprehensive overview of the entire project with the assurance that all the tasks would be met.

The financial reporting system needs to control the utilization of the financial resources and streamline budgetary allocations and appropriations to avoid excessive use of the resources as well as compliance with the set guidelines. The accounting systems are mostly operated on a certain basis of accounting for the preparation and approval of the estimations. Therefore, the data captured by the accounting system is in a format comparable with the approved budget. (Schick, 2013) notes that financial accounting systems are the main tool for approving financial accountability through budgetary integration.

The evaluation of a budget involves the determination of its effectiveness in the attainment of stated goals. The assessment entails an examination of the way financial resources were expended, the results of the expenditure and the degrees to which the stated objectives were achieved. The process is essential in the development of the next years' budget planning. The preparation of a budget is an annual exercise for the determination of funds allocation and a continuous cycle for evaluation and planning to achieve the projected organizational goals (Dorotinsky, 2014).

### **2.3.2 Project Schedule**

Any project schedule entails a planned duration for each task. It indicates activities that are dependent on each other and the formulation of their critical paths. While developing the budget estimates, a schedule allows the planner to see whether the duration is SMART. It also shows to derive the best price of a job in case one is accepting tenders of bids. Whenever one has comprehensive information, it is possible to calculate the critical expenses that include running costs, supervision, and management. In case schedule is resourced, it is possible to calculate estimates of tender. The plan can also be used in forecasting the cash flow of the contractor. Most of the contractors failed due to inadequate cash flows since they too project that drained their cash flows, especially those that have unfavorable payments or too large.

The schedule indicates the milestones, targets or goals and the periods required for completion. It offers a series of tasks to guide the project manager on the sequence of completing activities. (Street, 2011) found out that schedules provide the progress for subcontractors and suppliers because they offer timeliness when construction materials are needed on the site. Schedules remove confusions and other misunderstandings because subcontractors are aware of the documents while submitting their tenders. They enable project managers to monitor construction work because it aligns time with tasks proposed to be completed (Gwaya, 2015).

One main aim of any project is to commission within the scheduled time. The techniques for achieving this objective are explained in the various project management research journals and papers. A project is considered complete once it goes through the five-phases that includes definition, sequencing of activity, estimating the duration of an activity, set out of a schedule and control of the schedule (Guide to the Project Management Body of

Knowledge, 2009). Literature shows that project management teams should have enough information on how to complete the project promptly. This remains the primary goal across various industries but particularly the construction projects (Pickavance, 2015).

Time-oriented and resource-oriented are the primary techniques used for scheduling programs of works. The resource-oriented scheduling concentrates on specific resources in a particular fashion, whereas the time-oriented focuses on the duration of the project based on the interrelating factors amongst the activities. However, some circumstances necessitate a blend of the two resulting in hybrid techniques. The methods are useful when there is constrained scheduling characterized by the existence of precedence relationships. The current scheduling software is time-oriented, and the majority of them have the capacity of introducing resource constraints that allow their application in diverse contexts (Ashley & Wallan, 2016).

### **2.3.3 Project Quality**

Quality of a product and/or service is the totality of characteristics that meets the ability to satisfy the implied or stated needs which are the inputs used for the definition of the requirements of a project from the beneficiaries and donors (Odusami, 2013). The beneficiaries are the ultimate judges for quality and demonstrate how the deliverables and outputs of the project are close to the expectations and requirements of the beneficiaries. The characteristics of quality go beyond service, equipment, or material delivered. It goes the services, equipment, and materials the employees use to deliver the results (Nguyen, 2012).

Quality is a vital component for management and building consumer loyalty. (Serador & Turner, 2015) stated that development ventures encounter deadline, cost, and quality

deviations from the expectations. Project quality management ensures that a project fully meets the expected needs (Project Management Body of Knowledge, 2<sup>nd</sup> Edition). Huang and Yin (2013) state that it comprises of quality assurance and control (QAQC) and quality planning. A quality system is a composition of organizational resources, processes, procedures, and structures for the execution of quality management.

(Jha & Iyer, 2010) examined the factors influencing quality performance in the construction of structures by focusing on the failure attributes and two sets of success. They revealed that an owners' competence, interactions between participants of the project, diligence of the project manager, monitoring and feedback and support from the top management are the critical factors leading success. However, hostile socioeconomic environment, conflicts amongst the participants, lack of knowledge, ignorance of the project manager, and harsh climatic conditions impact negatively on the success of a project. Moreover, aggressive competition when tendering, project conceptualization and availability of resources including labor and machinery are equally important since they impact the quality of construction especially for the underdeveloped economies (Yung & Yip, 2010).

Furthermore, poor quality performance can also reduce employment rates, thereby impacting on the completion time of a project due to frequent re-works and extension of the budgets beyond the target. The factor influencing performance is unavoidable, although when identified early enough, some remedies can be put in place to curb them. The quality performance of both employees and contractors affect the results of construction projects because an improved quality performance would increase of customer satisfaction, the reputation of the contractor, and increased competitiveness (Zuofa & Ochiemg, 2014).

### **2.3.4 Environmental Influences**

Environmental impacts include the input and output mechanisms required to identify uncontrollable factors but by the project team, although they have a huge impact on the management of a project or the outcome. The results of a project can either be good or bad with the enterprise environmental factors varying wildly (Ward, 2014). However, regardless of the outcome, they are not limited to the factors defined by the organization but the factors that a company has to address, including industrial regulations. Some of the common enterprise environmental factors include infrastructural elements, industrial standards, the structure of the organization, political climate, commercial databases, and market conditions, amongst others (Turner, 2014). These factors can be quantified, although proper documentation is the most important concept.

### **2.4 Challenges of Project Scope Management**

Project scope management is the organized approach to deliver expected business value using appropriate tools, techniques, processes, knowledge and skills so that sponsor needs can be met. Understanding best project practices for improving business efficiency and effectiveness, as well as maintaining a competitive position in the market place is essential. Establishing best practices can help avoid pitfalls and analyzing the challenges would enable the organization to achieve the desired outcome (Gwaya, 2015).

Project management is globally regulated by project management body of knowledge (PMBOK) which ideally help structure the sector. It helps organizations constitute the project management Office (PMO) by adopting project management methodology, grooming strong project managers, developing project management capabilities, using feedback mechanisms, managing risk as well as change (Crawford, 2014). The main



challenges in adoption the best practices of project scope management practices include the human factor, role of senior management, struggle in adoption of Project Management Standards and the lack of project management training. The acquired knowledge obtained by project managers at times is not usable due to the little experience in managing diverse projects and hence they need formal training (Pemsel & Wiewiora, 2013).

Project management best practices increases project efficiency and provides better guidelines, methodology, and processes that can be followed throughout the organization. In pursuit of a firm's organizational goals and objectives, adoption of project management best practices can often cause the desired project outcome. Top management support is most essential for the development of best practices. As such lack of senior leadership support, ineffective PMO, people factors, as well as not well put out project scope management trainings are some of the significant challenges' organizations face, while implementing project management best practices (Pretorius & Jordaan, 2012).

## **2.5 Empirical Review**

In a study, (Fageha & Aibinu, 2013) found out that sufficient front-end planning characterized by precise project definition can diminish the possibility of cost overruns while poor scope definition results inexpensive adjustments, schedule overruns, rework and project failure. Another study conducted in Nigeria by (Zuofa & Ochieng, 2014) revealed that a lack of professionalism and corruption are the major reasons behind project failure in the country. This research suggests that a majority of the projects are considered not successful if they lag on attaining the targeted scope, time, and cost.

(Steyn & Jordaan, 2012) found out that relationships amongst cost, time, scope, outcome, and quality are the major determinants for the success of a project, although they vary with the environment. The researchers noted that the customers' feedback is the basis for assessing the success of a business. (Ashley, Shapiro, & Allan, 2016) analyzed project implementation, where they conclude that effective project implementation necessitates a great deal of work for the achievement of cost-effectiveness and competitive edge. Success implementation should also be repeatable. (Turner, 2014) research on factors influencing time overruns in the open developments in Jordan discovered limited capability of advisors, designers, and employees allocated to venture to be the leading issues. Besides, poor outline brief, comprehension of proprietor and partner prerequisites, insufficient on-site examinations, and issues with the utilization of right plan indicators are a portion of the contributory components to various modifications and revise.

In Ghana, (Frimpong, 2012) recognized five elements as significant reasons for delays to projects. These incorporate regularly scheduled installment challenges to contractual workers, poor contract administration, material procurement problems, poor specialized execution, and material value accelerations. Poor expert administration, the variance of costs, increasing expense of materials, and poor site administration have likewise been recognized as variables bringing about a postponement in venture finishing time. (Kamotho, 2014) study aimed to establish how each of these factors influences project completion. The study found that there is a insignificant relationship between budgeted cost and the actual cost of implementation of property development projects at 35%, which implies that the actual costs incurred were greater than the budgeted costs. Also, at a 95% confidence interval, the study found a weak relationship between target implementation time and actual implementation time of property development projects at 26%, which

implies that most projects were implemented later after the expiry of their targeted implementation timelines. Mojahed (UON) in a study completed in 2013 states that events of adjust are ascribed to inept specialists on account of inadequate working abilities and information of drawings or too awkward directors considering the absence of experience prompting to insufficient supervision.

## **2.6 Summary of Literature Review and Knowledge Gap**

Projects by their very nature differ from each other, mainly because of their contexts and scope which necessitates the contribution of qualified stakeholders and personnel in the implementation of all the processes. As a result, the project performance measures are undertaken to provide information to the managers about the changes that take place within the project. Proper project scope management practices are often a great influencer of project performance. The efficiency of the former reflects on the latter. However, to what extent?

In Kenya EPRA is the regulatory body the petroleum industry. The body focuses on the business practices in line with safety of the stakeholders but there exists no structure or body thereof that dictates good project management practices for best business output in terms of profitability as well as efficiency. This study came up with best scope management practices as well as expose the common challenges within the industry.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

This chapter elaborates on the methods adopted to establish results for the current paper. The researcher describes the procedures and processes followed to collect data on the research questions as well as addressing the objectives. This chapter also offers the justifications and reasons for the current study processes and procedures were undertaken, including an enumeration of the design, instruments, data sources, analysis tools, and the presentation techniques.

### **3.2 Research Design**

A census was adopted for the study. It involved the distribution of questionnaires to collect quantitative data from licensed (LPG) importers and wholesalers in Kenya. A well-structured questionnaire based on Likert scale was designed in order to collect data based on what degree project performance relate to project scope management practices.

### **3.3 Target Population**

The population was the licensed (LPG) importers and exporters in Kenya (EPRA, 2019) as listed in Appendix II. A census of all 83 firms was undertaken for the study.

### **3.4 Data Collection**

Structured questionnaires (Appendix I) were adopted to collect data. It comprised of close-ended questions designed on a Likert scale to collect data on some degree. It constituted of four section: General information, Scope management practices, Project performance, and the challenges faced in scope management practices.

The questionnaires were distributed through by issuing the approved transporters' drivers at the Miritini Bulk facility who dropped on their return trips. The respondents were the Project Managers and in some cases Operations Mangers in charge of the project operations of the LPG import, export, and wholesale firms. These managers were well versed with the project operations in the respective firms as well as the performance levels. One respondent per firm was considered enough.

### **3.5 Data Analysis**

Gathered information was joined with the assistance Red-cap Application and further investigated utilizing SPSS Factual programming and results introduced in type of tables and diagrams. To discover the impact of undertaking extension the executives rehearses on venture execution of the LPG firms, a relapse investigation was directed, and the model spoke to dependent on the beneath condition:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where Y is the dependent variable representing project performance, and X is the independent variable representing the scope management practices. These are X<sub>1</sub> representing project budgets, X<sub>2</sub> representing project schedule, X<sub>3</sub> representing project quality, and X<sub>4</sub> representing environmental influences. B<sub>0</sub> is the value of the model when all the other variables are equal to zero. It is the project performance when there is no presence of scope management practices and environmental concerns. β<sub>1</sub> represents the Coefficient of Project budgets, β<sub>2</sub> the Coefficient of the project schedule, β<sub>3</sub> the Coefficient of project quality, and β<sub>4</sub> the Coefficient of environmental influences. ε is the error of margin.

### **3.6 Diagnostic Tests**

For any research to be considered valid a normal distribution chart needs to be observed. Normality tests were implemented in the form of p tests. By principle, the smaller the p-value, the stronger the sought relationship. When dealing with big samples the P-test statistic ought to follow a standard normal distribution.

The multiple correlation coefficient (R) tries to decide the quality of the connection between the free factors and the reliant variable. The coefficient of determination ( $R^2$ ) shows the extent of the fluctuation in venture execution that is clarified by the undertaking extension the executives by a linear model. Descriptive Analysis was at last used to build up the difficulties of Project Scope Management practices in the LPG firms in Kenya. Heteroscedasticity was considered as the researcher investigated different variables. The population had different characteristics too. The dependent variable for this study was project performance while the independent variables are the Project scope management indicators of project budgets, project schedules, project quality and environmental factors.

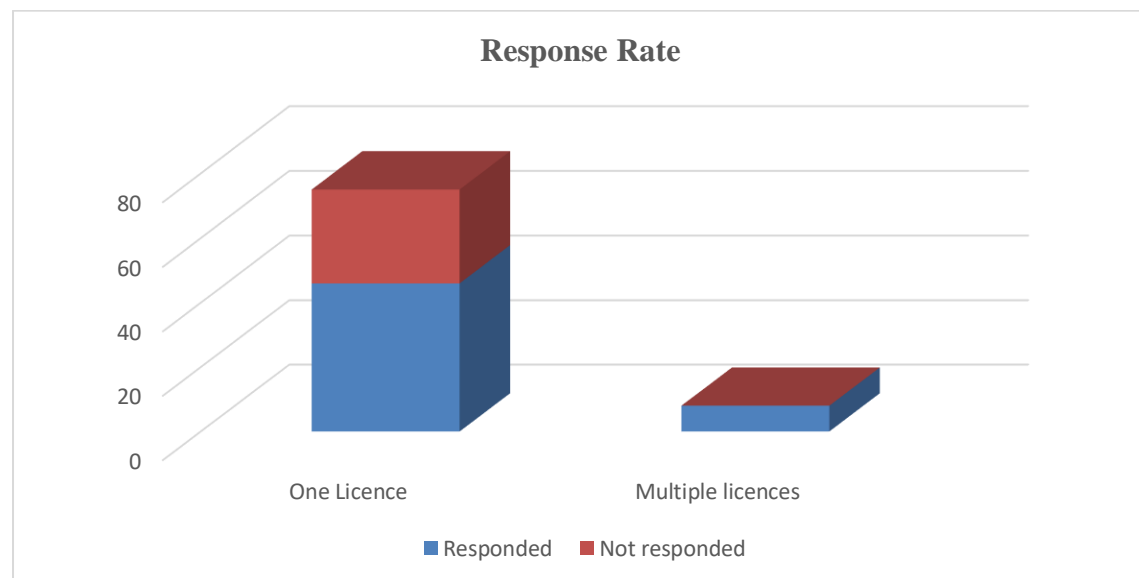
## CHAPTER FOUR: DATA ANALYSIS AND PRESENTATIONS

### 4.1 Introduction

This chapter analyses the information collected outlining the findings from the study. It aims at expounding on the study objectives. The research sought to find the effect of project scope management practices on the project performance of Liquid Petroleum Gas firms. In addition to this, it was to lay out the challenges of project Scope management by Liquid Petroleum Gas firms in Kenya.

### 4.2 Response Rate

Out of the 83 import and wholesale firms targeted, 54 responded, a feedback rate of 65%. The response rate was adequate for the study since it is above 50% (Mugenda, 2009). However, to note there were companies with more than one license as such reduced the population size. These included Hash and National Oil Limited Company. Figure 4.1 displays the same.



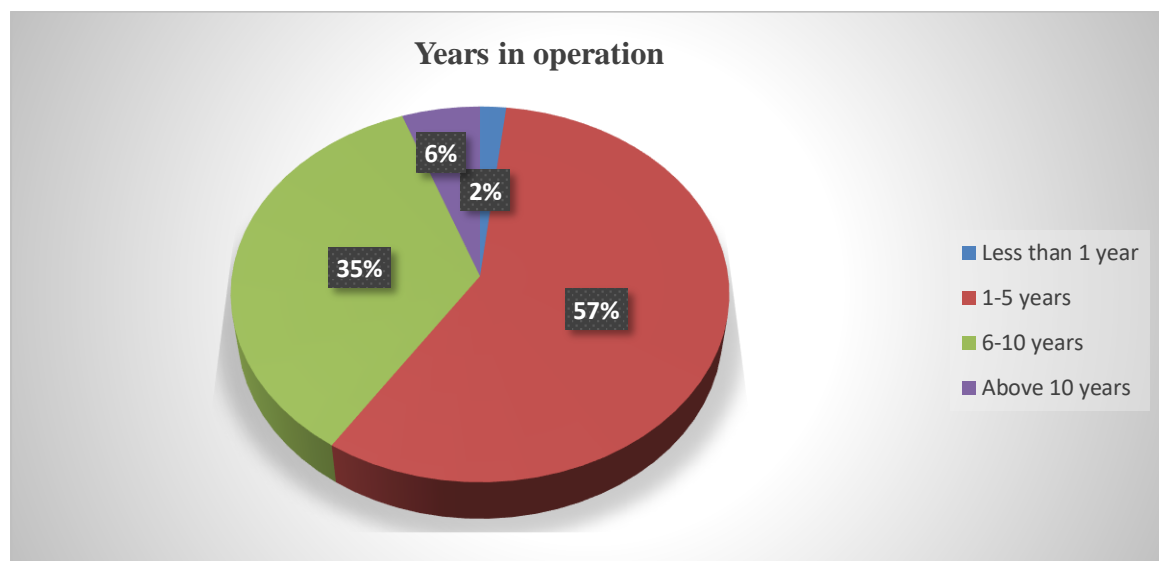
**Figure 4.1: Response rate**

### 4.3 General Information

The questionnaire aimed at finding out how long the companies had been trading as well as the ownership structure. The years of operation helped indicate the challenges of adopting project scope practices by the LPG import and wholesale firms in Kenya. The longer the time the company had been in operations the higher the exposure to the industry trades. The recipients were either the Project Managers or the operations managers of the various companies. In some of the companies, the general managers were given the authority to respond to the questionnaires.

Of the 54 companies there was one entrant to the industry with the highest majority being in operation for just under five years. More than half (57%) of the companies were in operation for less than five years, 35% between six and ten years, 6% over ten years and only 2% were less than a year old in operations. To note only 3% of the companies have been operation for more than 10 years suggesting the industry is relatively young.

The analysis of the years of experience is given in the Figure 4.2:

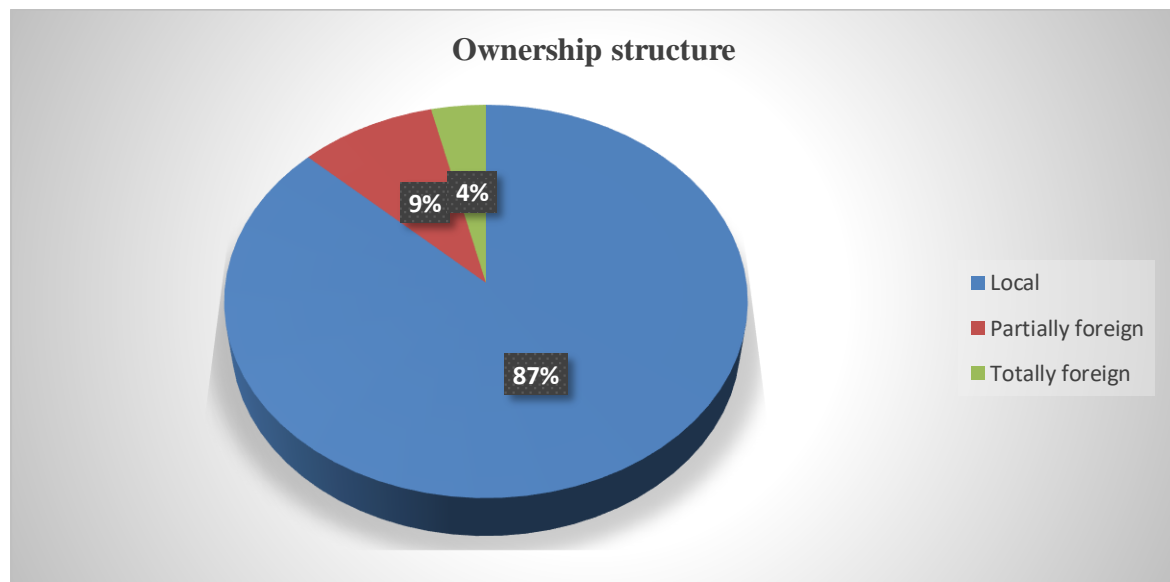


**Figure 4.2: Years of Experience**



Ownership structures were also determined. Local directors owned approximately 87% of all respondent companies, 9 percent was collaboration of local and foreign representation while foreigners owned only 4 percent in totality. Results are as per Figure 4.3.

From the Figure 4.3, it can be inferred that the LPG industry is relatively young, and that investment is rigidly controlled, as there are very few foreign entrants into the industry. To note one of the companies, have shares from the government, National Oil Corporation of Kenya.



**Figure 4.3: Ownership structure- Source: Research Data (2019)**

#### **4.4 Diagnostics Test**

This research paper is based on four broad principles which are project budgets, project schedules, project quality and environmental factors. The principles were further subdivided into 54 sub areas. All Exploratory factor analysis were found to have Kaiser Meyer Olkin measures of sampling adequacy above 0.78, which is slightly above the set allowable threshold of 0.701.

**Table 4.1: Kaiser Meyer Olkin Measure**

Kaisers Meyer Olkin measure of sampling adequacy	0.78
Approx. Chi-Square	38.48
DF	5
Sig.	0.001

The normality test was done using Shapiro-Wilk. Project budget had a p-value of 0.155, project schedule 0.099, Project quality 0.189 and environmental factors 0.124. All the p-values were found to be more than 0.05 implying normal distribution.

This is presented in Table 4.2.

**Table 4.2: Tests of Normality**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	Df	Sig.
Project Budgets	.155	52	.047	.924	52	.282
Project schedule	.099	52	.200*	.914	52	.565
Project quality	.189	52	.003	.941	52	.062
Environmental factors	.124	52	.140	.997	52	.360

Alpha for the principles was at 0.655 at a significance level of 5%. This indicates that the principles were reliable as it surpasses the acceptable threshold of 0.6. This is as in Table 4.3.

**Table 4.3: Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	Number of Items
.655	0.6	5

#### 4.5 Descriptive Analysis of the study variables

The analyst sought to measure the degree to which the companies had adopted project scope management practices in their operations. The project scope management practices under investigation were project budgets, Project schedules, Project quality and the environmental enterprise factors. The following subsections discuss the results. A likert scale was used where 1= strongly disagree, 2= disagree, 3= agree, 4= moderately agree and 5= strongly agree.

##### 4.5.1 Project Budget

In regard to various declarations concerning project budget the outcome was as in Table 4.4.

**Table 4.4: Predictors of Project Budgets**

	1	2	3	4	5
My company conducts project budget planning and follows keenly	0%	0%	7%	30%	63%
My company has a cost management committee to track variances from the budget plan	4%	20%	33%	26%	17%
My organization starts projects with a well set out budgets	2%	2%	9%	35%	52%
My organization starts projects on preliminary designs and allowed some contingency	0%	4%	2%	67%	26%
My organization has full influence on the budget of projects i.e. not client based	0%	0%	9%	50%	41%
My organization has a cost tracker software	2%	11%	43%	30%	13%

On whether the LPG firms conducted project budget planning and ensured that the plans were keenly followed 3% of the recipients strongly consented with the assertion while 7% were apathetic about it. 30% however moderately consented with the assertions. On whether the LPG firms had a cost management committee to track variances from the budget plan 17% strongly consented with the assertion while 33 % were apathetic about it. 4%, 33% and 26% however strongly disputed, consented and moderately consented respectively.

On whether the LPG firms started projects on a well-set budget 52% strongly consented while 9% were apathetic about it. 2%, 2% and 35% however strongly disputed, disputed and moderately consented with the assertion. When asked if the LPG firms started works on preliminary designs and allowed a contingency on the same 26% strongly consented with the assertion while 2% were apathetic about it. 4% and 67% however disputed and moderately consented with the assertion respectively.

On whether the LPG firms had full influence on the project budgets 41% strongly consented while 9% were apathetic about it. The remaining 50% were in moderate agreement with the assertion. On whether the LPG firms had cost tracker software 13% strongly consented, while 43% were apathetic about it. 2%, 11% and 30% however strongly disputed, disputed and moderately consented with the assertion.

#### **4.5.2 Project schedule**

In regard to various declarations concerning project schedules the outcomes were as in Table 4.5.

**Table 4.5: Predictors of Project Schedule**

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
My organization has well set up timelines for major milestones	0%	0%	4%	26%	70%
My organization has a scope management committee to track variances from the schedule	0%	24%	35%	33%	9%
My organization has a schedule tracker software	0%	26%	37%	30%	7%
My organization finishes projects timely	0%	4%	50%	11%	35%
My organization has full influence and control on the project schedule	0%	0%	4%	46%	50%

On whether the LPG firms had well set up timelines with indicated milestones 70% of the recipients strongly consented with the assertion while 4% were apathetic about it. 26% however moderately consented with the assertion. On whether the LPG firms had a scope management committee to track variances from schedules 33% of the recipients moderately consented with the assertion while 35% were apathetic about it. 24% and 9% however disputed and strongly consented with the assertion respectively.

On whether the LPG firms had schedule tracker software 30 % moderately consented while 37% were apathetic about it. 26% and 7% however disputed and strongly consented with the assertion respectively. On whether the LPG forms completed projects timely 35% strongly consented while 50% were apathetic about it. 4% and 11% however disputed and strongly consented with the assertion. On whether the LPG firms had full influence and control on the project schedule 50% strongly consented. 46% and 4% however moderately consented and disputed with the assertion respectively.

### 4.5.3 Project Quality

In regard to various declarations concerning project quality the outcome was as in Table 4.6.

**Table 4.6: Predictors of Project Quality**

	1	2	3	4	5
My organization pays attention to quality more than costs	0%	7%	15%	48%	30%
My organization invests heavily on product and/ or service quality	0%	2%	20%	41%	37%
My organization rewards quality from employees	0%	15%	30%	28%	26%
My organization has a quality assurance department	0%	52%	17%	17%	13%
My organization keeps records of all quality control checks as per statutory and professional recommendations	0%	7%	52%	22%	20%

On whether the LPG firms paid more attention to quality than cost 48% moderately consented while 30% strongly consented with the assertion. 15% and 7% were however apathetic about it and disputed with the assertion respectively. On whether the LPG firms invested heavily on product and/or service quality 41% moderately consented while 37% strongly consented with the assertion. 20% and 2% however were apathetic about it and just disputed with the assertion respectively.

On whether the LPG firms rewarded quality from employees 30% were apathetic about it. 28% 26% and 15% moderately consented, strongly consented and disputed with the assertion respectively. On whether the LPG firms had a quality assurance department 52%

disputed while 17% were apathetic about it with the assertion. However, a further 17% and 13% moderately consented and strongly consented with the assertion respectively.

On whether the LPG firms kept records of all quality control checks as per statutory and professional requirements 52% were apathetic about it. However, 22%, 20% and 7% moderately consented, strongly consented and disputed with the assertion respectively.

#### 4.5.4 Environmental factors

In regard to various declarations concerning environmental factors the outcome was as in Table 4.7.

**Table 4.7: Response rates on Environmental factors assertions**

	1	2	3	4	5
My organization is affected by adverse weather conditions	0%	20%	39%	22%	20%
My organization is affected by political instability	0%	28%	43%	20%	9%
My organization is affected by economic slow downs	0%	13%	54%	28%	4%
My organization is affected by foreign currency fluctuations	0%	2%	33%	35%	30%
My organization is affected by ethnic clashes	0%	37%	28%	13%	22%
My organization is affected by construction material transport issues such as county mobile weighbridges	0%	4%	9%	43%	43%

On whether the LPG firms were affected by adverse weather conditions 39% were apathetic about it about the assertion. However, 20%, 22% and 20% strongly consented, moderately consented and disputed with the assertion respectively. On whether the LPG firms were affected by political instability 43% were apathetic about it about the assertion. 28%,20%

and 9% however disputed, moderately consented and strongly consented with the assertion respectively.

On whether the LPG forms were affected by economic slowdowns 54% were apathetic about it. 28%,13% and 4% however moderately consented, disputed and strongly consented with the assertion respectively. On whether the LPG firms were affected by foreign currency fluctuations 35% moderately consented while 33% were apathetic about it with the assertion. 30% however strongly consented while the balance 2% just disputed on the assertion.

On whether the LPG firms were affected by ethnic clashes 37% disputed whole 28% were apathetic about it with the assertion. 22% and 13% however strongly consented and moderately consented with the assertion respectively. On whether the LPG firms were affected by construction material transport issues such as county mobile weighbridges 43% strongly consented with the assertion. Another 43% moderately consented as well. 9% and 4% however were apathetic about it and disputed with the assertion respectively.

The researcher summarized the various project scope management practices and graded them to find out, which was most relevant to the companies. The practices are project budget, project schedule, project quality and environmental factors. The analysis is shown in the Table 4.8. Further, the most popular practice is project scheduling with a mean of 15.29 while the least popular is project quality with a mean of 9.52.



**Table 4.8: Overall Adoption of Project Scope Management Practices**

	<b>N</b>	<b>Mean</b>	<b>SDT</b>	<b>Std. Dev</b>	<b>Rank</b>
Project Budgets	54	10.87	11.57	0.21	2
Project schedules	54	15.29	11.73	0.22	1
Project Quality	54	9.52	8.86	0.16	4
Environmental factors	54	10.61	12.56	0.23	3
<b>Valid Listwise (N)</b>	<b>54</b>	<b>11.57</b>	<b>11.18</b>	<b>0.21</b>	

#### 4.5.5 Project Performance

Project Performance was measured against running costs, flexibility in service delivery., product and service quality as well as speed of service delivery. This section will look at determinants of each of the above. In regard to various declarations concerning running costs as a measure of project performance the outcome was as in Table 4.9.

**Table 4.9: Predictors of Running Costs**

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Reduced labor costs	4%	11%	9%	63%	13%
Decrease in water and energy bills	7%	9%	22%	52%	11%
Decrease in hired assets costs	22%	2%	20%	26%	30%

On whether labor costs reduced 63% moderately consented with the assertion while 9% were apathetic about it. 13%, 11% and 4% however strongly consented, disputed and strongly disputed with the assertion respectively. On whether the LPG firms experienced a decrease in water and energy bills 52% moderately consented while 22% were apathetic about it about the assertion. 11%, 9% and 7% however strongly consented, disputed and

strongly disputed with the assertion respectively. On whether the LPG firms experienced decrease in hired assets costs 30% strongly consented while 20% were apathetic about it with the assertion. 26%,22% and 2 % however moderately consented, strongly disputed and disputed with the assertion respectively.

In regard to various declarations concerning flexibility of services as a measure of project performance the responses were as in Table 4.10.

**Table 4.10: Predictors of Flexibility of services**

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Variety of services	2%	13%	20%	54%	11%
Readily available services	2%	9%	35%	41%	13%
Volume flexibility	4%	11%	26%	50%	9%
Mix flexibility	28%	15%	28%	20%	9%

On whether the LPG firms experienced flexibility in variety of services 54% moderately consented while 20% were apathetic about it with the assertion. 2%, 13% and 11% however strongly disputed, disputed and strongly consented with the assertion respectively. On whether the LPG firms experienced flexibility in the form of readily available services 41% moderately consented while 35% were apathetic about it with the assertion. 2%,9% and 13% however strongly disputed, disputed and strongly consented with the assertion respectively.

On whether the LPG firms experienced flexibility in the form of volume flexibility 50% moderately consented while 26% were apathetic about it with the assertion. 4%,11% and 9% however strongly disputed, disputed and strongly consented with the assertion respectively. On whether the LPG firms experienced flexibility in the form of mix

flexibility 20% moderately consented while 28% were apathetic about it with the assertion. A further 28% strongly disputed with the assertion, 15 % and 9% however disputed and strongly consented with the assertion respectively.

In regard to various declarations concerning product and service quality as a measure of project performance the outcome was as in Table 4.11.

**Table 4.11: Predictors of product and service quality**

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Strong brand value	0%	0%	30%	54%	15%
High customer loyalty	0%	0%	22%	59%	20%
Increase in the number of customers	0%	2%	11%	50%	37%
High sales revenue	0%	2%	13%	39%	46%

On whether the LPG firms enjoyed strong brand value 54% moderately consented while 30% were apathetic about it with the assertion. 15% of the recipients however strongly consented with the assertion. On whether the LPG firms enjoyed higher customer loyalty 59% moderately consented while 22% were apathetic about it with the assertion. 20% of the recipients however strongly consented with the assertion.

On whether the LPG firms enjoyed an increase in the customer base 50% moderately consented while 11% were apathetic about it with the assertion. 37% and 2% of the recipients however strongly consented and disputed with the assertion respectively. On whether the LPG firms enjoyed an increase in the sales revenue 46% and 39 % strongly consented and moderately consented respectively. 13% were apathetic about it while 2% disputed with the assertion respectively.

In regard to various declarations concerning speed of service delivery as a measure of project performance the outcome was as in Table 4.12.

**Table 4.12: Predictors of speed of service delivery**

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Improved communication	0%	2%	13%	70%	15%
High service rates	0%	2%	28%	54%	15%
High regulatory compliance	2%	7%	50%	33%	9%

On whether the LPG firms enjoyed improved communication 70% moderately consented while 13% were apathetic about it with the assertion. 15% and 2% of the recipients however strongly consented and disputed with the assertion respectively. On whether the LPG firms enjoyed higher/faster speed rates 54% moderately consented while 28% were apathetic about it with the assertion. 15% and 2% of the recipients however strongly consented and disputed with the assertion respectively. On whether the LPG firms enjoyed improved communication 33% moderately consented while 50% were apathetic about it with the assertion. 9%,7% and 2% of the recipients however strongly consented, disputed and strongly disputed with the assertion respectively.

#### **4.6 Challenges of Project scope Management**

The researcher wanted to study the challenges in regard to project scope management practices in their operations. The following subsections discuss the results. A likert scale was used where 1= not at all, 2= small extent, 3= moderate extent, 4= great extent and 5= very great extent. The recipients were given a list of challenges proposedly experienced in Project scope management practices to choose from. Table 4.13 summarizes of their feedback.

**Table 4.13: Challenges of Project Scope Management Practices**

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Compatibility of equipment	20%	11%	17%	41%	11%
Prerequisites in joining and staying in the industry	0%	9%	15%	46%	30%
Resistance to change	4%	20%	35%	30%	11%
Level of top management support	41%	26%	24%	9%	0%
Tariffs and non-tariff restrictions	0%	4%	24%	33%	39%
Culture and language differences	7%	22%	48%	22%	2%
Corporate culture differences	2%	26%	46%	24%	2%
International trade laws and practices	15%	24%	26%	20%	15%
Capability of customers	4%	4%	17%	43%	30%
Payment methods involved in these transactions.	33%	15%	17%	22%	13%

On whether the LPG firms suffered from compatibility of equipment 41% consented to a great amplitude while 20% said not at all to the statement. 11%, 17% and another 11% of the recipients however consented with statement by a small amplitude, moderate amplitude and very great amplitude respectively. On whether the LPG firms had suffered from prerequisites in joining the LPG industry 46% consented to a great amplitude while 30% said to a very great amplitude. 9% and 15% of the recipients however consented to a small amplitude and moderate amplitude respectively.

On whether the LPG firms suffered from resistance to change 35% consented by moderate amplitude while 30% consented by great amplitude to the statement. 20%, 11% and another 4% of the recipients however consented with statement by a small amplitude, very great amplitude and not at all respectively. On whether the LPG firms suffered from top management support 41% consented not at all while 26% said small amplitude to the statement. 11%, 17% and another 11% of the recipients however consented with statement by a small amplitude, moderate amplitude and very great amplitude respectively.

On whether the LPG firms suffered from existence of any tariff and no tariff restrictions 39% consented to a very great amplitude while 33% consented by a great amplitude to the statement. 24% and 4% of the recipients however consented with statement by a moderate amplitude and small amplitude respectively. On whether the LPG firms suffered from cultural and language barriers 48% consented to a moderate amplitude while 22% consented by a great amplitude and small amplitude in equal measure to the statement. 7% and 2% of the recipients however consented not at all and to a very great amplitude respectively to the statement.

On whether the LPG firms suffered from corporate cultural differences 46% consented to moderate amplitude while 26% consented by a small amplitude to the statement. 24% further consented to the query by a great amplitude. 4% of the recipients however consented not at all and to a very great amplitude in equal share. On whether the LPG firms were affected by international trade laws and practices 26% consented to moderate amplitude while 24% consented by a small amplitude to the statement. 20% further consented to the query by a great amplitude. 30% of the recipients however consented not at all and to a very great amplitude in equal share.

On whether the LPG firms were affected by customer capability 43% consented to a great amplitude while 30% consented by a great amplitude to the statement. 17% further consented to the query by a moderate amplitude. 8% of the recipients however consented not at all and to a small amplitude in equal share. On whether the LPG firms were affected by the payment methods within the industry 33% consented not at all while 22% consented by a great amplitude to the statement. 15%, 17% and 13% consented to the query by a small amplitude, moderate amplitude and to a very great amplitude to the statement respectively.

#### 4.7 Effect of Project Scope Management Practices and Project Performance

In this section, regression analysis was conducted to ascertain if project scope Management practices affect project performance. Project performance was measured based on running cost, flexibility of project, product quality and speed of service offered. Project budget, project schedule, project quality and environmental factors formed the independent variables. The mean of the dependent variables and independent variables was then used to conduct regression analysis. Table 4.14 represents the summary information of the regression model performed.

**Table 4.14: Regression Model Summary**

Model	Multiple R <sup>2</sup>	Adjusted R Squared	Residual Std. Error	Overall p-value
1	0.2198	0.1437	0.5089	0.03397

The overall p-value was significant (0.03397,  $p < 0.05$ ), indicating that the project scope management practices had a significant association with project performance.

**Table 4.15: Regression Coefficients**

Project Scope Management Variables	Estimates	Std. Error	t value	p-value
Constant (x)	2.71794	0.70696	3.845	<b>0.000413</b>
Project budget (X1)	0.39466	0.22700	1.739	0.089607
Project schedule (X2)	-0.41114	0.23170	-1.774	0.083417
Project quality (X3)	0.25291	0.12809	1.974	0.055094
Environmental factors (X4)	0.03361	0.19227	0.175	0.862080

We established the following regression equation from Table 4.12.

$$Y = 2.71794 + 0.39466X_1 - 0.41114 X_2 + 0.25291X_3 + 0.03361X_4$$

By the above regression it was found that having project budget, project schedule, project quality and environmental factors constant, project performance index (dependent) would be 2.71794. A unit upward movement in project budget would result in an upward movement in project performance by 0.39466, a unit upward movement in project schedule would result in a decrease in project performance by 0.41114, and an upward movement in a unit of project quality would lead to an upward movement in project performance by 0.25291. Lastly, a unit upward movement in environmental factors would result in a 0.03361 upward movement in project performance. The information shows there exists a positive interrelation between the independent variables and project performance, except for a negative relationship, which was observed with the project schedule.

The researcher further did a correlation analysis presented in Table 4.16. The p-value of the correlation test between project budget and product & service quality is significant. The researcher thus conclude that the project budget and product & service quality are positively correlated with a coefficient of 0.4211 and p-value less than 0.01.

**Table 4.16: Correlation Analysis between Project Scope Management and Project performance**

Project Scope Management Practices	Project Performance			
	Running costs	Flexibility	Product & Service Quality	Speed of Service Delivery
Project Budget	0.1823	0.2017	<b>0.4211**</b>	0.1919



Project Schedule	0.0570	0.0875	0.1790	-0.0097
Project Quality	<b>0.3452*</b>	<b>0.3160*</b>	0.1746	0.2200
Environmental factors	0.1541	0.0642	-0.0980	-0.0543

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*\* Significant at 5%, \*\* significant at 1%*

Moreover, the p-values of the running cost and project flexibility are both significant with correlation coefficients of 0.3452 and 0.3160, respectively at p-value < 0.05, thus project quality was found to be positively correlated with both the running cost and project flexibility measures of performance.

## **CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Introduction**

This chapter concludes this report in which the research summary will be presented, and study findings are interpreted and discussed. The importance of this research study is the instantaneous context of the project scope management practices adopted by Liquefied Petroleum Gas firms in Kenya, to figure out the effect of these practices on project performance as well as to establish the challenges in adopting these practices within Kenya. Recommendations for more research will conclude this chapter.

### **5.2 Summary of Findings**

We had two main objectives for this study. The first was to determine the effect of project scope management practices on the project performance of Liquid Petroleum Gas firms in Kenya. Responses from questionnaire responses were analyzed and presented in different ways. They revealed that project scheduling was the most adopted practice. This is followed by project budgets, environmental factors/ influences and sadly the least observed is project Quality. This is disheartening mainly given the volatility of LPG as a gas. To note though all the companies practiced at different levels all the different management practices. This confirms (Pickavance, 2015) who argued that the timely completion of development projects is the primary goal of the construction industry.

The study was also aimed at establishing challenges of Project scope management by Liquid Petroleum Gas firms in Kenya. The most common challenges for adopting Project Scope Management Practices were prerequisite adoption pointers within the industry mainly by EPRA the governing body, Tariff restrictions and customer capability citing that not many citizens can still afford LPG as the main cooking agent. The least common

challenge was top management support. This is expected giving the sector is mainly privately owned and managed.

From the regression equation, the study found that project budgets, project quality and environmental factors had a significant positive effect on operational performance. The overall p-value was significant (0.03397,  $p < 0.05$ ), indicating that project scope management practices had a significant association with project performance. The overall coefficient of determination  $R^2$  was 0.1437 which means that there was 14.37% positive variation in project performance index due to changes in independent variable and 85.67% is variation of the dependent variable due to other factors not in the model.

Most common challenges in Project Scope Management Practices in the LPG firms were prerequisite adoption pointers within the industry mainly by EPRA the governing body, Tariff restrictions and customer capability citing that not many citizens can still afford LPG as the main cooking agent. The least common challenge was top management support as the main essence of a business is ensure maximum profitability.

The p-value of the correlation test between project budget and product & service quality was found to be significant. It can therefore be concluded that the project budget and product & service quality are positively correlated with a correlation coefficient of 0.4211 and p-value less than 0.01. Further, the p-values of the running cost and project flexibility are both significant with correlation coefficients of 0.3452 and 0.3160, respectively at p-value  $< 0.05$ . It can therefore be concluded that project quality is positively correlated with both the running cost and project flexibility measures of performance.

### **5.3 Study Conclusions**

This study was purposed to determine the effect of project scope management practices on project performance of the LPG firms in Kenya. It established a linear model that links project scope management practices with project performance. The specific objectives of the study were to determine the effect of project scope management practices on the project performance of Liquid Petroleum Gas firms and to establish challenges of Project scope management by Liquid Petroleum Gas firms in Kenya.

The study illustrated that the LPG firms practiced at different levels all the project scope management practices of project budgeting, project scheduling, project quality and observation of environmental factors. From the study findings, project scope management practices have a positive effect on the project performance of the LPG firms in Kenya.

Further, it was concluded that the most common challenges in adopting Project Scope Management Practices were prerequisite adoption pointers within the industry mainly by EPRA the governing body, Tariff restrictions and customer capability citing that not many citizens can still afford LPG as the main cooking agent. The least common challenge was top management support. The other factors challenging adoption of project scope practices include culture and language differences, currency fluctuations and resistance to change. This observation supports the study by Kerzner (2017) which listed currency fluctuation, tariff and non-tariff barriers and culture differences as the four main factors affecting project scope management.

### **5.4 Study Recommendations**

The researcher recommends that the LPG firms in Kenya adopt project scope management practices in all their projects. The companies should adopt the tariffs put out by EPRA as

it is one of the determinants of how successfully a project performs. Another recommendation is for government agents, EPRA to have reduced pre-requisite requirements for the industry players and to have favorable policies formulated to encourage that more LPG investors set up companies within the industry.

### **5.5 Limitations of the Study**

The study was narrowly focused on the LPG importer and exporter firms in Kenya. The study would be better conclusive for policy making reasons if it reflected the situation across all petroleum and fuels industry as well as beyond Kenya. Given the researcher happened to work for one of the companies under investigation the researcher encountered hostility from some respondents who felt that the information would be exposed to their business competitors.

The geographic spread of the firms across the country did not help either. The researcher had a challenge in reaching out to the different companies and time required to meet the respondents, convince them to complete the questionnaires and having the questionnaires back was not easy either.

### **5.6 Suggestions for Further Research**

Given the LPG sector is growing steadily, the researcher would suggest a deeper study on the dynamics within the sector as there is only one bulk handler which appears as a monopoly. This could just be a mistaken case. As such barriers of entry into the industry need to be investigated.

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## **APPENDICES**

### **Appendix I: Questionnaire**

To Whomever It May Concern

Dear Sir / Madam,

#### **RE: TO FILL QUESTIONNAIRE**

In pursuit of my Master of Business Administration degree at the University of Nairobi, Mombasa Campus I am carrying out research on the “Effect of project scope management practices on performance in the Liquefied Petroleum Gas firms in Kenya”. I hereby request you to respond to the following questionnaire with utmost honesty.

Any information from the study will be purely for this research paper and will be handled with utmost confidentiality. Your privacy will be well protected.

Your cooperation will be highly appreciated.

Thanks for your support.

Yours faithfully,

Elizabeth Ngure

## RESEARCH QUESTIONNAIRE

### PART A: GENERAL INFORMATION

1. Name of the company \_\_\_\_\_

2. Ownership structure

i. Local

ii. Foreign

iii. Local and Foreign

3. Years of operation

i. Less than one year

ii. 1 – 5 years

iii. 6 – 10 years

iv. Above 11 years

### PART B: PROJECT SCOPE MANAGEMENT PRACTICES

Please indicate your level of agreement/disagreement on the following statements on project scope management using the scale of 1-5 where 1= Strongly disagree; 2 = Disagree; 3 = Agree; 4 = Moderately agree & 5 = Strongly agree	Level of agreement?				
	Strongly disagree	Disagree	Agree	Moderately agree	Strongly agree
	1	2	3	4	5
<b>Project Budget</b>					
1. My organization conducts project budget planning and ensures it is keenly followed					
2. My organization has a cost management committee to track variances from the budget plan					
3. My organization starts projects with a well set out budgets					
4. My organization starts projects on preliminary designs and allowed some contingency					

5. My organization has full influence on the budget of projects i.e. not client based					
6. My organization has a cost tracker software					
<b>Project Schedule</b>					
1. My organization has well set up timelines for major milestones					
2. My organization has a scope management committee to track variances from the schedule					
3. My organization has a schedule tracker software					
4. My organization finishes projects timely					
5. My organization has full influence and control on the project schedule					
<b>Project Quality</b>					
1. My organization pays attention to quality more than costs					
2. My organization invests heavily on product and/ or service quality					
3. My organization rewards quality from employees					
4. My organization has a quality assurance department					
5. My organization keeps records of all quality control checks as per statutory and professional recommendations					
<b>Environmental Factors</b>					
1. My organization is affected by adverse weather conditions					
2. My organization is affected by political instability					
3. My organization is affected by economic slow downs					
4. My organization is affected by foreign currency fluctuations					
5. My organization is affected by ethnic clashes					

6. My organization is affected by construction material transport issues such as county mobile weighbridges					
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**PART C: PROJECT PERFORMANCE**

Indicate the extent to which the following project outcomes have been enhanced as a result of implementing project scope management practices. 1= Not at all; 2 = Small extent; 3 = Moderate extent; 4= Great extent; 5 = Very great extent	What is the extent?				
	Not at all	Small extent	Moderate extent	Great extent	Very great extent
	1	2	3	4	5
<b>Running Cost</b>					
Reduced labor costs					
Decrease in water and energy bills					
Decrease in hired assets costs					
<b>Flexibility</b>					
Variety of services					
Readily available services					
Volume flexibility					
Mix flexibility					
<b>Product and Service Quality</b>					
Strong brand value					
High customer loyalty					
Increase in the number of customers					
High sales revenue					
<b>Speed of Service Delivery</b>					
Improved communication					
High service rates					
High regulatory compliance					

**PART D: CHALLENGES OF ADOPTING PROJECT SCOPE MANAGEMENT PRACTICES**

The following is a list of challenges facing adoption of project scope management practices, tick the ones that are relevant to your organization

		What is the extent?				
	Indicate the extent to which the following project outcomes have been enhanced as a result of implementing project scope management practices. 1= Not at all; 2 = Small extent; 3 = Moderate extent; 4= Great extent; 5 = Very great extent	Not at all	Small extent	Moderate extent	Great extent	Very great extent
		1	2	3	4	5
1	Compatibility of equipment					
2	Prerequisites in joining and staying in the industry					
3	Resistance to change					
4	Level of top management support					
5	Tariffs and non-tariff restrictions					
6	Culture and language differences					
7	Corporate culture differences					
8	International trade laws and practices					
9	Capability of customers					
10	Payment methods involved in these transactions.					

**Appendix II: List of licensed (LPG) importers and wholesalers**

	<b>License Number</b>	<b>Company Name</b>	<b>Nature</b>
1	ERC/LPG/1511	AFRICAN GAS AND OIL COMPANY LIMITED	IMPORTER
2	ERC/LPG/1540	AIVEO LIMITED	WHOLESALE
3	ERC/LPG/1614	AMEKEN MINEWEST COMPANY LIMITED	IMPORTER
4	ERC/LPG/1597	ASTROL PETROLEUM COMPANY LIMITED	IMPORTER
5	ERC/LPG/1596	BELSA ENERGY LIMITED	IMPORTER
6	ERC/LPG/1471	BLUE GAS LIMITED	IMPORTER
7	ERC/LPG/1483	BLUE SKY ENERGY LIMITED	WHOLESALE
8	ERC/LPG/1599	CAMEL AFRICA OIL (K) LIMITED	IMPORTER
9	ERC/LPG/1276	CAPE SUPPLIERS LIMITED	WHOLESALE
10	ERC/LPG/1415	CHEMIGAS LIMITED	IMPORTER
11	ERC/LPG/1419	CITY GAS LIMITED	WHOLESALE
12	ERC/LPG/1488	CORAL STAR ENERGY LIMITED	WHOLESALE
13	ERC/LPG/1448	DASH ENERGY LIMITED	WHOLESALE
14	ERC/LPG/1373	DEPAR LIMITED	WHOLESALE
15	ERC/LPG/681	DEPAR LIMITED	IMPORTER
16	ERC/LPG/1437	DIRIR PETROLEUM LIMITED	IMPORTER
17	ERC/LPG/1604	ENZENA ENERGY LIMITED	IMPORTER
18	ERC/LPG/1250	EXCELLENT LOGISTICS LTD	IMPORTER
19	ERC/LPG/1346	FOSSIL SUPPLIES LIMITED	IMPORTER
20	ERC/LPG/1616	GAS CONTROLS COMPANY LIMITED	WHOLESALE
21	ERC/LPG/1452	GAZLIN ENERGY LIMITED	WHOLESALE
22	ERC/LPG/1622	GREEN ENERGY LIMITED	IMPORTER
23	ERC/LPG/1363	GULF ENERGY LIMITED	IMPORTER
24	ERC/LPG/1358	HASHI ENERGY LIMITED	WHOLESALE
25	ERC/LPG/1475	HASHI ENERGY LIMITED	IMPORTER
26	ERC/LPG/1546	HASHI ENERGY LIMITED	IMPORTER
27	ERC/LPG/1627	HASS PETROLEUM KENYA LIMITED	IMPORTER

28	ERC/LPG/1585	HAVANA GAS LIMITED	WHOLESALER
29	ERC/LPG/1027	IMANY ENERGY LIMITED	WHOLESALER
30	ERC/LPG/1583	ISLAND GAS LIMITED	WHOLESALER
31	ERC/LPG/1308	JAFLO TRADING LIMITED	WHOLESALER
32	ERC/LPG/1548	JAGUAR PETROLEUM LIMITED	IMPORTER
33	ERC/LPG/1498	JIBCO KENYA LIMITED	WHOLESALER
34	ERC/LPG/1626	LAKE OIL LIMITED	IMPORTER
35	ERC/LPG/1429	LEWA PETROL LIMITED	WHOLESALER
36	ERC/LPG/1023	LIBYA OIL KENYA LIMITED	WHOLESALER
37	ERC/LPG/1412	LIBYA OIL KENYA LIMITED	IMPORTER
38	ERC/LPG/1529	LIBYA OIL KENYA LIMITED-NAIROBI	WHOLESALER
39	ERC/LPG/1368	MALUC PETROLEUM COMPANY LIMITED	WHOLESALER
40	ERC/LPG/1499	MAPKA INVESTMENT LIMITED	IMPORTER
41	ERC/LPG/1409	MAX GAS AND PETROLEUM COMPANY LIMITED	WHOLESALER
42	ERC/LPG/11574	MEGTRACO LIMITED	WHOLESALER
43	ERC/LPG/1401	MENENGAI ENGINEERING AND PETROLEUM SERVICES LIMITED	WHOLESALER
44	ERC/LPG/1503	MITANNA GASES LIMITED	WHOLESALER
45	ERC/LPG/1541	MOTO GAS COMPANY LIMITED	WHOLESALER
46	ERC/LPG/1635	MULTIENEGY LTD	IMPORTER
47	ERC/LPG/1618	NAKURU GASES LIMITED	IMPORTER
48	ERC/LPG/1618	NAKURU GASES LIMITED	IMPORTER
49	ERC/LPG/1428	NASSER ENERGY LIMITED	WHOLESALER
50	ERC/LPG/1133	NATIONAL OIL CORPORATION OF KENYA	IMPORTER
51	ERC/LPG/1379	NATIONAL OIL CORPORATION OF KENYA-NAIROBI	WHOLESALER
52	ERC/LPG/1525	ONE GAS LIMITED	IMPORTER
53	ERC/LPG/1371	ORANGE ENERGY LIMITED	IMPORTER
54	ERC/LPG/1420	OVERSEAS GAS AND OIL LTD	IMPORTER



55	ERC/LPG/1598	OXXENERGY LIMITED	IMPORTER
56	ERC/LPG/1438	PACKFUELS LIMITED	WHOLESALER
57	ERC/LPG/1335	PINE ENERGY E.A LIMITED	IMPORTER
58	ERC/LPG/1372	PROTO ENERGY LIMITED	WHOLESALER
59	ERC/LPG/1612	QUICKPOINT ENERGY LIMITED	IMPORTER
60	ERC/LPG/958	RIFT GAS LIMITED	IMPORTER
61	ERC/LPG/1568	RIHAL ENERGY COMPANY LIMITED	IMPORTER
62	ERC/LPG/1575	SAFARI PETROLEUM LTD	WHOLESALER
63	ERC/LPG/1530	SEAGAS KENYA LIMITED	WHOLESALER
64	ERC/LPG/1586	SIEKE LIMITED	WHOLESALER
65	ERC/LPG/1332	SOLUTIONS EAST AFRICA LIMITED	WHOLESALER
66	ERC/LPG/1394	SONANGOL PETROLEUM LIMITED	WHOLESALER
67	ERC/LPG/1578	SWIFT ENERGY DISTRIBUTORS LIMITED	IMPORTER
68	ERC/LPG/1391	SYZO INTERNATIONAL LIMITED	IMPORTER
69	ERC/LPG/1439	TAHERI GAS LIMITED	WHOLESALER
70	ERC/LPG/1630	TELIFORM E.A LIMITED	IMPORTER
71	ERC/LPG/1301	TEX TRADING LIMITED	WHOLESALER
72	ERC/LPG/1619	TEX TRADING LIMITED	IMPORTER
73	ERC/LPG/1607	THE ARK SAIGA	WHOLESALER
74	ERC/LPG/1615	TOGAN TRANSPORTERS LTD	WHOLESALER
75	ERC/LPG/1289	TOPLIVO LIMITED	WHOLESALER
76	ERC/LPG/1495	TOSHA PETROLEUM KENYA LIMITED	WHOLESALER
77	ERC/LPG/1520	TRANSCEND SOLUTIONS LIMITED	WHOLESALER
78	ERC/LPG/1589	TRINITY ENERGY (K) LIMITED	IMPORTER
79	ERC/LPG/1399	TRINITY PETROLEUM LIMITED	WHOLESALER
80	ERC/LPG/1613	TRIPLEA HAULIERS LIMITED	IMPORTER
81	ERC/LPG/1385	UNIGAS KENYA LIMITED	IMPORTER
82	ERC/LPG/1417	VIVO ENERGY KENYA LIMITED	IMPORTER
83	ERC/LPG/1605	WORLDWIDE COMMODITIES LIMITED	IMPORTER