THE IMPACT OF BROKERS IN MARKETING AND PROCURING OF QUARRIED STONES IN JUJA, KIAMBU COUNTY

BY

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DECLARATION

This project is my original work and has not been presented for a degree in any other university.

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This project report has been submitted for examination with my approval as university supervisor.

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LIST OF ABBREVIATIONS AND ACRONYMS

CM : Construction Management

CPM : Construction Project Management

DEC : District Environment Committees

EAI : Environmental Impact Assessment

KEBS : Kenya Bureau of Standards

KRA : Kenya Revenue Authority

MENR: Ministry of Environment and Natural Resources

MPSP : Most Probable Selling Price

NCA : National Construction Authority

NEMA: National Environmental Management Authority

OPEC : Organization of Petroleum Exporting Countries

OSHA : Occupational Safety and Health Administration

POW : Prisoner Of War

PPE : Personal Protective Equipment

SCM : Supply Chain Management

SHEC : Safety, Health and Environment Committee

SPSS : Statistical Package for Social Sciences

ABSTRACT

Quarried stones are the main construction materials used for the purpose of enclosure and load bearing in most constructed facilities in Kenya.Juja quarries provide building stones for construction work in Nairobi metropolitan and all the neighbouring counties. Transactions of Juja quarry stones are mainly intermediated between one off buyers and sellers of stones by intermediaries (middlemen) commonly referred to as brokers. The study location was Juja area in Kiambu County, where there are a total of 41 active quarries and approximately 150 brokers.

The objectives of this study are three fold; determine the impact of brokers on price of building stones at the quarries, establish the influence of brokers on the choice of building stone at the quarries and establish conditions that make brokers apparently necessary to both the quarry managers and buyers of building stones. The subjects of the study were brokers, quarry managers and buyers of stones from Juja quarries.The study adopted descriptive research design. The research instrument that was employed to collect data was questionnaire. Data analysis was carried out using a Statistical Package for Social Sciences (SPSS) and then data presented in the form of frequency tables, graphical charts and percentages. Qualitative data was analysed by establishing the categories and themes, relationships/patterns and conclusions in line with the study objectives.

The study established that the market structure was a differentiated oligopoly in which the product is non- homogeneous but highly substitutable in the industry. Accessibility to most quarries is a major challenge with some quarries located 12 kilometers from Thika Super High Way under rough and insecure terrain. The research also established that there are no adequate signboards describing the locations of quarries in the interior locations. Buyers therefore do not have correct information on product differentiation, location, quality and price. In contrast, brokers have updated information on location of every quarry, quality and price. Buyers of stones use brokers to facilitate procurement of the right building stones at a fair price while quarry managers engaged the same brokers to market their products with a view of boosting sales. Brokers are paid a commission per every stone sold through their efforts. Quarry managers admitted that they entice brokers with increased commission when faced with various challenges of quality of stone and quarry site accessibility. Brokers admitted to being driven solely by the economic gain in their choice of stone for the buyer and can therefore convince the buyers to purchase poor quality stones if they stand to gain financially.

It is instructive to note that there are no materials testing department at the quarries to ensure the quality of stones bought. Quarry owners are aware that there are problems of accessibility but are not willing to invest in the improvement of access roads due to the fact that quarry sites are very temporal. Considering that information asymmetry is the main problem in the Juja quarries, effort must be made to provide factual information on; location of quarries, quality of stones at each quarry and prices of various stones. This can be achieved through appropriate advertising, marketing and promotional techniques. Quarrying companies should also invest in improving access routes to the quarrying sites. Also there should be a deliberate move towards reducing the role of brokers in the quarrying industry. National Construction Authority (NCA) as mandated by the National Construction Authority Bill 2011 Part II, subsection 5(2) a – h should ensure only quality stones leave the quarries.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Quarrying activity is a major industry in Kenya which supports the local construction industry, creates huge employment opportunities and is a major contributor to the national economy (Ministry of Environment and Natural Resources, 2010). Quarried stones are the main construction materials used for the purpose of enclosure and load bearing in most constructed facilities. The area around the Ndarugu valley in Juja constituency along Thika Super Highway is naturally endowed with the rock suitable for quarrying of building stones. Entrepreneurs have identified the existing demand, and subsequently established quarrying business while others have set up brokerage businesses in the quarrying industry.

Meredith (1982) observes that entrepreneurs as people who have the ability to see and evaluate business opportunity, to gather necessary resources, to take advantage of them and to initiate appropriate action to ensure success. Entrepreneurs have the ability to see and assess opportunity where others see chaos, contradiction and confusion (Timmons, 1989). Juja Stone quarries are the leading Supplier of Machine Cut Stones to construction industry in Kenya (Ministry of Environment and Natural Resources, 2010). Building stones from Juja are very popular in Nairobi and its surrounding counties like Machakos, Nakuru, Muranga, Mwingi and Garissa because they are sold finished, are relatively cheap and are easy to work with. There are approximately 41 independent and active quarries in Juja (Municipal Council of Thika, 2011).

Contractors, materials suppliers and buyers in or around Nairobi and the neigbouring counties usually procure building stones from Juja quarries. Procurement of materials is an important subsystem for a construction project. Generally procurement is the acquisition of goods and services at the best possible total cost of ownership in the right quality and quantity, right price and right source for the benefit or use of client (Carter, 1997).

According to Hall (2003) producers and consumers of a commodity or buyers and sellers of an asset who wish to trade can choose between two competing types of intermediaries "middlemen" (dealers/brokers) and "market makers" (specialists). Market makers post publicly observable bid and ask for prices whereas the prices quoted by different middlemen are private information that can be obtained only through a costly search process (Rust, 2003). Buyers of stones from Juja commonly refer to these intermediaries (middlemen) as brokers and therefore this research has adopted the name 'broker' to refer to the middlemen involved in the chain of purchase and procurement of building stones from Juja quarries. Buyers of stones use brokers to facilitate procurement of the right building stones while producers of stones use brokers to boost sales. Conditions which allow a broker to act for both the seller and the buyer are of interest in this research.

Unlike other sectors, brokerage of building stones from Juja is usually informal, covert and shrouded in secrecy with most customers not knowing when they are dealing with a broker. Brokers in this sector are usually shrewd entrepreneurs who hover around quarries, trading centers and construction sites looking for prospective buyers of building stones to link them for gain with the sellers of stones. Often the

same brokers in quarry sites reach over to the consumers (buyers) by visiting construction sites seeking for orders to "supply" the building stones. Most buyers of stones in Juja quarries do not discern when dealing with brokers because they (brokers) masquerade as drivers of transport Lorries, owners of transport vehicles or even employees of specific quarries. Brokers in the quarries are not officially employed by quarry owners and do not have registered companies specific for their business. Brokerage in this sub sector has entrenched forward and backward linkages with other operators like quarry managers, transport merchants and construction site supervisors.

The main tool of trade for brokers in this sector is hinged on information and information sources which they guard jealously creating a condition that makes it easy for the brokers to manipulate both the quarry managers and buyers of stones. Therefore a broker in these materials sub sector is an information intermediary. Information consultancy and brokerage services are increasingly being considered to be important among the existing information intermediaries (Ochola, 1999). Information consultants and brokers form part of the individuals and organizations that interface between information and consumers for the purpose of increasing the exploitation and use of information (Ochola, 1999).

1.2 Statement of the Problem

1.2.1 Information asymmetry

There is little research conducted on quarrying business despite the significant role played by the machine cut building stones from Juja in the construction industry in Kenya. Casual observation while driving along the Thika super highway around Juja area does not reveal signboards describing location of quarries. This is compounded

by the fact that there is no promotion, advertising or marketing in any way including print and electronic media. This results in a general lack of knowledge among one time buyers on; location of quarries, quality and price of stones at each quarry at any point in time.

Trading in this sub sector is inherently conducted under a condition of informational asymmetry. This means that information regarding the stones is tilted to the side of the sellers than the buyers. As a result of such informational asymmetries, information on actual product variation and actual price differentiation of stones in different quarries is not accessible to buyers, a condition which has seen emergence of intermediaries otherwise commonly referred to as brokers in this materials sub sector. Asymmetric information can result in producer opportunism through both adverse selection and moral hazard (Walters, 2008). Adverse selection occurs when "hidden information" exists and moral hazard occurs if producers take "hidden action" (Arrow, 1984). Brokers conceal information on location of quarries, product quality and price from buyers and take 'hidden actions' mainly with the intention of increasing earnings from the transactions. Most often broker earnings are so high as to have a significant impact on the cost of construction. Quarry owners and managers just like buyers are also easily manipulated by the brokers. This is due to the nature of the market structure, general quarrying environment and lack of unity among them.

1.2.2 Product and Price Variation

Building stones are mainly differentiated by colour, hardness and texture but buyers have differing preferences which are mainly supported by wrong information, perceptions and stereotypes. For instance most buyers believe that dark- grey stones are hard and of good quality and that brownish stones are light and too soft for

construction which is not always the case. The quarry price for hard stones is higher than that of soft ones. The rock construction quality varies from one quarry to the other and from one stratum to another. Quarrying companies do not have prior knowledge of what lies in the ground before the excavation process. It is common to encounter unsuitable rock after spending millions of money with the initial excavation. There is a definite variation in colour, hardness and other important parameters within the same quarry as different strata are encountered. Often when poor quality rock is encountered, broker services become essential so as to maintain sales and this becomes a classic example of adverse selection leading to moral hazard.

1.2.3 Quality Assurance

Construction industry is blamed for being backward and for failing to develop into a mature and technically advanced sector (Santos, 1999). It is a unique industry in the sense that consumers do not influence what is being produced and instead they just do with what is being availed to the market (Hillebradt, 1985). The interest of the consumer is certainly sacrificed to that of the producer. Most one time buyers of stones rely on the wisdom of the brokers and the untrained tradesmen on the construction sites to guide them on both price and quality.

Quality is assured through visual examination and other rudimentary methods by the brokers yet they are not technically qualified. In testing of hardness, a broker lifts a building stone with hands when standing then releases it to fall to the ground. If the stone breaks on impact it is considered as weak and vice versa. Unfortunately brokers have a way of ensuring that the stone breaks or it doesn't by choosing the face with which the stone lands. The situation is made worse by the fact that in the quarries there is no government agency to ensure a minimum threshold of quality is met before

any sale. This is despite the fact that the strength of materials is a major area of study under engineering which should not be left to untrained operatives in the quarries and construction sites (Mitullah W. N., Wachira I. N, 2003). In Kenya, construction skills tend to be acquired by apprenticeship rather than through formal instruction (Kioko, 2007). The majority of workers on construction sites gain their skills through observation and practice on sites.

Surprisingly, most buyers and sellers of stones view brokers with disdain and are taken as opportunists (Yusuf, 2010). The Encarta Dictionary defines an opportunist as an unprincipled resourceful "person "or "somebody" who takes advantage of something, especially somebody who does so in a devious, unscrupulous, or unprincipled way. Despite all these shortcomings, producers and buyers of building stones voluntarily and involuntarily continue to engage the services of brokers without proper understanding of the value or consequences of such engagement. Such blind engagement of brokers in these materials sub sector can easily turn out to be against producers and buyers best interests.

1.3 Assumptions of the Study

The first assumption for this study was that challenges facing producers and buyers of quarry stones are similar in all quarries. Stone quarrying is a risky business because there is no adequate prior information on the type of rock before excavation is done. Further the quality of stone keeps on changing as different rock formations are encountered on the way down. In addition quality rock formations are now increasingly becoming available further interior from the highway where accessibility to the buyers is difficult.

Secondly, brokers of quarry stones have similar objectives, tactics and targets. The main objective of brokers in this subsector is to make maximum earnings where possible from both the buyer and the seller. Brokerage in this subsector is mainly informal and covert with only the brokers sharing information among them.

The third assumption was that the respondents will be honest when filling the questionnaires and when interviewed. The answers given by the respondents would be their true observations and feelings regarding the industry. The fourth assumption was that the research instruments were adequate in gathering sufficient information required for this study. The information sought in the questionnaire was based on the research objectives which adequately addressed the information needs for the study. Lastly, the respondents will be conversant with various issues under study

1.4 Theoretical Framework

Middlemen versus Market Makers: A Theory of Competitive Exchange

In this theory, microstructure of trade in a commodity or asset is internally determined. Producers and consumers of a commodity (or buyers and sellers of an asset) who wish to trade can choose between two competing types of intermediaries: "middlemen" (dealers/brokers) and "market makers - specialists" (Rust, 2003). Market makers post publicly observable bid and ask for prices, whereas the prices quoted by different middlemen are private information that can be obtained only through a costly search process. In this model an initial equilibrium with which there are no market makers but there's free entry of middlemen with heterogeneous transactions costs is considered.

The point of departure is a simple exchange economy in which the only intermediaries are middlemen. There is a modified version of Spulber's (1996) equilibrium search model with three types of agents: producers, consumers, and middlemen. In this model producers and consumers cannot trade directly with each other and instead trade must be intermediated. Since the middlemen to be studied in this research are called brokers in the quarrying industry, documentation by Spulber (1996) will be referred as an analysis of a competitive broker market. The broker market consists of a continuum of heterogeneous producers, consumers, and middlemen. A producer of type *v can* produce at most one unit of the good at a cost of *vc*. A consumer of type *v* can consume at most one unit of the good and is willing to pay at most to consume it. Producers and consumers remain in the market for a random (geometrically distributed) length of time before permanently exiting (Spulber, 1996)

In a broker market there is no central exchange or marketplace in which the commodity is traded. In particular, there is no advertising or central, publicly accessible site on which middlemen can post bid and ask prices. Instead, the only way for producers and consumers to obtain price quotes is to directly contact individual middlemen (Spulber, 1996)

1.5 Conceptual Framework

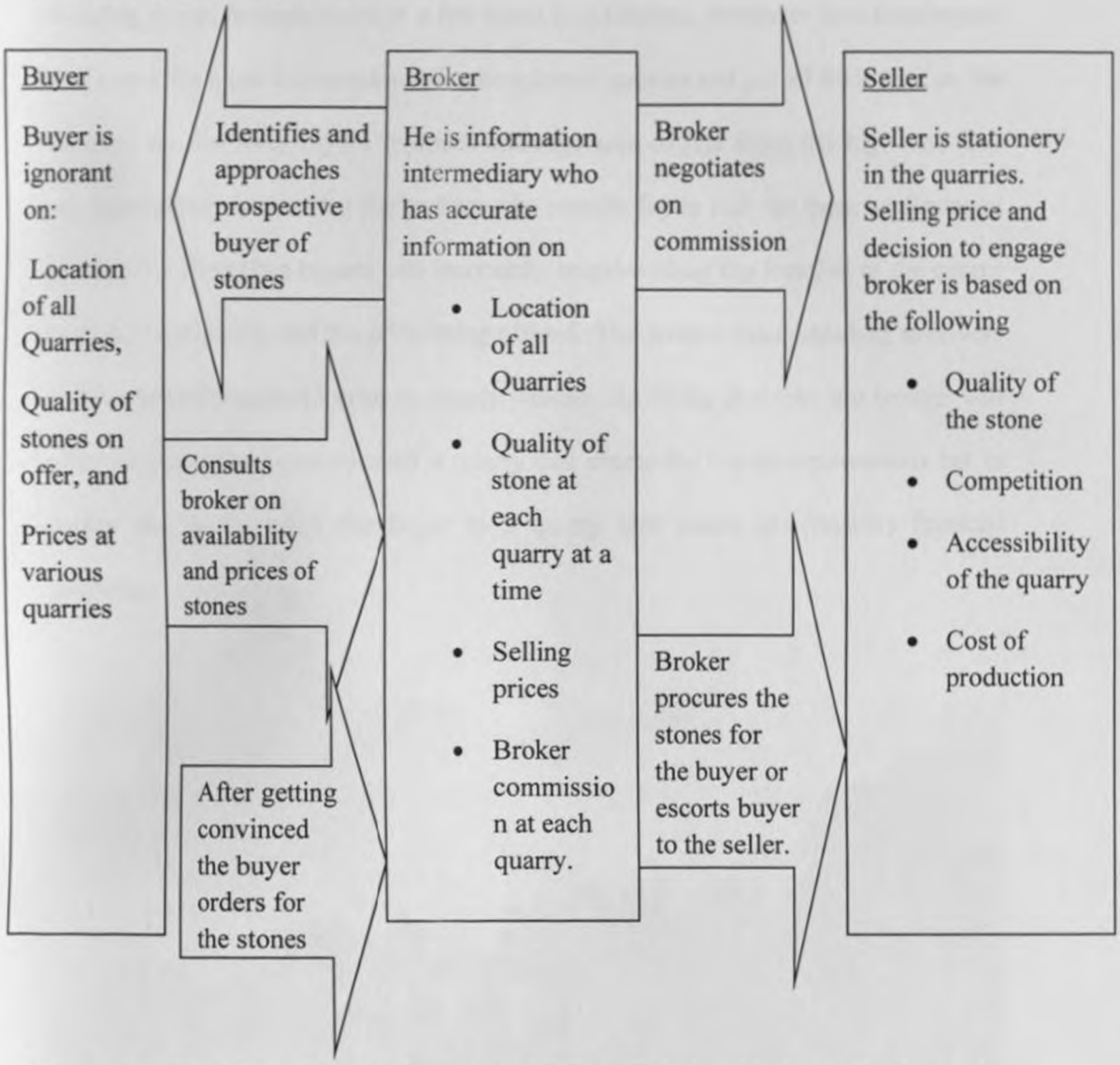

Figure 1.1: First Time Buyers, Broker and Sellers Relationship in marketing and procurement of building stones
Source; Researcher

Quarry managers engage brokers directly to market their products for a fee especially when disadvantaged by emergence of poor quality rock and poor accessibility of quarries by the buyers. Poor accessibility may be as result of long distance from the highway, rough terrain and insecurity among other reasons. First time buyers are ignorant on location and quality of stone available in various quarries and do not have

an umbrella body which they can use to demand for information since the need for building stones happens once or a few times in a lifetime, moreover first time buyers don't seek for more information from the relevant sources and put all their trust on the brokers. As first time buyers approach Ndarugu area of Juja along the highway, they are immediately noticed by the brokers who usually lay in wait for them as displayed in Plate 1.1 First-time buyers will innocently enquire about the location of the quarry with the best quality and the price being offered. The brokers masquerading as drivers and loaders of transport lorries or simply without disclosing that they are brokers will offer to escort the buyer to such a quarry that meets the buyer requirements but in reality the broker takes the buyer to a quarry that meets his (broker) financial interests.

Plate 1.1: Brokers accosting a prospective customer at Ndarugu area of Juja

Source: Field work

Quarry managers main interest is to increase or boost sales and therefore they offer to the brokers' differentiated commissions per each stone sold through their effort. When the first transaction is successful the buyer will start ordering for stones through the same broker without visiting the quarry area and broker will negotiate his fees with the buyer. For reasons explained in chapter five, buyers are forced to engage brokers for transactions. Brokers' decision on which quarry to purchase from or which quarry to direct the buyer to is mainly influenced by the financial incentives to the broker and not the buyers' best interest. This conceptual framework clearly shows that quarry managers are using the brokers to market and sell the stones especially when disadvantaged by such factors as location and poor quality stones. On the other hand buyers are using brokers to procure building stones at favorable prices. The two interests are competing and therefore it would only work if there are two sets of brokers; one set for the seller and another for the buyers. Unfortunately in reality the same broker may represent both the seller and the buyer at the same time. Reasons and factors contributing to this kind of scenario is part of what this research seeks to address.

1.6 Purpose of the Study

The purpose of this study is to investigate the impact of middlemen in marketing and procuring of quarried stones in Juja quarries in Kiambu County.

1.7 Objectives of the Study

The objectives of this study are to:

1 Determine the impact of brokers on price of building stones at the quarries

2 Establish the influence of brokers on the choice of building stone at the quarries.

3 Establish reasons and conditions that make brokers apparently necessary to both the quarry managers and buyers of building stones.

1.8 Statements of Hypothesis

1.8.1 Alternate Hypothesis

1. The use of brokers in the marketing and procurement of buildings stones from Juja quarries has a negative effect on price of stones for the buyers.
2. Brokers in the Juja quarries positively influence the buyers on the choice of stones
3. Brokers are entirely indispensable to both sellers and buyers

1.8.2 Null hypothesis

1. There is no significant relationship between use of brokers in marketing and procurement of building stones and the price of stones in Juja quarries
2. There is no significant relationship between buyers choice of stones and brokers influence in Juja quarries.
3. There is no significant relationship between the role played by brokers and marketing and procurement of stones in Juja quarries.

1.9 Significance of the Study

The findings of this study will be useful to stakeholders in construction industry in various ways. In view of the dominant use of the machine cut stones from Juja quarries it is imperative that the whole business of buying and selling of building stones from Juja be understood in all its dimensions particularly; product variability,

quality and pricing. Comprehensive understanding of the total environment which propagates the brokerage business is important to both the producers of the stones and the end users.

Buyers and consumers of building stones need to be equipped with the right information so that they can make correct choices of stones and have some leverage during negotiation on product versus price. If the national economy is boosted through low constructional costs due to low cost of materials procurement, it will mean a healthy and more vibrant economy (Muchungu, 2007). The study will provide information on variety of stones, prices and location of quarries to the customers to reduce customer exploitation by the brokers. With the right information contractors and other buyers will be able to procure quality building stones at an optimal cost due to reduced customer exploitation. It is hoped that the sub sector will develop a progressive business philosophy that will provide a free and fair atmosphere to all players. This research will come up with recommendations on how marketing for building stones can be done in quarries and hopefully it will provoke further research into other materials like sand. The study will also contribute to the existing body of knowledge on improving procurement and marketing of building stones.

1.10 Limitations of the Study

In the course of conducting this study, it will not be possible to control the attitudes of the respondents. This might have adverse effects on the research findings since the respondents may just give the feedback to impress the researcher. The instruments themselves constitute a limitation in that no particular instrument can be regarded as totally absolute.

1.11 Delimitations of the Study

Delimiting a study is setting its scope. This study is delimited to only Juja area and only to the 41 existing quarries. In the area, other subjects involved in brokerage of construction material like sand, murram, and ballast will not be investigated in this study. The target population for the study will comprise only the brokers, buyers and quarries managers. Other stakeholders such as designers, and land owners would have been involved if there was ample time and resources.

1.12 Operational Definition of Terms in Relation to Juja Quarries

Broker refers to the middleman in the procurement of building stones

Buyer refers to the customers of building stones

Seller refers the suppliers of building stones

1.13 Study Outline

Chapter one

This chapter comprises of background information, statement of the problem, assumptions of the study, theoretical framework and conceptual framework, purpose of the study, statements of hypothesis and objectives of the study. Limitations, delimitations and significance of the study are also given in this section.

Chapter two

This chapter is organized according to the following sub headings: Brokerage terminology, Insurance Brokers, Types of services that a broker can provide, Services provided by brokers to seller as client, The Context of Producer-Middleman Relations in Late Pre-colonial and colonial Africa, Marketing, Marketing within Construction Industry, Middlemen and the market, Difference between market maker and a

middleman, Brokers and the Art of Negotiation, Consumer Decision Making Process, Stone Quarrying in Kenya, Environmental hazards Protection Measures, Human hazards, Registration and licensing of quarries, Land and reclamation, principles of marketing, procurement principles, supply chain management and the Summary.

Chapter three

This chapter presents the methodology and design of the study under the following headings; Research Design; Locale of the Study; Target Population; Sample and Sampling Procedures; Research Instruments; Validity of Research Instruments; Reliability of Research Instruments; Piloting, identification of variables,data Collection Procedureand; Method of Data Analysis

Chapter Four

This chapter discusses all the variables grouped into three broad categories namely brokers, quarry managers and buyers of stones. The analysis involves the observed frequency of various variables, occurrences and the mean score of the rating scales used for the response items.

Chapter Five

This chapter concludes the impact of broker on price of stone, choice of stone by the buyer and indispensability of broker in the Juja stone market. The chapter also describes general behavior of all the three players in the Juja stone market, recommendations and areas of further research.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Intermediaries in Commerce

"Intermediary" is necessarily broad and covers, inter alia, brokers, independent agents and "tied" agents (Yusuf, 2010). The intermediary theorized in this study is modeled by Eckardt (2007), Picard (2000) and Cummins & Doherty (2006) in their report entitled "Economics of insurance intermediaries." The broker is a risk-averse agent who has an incentive to provide credible signals about his client's commodity preferences if the commission paid is related to the profitability of the business to the seller. Generally the business of brokerage is under the agency law. Agency is a broad term describing the relationship between two parties whereby one the agent acts on behalf of the principal. Hussain (1982) defines an agent as a person employed to do any act for another or to represent another in dealings with the third person.

The person for whom the act is done or who is represented is called the principal (Salemi, 1992). Agency is thus a contract which creates the relationship between principal and agent. The relationship of principal and agent may be created in any of the following ways; by express appointment, by implication, by necessity, or by conduct. A broker is an agent who represents a buyer or a seller in negotiating purchase or sale without physically handling the goods involved. A broker is an agent employed to buy or sell goods on behalf of someone else for a commission (Hussain, 1982).

A broker is therefore a middleman (in between two parties) concerned with negotiating, making bargains and establishing contacts between the two parties for the consideration of a commission. He does not possess the goods but acts on the guidance of his principal and does not sell in his own name. Business brokers also called business transfer agents, or intermediaries assist buyers and sellers of privately held businesses in the buying and selling process. They typically estimate the value of the business, advertise it for sale with or without disclosing its identity, handle the initial potential buyer interviews, discussions, and negotiations with prospective buyers; facilitate the progress of the due diligence investigation and generally assist with the business sale.

Agency relationships in business ownership transactions involve the representation by a business broker (on behalf of a brokerage company) of the selling principal, whether that person is a buyer or a seller. The principal broker (and his/her agents) then becomes the agent/s of the principal, who is the broker's client. The other party in the transaction, who does not have an agency relationship with the broker, is the broker's customer. A brokerage firm is a company that acts as an intermediary between a purchaser and a seller. To broker a deal is to communicate with both the buyer and seller to acceptable price on anything sold or purchased.

A broker, a single person, or the brokerage firm completes any necessary legal paperwork, obtains the appropriate signatures, and collects money from the purchaser to give to the seller. Since the buyer and seller are employing the brokerage to complete the deal, the brokerage may collect a portion of the money obtained. In some cases, a brokerage receives money from both parties. Brokerage firms are most

commonly thought of in relationship to the sale and purchase of stock shares. Fees are variable, depending on the degree to which the brokerage is involved in decisions about purchase. Some stockowners give their brokers power of attorney to make decisions about their goods when to buy or sell stock and depend upon their brokers for researching new stock for purchase. This type of brokerage firm usually assesses a fairly large fee, and regardless of whether the owner loses or earns money, the firm is paid. In Kenya, brokerage is a common phenomenon which has infiltrated most sectors of the economy including selling and buying of motor vehicles, land e.t.c.

2.1.1 Insurance Brokers

A broker or other insurance intermediary is employed to act as a middle man between the person employing him – normally, the person requiring insurance – on the one hand, and the proposed insurer or insurers on the other (Yusuf, 2010). They take an important position as match-makers between the supply and demand sides on insurance markets. On the one hand, they provide distribution and marketing services for insurance companies; on the other, they supply informational and advisory services for consumers. Insurance intermediaries assist in concluding an insurance contract by economizing on information and transaction costs.

The more involved and rigorous the information gathering role of the broker at the post contractual stage, the more difficult it is for customers to perpetrate opportunism (Yusuf, 2010). It has been held that 'the ordinary function of the insurance broker or other intermediary is to receive instructions from his principals to the nature of the risk or risks, the rate or rates of premium at which he wishes to insure, to communicate the material facts to the potential insurers and to obtain insurance for his

principals in accordance with the principal's instructions and on the best terms available (Virgo, 2004). In many cases those duties will include advising his client on the type of insurance best suited to his requirements and subject to his client's instructions, exercising reasonable care to obtain insurance which will best meet those requirements'.

2.1.2 Types of services that a broker can provide

Broker services vary widely depending on the practice. To broker a deal is to communicate with both the buyer and seller as to acceptable price on anything sold or purchased. A broker, a single person, or the brokerage firm completes any necessary legal paperwork, obtains the appropriate signatures, and collects money from the purchaser to give to the seller. Since the buyer and seller are employing the brokerage to complete the deal, the brokerage may collect a portion of the money obtained.

In some cases, a brokerage receives money from both parties. In others, the brokerage receives a commission only from the seller. Broker will help the client in establishing a MPSP Value - Most Probable Selling Price Valuation and develop a comprehensive Information memorandum on the company outlining the potential buyers for the business or business products. In addition, brokers conduct buyer searches, screen buyers for ability to complete a purchase, coordinate negotiations and provide deal structuring advice. Brokers also provide overall deal management to guide the client through the entire process and help maintain confidentiality of the sale in addition to marketing the business or business products to prospective buyers.

2.1.3 Producer-Middleman Relations in Late Pre-colonial and colonial Africa

Communities in the late pre-colonial Africa used to trade. Interaction between middlemen and producers in the interior of west central Africa appears to have begun around 1790 (Leeson, 2007). To profit, middlemen needed to obtain the goods of producers in the interior of Central Africa and bring them to outlying communities and coastal exporters. These goods could be obtained in one of two ways, peaceful trade or violent theft.

Middlemen typically traveled in caravans and were constantly on the move. These caravans consisted of other free middlemen, security charged with protecting the caravan on the road, and often great number of slaves who carried the items for sale (Hall, 2003). Caravans ranged in size from tens to thousands, although on the basis of the evidence available in travelers 'reports, the modal caravan consisted of about 70 or 80 people (Leeson, 2007). Common imports carried by traveling traders to the interior included tobacco, gin, beads, shells, and brass, which were used as body ornaments, cloth, and firearms and in return they got ivory, beeswax and wild rubber. As the sole suppliers of fire arms to interior communities, middlemen controlled the weaponry reaching producers of godsend thus typically had the upper hand when it came to implements used infighting (Leeson, 2007).

Producers consisted of village chiefs, or headmen, and their citizens in the remote interior. These individuals rarely traveled far beyond the bounds of their communities where the resources used in production could be found. Their immobility was strengthened by the costliness of spending significant time away from home, especially in light of the fact that, as producers, traveling for the purposes of trade was

not to their comparative advantage. In this way, specialization contributed to their immobility. The fact that middlemen tended to be stronger than the communities of producers with whom they interacted, however, created a situation in which middlemen left unchecked and caravans profited by robbery in passing through countries where people did not possess guns (Cameron, 1877).Middlemen were highly mobile, and producers were highly stationary which meant that middlemen could escape from conflict with their booty by fleeing to the coast without much worry that they would be overtaken later by bands of producers who would need to locate, track down and recover what had been stolen.

According to Crawford (1914), agents in west central Africa at this time also frequently changed their names. This, of course, would have contributed to the difficulty of tracking down violent middlemen. However, it remains unclear how pervasive this practice was (Leeson, 2007). A third reason for middlemen's strength superiority could also be added, namely, the fact that they were mobile and producers were stationary meant that middlemen had the ability to initiate surprise attacks on communities of producers.

In the colonial Africa, European settlers on the west coast of Africa employed middlemen to collect the goods they needed for export from producers in the remote interior of Central Africa (Leeson, 2007). In addition to this, some Africans operated as middlemen on their own account by connecting European exporters and others with producers in the interior. Trade in Africa was divisible into two branches; the purchasing of goods from the whites and selling them the produce of the country, and purchasing such produce from the Africans and selling to them the aforesaid goods.

2.1.4 Brokers and the Art of Negotiation

Broker interrogates to assess and to know what is going in the mind of the other party before strategically adopting both offensive and defensive means to bring the other party to his view point. Brokers are very good in negotiations. Negotiation refers to trading and deliberations between trading partners on quality, quantity, and price, time of delivery, mode of transport, after sales service and mode of payment. Negotiation is a battle of wits and an art embodying sophisticated tactics and manipulation by both the buyer and seller (Saleemi, 1997). Negotiators are usually thick skinned who weigh the pros and cons, blows hot and cold, suggests and investigates before settling for the terms

2.1.5 Brokers and the Consumer Decision Making Process

Traditionally, consumer researchers have approached decision making process from a rational perspective. This dominant school of thought views consumers as being cognitive (i.e., problem-solving) and, to some but a lesser degree, emotional. Such a view is reflected in the stage model of a typical buying process (often called the consumer information processing model) depicted in figure 3.2

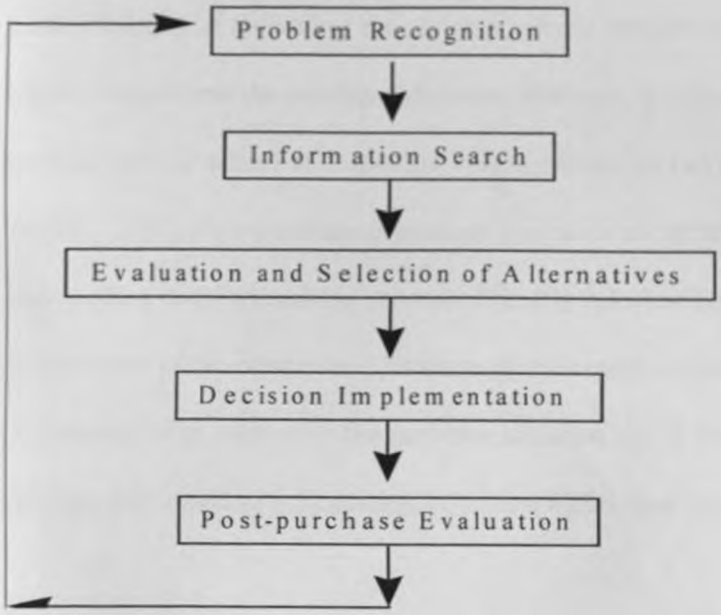

Figure 2.1: Consumer information model
Source: Alajoutsijarvi, Klint, and Tikkanen, (1998)

In this model, the consumer passes through five stages: problem recognition, information search, evaluation and selection of alternatives, decision implementation, and post-purchase evaluation.

In this information processing model, the consumer buying process begins when the buyer recognizes a problem or need. When a consumer discovers a problem, he/she is likely to search for more information from various information sources. The other dominant view, however, is to see the evaluation process as being cognitively driven and rational. Under this view, a consumer is trying to solve the problem and ultimately satisfying his/her need. In other words, he/she will look for problem-solving benefits from the product.

The consumer, then, looks for products with a certain set of attributes that deliver the benefits. Thus, the consumer sees each product as a bundle of attributes with different

levels of ability of delivering the problem solving benefits to satisfy his/her need. To actually implement the purchase decision, however, a consumer needs to select both specific items (brands) and specific outlets (where to buy) to resolve the problems (Kotler, 1992). Post-purchase evaluation processes are directly influenced by the type of preceding decision-making process. Directly relevant here is the level of purchase involvement of the consumer. Purchase involvement is often referred to as the level of concern for or interest in the purchase situation and it determines how extensively the consumer searches information in making a purchase decision.

2.2 Marketing

Marketing has been defined in different ways by different writers and practitioners. According to the American Marketing Association, marketing refers to the performance of business activities that direct the flow of goods from producer or seller to the consumer or user (Kotler,1977) observes that marketing involves the satisfaction of human needs and wants through exchange processes. Marketing is the business function that identifies consumer needs and wants determining which target markets the organization can best serve, designs appropriate products, services and programs to serve the markets and calls upon everyone in the organization to think and serve customers. Identifying customer needs, developing good product and services, pricing distribution and promoting them effectively makes it easy for marketers to sell the products (Muchungu, 1997). Marketing requires two sets of actors-the givers and the takers i.e. there must be as a bare minimum producers or sellers on one hand and consumers or users on the other hand (Waruingi, 1993).

2.2.1 The principles of marketing

Marketing seeks to satisfy the needs of people (customers or the market) (creating a sense of usefulness or utility) through the exchange process. Marketing refers to channeling the gap between service and product providers to service and product seekers also known as a way of satisfying needs (Kotler, 1992).

Marketing involves a range of processes concerned with finding out what consumers want, and then providing it for them. This involves four key elements, which are referred to as the 4Ps. A useful starting point therefore is to carry out market research to find out about customer requirements in relation to the 4Ps (Rust, 2003).

The marketing mix or the "4 P's" are: product, place, promotion and price. The concept of "4 Ps is then replaced by the concept of "7 p's" which are: product, price, place, promotion, people, positioning and packaging. These are employed to satisfy a *target market'* or target demographic (the pool of potential customers).

2.2.2 Factors affecting structure of markets

A review of the marketing literature regarding the structure of a market revealed that the basic elements that comprise this structure are: extent to which the products or services that are offered in the market are homogeneous or differentiated, concentration level, size of the market (number of customers and competitors), existing profit margins, form of competition (perfect competition, oligopoly, monopoly, monopolistic competition), degree of governmental intervention, customers' price elasticity, extent to which customers are informed about the existing prices.

2.2.3 Perfect Competition

It is a theoretical market structure in which there are many buyers and sellers. The model of perfect competition is based on the assumptions that the market consists of a large number of sellers as well as a large number of buyers and that the product is homogeneous. It is assumed that the technical characteristics and services associated with the sale of the product are identical and that there are no barriers to either entry or exit from the industry. Equally it is assumed that all buyers and sellers have perfect knowledge of the conditions in the market and that information is free (Kotler,1977) and that there are no uncertainties about future developments in the market.

2.2.4 Oligopoly

Oligopoly is a market structure which has a few sellers and where individual profit maximization decisions are highly interdependent. Oligopoly may be either pure or differentiated depending on the nature of the product involved (Waruingi, 1993).It is pure oligopoly if the product is homogenous. It becomes differentiated oligopoly if the product is non- homogeneous but highly substitutable in the industry. If only two firms are in the industry, it becomes a special case of oligopoly known as duopoly (Waruingi, 1993).When the firms in an industry are few, each seller must be acutely conscious of the actions of these rivals and of other reactions to changes in his policies (Kotler,1977).

2.2.5 Collusion in oligopoly

Collusion occurs when firms decide their common and individual interests would be best served if they joined together as a single unit. In this case, they set to maximize joint profits (for the whole industry) and negotiate among themselves how this profit will be shared among them (Hawkins, 1983).

They also try to prevent long run entry into the industry. A formal collusion is known as a cartel. The objective of a collusive oligopoly is to act like a monopoly by restricting output thereby earning the maximum profits that can be attained in the industry (Goodell, 1992). Cartel agreements can be overt (Generally known terms of agreement) or covert (Terms known only to the participating firms). In general, trade associations and professional organizations may be taken to perform functions usually associated with a cartel. One of the best known international cartels is the Organization of Petroleum Exporting Countries (OPEC).The nature and degree of competition (market structure) of this materials subsector is a differentiated oligopoly which in itself helps to propagate informational asymmetry. Oligopoly is a type of market structure where there are few sellers and many buyers (Kotler,1977). It becomes differentiated oligopoly if the product is non- homogenous but highly substitutable as is the case within the Juja quarries. Quarrying companies despite being in an oligopoly situation have been unable to collude or at least form a cartel to fight out brokers. Collusion occurs when firms decide their common and individual interests would be best served if they joined together as a single unit (Goodell, 1992). In this case, they set to maximize joint profits (for the whole industry) and negotiate among themselves how this profit will be shared and to prevent long run entry into the industry. A formal collusion is known as a cartel. The objective of a collusive oligopoly is to act like a monopoly by restricting output thereby earning the maximum profits that can be attained in the industry (Waruingi, 1993). Cartel agreements can be overt (Generally known terms of agreement) or covert (terms known only to the participating firms). Quarrying companies are faced with the usual challenges that prevent business unity among firms in an oligopoly situation. For instance, product

variation, differences in size of firms, differences in costs and changing market conditions are major hindrances of business unity (Curtis, 2001).

2.2.6 Marketing in construction industry

Advocating marketing in the construction industry is perhaps the most challenging activity. It is rarely practiced with the enthusiasm, creativity and sophistication to be found in the marketing of other goods. This is because most people tend to equate marketing with client entertainment in slick bars and sumptuous wining and dining (Low, 1995). A number of studies have criticized firms in the construction industry for failing to adopt modern marketing methods. Specifically, it has been alleged that "adversarial attitudes towards customers exist within construction companies, resulting from a "tendering culture" that focuses on winning individual orders rather than on developing sound long-term relationships with clients (Tan, 1995).

Construction firms have also been condemned for assuming that downturns lead to fewer new entrants and consequently less competition, whereas in fact competition intensifies during a downturn and completely new critical success factors emerge. Several investigations of the UK construction industry revealed indifferent attitudes to marketing, with a heavy emphasis on selling and double glazing hype. These studies allegedly showed that construction enterprises had ignored, or been slow in adopting, marketing principles and had failed to include marketing in corporate strategies (Tan,1995).The main justifications for eschewing heavy investment in marketing proposed by these authors were that, the environment in which construction firms operated was turbulent and fluctuating.

Stone quarrying firms operate under very difficult conditions in that they are not in a position to determine the nature of rock underneath before excavation hence they are not in a capacity to determine the quality of stone to sell. The uniqueness of the stone quarrying and selling business has forced the quarry managers to embrace intermediaries

2.2.7 Middlemen, market and prices.

According to (Spulber, 1996) model there are three types of agents in an oligopoly market: buyers (consumers), sellers (producers), and price-setting middlemen. As a step toward answering these puzzles and understanding the differences in the microstructure of trade that we observe across various markets, we present a simple model in which the share of trade intermediated by middlemen and market makers is endogenously determined. In Spulber's model, middlemen are assumed to be the exclusive avenue of exchange. Every producer wishing to sell a commodity or asset and every consumer wishing to purchase it is required to transact via middlemen rather than trade directly with each other.

Transactions in the dealer market occur over a range of individually negotiated prices. In a dealer market there is no central exchange or market place in which the commodity is traded. In particular, there is no advertising or central, publicly accessible site on which middlemen can post bid and ask prices. Instead, the only way for producers and consumers to obtain price quotes is to directly contact individual middlemen. Middlemen are infinitely lived and set a pair of stationary bid and ask prices to maximize their expected discounted profits. Middlemen can increase their profits at the expense of consumers and producers by promulgating measures that artificially limit entry of the market maker.

2.2.8 Difference between market maker and a middleman

Middlemen and market makers represent complementary and competitive exchange institutions. Market makers post publicly observable bid and ask prices, whereas prices quoted by middlemen in the dealer market constitute private information that can be obtained only through a costly search process (Hall, 2003). Perhaps one of the best-known examples (at least among economists) of the coexistence of middlemen and market makers is the World War II Prisoners Of War (POW) camp described by Radford (Rust, 2003). In this camp, prisoners traded a variety of commodities among themselves: canned milk, jam, biscuits, and chocolate. In the absence of money, cigarettes became a form of currency. Trade was facilitated by "Exchange and Mart notice boards" on which bid and ask prices for different goods were posted. When a deal was consummated, the posting was crossed out.

Radford notes that "the public and semi-permanent record of transactions led to cigarette prices being well known and thus tending to equality throughout the camp" (p. 191). In addition to the Exchange and Mart, middlemen were active in the camp, although they were viewed with disdain. Despite the fact that his very existence was proof to the contrary, the middleman was held to be redundant in view of the existence of the Shop and the Exchange Mart. Middlemen as a group were blamed for reducing prices by the suppliers.

Opinion notwithstanding, most people dealt with a middleman, whether consciously or unconsciously, at some time or another Radford does not mention whether middlemen had any effect on bid prices. These models generally consider two types of traders: informed and uninformed. If the middlemen are able to selectively trade

with only the uniformed traders (e.g., by accepting only small orders), then the market maker is left trading with only the informed traders. This "cream skimming" by the middlemen leaves the market maker at an informational disadvantage against the informed traders (Hall, 2003).

2.3 Procurement principles

The guiding principles for procurement are described below:

Value for Money

Assessment of both quantitative (e.g. response quotations) and qualitative factors (e.g. quality, service standards, timing, support, benefits and risks).

Ethical and Fair Treatment

The procurement process should provide a level playing field for all respondents. For example, during the market approach period all respondents should be given the same opportunity to ask questions, be provided with the same information at the same time and given the same time period to submit their response. During the evaluation process all respondents should be evaluated against the same criteria and in the same way. However, this approach does not preclude selective tender or waiver of competitive process where the circumstances justify it. Appropriate arrangements should be made to protect commercially sensitive information.

Probity, Accountability and Transparency

Probity

Conflicts of interest (actual or potential) should be identified and dealt with appropriately. Particular care must be taken where there is a potential benefit (financial or other) to an officer or a member of his/her family. It is also inappropriate to accept gifts or hospitality from current or potential suppliers (Rust,2003).

Accountability

Staff undertaking a procurement process are responsible for ensuring that it is carried out in-line with Departmental policy. All officers involved in a procurement are responsible for familiarising themselves with Departmental procurement policy and acting in a manner which is compatible with it.

Transparency

The decision-making process must be clear and auditable. Appropriate records must be kept.

2.4 Supply chain management

Supply Chain Management (SCM) is management of material and information flow in a supply chain to provide the highest degree of customer satisfaction at the lowest possible cost. SCM requires commitment of supply chain partners to work closely to coordinate order generation, order taking and order fulfillment thus, creating an "extended enterprise" spreading far beyond the producer's location. Supply chains encompass the companies and the business activities needed to design, make, deliver and use a product or service. Businesses depend on their supply chains to provide them with what they need to survive and thrive. Every business fits into one or more supply chains and has a role pay in each of them. And also supply chain management is the integration of key business processes from initial raw material extraction to the final or end customer, including intermediate processing, transportation and storage activities and final sale to the end customer.

Today, the practice of supply chain management is becoming extremely important to achieve and maintain competitiveness. Many firms are just now beginning to realize

the advantages of supply chain integration. Supply chain management is an out-growth and expansion of logistic and purchasing activities and has grown in popularity and use since the 1980s. Important elements in supply chain management are in the areas of purchasing, operations and production and distribution. Finally, as markets, political forces, technology and competition change around the world, the practice of supply chain management must also change (Santos, 1999).

The supply chain starts with firms extracting raw materials from the ground –such as iron, oil, wood, and food- and then selling them to raw material manufactures. These companies, acting on purchase orders and specifications they have received from component manufacturers, turn the raw materials into materials that are usable by these customers. Now what is supply chain management? SCM is management of material and information flow in a supply chain to provide the highest degree of customer satisfaction at the lowest possible cost.

2.4.1 Importance of Supply Chain Management

Many firms, thought, have discovered value, long term benefits from their supply chain management efforts. Firms with large system inventories, many suppliers, complex product assemblies, and highly valued customers with large purchasing budgets have the most to gain from the practice of supply chain management. For these firms, even moderate supply chain management success can mean lower purchasing and inventory costs, better product quality, and higher levels of customer service and sales. Purchasing inventory, and transportation cost saving is quite sizable for firms utilizing supply chain management strategies. Firms must realize that their management efforts can start small –for instance, with just one key supplierand build through time to include more supply chain participants- such as other important

suppliers, key customers, and shippers- and, eventually, second-tier suppliers and customers. So why is this integration activity important? As alluded to earlier, when a firm, its customers, and its suppliers all know each others' future plans, the planning process is easier and more accurate (Maggard, 1976).

2.4.2 The five major supply chain drivers

Companies in any supply chain must make decisions individually and collectively regarding their actions in five areas. These are the five major supply chain drivers.

- Production (what, how, and when to produce)
- Inventory (how much to make and how much to store)
- Location (where best to do what activity)
- Transportation (how and when to move product)
- Information (the basis for making these decisions)

Effective supply chain management calls first for an understanding of each driver and how it operates. Each driver has the ability to directly affect the supply chain and enable certain capabilities. The next step is to develop an appreciation for the results that can be obtained by mixing different combinations of these drivers.

2.5 Stone Quarrying Conditions in Kenya

Quarrying activity is a major industry in Kenya, which supports the local construction industry, creates huge employment opportunities and is a major contributor to the national economy. (Ministerial task force report 2010). Workers dig in an unregulated quarry for stones to be used for construction in Kenya. Building and construction boom has shot up the demand for building materials, leading to high demand for building stones, ballast and sand. A delay in the review of a Kenyan mining Act has

led to the proliferation of new and unregulated quarrying activities in forest areas and private farm land. There is no clear regulatory framework for the management of quarrying in Kenya and there has been inadequate and uncoordinated enforcement of existing legislations resulting to haphazard and unsafe operations (Ministry of Environment and Natural Resources, 2010). According to the National Environmental Management Authority (NEMA), of the hundreds of quarries operating in central Kenya only two private quarries conduct an annual audit or have met the country's Environments Assessment Impacts (EAI) requirements.

Stone quarrying in Kenya is a significant *jua kali* (informal sector) employer involving landowners, quarry owners, concession holders (who lease land and extract stone for sale) and quarry workers (both skilled and unskilled). The latter group is usually totally dependent on proceeds of quarrying for their livelihood. In Nairobi area alone, this sector directly employs an estimated 10,000 workers (Shadmon, 2002). Nationally the estimated number of employees in quarrying sector is 40,000. According toMinistry of Environment and Natural Resources (2010) there is continued exploitation of workers by middlemen leading to low wages.

Plate 2.1: Workers at a typical quarry
Source: Field Work

Workers have limited opportunity to participate in collective bargaining processes since they have no formal association and have not joined any union. Many quarries have notable negative effects such as illicit brews, drug abuse, and HIV /AIDS prevalence. Stone as a building material is in great and growing demand because of the booming construction industry. This is particularly so in mechanized quarries in Juja and elsewhere and until recently in the project area which serves Nairobi (the Ngong Division of Kajiado district, approximately 13 Kilometers South West of Nairobi) where geological surveys have revealed that local stone reserves are sufficient for at least the next 50 years. However demand far exceeds supply and many house developers use concrete blocks as an expensive but more accessible and standardized alternative (Gakunga, 2002).

2.5.1 Stone Quarrying in Juja

Juja Stone quarries are the leading Supplier of Machine Cut Stones in Kenya. There are approximately 41(forty one) active quarries spread along the Ndarugu valley. This valley is endowed with layers of natural bed rock approximately 60 meters net depth suitable for commercial mining of the building stone. The depth and quality of the rocks not usually known before the actual excavation while quality parameters changes for worse or better with depth. To strike a good rock therefore becomes a matter of chance. These stated conditions are major impediments to commercial unity among quarry owners.

Plate 2.2: Stone cutter machines at work in a quarry in Juja

Source: Fieldwork

2.5.2 Environmental hazards Protection Measures

Mining and Minerals Bill, 2011 and the Environmental Act have been referred to in this section. The Mining and Minerals Bill, 2011 states that quarries should conform

to the following rules; there should be at least 10 meters buffer zone between the quarry and the 30 meter riparian reserve of the river, wetland and water catchment areas (40 meters buffer zone between the quarry and the edge of the river, wetland or water catchment area). Quarrying activities within the forested land should be in accordance with section 42 of the Forest Act 2005. Furthermore it is recommended that quarrying should be restricted to forest land devoid of trees with the aim of reclamation for re-vegetation. In addition, for mechanized operations without blasting, there should be a distance of 500m to any aerodromes/landing ground, 100m to any shopping center, school and hospital, 50m to any house irrespective of consent from the owner and 40m to any river, road reserve or rail.

Plate 2.3: An open quarried site with stagnant water

Source: Field work

In addition to the above minimum distances, quarry operations where blasting is required may need extended buffer zones/distances and/or adopt controlled blasting as advised by inspector of mines/explosives. Both Mechanized with controlled blasting

and mechanized where blasting is not controlled, the technical officer (inspector of mines/explosives) should advise accordingly as provided for under subsidiary legislation 78 of explosives Act and MSR 90 of the mining Act. Adherence to the Noise and Excessive Vibrations Regulations, 2009 should be observed and for proposed small scale quarry, the owner/operator should apply for an approval from the District Environment Committees (DEC) (prior to the Enactment of the Mining and Minerals Bill). Simplified Environmental audit checklist for ongoing small scale quarrying operations to be used by the DEC and/or its appointed agents (e.g. Chiefs), and/or relevant Government inspectors to monitor compliance. Sensitization and training of the quarry operators/owners on the use of simplified Environmental audit checklist should be conducted.

2.5.3 Human Hazards

Mining and Minerals Bill, 2011 and the Environmental Act have been referred to in this section. The Mining and Minerals Bill, 2011 states that no undercutting and tunneling should be allowed in all quarries to avoid collapse, which may result to damage to property, injury or loss of life. Quarrying on soil, sand, gravel, soft rock or debris shall not have vertical faces exceeding 2.5 M high, and shall be worked in terraces/ benches or at a safe angle of slope. Hard rock quarry faces to be benched or worked from top to bottom. No loose hanging rocks/material shall be allowed near or on the face of excavation/quarry.

Plate 2.4: Loose rocks at an entrance to a quarry site

Source: Field work

All loose rocks/ materials should be scaled down before commencement of any operation and there should be no tunneling in sand mining. All quarry faces/cliffs should be securely fenced .The fence should be at least 3meters from the edge of the cliff using chain link of at least 1.5meters high. Warnings signs of appropriate font size and in the appropriate language should be erected in all quarry entries and in areas with high cliffs e.g. Danger: Quarry Deep Pit' or 'caution: flying stones and debris' or "Kware" (in Kikuyu). All roads to and from quarries should be safe and accessible. The following protective gears should be used by persons working in quarries; protective helmets against falling objects; gloves to protect against cuts and bruises; protective shoes; safety goggles and overall/dust coat. Quarry operators to be trained on safety, health and environmental issues and each quarry site to have a person in charge of safety.

There should be also a Safety, Health and Environment Committee (SHEC) at each quarry site. Each quarry site (where blasting is required) is to acquire blasters permit and to nominate a suitable person in consultation with the local provincial administration to be trained on safe blasting. All blasting materials /explosives should be acquired and conveyed legally through acquisition of relevant permit(s) from Mines and Geological Department. Blasters for informal quarries to acquire blasting materials for immediate (daily) use only, where there is no licensed storage facility (explosives magazine).

The inspection staff to be facilitated to conduct regular inspections and provincial administration (Chiefs) to assist in enforcement of laid down laws. Quarry operators to ensure provision of clean water, sanitation and well equipped first aid kit with trained first aiders. Where ladders are required, they should be made safe by ensuring that they are strong, firmly secured and have a hand rail and erection of adequate barriers to check material rolling down slope. There should also be enhancement of District Disaster Preparedness Committees and training of the local quarry operators on Disaster preparedness and response.

2.5.4 Registration and licensing of quarries

License is to be granted in accordance to the Mining and Minerals Bill, 2011, Environmental Act and any other government regulatory act pertaining to mining after an application for the grant or renewal of a mineral dealer's license. Change of user should be effected before the establishment of quarry site through the District Liaison committees. Furthermore the expansion and/or change of potential

agricultural land into quarrying operations (a case of uprooting tea and coffee for quarrying) must be subjected to change of user procedure.

2.5.5 Land Reclamation

Mining and Minerals Bill, 2011 and the Environmental Act have been referred to in this section. Land owner shall establish quarry pit rehabilitation and/or after use plan to be approved by the District Environment Committee as prescribed in the audit check list. The after use plan should identify suitable alternative land uses for the disused pits like land restoration for agriculture, recreation, for forestry and apiary (bee keeping), aquaculture, pits as water reservoir and if suitable exploitation for sanitary land filling.

Phasing or "blocking" of the quarry site for progressive quarrying operations and therefore progressive restoration and/or reclamation should be practiced. Decommissioned (closed down) quarries shall be restored within twelve (12) months of depletion of the quarry and the District Environment Committee (DEC) or an appointed agent shall issue a clearance letter confirming satisfaction with the restoration efforts. The use of Personal Protective Equipment (PPEs) is recommended for both manual and mechanized operations while watering of the aggregates from the crusher should be mandatory for mechanized operations.

2.6 Methods for testing building Stones

According to Jumikis (1983), there are various tests for building stones. For instance porosity test, compressive strength test, and shear resistance test. The strength of rock depends on qualitative mineral composition and texture.

2.6.1 Compressive strength

Compressive strength also called crushing strength is the most commonly used method of determining property of rocks. It is the maximum stress required to crush standard rock specimen. In this test cylindrical, square or a prismatic rock specimen is subjected to uni-axial or tri-axial compressive stress and strength is calculated according to Jumikis, (1983) as following:

Compressive strength = C, = P/A

Where P = applied load at failure and

A = cross section area of the specimen

For accurate results rock specimen should be free from deformational defects. With respect to the compressive strength it is reasonable to consider that with a few exceptions, the building stones under investigation are of fairly good quality.

2.6.2 Tensile strength

Tensile strength of a rock is its resistance to failure in tension. Tensile strength of rock can be determined by direct or indirect method. In direct method a rock core specimen with length-to diameter ratio (L/D) of approximately 2 is fixed in the gripping ends of the testing device and pulled in opposite direction. The tensile strength is calculated as:

Tensile strength = Ts = F/A

Where F = tensile load at failure

A = cross section area of the specimen

The demerits associated with this method are:

Very small scratches on the surface of the specimen cause an appreciable decrease in the strength

Stress concentration takes place at the gripping ends and there is an uneven distribution of stresses.

In the indirect method a rock core specimen with L/D ratio of 0.5 is placed horizontally between the bearing plates of the testing machine and loaded to failure.

The tensile strength is given by $Ts = 2P/3.14 \times D \times L$

Where P = load at failure

D = diameter of the specimen

L = length of the specimen.

2.6.3 Shear strength

There are many designing problems where knowledge about shear strength of rocks is needed. Shear strength of stone or rock is the maximum resistance to deformation by continuous shear displacement upon action of shear stress and it is the sum of

i. Internal friction or resistance to translation along the sliding
ii. Dilatancy or the interlocking effect between individual rock grains and
iii. Cohesion along the sliding surface of the rock.

Cohesion is the inherent shear strength of the material in the absence of external stress. Physically it is the resistance of particles to separation without the presence of normal force or pressure. Thus resistance to separation consists of molecular bonding, ionic attraction and particle interlocking.

2.7 Summary

There is little research conducted on quarrying business and particularly the role of brokers in the construction industry yet the industry is highly saturated with brokers. The available related studies mainly focus on brokerage in the insurance industry which is mainly formal and controlled by well-established structures. The available

studies showed that stone quarrying enterprises had ignored, or been slow in adopting, marketing principles and had failed to include marketing in corporate strategies (Tan,1995).Specifically, it has been alleged that "adversarial attitudes towards customers exist, resulting from a "tendering culture" that focuses on winning individual orders rather than on developing sound long-term relationships with clients (Tan, 1995). The main justifications for these undeveloped marketing strategies are that, the environment in which quarrying firms operated was turbulent and fluctuating.

There are approximately 41(forty one) active quarries spread along the Ndarugu valley serving the whole of Nairobi and the surrounding counties. The stones differ in colour and strength but they are highly substitutable. To strike a good rock therefore becomes a matter of chance, therefore a classic example of a differentiated oligopoly form of market structure. According to conceptual framework as shown by figure 1.1, quarry managers engage brokers directly to market their products for a fee especially when disadvantaged by emergence of poor quality rock and poor accessibility of quarries by the buyers.

The uniqueness of the stone quarrying and selling business has forced the quarry managers to embrace intermediaries. According to theoretical framework, producers and consumers of a commodity (or buyers and sellers of an asset) who wish to trade can choose between two competing types of intermediaries: "middlemen" (dealers/brokers) and "market makers - specialists" (Rust, 2003). However there is a modified version of Spulber's (1996) equilibrium search model with three types of agents: producers, consumers, and middlemen. In this model producers and

consumers cannot trade directly with each other and instead trade must be intermediated.

According to the literature reviewed, "Intermediary" is necessarily broad and covers, inter alia, brokers, independent agents and "tied" agents (Yusuf, 2010). The broker is a risk-averse agent who has an incentive to provide credible signals about his client's commodity preferences if the commission paid is related to the profitability of the business to the seller. A broker is therefore a middleman (in between two parties) concerned with negotiating, making bargains and establishing contacts between the two parties for the consideration of a commission. Studies have shown that brokers are usually thick skinned negotiators who weigh the pros and cons, blows hot and cold suggests and investigates before settling for the terms. According to the literature reviewed, producer- middlemen relations have been recorded in the late pre-colonial Africa, implying that brokerage business is not a new phenomenon.

According to the literature reviewed there is Mining and Minerals Bill, (2011) and the Environmental Act that are supposed to be adhered to however there is little conformity to these regulations.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Design

Research design is defined as the scheme, outline or plan that is used to generate answers to research problems (Orodho, 2003). Qualitative research focuses on phenomenon that occurs in natural setting or real world and recognizes that issues being studied have many dimensions and layers and are multifaceted. This research project had endeavoured to find out the impact of brokers in procuring and marketing of Juja quarries stones. This was done through seeking out opinions of the respondents about the phenomenon. The research design that was adopted in this research is descriptive survey design. Descriptive studies are concerned with finding out "what is" (Borg & Gall, 1989) and this study sees to describe the impact of brokers in marketing and procurement of quarried stones in Juja. This design does not seek to interfere with the status quo but rather explain its nature.

According to Mugenda and Mugenda (1999), descriptive study is probably the best method for researchers who are interested in collecting original data for the purpose of describing a population. Survey approach was employed since it enabled investigation to be made for tentative causal factors by collection and use of both quantitative and qualitative data. Survey approach is often used to assess thoughts, opinions, and feelings (Mwanje, 2001), thus this study adopted descriptive survey design. Critics of survey research method hold it to be a method which artificially forces respondents to formulate opinions masking the complexity of conflicting views and unconscious bases within each respondent. In spite of this opinion, survey research provides information which is fairly representative of the population under

study (Kioko, 2007).The unit of observation for this research was individual brokers, buyers and quarry managers while units of analysis were brokers, buyers and quarry managers as groups.

3.2 Locale of the Study

The study location was Juja area in Kiambu County, Kenya. In the area there were a total of 41 active quarries at the time. The area has a population of about 150 brokers dealing with brokerage of Juja quarries stones. All the quarries are either individually owned or corporate owned. For the purpose of this study only the quarries' managers, brokers and buyers were investigated. Juja area was selected because it's one of the areas exhibiting high levels of brokerage of quarry stones. The area is also accessible and familiar to the researcher; hence, data collection could not be hindered by the participants' resentment due to suspicion. Familiarity with the research locale helps in gaining acceptance (Karugu and Olela, 1993).

3.3 Target Population

The subjects in this study included quarry managers, buyers and brokers of stones in Juja quarries. Juja area has 41 active quarries. The study population consisted of 41 quarry managers as represented by the number of quarries in Juja area. There are 150 active brokers in the 41 active quarries, therefore the study population for the brokers category was 150. According to survey conducted by the researcher, it was observed that, each quarry received an average of 2 buyers of stones every day and thus the study population for the buyers category constituted of 82 in an active day.

3.4 Methodology

Data was collected using a guided research questionnaire administered to the sample population. Data was analyzed using descriptive statistics and presented in the form of frequency tables and percentage scores and pie charts. Stratified random sampling was used for this research. Stratified random sampling is used where we have population in different layers, categories or groups. Sample covers each layer. In this research the following were taken as layers: - Quarry managers, Brokers, and buyers of stones.

3.5 Sample and Sampling Procedure

Each of the three objectives were tested by having all the three categories of respondents by responding to the items in questionnaires. The researcher collected information from the total population of the quarry managers since it was possible for the researcher to collect data from that total population (Ogula, 2005) and it is higher than the minimum recommended proportion of 10% of the total population (Gay, 1992). The researcher selected the required number of the respondents from the category of brokers and buyers through purposive sampling. This sampling method involves deliberate selection of particular units of the universe to constitute a sample which represents the universe (Borg & Gall, 1989). This method is used for selecting elements for inclusion in the sample based on the ease of access and their immediate availability (Kothari, 2004). The researcher selected one broker from each quarry thus constituting a sample of 41. From the buyers of stones category the researcher selected two buyers from each quarry thus constituting a sample size of 82. Selection of the sample size was conducted within one day. Both the sample sizes of buyers and brokers of stones are more than the recommended minimum of 10% of the study

population as stipulated by Gay (1992). The summary of the sample sizes are presented in Table 3.1 below.

Table 3.1 Sample Population

Respondents Category	Population (N)	Sample (n)	Percentage (%)
Quarry Managers	41	41	100
Brokers of Juja Quarries' Stones	150	41	27
Buyers of Juja Quarries' Stones	(2 buyers x41)	82	100
Total	**273**	**164**	**60**

3.6 Research Instruments

The researcher used the questionnaire to obtain factual data and opinions in a structural framework from the respondents (Nisbet, 1970).A questionnaire was used because it was less expensive and required less time to administer (William, 1990).

3.6.1 Questionnaire

The questionnaire consisted of structured and unstructured open questions. Ambiguity in framing of the questions was avoided. Three sets of questionnaires were designed for the quarries managers, brokers and buyers of stones. Respondents filled in the questionnaires and returned to the researcher mainly by hand.

3.7 Validity of Research Instrument

Instrument validity is the degree to which an instrument is capable of gathering the anticipated information. It is the extent to which the instrument measures what is actually intended to measure. To determine the validity of the items in the

questionnaire and interview schedule, a pilot study was conducted to the respondents from each category of the subjects. Each item of the completed questionnaire and was discussed with those involved in the pilot study respectively in order to find out difficulty and ambiguity in the items and also establish whether there were any confusing items. The researcher also applied content validity to improve the validity of the questionnaire whereby experts' opinions was sought. This approach assumes that the instruments have a good detailed description of the content domain. Through the comments of experienced researchers, some items were modified while others were disregarded

3.8 Reliability of Research Instruments

Reliability of the research instruments was ascertained and suggestions were incorporated on how to improve them. The split-half method was be used to establish the coefficient of internal consistency of the questionnaires. This method involves splitting the statements (items) of a test into two halves (odd and even numbered items) (Gay, 1992). Then, the odd numbered and even numbered items are be placed in two subtests and the scores of the two subtests are computed for each individual and correlated using the Pearson's Product Moment Correlation Coefficient formulae. The obtained value (r) however represents reliability of only half of the test. In order to obtain reliability of the whole test, the Spearman Brown Prophecy formulae stated below is applied: Rx = 2r / 1+r where:, r is the reliability coefficient resulting from correlating scores of the odd and even numbered items for part of the test; and Rx is the reliability of the original (whole) test.

A test-retest method was used to determine reliability of the interview schedule. Test-retest involves administering the instrument twice to a group with similar characteristics to the subjects or research setting. Then the instrument items are improved depending on the extent to which the items are suitable to gather the required information when instruments are administered in the main study. This method ensured that the instrument gathered relatively the same information obtained in the first test when administered in the main study. This is due to the fact that ambiguous, difficult and unclear items could either be simplified or discarded altogether, or new items added to the instruments depending on the outcome of the first test.

3.9 Piloting

The aim will be to establish if the instruments are workable and develop ways of improving them. The researcher conducted piloting with one quarry manager, 2 brokers and 2 buyers of Juja quarries' stones. Piloting ensures that the questions are comprehensive, if instructions are clear or ambiguous, how long respondents take to complete questionnaire, if the respondents object about answering some questions and it also assists on how to analyse data collected. The subjects selected for piloting were not used in the main study.

3.10 Data Collection Procedure

Data for this research was collected from brokers, quarry managers and buyers. The data were secured by means of three sets of questionnaire for each group. Following the suggestions of many marketing research academicians an effort was made to avoid leading and ambiguous questions. Particular attention was given to the wording and

the sequence of questions while ensuring a professional style and format. The researcher enlisted services of two (2) research assistants to carry out the research. The research assistants were trained on how to administer the questionnaires and interviews. Data collection was done between February and March 2013.

A research permit was obtained and thereafter, the researcher paid a courtesy call to the quarries before the commencement of the study. The quarries' managers, the brokers and the buyers were visited to inform them of the forthcoming research exercise. The questionnaires were administered directly by the researcher and the two research assistants to the respondents. The questionnaires were then be personally collected by the researcher from the quarries' managers, brokers and the buyers of the quarries' stones after the respondents had completed filling them. The respondents were interviewed at their own convenient time by the researcher. The interviews took place at the respondent's convenient place. The face-to-face communication during the interview enhanced trust and confidence in seeking the required information, hence, the researcher was in a position to gather in-depth information about procurement and marketing of Juja quarries' stones.

3.10.1 Impact of brokers on price of building stones

Brokers were requested to indicate their sources of income and explain how they earned it. Specifically they were requested how they earned their income from buyers of stone and from sellers of stone. Respondents were then asked to indicate official and unofficial commission they earned from both the buyers and the sellers. Respondents were also asked to indicate and explain the techniques used to earn

unofficial commission. The purpose of these questions was to arrive at the mark up put by the brokers.

On a 5- point scale, ranging from strongly agree to strongly disagree quarry managers were asked to indicate whether they agree that brokers negatively affect prices of stones at the quarry sites. Quarry managers were also requested to indicate pricing of stones by filling in the table the office price and the broker price for the purpose of comparing.

3.10.2 Choice of building stones by the buyer at the quarries.

Quarry managers were requested to indicate whether they have prior knowledge of the quality of the stone in different rock strata before opening up the ground and the probability of getting poor quality stone. Managers were asked to describe the methods they use to test various strength variables such hardness, compression and tensile strength before selling. Managers were also to indicate the conditions that force them to involve brokers in marketing and selling of stones.

Between earning from the commissions and selling quality stones, brokers were asked to indicate their greatest motivating factor. Brokers were also asked to state how they ensure that they market and sell quality stone to the buyers. In the scale of 1-100, brokers were requested rate buyers knowledge on location of quarries and quality levels of various stones. Buyers were asked to state how they ensure that they have visited the quarries with the best stones and who guides them in locating such quarries. Buyers were asked to state who guides them on quality of stone both at the quarry and the construction site

3.10.3 Broker indispensability

Managers were asked to indicate whether they engage brokers in marketing and selling of stones from their quarries. Respondents were to explain social, economic and environmental conditions that force them to use of brokers in marketing and selling of stones. Equally managers were asked to state other statutory or legal conditions that make the use of brokers in marketing and selling of stones necessary. 4-point scale ranging from very important to not important was used to measure importance of brokers in marketing and selling of stones.

Buyers were asked to indicate whether they engage brokers in procuring of stones from the quarries. Respondents were to explain quarry site conditions and environment that requires the use of brokers in procuring of stones. Buyers were requested to the number of quarries they n any other role the brokers play in Equally managers were asked to state other statutory or legal conditions that require the use of brokers in marketing and selling of stones. 4-point scale ranging from very important to not important was used to measure importance of brokers among buyers.

Brokers were requested to indicate their relevance in the marketing and selling of stones on behalf of quarry managers and their relevance in the procurement of stones for or on behalf of the buyers. Respondents were to explain quarry site conditions and environment that requires the use of brokers in marketing and selling of stones for quarry managers and procurement of stones for the buyers. Equally brokers were asked to state other statutory or legal conditions that necessities their engagement by both the sellers and buyers.

3.11 Conclusion

Any research requires a research strategy to be executed effectively. A research strategy in essence comprises the logical steps that a researcher takes to arrive successfully at the conclusion of an inquiry. The present chapter outlined the research design and the methodology adopted for the research. The research design adopted was survey research while methodology included identifying the sample population, sample size, questionnaire design and identification variables.

The methodology in this research consisted the use of questionnaire as a research instrument for collection of data. The method of data analysis on the phenomena studied is also presented. The choice of a strategy is greatly influenced by the nature of the problem to be solved. The problem area and the problem statement formulated in this study determined the strategy used.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION OF FINDINGS

4.1 Introduction

Data collected from respondents was cleaned to remove incomplete information, coded and presented in tables ready for analysis. Data analysis was carried out using a statistical software package. The statistical package for social sciences (SPSS) was used to present the data in the form of frequency tables and graphical charts. The raw data received from the field was categorized into information that answered the researcher's research questions. The information was then summarized and statistics derived. The data was then subjected to descriptive analyses encompassing a range of both qualitative and quantitative treatments. Quantitative data was presented by use of tables, percentages, and frequencies. Spread sheets and SPSS computer applications were applied in data analysis.

Qualitative data is analysed by establishing the categories and themes, relationships/patterns and conclusions in line with the study objectives (Van Dalen, 1962). Descriptive analysis was used because it enabled the researcher to inspect the variables in their real world setting. Tabulation enabled the researcher to categorize the subjects in this research. The frequencies enhanced analysis of the continuous variables. Data was also presented in form of pie-charts and bar graphs where appropriate, and finally making inference about the whole population.

The response rate was 93% of the sample size that positively responded to the survey, while the rest either responded negatively or did not respond at all. The answers of the

survey were grouped for each type of information separately. Respondents were grouped into, brokers, quarry managers, and buyers. The researcher benefited greatly from insight obtained from brokers and the following statistics were drawn from the brokers.

4.2 Brokers and prices

This research is manly on how brokers influence prices of stones, choice of stones of the quarries by the buyers and that they are indispensable. Buyers and quarry managers are target of this research because their information can be used to collaborate that of brokers. It is therefore necessary to discern who brokers are in this context. Literature review has fully described the character of the broker. The data indicated that 75% of all brokers are male implying that the occupation is manly dominated by men as indicated by figure 4.1

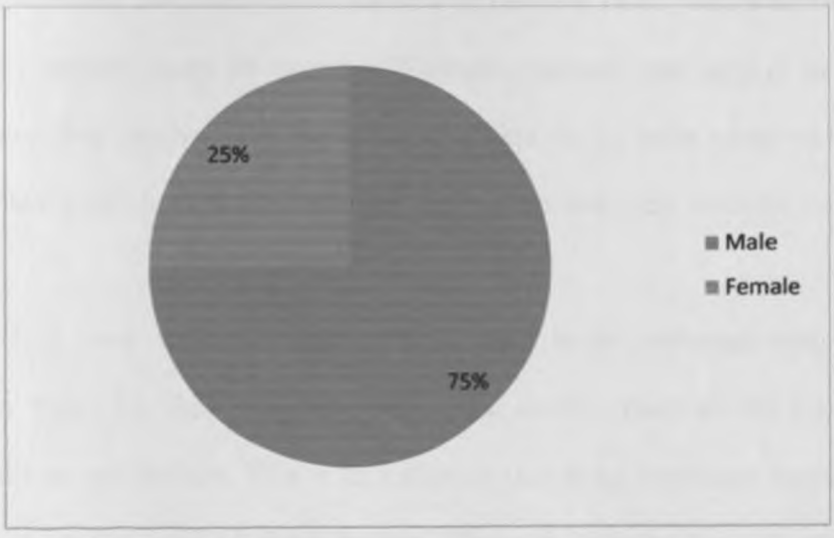

Figure 4.1: Gender of brokers in Juja quarries

Source: Collected data in the questionnaires

The data showed that 32% of the brokers were above 40 years of age as indicated by table 4.1 and figure 4.2 while76.5% of brokers are aged between 20-40 years of age. This shows that brokerage work at Juja quarries is not for very young or very old as it appears that the work is best for the strongest in the society.

Table 4.1: Age of brokers in Juja quarries

	Age group	Frequency	Percent	Cumulative Percent
Valid	20-25	6	15.0	15.0
	26-30	5	12.5	27.5
	31-35	10	25.0	52.5
	36-40	6	15.0	67.5
	above 40	13	32.5	100.0
	Total	40	100.0	

Source: Collected data in the questionnaires

55% of the brokers have been in this business for between 16-20 years which explains that it is a reliable source of income. All brokers indicated that there is an official commission they receive from the quarry managers on the sales made with above 50% of them indicating that they receive 3 shillings per stone sold from the managers.

Most brokers have worked for between 0-20 years in the brokerage business. As shown by figure 5.3, those who have worked for over 15 years are the majority at 55% of all the respondents. This is an indication that doing brokerage business is a lifelong career for most of these brokers. However, even as they all responded positively to this question, they admitted that they would not have responded positively if they were dealing with a buyer. Most likely, they would have concealed that fact. 97.5% of those brokers interviewed admitted that brokerage is their only or

main source of income. On who creates more income between brokers and quarry managers, brokers were torn in the middle, with 50% stating brokers earned more than the managers and vice versa.

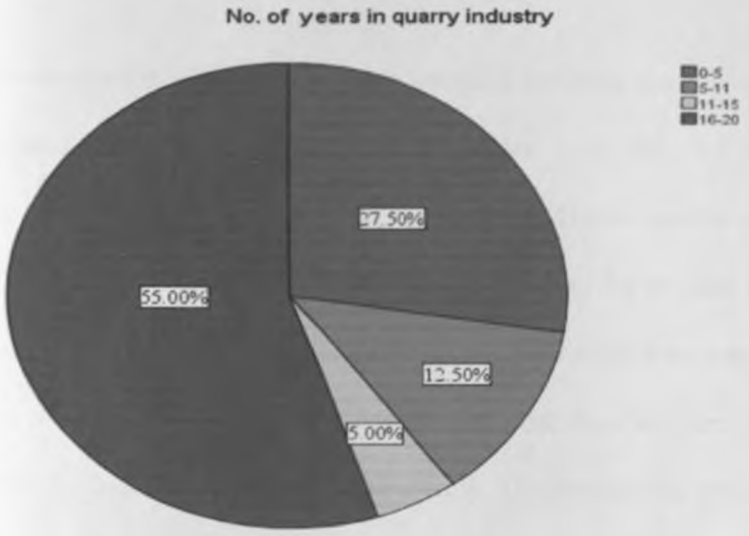

Figure 4.2: Number of years in quarry industry
Source: Collected data in the questionnaires

However it is important to note that such a response in mainly based on perception than on facts. Its common knowledge that the quarry managers are not likely to reveal the profits that the company makes to the brokers or an outsider. In their responses, they stated that brokers don't incur any expenditure in quarrying and transaction of stones while quarry managers have to lease out land, hire/buy the equipment, hire loaders etc.

On whether brokers conflict with managers especially on prices, 90% of brokers admitted that conflicts and friction are common. Usually when the buyers send brokers with money, brokers have used information asymmetry for adverse selection to hike prices of stones at the expense of the customers. Most often, the brokers put

high markup that managers feel cheated. Managers get the feeling that brokers are making too much money unfairly. Managers are uncomfortable when brokers exploit buyers. Most brokers admit that they are usually offered a commission of 3Ksh per stone sold by the sellers.

It was observed that, 100% of brokers admitted that they also strive to charge buyers commission without the knowledge of sellers with 90% of brokers admitting increasing the buying price by 5-10 Ksh per store. This is usually over and above the commission given to them by the sellers. According to the brokers, 60% of the buyers do not know how brokers make their income.95% of brokers admitted that in their choice of stones, they are mainly driven by the earnings they are likely to make and only 5% of brokers are driven by the quality. The brokers are mainly driven by how much they earn and the quality of stones comes second.

4.2.1 Cost Implication of the use of brokers

Brokers admitted to earning an average of 10 Kshs per stone being a total of commissions from both the buyers and quarry managers. This average earning per stone by the broker is arrived at the quarry manager reducing the price of the stone by Ksh3 and the broker raising the price of the stone by Ksh7while selling to the buyer. According to Institute of Quantity Surveyors of Kenya 2014 (IQSK 2014) the cost of machine dressed 'Ruiru' natural stone walling in Nairobi area per square meter is as follows: 100mm thick ;Kshs 1500, 150mm thick;Kshs 1600 and 200mm thick ;Kshs 1800 inclusive of 16% Value Added Tax (VAT).

The effective area of a single stone in a wall = 0.43x0.23

Therefore the number of stones in a square meter of a wall = 1÷ 0.43x0.23= 10 pcs

According to IQSK (2014), a 200mm thick stone costs Kshs 62 in Nairobi area (inclusive of brokerage fees)

Therefore the cost of in stones in a square meter of a wall = Kshs 62×10= Kshs 620

The % of the cost of stones with brokers in a square meter of a wall= Kshs 620/Kshs 1800×100=34.4%

Considering that the total mark up for brokers is an average of Kshs 10 per stone, without brokers the average cost of a stone in Nairobi would therefore cost; Khs. 62-10 =Ksh 52

Therefore the cost of in stones in a square meter of a wall without brokers would be = Kshs 52×10= Kshs 520

The % of the cost of stones without brokers in a square meter of a wall= Kshs 520/Kshs 1800×100=28.8%

Therefore brokers increase the cost of a square meter of a wall by 34.4%-28.8%=**5.6%**

4.3 Brokers and choice of stone

Brokers revealed that 90% of the buyers do not know the location of quarries which explains that the buyers are largely disadvantaged in the juja quarried stone market. 55% of brokers rated customer's knowledge on quarries location at between 1-2%. While 44% of brokers rated buyer's knowledge on quarry location at between 20%-40%.The results are as indicated in table 4.2.

Table 4.2: Engagement brokers in locating of quarrying sites

	Response choice	Frequency	Valid Percent	Cumulative Percent
Valid	YES	25	65	65
	NO	13	34	100
	Total	38	100.0	

Source: Collected data in the questionnaires

Respondents were asked whether they engaged brokers in the process of purchasing building stones. The responses are as shown in table 4.3.

Table 4.3: Engagement of brokers in the purchasing of the building stones

	Response choice	Frequency	Valid Percent	Cumulative Percent
Valid	yes	25	65.8	65.8
	no	13	34.2	100.0
	Total	38	100.0	

Source: Collected data in the questionnaires

66% of the buyers admitted to engaging brokers in the purchasing of building stones the 34% who indicated that they do not engage brokers could be due to ignorance. Brokers had indicated that a significant number of buyers do not discern them as brokers. This means that very few buyers are able to avoid brokers.

The buyers were asked to indicate whether they engaged brokers on the choice of the stone to be bought. The results are as shown in table 4.4.

Table 4.4: Engagement of brokers in choosing the stones to buy

	Response Choice	Frequency	Valid Percent	Cumulative Percent
Valid	yes	25	65.8	65.8
	no	13	34.2	100.0
	Total	38	100.0	

Source: Collected data in the questionnaires

The data shows that 65% of buyers admitted to involving brokers in the choice of stone to be bought from the quarries. This is the same percentage that stated that they engaged the services of brokers. It therefore shows that those who engage the brokers are likely to require their services for more than one activity. 34% of the respondents do not engage the brokers to choose the type of stone. It's important to note that some buyers engage brokers not knowing they are dealing with the brokers hence those that do not engage brokers knowingly are much fewer.

Table 4.5: Awareness of how the broker benefits out of buyers engagement

	Response Choice	Frequency	Valid Percent	Cumulative Percent
Valid	yes	13	34.2	34.2
	no	25	65.8	100.0
	Total	38	100.0	

Source: Collected data in the questionnaires

The results indicated that 66% of buyers were not aware of how brokers earn from their work. However 34% of the buyers indicated that they were aware of how the brokers benefit from the work they do at the quarries. This response corresponds with the first answer of buyers who did not engage brokers in their dealings with the quarries. This confirms that brokerage of stones in Juja quarries is covert and

shrouded in secrecy and those who are aware of the work of brokers rarely engage their services.

Table 4.6: Assurance of purchase of quality building stones from Juja quarries

	Response Choice	Frequency	Valid Percent	Cumulative Percent
Valid	Yes	36	94.7	100.0
	Missing	2	5.3	
Total		38	100.0	

Source: Collected data in the questionnaires

Of all those who answered the question, all the buyers are very keen on quality. It's important to note that although their main interest is quality they do not eventually achieve the objective due to their limited knowledge on quality and the fact that there are no materials testing department at the quarries. They are more likely to use visual appearance of the stones for quality assurance. Two respondents did not answer the questions.

4.4 Conditions that make broker services indispensable

Most buyers are at 74% agreed that the quarry terrain is rough, unsafe and insecure with 52% of them choosing to use brokers as a result. The results are as shown in tables 4.7.

Table 4.7:Views of buyers on whether Juja quarry sites are rough, dangerous and unsecure

	Response Choice	Frequency	Valid Percent	Cumulative Percent
Valid	Yes	31	73.8	73.8
	No	11	26.2	100.0
	Total	42	100.0	

Source: Collected data in the questionnaires

Views of the buyers on whether Juja quarry sites are rough, dangerous and unsecure are presented in Table 4.7. Majority of the buyers, constituting of 73.8% felt that the sites are rough, dangerous and unsecure whereas 26.2% felt they are not. This could justify the reasons why most buyers engage brokers in purchase and procurement of stones from Juja quarries.

Table 4.8: Whether buyers engage brokers to avoid risk of travelling to where quarries are

	Response Choice	Frequency	Percent	Cumulative Percent
Valid	no	2	4.8	4.8
	Others	18	42.9	47.6
	yes	22	52.4	100.0
	Total	42	100.0	

Source: Collected data in the questionnaires

The feedback on whether buyers engage brokers to avoid security risks of travelling to quarries sites, is give in Table 4.8 below. It was observed that 4.8% of the respondents don't engage brokers due to security reasons whereas 52.4% stated security issues as main reasons for engaging brokers in buying stones from Juja quarries. Consequently other respondents constituting of 42.9% gave other reasons which lead to engagement of brokers in procurement of stones. These reasons include the following among others; time factor, choice of quality, trust of brokers.

4.5 Number of years of Managers in Quarry Industry

From the responses, it shows that 52% of managers have been in the quarry industry for more than 10 years. Only less than 5 % have been in the industry for periods less than 5 years indicating that there is a high retention of workers in the quarry industry.

The results of the number of years they have been managers are as indicated in table 4.9.

4.6 Reasons why quarry managers use brokers

The results indicated in Table 4.9 shows that 67% of the managers use brokers to boost sales while a significant 33% indicated that they use brokers to facilitate tax evasions with only less than 5% for other reasons

Table 4.9: Reasons why quarry managers use brokers in marketing and selling of stones

	Reasons for using Brokers	Frequency	Valid Percent	Cumulative Percent
Valid	Others	2	4.8	4.8
	Tax evasion	12	28.6	33.3
	Boost sales	28	66.7	100.0
	Total	42	100.0	

Source: Collected data in the questionnaires

All managers indicated that they can sell any stone regardless of colour and hardness. 76% of managers strongly agreed that brokers are in a capacity to know the stone colour, hardness, and cost difference amongst various quarries. This is the knowledge that they utilize in convincing customers that they are knowledgeable by exploiting the information asymmetries in the building stones business.

4.7 Views of managers on Juja quarries

The views of managers on Juja quarries are presented in Table 4.10 below

Table 4.10: Views of managers on Juja quarries

Parameters	N	Minimum	Maximum	Mean	Std. Deviation
Specify the approximate distance of the quarry from Thika Super Highway (KM).	42	1.0	5.0	2.857	1.5072
Stone Colour	41	4.0	4.0	4.000	.0000
Are you aware of the stone colour and stone hardness before excavation	42	1.0	2.0	1.905	.2971
The brokers are aware of the stone colour, stone hardness and cost difference	40	1.0	4.0	1.650	.9753
The quality of the building stones sold is ensured.	42	1.0	4.0	3.143	.6466
KRA requirements are important in extraction process	42	1.0	4.0	2.643	.8211
All quarries must be insured against risk	42	1.0	2.0	1.667	.4771
Brokers form an important phase in the quarrying and selling chain.	42	1.0	3.0	1.381	.5389
Brokers influence the prices at quarries?	42	1.0	2.0	1.286	.4572
Brokers play critical role in getting potential customers and marketing	42	1.0	3.0	1.500	.7071
There should be a legal body formed to curb broker malpractices.	41	1.0	3.0	1.537	.8092
The prices of stones in the office are always constant.	41	1.0	3.0	2.585	.5906
The broker's prices reduce the total sales due to competition from neighboring quarries.	41	1.0	3.0	2.049	.4976
Quarrying business can be made better without brokers.	38	2.0	3.0	2.974	.1622

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Quarrying business can be made better without brokers.	38	2.0	3.0	2.974	.1622
Valid N (list wise)	35				

Source: Collected data in the questionnaires

Quarries are evenly distributed from 1km distance from Thika highway to more than 10km as shown by the responses of the managers. The average distance however is about 5-10 kilometers as indicated by the average of 2.857 which lies between the two distances. 95% of managers indicated that they are not in a capacity to know stone colour and hardness before excavation. This is indicted by the average of 1.905 of the answers as shown in table 4.10.The managers confirmed that there was no mechanism of testing the stone hardness before excavation as the quality of the stones may change with depth.

Most of the managers agreed that there is no quality assurance exercise done at the quarries. This is a major indictment of the sector as it shows that there is no assurance of quality for building stones leading to buildings being constructed with poor quality stones with its attendant risks. 66% of managers indicated that KRA requirements are not important in stone excavation despite the fact that the quarries are making profits meaning tax evasion is a real possibility. The responses indicated that 66% or an average of 2.643 of the responses have not fully complied with KRA requirements.

On insurance of quarries, 41.7% or an average of 1.667 out of a maximum of 4 agreed that all quarries should be insured against risk. This is an indication that most quarries are not insured despite the requirements under the OSHA Act making it mandatory for employers to provide insurance for employees. On average, managers agreed that brokers form an important phase in the marketing and selling of building stones with mean score of 1.381. This lies between strongly agree and agree with a standard deviation of 0.5 implying that very few managers dissented with the others. All the managers stated that brokers influenced the prices of the materials in the quarries with

an average score of 1.286.The same was observed with all the managers accepting that the brokers play a critical role in getting customers and marketing.

Despite the importance of brokers in the construction materials industry, all managers agreed that there should be a legal body formed to curb broker malpractices. Managers agreed that the prices keep on fluctuating depending on quality, demand, cost of extraction, colour and distance from the road.70% of managers agreed that they require brokers to market and sell stones especially when disadvantaged by such factors as quality, colour and distance from the highway. The result of interviews indicated that prices across the various quarries differ. It also emerged that all the managers disagreed with the observation that brokers are not an integral part of the construction materials industry and should be left to continue operating. This is despite the fact that they increase the costs of doing business by exploiting the information asymmetry within the construction materials industry.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

The study set out to accomplish the following objectives;

1. Determine the impact of brokers on price of building stones at the quarries
2. Establish the influence of brokers on the choice of building stone by the buyers at the quarries.
3. Establish reasons and conditions that make brokers apparently necessary to both the quarry managers and buyers of building stones.

5.1 Impact of brokers on price

Quarry managers admitted to having buyer price and broker price. Brokers are paid a commission of an average 3.00 shillings per stone sold by the quarry managers and they also get up to an average of 7.00 shillings per stone from the buyers. The commission rate to the broker is increased if there are difficulties in accessing the site or if the stones in the quarry are of very poor quality thereby increasing the price further up. Most brokers admitted that they are not satisfied with the commission rate that they are paid by the quarry managers and therefore they connive to gain more from the buyers mainly using dishonest methods thereby pushing the prices further up. Brokers earn when charging commission to the buyers than the official rate paid by the quarry managers hence pushing the final stone prices even further up.

5.2 Choice of stone

The research clearly established that there is no scientific way of testing the quality of stone in the Juja quarries. It is instructive to note that there are no materials testing

department at the quarries to ensure the quality of stone sold. Equally engineers are not always present when stones are being procured or when they arrive at the site, a condition which made buyers result to using brokers at the quarries and tradesmen at the construction sites for quality assurance. Brokers admitted to being driven solely by the economic gain in their choice of stone for the buyer. A broker will convince a buyer about the quality depending on how much he or she stands to gain from the transaction. Equally quarry managers admitted that they entice brokers with increased commission when faced with the problem of having poor quality stones. Brokers therefore deliberately convince the buyers to purchase poor quality stones if they stand to gain financially.

5.3 Indispensability of brokers in the Juja quarries

There are several factors that have ensured propagation of brokerage services in the Juja quarries. Firstly the nature of the market structure in Juja quarries is differentiated oligopoly as explained in the literature review. Unlike in perfect competition the research indicated that buyers do not have correct information on product differentiation, location, quality and price. Accessibility to most quarries is a major problem due to the long distances to be covered in the interior under rough and insecure terrain. The research established that there are no adequate signboards describing the locations of quarries in the interior. Further buyers would fear to venture deep interior due to the attendant security risks involved. Buyers therefore are not in a capacity to compare prices and quality of stones from different quarries. In contrast brokers have updated information on price, quality and location of every quarry, current qualities and prices.

Due to the risks involved in travelling to the interior most buyers are not willing to venture interior to shop for better prices and quality and they therefore choose to use the brokers for the procurement of stones. Buyers are therefore forced to use brokers to locate various quarries and select the stone required. It is noteworthy to state that brokers discloses the quarries and a type of stone depending on how much he stands to gain in terms of official and unofficial commission.

Quarry owners and managers are aware that there are problems of accessibility but are not willing to invest in the improvement of access roads due to the fact that quarry sites are very temporal and therefore raise the cost of stone extraction. Faced with these problems, quarry managers must engage brokers to do their marketing bid for them. It's the brokers who guide the buyers to where the quarries are. Immediately the buyer and broker are seen to arrive together, broker is assured of commission per every stone bought by the buyer whether the broker was involved in the negotiation or not. In some instances brokers just call the quarry managers to inform them of the details of the new buyer that they have sent to the quarry and they are paid the commission.

The tax evasion motive has also tremendously contributed to the reliance on brokers for most of the transactions. It is instructive to note that most quarrying companies are not voluntarily willing to comply with various tax and environmental regulations. Managers of quarries are usually very suspicious of new buyers lest they be Kenya Revenue Authority (KRA) or National Environmental Management Authority (NEMA) officials. KRA and NEMA officials are known to masquerade as buyers of stones only to arrest the managers for flouting tax and environmental rules. As a result

most quarrying company managers are more comfortable transacting with brokers whom they know and trust than new buyers of stones.

According to the research results any quarrying company can be faced with poor quality stone which must be sold to at least recover the cost of leasing the land. Promising a higher commission quarry managers usually engage brokers to market the poor quality stone. Brokers using their good negotiation skills are able to convince the buyers about suitability and appropriateness of quality and price even when it is not necessarily the case.

It is instructive to note that not all quarries use brokers for marketing of stones however brokers are able to infiltrate even such quarries by way of dishonesty. The organization structure of a quarrying site allows this dishonesty to succeed. With many activities going on at the same time in a quarry it is possible for a broker to disguise himself and impersonate a quarry manager. A broker impersonating as quarry manager is referred to as *Gathinieri* by other brokers. When buyers arrive at the quarry, they are introduced to Gathinieri by other brokers and loaders. *Gathinieri* now declares the price which is higher than the price on offer, receives the money from the buyer and pays the real quarry manager. The difference between the price offered by the company and that sold by *Gathinieri* becomes unofficial commission which is shared by all those who connived to misguide the buyer as to the real quarry manager.

5.4 Recommendations

Considering that information asymmetry is the main problem in the Juja quarries, effort must be made to provide factual information on; location of quarries, quality of

stones at each quarry and prices of various stones. This can be achieved through appropriate advertising marketing and promotional techniques. Quarrying companies should also invest in improving access routes to the quarrying sites. Also there should be a deliberate move towards reducing the role of brokers in the quarrying industry. National Construction Authority (NCA) as mandated by the National Construction Authority Bill 2011 Part II, subsection 5(2) a – h should ensure only quality stones leave the quarries.

5.5 Areas of Further Research

This study generally involved brokerage in the procurement and marketing of quarried stones from Juja quarries. It is recommended that a study be carried out to:

- Investigate brokerage of other construction materials like sand ballast.
- Establish the level of compliance with local revenue disclosures for tax purposes as these are the drivers of continued existence of brokers in the procurement of quarried stones in Juja.
- The level of compliance for quarried construction materials with the regulations in the building industry.

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APPENDICES

APPENDIX I: INTRODUCTION LETTER

Peter Njagi Githinji,
Department of Real Estate &
Construction, Management,
University of Nairobi

Dear Respondent

I am a postgraduate student of University of Nairobi. I would like to collaborate with you in identifying the impact of middlemen in marketing and procuring of quarried stones in Juja Quarries' in Kiambu County, Kenya. The goal of this project is to devise ways and come up with strategies of how marketing and procurement of quarried stones in Juja Quarries' can be enhanced without hurting the interest of both the buyer and the seller.

I sincerely request for your support through filling the questionnaire provided to you. The information you will give will assist highly in the above goal. The information provided will be treated with utmost confidentiality.

Your contribution and sincerity will be highly esteemed.

Thank you,

Signed---------- Date----------

Peter Njagi Githinji

APPENDIX II: QUARRIES' MANAGERS' QUESTIONNAIRE

Section A: Demographic Information

1. Name of the Quarry_____

2. Gender (tick) Male ☐ Female ☐

3. No. of years in quarry industry

   0-5 yrs ☐ 6 – 10yrs ☐ 11 -15yrs ☐ 16-20yrs ☐ 21 – 25yrs ☐ above 25yrs ☐

4. No. of years as a quarry manager

   0-5yrs ☐ 6-10yrs ☐ 11-15yrs ☐ 16 -20yrs ☐ 21-25yrs ☐ above 25yrs ☐

5. Specify the approximate distance of the quarry from Thika Super Highway (KM).

   Please select one.

   0-1 km ☐ 1-2km ☐ 2-5km ☐ 5-10km ☐ above 5km ☐

6. Building stone characteristics you deal with in your quarries (tick appropriately in the following table)

S/no.	Stone Characteristics	Specific Characteristics	(√) or (x)
1.	Stone Colour	Grey	
		White	
		Brown	
		All the above	
2.	Stone Hardness	Hard	
		Medium	
		Soft	
		All the above	

7. Are you aware of the stone colour and stone hardness before excavation

   Yes ☐ No ☐

8. The brokers are aware of the stone colour, stone hardness and cost difference

   Strongly agree ( ) agree ( ) disagree ( ) strongly disagree ( )

9. Briefly explain importance of stone colour, stone hardness to the buyers

   ---

   ---

10. The quality of the building stones sold is tested.

    Strongly agree ( ) agree ( ) disagree ( ) strongly disagree ( )

11. KRA requirements are important in extraction process

    Strongly agree ( ) agree ( ) disagree ( ) strongly disagree ( )

12. Has your quarry complied with KRA requirements? (tick) Yes ☐ No ☐

13. All quarries must be insured against risk

    Strongly agree ( ) agree ( ) disagree ( ) strongly disagree ( )

14. Has your quarry been insured against risk? (tick) Yes ☐ No ☐

15. a. Do you engage brokers in selling of building stones? Yes ☐ No ☐

b. Give reasons for the above question

a). ----------

b). ----------

c). ----------

d). ----------

e). ----------

16. Brokers form an important phase in the quarrying and selling chain.

Strongly agree ( ) agree ( ) disagree ( ) strongly disagree ( )

17. Brokers influence the prices at quarries?

Strongly agree ( ) agree ( ) disagree ( ) strongly disagree ( )

18. Brokers play critical role in getting potential customers and marketing

Strongly agree ( ) agree ( ) disagree ( ) strongly disagree ( )

19. There should be a legal body formed to curb broker malpractices.

Strongly agree ( ) agree ( ) disagree ( ) strongly disagree ( )

20. What benefits do you derive from brokers in selling building stones in your quarry? List below

a). ----------

b). ----------

c). ----------

d). ----------

21. What problems do you encounter when engaging brokers in selling building stones in your quarry? List below

a). ----------

b). ----------

c). ----------

d). ----------

e). ----------

22. The prices of stones in the office are always constant.

Strongly agree ( ) agree ( ) disagree ( ) strongly disagree ( )

23. The broker's prices reduce the total sales due to competition from neighboring quarries.

Strongly agree ( ) agree ( ) disagree ( ) strongly disagree ( )

24. Pricing of stones in your quarry (please fill in the following table)

Sno	Price Category	Price (Ksh)
1.	Office price	
2.	Brokers Price	

25. Quarrying business can be made better without brokers.

Strongly agree ( ) agree ( ) disagree ( ) strongly disagree ( )

26. Please state the possible interventions on how marketing and procurement of Juja quarry stones can be enhanced. State below

a). ----------

b). ----------

c). ----------

APPENDIX III: BROKERS OF JUJA QUARRIES' STONES

QUESTIONNAIRE

1. Gender (tick) Male ☐ Female ☐
2. Age below 20years ( ), 20-25 years ( ), 26-30 years ( ), 31-35years ( ), above 40years ( ),
3. No. of years in quarry industry

   0-5yrs ☐ 6-10yrs ☐ 11-15yrs ☐ 16-20yrs ☐ 21-25yrs ☐ above 25yrs ☐
4. Do you do stone brokerage business in Juja quarries Yes ☐ No ☐
5. Explain how you get your customers or the marketing strategies normally used

   ---

   ---
6. Which are the sources of your income

   Quarrying business ( ), other activities ( ), relatives ( ).
7. Who creates more cash/who benefits more from quarrying?

   Brokers ( ), managers/quarry owners ( ), excavators
8. Do you face conflicts in prices between brokers and managers

   Yes ( ), no ( )

9. How do you earn income in your brokerage work?

a). Stone buyers----------

---

b). Quarry manager ----------

---

10. Official Commissions given per stone bought or sold (please fill in the following table)

	Category	**Ksh per stone**
	Buyers	
	sellers	

11. Unofficial commission or income earned through dishonesty.

	Category	**Ksh per stone**
	Buyers	
	sellers	

12. Explain the techniques used to achieve the unofficial income

---

---

13. Is the customer (the buyer) aware of how you make your income? Yes ☐ No ☐

14. In the scale of 1-100 rate your customer's knowledge on previous question. Tick appropriately.

1-20% ( ), 20-40% ( ), 40-60% ( ), 60-80%, ( ), 80-100% ( ),

15. How do you ensure quality of the building stones you sell to your customers? Specify below

a). ---

b). ---

c). ---

d). ---

e). ---

16. What drives you most

a). Selling quality stone ☐

b). Increasing earnings through brokerage ☐

17. In the scale of 1-100 rate your customer's knowledge on location of quarries

1-20% ☐

20-40% ☐

40-60% ☐

60-80% ☐

80-100% ☐

18. In the scale of 1-100 rate your customer's knowledge on quality of stones

1-20% ☐

20-40% ☐

40-60% ☐

60-80% ☐

80-100% ☐

19. What strategies can be put in place to enhance marketing and procurement of Juja quarry stones?

a). ----------

b). ----------

c). ----------

d). ----------

20. What is the quarries owners/managers response about your work?

a). ----------

b). ----------

c). ----------

d). ----------

APPENDIX IV: BUYERS OF JUJA QUARRIES' STONES QUESTIONNAIRE

1. Gender (tick) Male ☐ Female ☐

2. Do you engage brokers in the deciding the quarry to buy from? Specify

   Yes ☐ No ☐

   Give reasons

   a). ----------

   b). ----------

   c). ----------

   d). ----------

   e). ----------

   f). ----------

3. Do you engage brokers in choosing the type and colour of stone to buy.

   Yes ☐ No ☐

   Give reasons

   a) ----------

   b) ----------

   c) ----------

   d) ----------

   e) ----------

   f) ----------

4. Are you aware of how the broker benefits out of your engagement?

   Yes ☐ No ☐

5. How do you pay the broker for the services rendered

   Specify below

   a). ----------

   b). ----------

   c). ----------

6. What strategies can be put in place to enhance marketing and procurement of Juja quarry stones?

   a) ----------

   b) ----------

   c) ----------

   d) ----------

7. Which are the conditions that force you to use brokers in the procurement of stones in Juja quarries?

   a) ----------

   b) ----------

   c) ----------

   d) ----------

APPENDIX V: LETTER OF AUTHORIZATION TO DO RESEARCH

UNIVERSITY OF NAIROBI
DEPARTMENT OF REAL ESTATE AND CONSTRUCTION MANAGEMENT
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November 23, 2009

To Whom It May Concern

RE: GITHINJI PETER NJAGI – B50/7720/2006

The above-named is a bonafide student registered for a Master's degree course in Construction Management.

He is now in the stage of collecting data and finalising his project work.

Please allow him access to enable him complete his studies.

CHAIRMAN
DEPARTMENT OF REAL ESTATE
AND CONSTRUCTION MANAGEMENT
UNIVERSITY OF NAIROBI

Dr. M.A. Swazuri, Ph.D. OGW.
Chairman
Dept. of Real Estate & Construction Management