EFFICIENT VALUE CHAIN MANAGEMENT AND FIRM SURVIVAL: THE CASE STUDY OF AYENSU STARCH COMPANY LIMITED (ASCo).

By

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DECLARATION

I hereby declare that this thesis is an original work carried out for the award of a Masters' of Philosophy in Business Administration (Marketing Option) and that, to the best of my knowledge, it contains no materials previously published by another person or material which has been accepted for the award of any other degree of the university except where due acknowledgement has been made in the text.

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DEDICATION

This research is dedicated to my family and the KNUST-DANIDA Roots and Tuber Value Chain Project.

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LIST OF ABBREVIATIONS

ASCo	Ayensu Starch Company Limited
ATC	Average Total Cost
ATR	Average Total Revenue
OP/R	Operating Expenses to Revenue Ratio
PEI	Production Efficiency Index
SPSS	Statistical Package for Social Sciences
UNIDO	United Nations Industrial Development Organisation
VCM	Value Chain Management

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ABSTRACT

The competitiveness of manufacturing activities in the modern business world enjoins the actors of all value adding activities to operate efficiently in order to maximize the output of their operating activities. The success of these value adding activities is influenced by the interaction and strength of relationships that exist between suppliers downstream, the firm as well as customers upstream. The study was on the efficient value chain management and firm survival using Ayensu Starch Company Value Chain as a case study. The total population of farmers, customers and management used for the survey was 570 out of which a sample of 260 was selected, broken down into 250 farmers, 2 management members and 8 customers. The researcher adopted stratified and judgmental sampling technique in selecting the respondents and also used structured questionnaires and interview guides as data collection tools. Data collected from the field was analysed in forms of descriptive statistics, regression analysis and methods of efficiency measurement. The results showed that ASCo has suffered severe production shortfalls in the past five (5) years due to inadequate supply of raw materials, inefficient plant, machinery and equipment to undertake processing of raw cassava. Also, the efficiency in production was low for the period 2010-2013 cropping season whilst that of 2014 was high. Furthermore, factors such as main objective for cassava cultivation, cropping system, major point of sale, pest/disease control and main source of funds influence survival of ASCo from the farmers' perspective. Again, the operating experience resulting from years of operation, state-of-the-art technology, relationship with suppliers, relationship with customers as well as research and development impact on survival of the firm. Finally, production, technological and marketing constraints affect efficiency of the players in ASCo's value chain therefore the researcher recommends that ASCo should pay competitive prices for cassava in order to guarantee regular and promote supply and also ASCo should engage in a private-public partnership so as to help inject substantial funds into its operations.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Today, supply chain management is evolving into value chain management, which recognizes the importance of demand in addition to supply (Marzian et al., 2003). Thus, not only the product but also the entire chain of business activities from raw materials through to the final point of consumption should be effectively managed to deliver value to the end-consumer (Christopher, 2005). Describing the phenomenon, the United Nations Industrial Development Organisation (UNIDO, 2009) views it as the churning out a final product or service by passing it through all the intermediary levels of production (which involves the blending of physical conversion and the contribution of various actors) to aid in the delivery of the final product or service and its disposal after consumption. This series of activities has made most manufacturers very proactive in forging a harmonious working relationship with suppliers of their input due to the complexities associated with the products they manufacture (Kumar and Liu, 2005) since the value chain concept primarily focuses on the interactions and the association between a firm, its key input suppliers and customers who patronise the firm's finished product.

Efficient value chain management requires mutually sharing risks and rewards that yield a competitive advantage (Cooper and Ellram, 1993) and this should happen over the long term period since it is important for long-term focus and cooperation among the value chain members (Cooper et al. 1997 and Tyndall et al. 1998). In addition, to effectively manage the players in a firm's value chain given the current competitive business

environment, Bowersox and Closs (1996) argue that firms must extend their integration of behaviours by expanding their activities that help shape the integration of such behaviours to incorporate their dealings with suppliers and customers. Directly related to this integrated behavior, is the extent to which information is shared mutually among value chain members especially for planning and monitoring processes (Tyndall et al. 1998).

The Global Logistics Research Team at Michigan State University (1995) defines information sharing as the willingness to make strategic and tactical data available to other members of the vale chain. Information sharing between and among players of the value chain is important. Sharing open information on key issues relating to levels of inventory, forecasts, strategies in sales promotion and other general strategies in marketing that limits the distortion in arrangements with partners in supply and results achieved through performance (Salcedo and Grackin 2000) eventually enhances the survival of a firm.

Although this is seen as key, the works of Helo (2005) and Pujawan (2004) stipulate that intermittent changes in product formulation, absence of constant and timely sharing of vital information, development of new products, upgrades in existing technology, turnover of staff, disputes between management and labour as well as threats from emerging competing firms create room for uncertainties regarding management of a value chain.

Cooperation among the members of the value chain is required for effective Value Chain Management (VCM) (Tyndall et al. 1998) since this similar or complementary cooperation is a set of activities which are coordinated and undertaken by firms in a relationship of a business nature aimed at producing outcomes which are mutually

superior or activities that generate singular outcomes that are expected to occur over a given time period (Anderson and Narus, 1990).

This form of cooperation that occurs at different managerial levels in the organisation involves coordination of cross-functional activities among members of the value chain (Cooper et al., 1997) thus it is not limited to the present needs of the firm's current dealings.

Furthermore, according to Trelevan (1987), it is a joint action to design systems that enhance development of quality control mechanisms as well as effective systems of delivery. Therefore, it is imperative that all players in a value chain possess a primary objective of delivering to meet customers' needs. A form of policy integration that has developed is the avoidance of redundancy and possible overlap since relationships that are of successful nature is aimed at integrating the entire value chain policy (Lassar and Zinn, 1995) but this integration of policy can only be possible if cultures and techniques in management that exist among members of the supply chain are compatible.

Thus working effectively with the suppliers and other value chain players can derive benefits such as competitiveness in cost, swift response to customers' orders and flexibility in operations (Kumar and Liu, 2005; Gunasekaran and Ngai, 2007; Steiner, 2008). It is therefore not surprising that currently firms have entered into important strategic partnership with their suppliers since their contribution to a firm's performance is enormous (Sarkis et al., 2007; Silva, 2008 and Wu, 2009). In general the acknowledgement of the fact that for every value chain management activity to succeed, it is dependent on certain key factors which are innovation in product and process, scheduling of work processes into a cycle time, servicing, profile of the organisation,

effective management of production process and traceability notwithstanding the challenge of miscommunication which most manufacturers view an instrumental challenge that hinders the efficient management of value chains (Hilletofth, 2009) and thus possess a threat to survival of firms.

By convention therefore, the phenomenon provides a useful analytical framework for market and sub-sector analysis and describes productive processes around a product from the provision of inputs to production, transportation, transformation, processing, marketing, trading and retailing to final consumption (International Relief and Development, 2009). It further provides a holistic framework which can encompass a number of different development activities for the purpose of fostering agricultural growth (UNIDO, 2009).

1.2 Problem Statement

The government of Ghana in 2001 embarked on an integrated programme as part of the Presidential Special Initiative on cassava. The government in order to champion this course set up the Ayensu Starch Company (ASCo) in July, 2003 with the mandate to add value to cassava by creating a market for the cassava growers, developing cassava into starch and allied products to serve both domestic and international markets (companies in the paper, textile, food, pharmaceutical, oil drilling and petrochemical industries) as well as creating job avenues for the youth. ASCo has over the years suffered intermittent setbacks that have greatly threatened its survival and that of its suppliers (cassava farmers) and customers. This has resulted in the company's inability to process an initial target of 22,000 metric tonnes of cassava starch per annum which is equivalent to 70% of its installed capacity. Currently, the factory is crippled with productivity, management, sup-

ply and technical challenges that compelled the workers to lay down their tools some months ago (News Report, 2014) due to the inability of management to efficiently manage the actors of the value chain. Several studies conducted on value chain management showed a positive relationship between efficient value chain management and survival of firms. Ketchen et al. (2008) conducted a research that attempted to develop the best value chain practices that can help firms realize their best value chain practices and found out that firms can survive if their practices leverage strategic value chain management, agility, adaptability and alignment which does not simply create low costs, but also maximizes the total value added to the customer. Another study on value chain was carried out by Mwirigi (2012) to interrogate the key value chain activities that characterized the sea food industry along the Kenyan Coastline and found out that problems such as lack of adequate value adding facilities, insufficient or fairly weak marketing channels and weak value chain nodes retard firm survival. In the case of ASCo, no study has been done since its inception to know the level of efficiency of ASCo in order to improve its value chain to ensure survival. It is on the backdrop of this that this study is being done to understand the company's nature of production, investigate the inefficiencies of all the value chain players as well as ascertain the loopholes that accounts for these inefficiencies in the value chain not ignoring the marketing, production, supply and technological challenges that hinder the survival of ASCo.

1.3 Objectives of the study

1. To examine the production and supply levels of Ayensu Starch Company Limited.
2. To measure the efficiency of production of Ayensu Starch Company Limited.

3. To determine the factors that contributes to the survival of Ayensu Starch Company Limited
4. To identify the production, technology and marketing constraints of Ayensu Starch Company Limited.

1.4 Research Questions

1. What are the production and supply levels of Ayensu Starch Company Limited?
2. What is the efficiency of production at Ayensu Starch Company Limited?
3. What factors contribute to the survival of Ayensu Starch Company Limited?
4. What are the production, technology and marketing constraints of Ayensu Starch Company Limited?

1.5 Significance of the Study

This piece of work will offer management and other players in the value chain of ASCo, the best strategy to adopt in order to increase productivity, penetrate and compete favourably with companies in both the local and international markets.

The study will also help management of ASCo address the challenges of other value chain actors such as farmers and customers so as to proffer suitable solutions to resolving them.

Furthermore, this research will guide policy-makers, government officials and researchers in identifying the specific policy actions that could be undertaken to overcome the constraints among the value chain players and encourage the internationalization of ASCo's products.

Finally, its academic relevance cannot be overlooked since it will offer a repository for future researches by academicians such as researchers, students, consultants, teachers and others with interest in the subject area.

1.6 Scope of the Study

This research intends to assess the efficient value chain management and firm survival using ASCo as a case study. It accessed the various value chain players in the entire value chain framework of the company. The scope of the study was therefore limited to cassava farmers, management and customers of ASCo.

1.7 Methodology

The research takes the form of a case study focusing on the Ayensu Starch Company and its value chain activities. Case study is an ideal methodology when a holistic, in-depth investigation is needed (Feagin et al, 1991). The population for the study which includes cassava farmers (out growers and block), management and customers are estimated at 570.

Stratified and convenience sampling approaches will be used to select respondents. A total of 250 farmers will be selected using a stratified sampling method while a judgmental sampling method would be used to select to 8 customers as well as 2 members of management.

1.8 Limitations of the study

Since the study was on understanding the interaction between the value chain players of ASCo, it was limited to the respondents who make up the actors of the chain therefore the responses will be limited to only these actors.

1.9 Organization of the Study

The study will be grouped into five distinct chapters. The introductory chapter will consist of an insight into the background to the study, discussion of the research statement outlining the objectives of the research as well as research questions posed, significance/relevance of the study, the scope of the study, a brief overview of research methodology, limitations likewise organisation of the study. Chapter Two will review available literature on efficiency management of a value chain, firm survival and constraints in managing a value chain. Chapter Three will outline the breakdown of elements in the methodology used for study. It will spell out information on the population, sample and methods used to select samples, research design and the data collection instruments to be used and an explanation of how these chosen methods will assist in realizing the set objectives of the research. Chapter Four will cover analysis, presentation and interpretation of the data. The concluding chapter will constitute the summary, conclusions and recommendations centered on the results arrived at by the researcher.

CHAPTER TWO

LITERATUE REVIEW

2.0 Introduction

This chapter reviews existing literature about the subject matter and covers areas such as value chain analysis, value chain relationships, efficiency measurement, value chain challenges and firm survival.

2.1 Definition of Value Chain

Value chain analysis has its historical origins in sectorial types of analysis, such as those elucidated by the French approach (Raikes et al., 2000) whose main idea is to highlight and map out specific physical commodity flows within a sector, including key stakeholders, though usually confining the analysis to domestic markets and ignoring dynamic adjustments to sector characteristics and relationships (Raikes et al., 2000).

Porter (1980) defined it as a representation of a firm's value-adding activities, based on its pricing strategy and cost structure. Porter's approach highlights actual and potential areas of competitive advantage for the firm which suggests that individual firms each have their own value chains that are embedded in value networks, each of which have different functions within an industry or sector that influence other actors in the network. John and Govindarajan (1993) also describe the value chain in broader terms as the value-creating activities all the way from basic raw material sources from component suppliers through to the ultimate end-use product delivered into the final consumers' hands. This description views the firm as part of an overall chain of value-creating processes. The industry value chain starts with the value-creating processes of suppliers, who provide the basic raw

materials and components. It continues with the value-creating processes of different classes of buyers or end-use consumers, and culminates in the disposal and recycling of materials.

According to Hopkins (2009), an environment of transacting businesses activities that permits the developing of sustainable competitive advantage ensures the distinctiveness of value chain thinking. This is due to the fact that effective information sharing between and among firms/institutions in a chain results in making better decisions especially in allocating resources. Also, by virtue of the chain acting in as a partnership, Fearne (2009) explains that these systems are developed and preferences of consumers fundamentally define products and this makes these products extremely difficult to be imitated by industry competitors. This form of thinking is derived only from an efficient management of a value chain since according to Kaplinsky and Morris (2001), the main components of managing a value chain are pursuance of a common vision by virtue of strategies that are aligned, well designed processes and structures, trust and confidence, effective flow of information, consented efforts at continuous improvement, identification of customers' value preposition in a product/service and the commitment to create these values at every level of the chain.

The resultant effect of these is the mutual benefits that are derived from the value flow along and among the actors in the chain from creation to realisation of such values envisaged by actors. It is also important to note that such an alignment which is of a strategic nature requires a common plan among the value chain partners in order to execute it across and among key functions (Fearne et al., 2008). Value chain primarily

concerns itself with waste elimination and the flow of materials efficiently which are activities that are dependent on the strength of the interrelationship between and among the entities (Taylor, 2005), with an extension of the scope to measure the contribution of suppliers and service providers to value creation and waste generation.

The structure of a value chain includes all the firms in the chain and can be characterized in terms of five elements. These are end market opportunities, business and enabling environment, vertical linkages, horizontal linkages and supporting markets. The end-markets are the starting point of the value chain analysis. End-markets are people, not a location and they determine characteristics such as price, quality, quantity and timing of a successful product or service (Dunn et al., 2006). Chains also operate in a business enabling environment that can be all at once global, national and local and include norms and customs, laws, regulations, policies, international trade agreements and public infrastructure (roads and electricity).

Linkages can be vertical or horizontal, not only do the vertical linkages between firms at different levels of the value chain are critical for moving a product or service to the end market, but also their cooperation reflects the quality of relationships among vertically linked firms up and down the value chain. More efficient transactions among firms that are vertically related in a value chain increase the competitiveness of the entire industry as Odeyale (2007) and FAO (2004) pointed out that when a vertically integrated market develops there are three clusters of producers which are those who are already competitive, those that can be helped to make it, and those who will never make it, who will either remain in the informal market or need other sources of income. But horizontal linkages (formal and informal) between firms at all levels in a value chain can reduce

transaction costs, create economies of scale and contribute to the increased efficiency and competitiveness of an industry. Such linkages also facilitate collective learning and risk sharing, while increasing the potential for upgrading (Dunn et al., 2006).

2.2 Value addition among actors in a value chain

The difference between cost of input and value of output according to Hines (2004) is referred as value addition since the added value in a value chain comprises the addition of tangible goods and provision of intangible services supplied. This refers to extra creation of value at a particular production stage by essential factors of production such as adding value in transforming raw material, cost of labour and capital goods, addition of intangible value using intellectual capital and relationship exchange (building relationships of collaborative nature). Resources that add value in a value chain are the physical processes and unseen capabilities of an organisation (Varadarajan and Cunningham, 1995).

2.2.1 Tangible Value-added and Intangible Value-added

The assessment of physical value added in price transfer has been discussed by Baxter and Matear (2004) as generally developed. In-depth discussion of this assessment of the tangible value added in price transfer is thereby unnecessary since the measurement techniques already exist for computing the physical part (Baxter and Matear, 2004). Since intangible resources have no physical presence, difficulties emanates from its measurement when attaching intrinsic monetary value to the invisible constituents in the transfer.

In the context of a value chain, relational capital refers to the essence of strategic alliances, collaborations in relationships, partnerships in business and relationships that

enhance knowledge (Rylatt, 2003) and firms participate actively in order to add value and create competitive advantage.

An intangible asset which is intellectual asset of firms includes: knowledge, adding experience and information value to the physical products as well as processes (Johnson, 2002). The importance of strategic alliances, collaborative relationships, partnerships in business and relationships with enhanced knowledge (Rylatt, 2003) is described by relational capital and this is mostly used by firms to gain competitive edge and also add value. Five (5) stages of relational capital were described by Wilson (1995) which included one for creation of value. He stated that value creation results in accomplishment of shared goals, addition of non-retrievable investments, and adaptations related to products and processes which are specific to relationships. Together with strengthening cooperation (Baxter and Matear, 2004) and commitment, the structure through which value is created is provided. Intangible parts of the value chain and transfer pricing strategies must be accounted for since intangible assets are linked to the future performance of the current as well as the future value addition. The measurement of those intangible is easily done, thus the framework of measurement is needed so as to provide guidance on the effective use and manage the use of the intangible resources (Cassel et al. 2000).

2.3 Building Relationships in a value chain

Successful value chain management rests on relationships since they are seen as the most important success factors in managing value chains efficiently. Successful value chains are therefore built on the strengths of these relationships which among other are Commitment Trust Cooperation, Mutual Goals, Interdependence and Power, Performance

Satisfaction, Structural Bonds, Comparison Level of the Alternatives, Adaptation, Non-Retrievable Investments, Shared Technology and Social Bonds.

2.3.1 Commitment

Commitment is the most common dependent variable used in buyer-seller relationship studies (Anderson and Weitz 1990; Moorman et al. 1992) since it is a phenomenon that is essential in distinguishing between those who stays and those that leaves (Mummalaneni, 1987) and a wish to further this relationship and earnestly work to guarantee its continuity. According to Dwyer et al., (1987), commitment connotes an integral or clear sign between associates to continue a relationship between and among them. Similarly, Moorman et al., (1992) define commitment as a lasting wish to sustain a treasured association. Commitment denotes significance of the relationship to the associates and a desire to keep the relationship into the future. Hardwick and Ford (1986) posit that future benefits to the partners underpin commitment as they concluded that it is a dire component in determining how long a relationship will last.

2.3.2 Trust

Trust is a major ideal block for relationship building and thus is involved in most relationship models. Most definitions of trust comprise a belief that one party in the relationship will act to the benefit of the other. Moorman et al., (1992) define trust as the inclination to be dependent on on a give-and-take partner in whom one has sureness. Anderson and Weitz (1990) is also of the view that trust is comes to play when a party have faith that its needs will be satisfied in the future by activities of the other party. Furthermore, Dwyer, et al., (1987) defines trust as the anticipation one party has of

another in a relationship towards coordination, to live up to responsibilities and to tug its weight in the relationship. Finally, Schurr and Ozanne (1985) assert that trust is the faith that a party's assurance is dependable and a party will live up to his/her duties in an exchange relationship.

The theoretical validation for the definitions above of trust is vital in the marketing sphere and centered upon common sense (Williamson, 1981). It is worth mentioning that the addition of trust as a variable does not always turn out as expected (Anderson and Narus 1990, Han and Wilson 1993, Ganesan 1994) and this may be part of the strain in defining trust within a study. In that respect, Anderson and Narus (1990) suggested that, perceptions of value chain actors' trust in a working relationship, is often measured on how much the actors trust each partner at present. Thus, period is only one of numerous components that needed to be accounted for when used as a variable in association study.

2.3.3 Cooperation

Anderson and Narus (1990) view cooperation as comparable or matching synchronized activities used by organizations in synergetic relationships to attain common results or particular aftermaths with estimated correspondence over a period. Morgan and Hunt (1994) appear to consent to the above definition but carry on to add by accentuating the hands-on feature of cooperation against being forced to take inter-reliant actions. The relation that exist between cooperation on one hand and commitment on the other, ends in supportive conduct permitting the smooth flow of the partnership's activities thereby making it possible for both parties get the gains that emanate from the relationship.

2.3.4 Mutual Goals

The idea of mutual goals is perceived to be the point that goals shared by associates can only be achieved by way of action been shared and the preservation of the relationship. These shared goals offer a solid motive for association prolongation as Wilson et al. (1994) propose that mutual goals impact performance satisfaction which, in turn, sways the level of commitment to the relationship. Common values are comparable but expansive concept which Morgan and Hunt (1994) define as the degree to which associates have common views about what conducts, objectives and guidelines are key, insignificant, suitable or unsuitable, and correct or wrong. Even though the broader conception of communal ethics has a number of appeals, it appears too comprehensive for efficient operationalization. Standards are the rules by which values are operationalized. Standards vary per approved conduct in the direction of joint versus singular goals. Individual goals create norms of behavioral competition while; interpersonal give-and-take rules are founded based on the belief of backing of concern, fundamentally suggesting a behavior of stewardship that are intended to improve the complete welfare of the association. Most probably, mutual goals buoy up mutually, affinity of interest and stewardship behavior that will bring about attaining the shared goals. Perchance it is not difficult to gauge the amount of similarity in goals of associates as compared to measuring norms and values (Heide and John, 1992).

2.3.5 Interdependence and Power

Interdependence and power disparity are significant variables of relationship. The power of the purchaser is carefully linked to the association between the parties in a relationship (Anderson and Narus, 1990, Anderson et al., 1987, Heide and John 1988, Dwyer et al.,

1987, Ganesan 1994). Anderson and Weitz (1990) defined power disparity as the capability of a party to make the other do what they usually would not do. Power inequity is openly linked to the extent of a party's dependency on another. Power and dependency are central concerns in customary and interpersonal research thus both purchasers/vendors often see the need to increase inter reliance on the other (Han, Wilson and Dant 1993).

2.3.6 Performance Satisfaction

Performance satisfaction is a vital variable in defining business relationships since associates, particularly vendors need to convey great level of gratification on the rudimentary components of the commercial deal. Purchasers must satiate a party to a business's necessities or they risk being sidelined. Performance satisfaction is thus defined as the point to which the business deal satisfy the expectations in performance of a party which comprises both explicit performance of product and non-product qualities (Taylor, 1994).

2.3.7 Structural Bonds

The concept of structural bonds is the course of powers that produce inhibitions to the closure of the relationship. While singular concepts (non-retrievable investments, mutual technology and adaptations) incline to one or the other to fortify/deteriorate a relationship, their relations may be bigger as compared to the totality of their components in producing a force to keep an affiliation organised. Structural bonds grow with time as the level of the investments, versions and shared technology grows till a time when it becomes very challenging to let go a relationship. Firms possessing extraordinary levels of structural bonding were established to have a greater commitment level to the endurance of a

relationship than organizations with lesser levels of structural bonding (Han and Wilson, 1993).

2.3.8 Comparison Level of the Alternatives

Anderson and Narus (1990) define the comparison level of alternatives as the value of the result obtainable from the best party in an existing relationship. They posit that the measure of the quality of dependency on a party is seen in the aftermath when compared with options. Reliance in a relationship will be little when it involves extraordinary quality partners, but if the contrast level is little, a partner will not be likely to walk out of the relationship since the substitute partners are not as attractive as the current partner (Anderson and Narus 1990; Han and Wilson 1993).

2.3.9 Adaptation

Adaptation ensues when a partner in a relationship modifies its procedures or the thing swapped to put up with the other party (Han and Wilson, 1993). Further, Hallen, et al., (1991) established that both the purchaser and vendor adapt to suit each other as they believe that such behavior will differ throughout the duration of their association. During the initial phases, it is all about nurturing trust, and in the advanced phase it increases and strengthens the relationship. Adaptations incline to tie the purchaser and vendor in a close association and generate obstacles to prevent entrance by a rival supplier (Hallen, et al., 1991).

2.3.10 Non-Retrievable Investments

Non-retrievable investments are defined as the investment a party puts into a relationship by way of committing resources. These investments such as capital injections, training, and equipment are not retrievable should the relationship cease. It is not the presence of these investments, rather the quantum at play that generates reluctance among the parties to let go a relationship. This reluctance is connected to the transaction specific investments defined by Williamson (1981) which is based on the assumption that a partner's non-retrievable investments may be at risk if proper safety measures are not put in place to prevent abuse by the other party.

2.3.11 Shared Technology

Shared technology is the extent to which a party identifies with the technological contribution of another. It can include technology at product level such as networking of computer systems. Shared technology has been established to put pressure on developmental stages of relationship of technology but certainly it adds to a durable relationship when the technology becomes operational (Vlosky and Wilson, 1994). Han and Wilson (1993) also report that technology adds to swelling the commitment to the relationship.

2.3.12 Social Bonds

Social psychologists have used social bonding to study alliances, sensual relationships, family and group relations (McCall 1970; Turner 1970; Johnson 1982). Individual social bonds mature via personal social relations as persons may cultivate sturdy subjective relationships which will be likely to hold together a relationship. Mummalaneni and

Wilson (1991) found that purchasers and vendors who have a solid subjective relationship are extra dedicated to sustaining the relationship as compared to socially less attached parties. In a more intricate purchasing circumstance, Han and Wilson (1993) established that bonding socially did not add to purchaser-vendor commitment since social bonding is seen as the degree of joint subjective alliance and penchant common to the buyer and seller.

2.4 Customer Costs Affected by Supplier Relationships

There are three types of customer costs affected by supplier relationships. They are "direct product costs, acquisition costs, and operations costs" (Cespedes 1995 and Noordewier, et al. 1990). Whereas most of the definitive procurement literature and economic theory focus on the price paid for a product (Kotler 1994), research in procuring (Ellram and Siferd 1993), logistics (Cavinato, 1992; Robeson and Copacino 1994), and transaction cost economics (Noordewier, et al. 1990) study different categories of costs involved in obtaining products. Furthermore, studies in manufacturing (Hill, 1994) and quality (Hiam 1993 and Rust, et al. 1994) propose that supply quality and supplier relationships can affect operational costs. The three (3) types of costs are further clarified below:

Direct product cost: This is the real price the customer is charged by supplier for the products. Since this cost is the easiest to measure, it receives the most consideration from business purchasers and vendors (Zenz, 1994).

Acquisition costs: These are defined as costs pertaining to procuring and keeping products from a specific supplier. They consist of expenditures related to "ordering, delivering, and storing products, as well as the expense of monitoring supplier performance and

coordinating and communicating with the supplier". Minimizing such costs is of primary concern in purchasing and logistics practice (Ellram, 1996).

Operations costs: These are integral expenditures of the client firm's main business. In a sector like manufacturing, such costs comprise overheads for research and development, manufacturing and downtime, and internal coordination (Gyrna, 1988a). Quality and activity-based costing have switched attention to how supplier relationships affect those expenses combined with direct product, acquisition, and operations costs form the client firm costs affected by supplier relationships (Crosby 1979; Gyma 1988b).

2.5 Customer relationships in a value chain

By directing the growth of a long-lasting relationship between the company and its end customers, relationship marketing seeks the gratification of the following three key aims: drawing customers, attaining the faithfulness of current customers and rebranding the company's image (Dumitrescu, L. and Apostu C, 2009). Attaining the faithfulness of current customers is a process which adopts a differentiation and a distinct analysis of the customer relationship stages. To formulate strategic and effective recommendations for each of these stages, the concept of "life cycle" in the area of the customer relationships is necessary. Therefore, three customer life cycles are noteworthy: "the customer life length cycle, the customer episode cycle and the customer relationship cycle" (Stauss, 2000).

In this view, recognizing the contributing factors on which building customer relationship strategy, starts with solving the ensuing three key problems which are; recognizing the stages of the three life cycles, operating the concepts of satisfaction, faithfulness and

allegiance and finally segmenting the market based on the relationship between satisfaction and loyalty.

2.5.1 Ways of building customer relationships in a value chain

From the 1970's, relationship marketing scholars instigated investigations into exchange procedure that existed over a period and were founded on network relations, in a given social setting, buoy up co-operative partnerships among purchasers and vendors (Hakansson and Osteberg, 1975; Ford, 1980; Hakansson, 1982). Studies of market relations have identified other variables, adding to trust, that are a part of the most steady and strong relationships. Among others, definite research has been done into the following: "commitment, stability, interaction, power, influence, dependence, reciprocity and co-operation". Of utmost prominence as far as the study of customer behaviour is concerned are commitment, reciprocity and cooperation (Turnbull and Valla, 1986).

Morgan and Hunt (1994) in their view acknowledge trust and perceive it to mean the extent to which customers and organisations share similar values (congruence of value); the level to which aims are in a relationship (congruence of goal/objective), all valuation of all benefits earned as a result of the relationship, in addition to how interruptions in the relationship will cost the relationship. Interchange and co-operation then impact trust and commitment, likewise contingent on the complementarity of power and reliance (Stern and El Ansary, 1992; Bucklin and Sengupta, 1993).

In building cooperation among partners, long term relationships are very important since this is built around trust. These aspects have been an overly studied discipline since it delves into the alliances between firms and partnership. Attitudes of cooperation rest on the levels of satisfaction gained in the course of dealings (Anderson and Narus, 1984 and

1990). Co-operative attitude has been made known to drive adopting of non-opportunistic behaviours, or reasonable behaviours not considered to take advantage of short-term self-interest, on the foundation of give-and-take future behaviour anticipated by the partner (Anderson and Weitz, 1989; Morh and Speckman, 1994; Ganesan, 1994; Kumar, 1996). Relationship has been linked to Gruen (1995) as well as to satisfaction which is deduced from the perception about equity that emanates during the process of exchange.

He theorized there is a significant reduction in risk of opportunistic behaviour through the how equity is perceived and how the consolidation in commitment by the partners towards the relationship. In the domain of relationship marketing, diverse models recommend the designation of purchasing behaviour from the viewpoint depicted by the relationship in a life cycle. Few writers uphold the fact that although their empirical confirmation around constructs on relationship and factors that determine them as well as the end results are determined by the nature of a relationship at a specific period of time thus accepting a changing viewpoint that makes it likely to well comprehend the purchasing behavior as well as the growth within the relationship (Ford, 1980 and 1988; Dwyer, et al., 1987; Fontenot and Wilson, 1997; Iacobucci and Zerrillo, 1997).

A recognized model that backs this observation is the five stages (consequently condensed to four) developed by Ford (1980). The five stages life cycle developed include: “the pre-relation stage, which involved gathering involvement and assessing the components that could be developed from the relationship; the exploration stage, a level where some tangible and intangible investments are needed to undertake experimentation in exchange process during the course of the relationship; the development stage, is explains the height of reciprocity in the entire process of learning and investing; the commitment or stability

stage adopts the routines associated with exchange and finally the final stage is devoted to management of the interactions where uncertainties are minimized and sanctions applied to deter interruptions that may exist in the relationship.

Similar to Ford (1980), Dwyer et al., (1987) too developed a five-stage model of the life cycle in which he put out as: “awareness, exploration, expansion, commitment, and dissolution”. The key variance concerning the two models is the dissolution phase of the relationship, which they sustain is time and again characterised by one-sided pronouncements, contrasting the other stages which necessitate give-and-take attitudes and behaviours that have a tendency to be synchronized.

An appraisal of the authors who have recommended models of the relationship life cycle is found in a study by Iacobucci and Zerrillo (1997). They give additional tentative evidence of the behaviours occurring in the growth of the relationship, and explicitly of the role of relational networks which the actors in a given association can set in motion. Among the numerous offerings they study, the authors highlight the novelty of the model proposed by a social psychologist, Tuckman (1965), who examined the underlying forces of interpersonal relationships and brought attention to the circumstances for moving from one stage of the cycle to the next. Tuckman (1965) posited the role of conflicts at the early state and his theory has been authenticated by the tests of Iacobucci and Zerrillo (1977), which shows the development course of dyadic relationships, defined by checking stages which take the form of possible conflicts in the initial state. It is from the positive determination of these skirmishes that relationships are strengthened, and move on to succeeding stages.

2.6 Importance of Value Chains

In the present worldwide vibrant markets, small and big firms alike are regularly met with the tests of business value chains management (Blanchard, 2008). Operative business value chains point to groundbreaking ability to impact timely, product distributions and cost-effective processes (Hoehn, 2003; Huang et al., 2009). The long term value chain integrates the connections between a company and its suppliers and clients. For the supplier pespective, many firms have developed more pre-emptive habit in working together with their partners (Kumar and Liu, 2005). Given the need of equilibrium amid cost effectiveness, client awareness, operational flexibility and supervisory agreements in industrial health and surroundings; most manufacturers have chosen to collaborate more carefully with their suppliers (Kumar and Liu, 2005; Gunasekaran and Ngai, 2007). Again, notwithstanding the magnitude (small or large) of a partner firm, supplier management at the present time signifies an important task that should be brought into line with the company's strategic goals (Pagell and Krause, 2002; Steiner, 2008).

Suppliers have progressively become a vital strategic partner because of their effects on a company's short and long term achievements (Rungtusanatham et al., 2003; Sarkis et al., 2007). Thus, if a supplier fails to offer deliver services timely, this will likely lead to poor customer services and will subsequently add cost to an entire value chain, especially in aviation, electronics, and automotive industries (Blanchard, 2008). At the same time, when developing new products, a great deal of consideration must be given to a supplier's ability to come up with a new part on-time with a required volume and quality (Silva, 2008).

According to Blanchard (2008), the significance of business value chains continues to strengthen due to the progressively shorter product life cycles. Controlling a value chain management efficiently shows a firm's competence of manufacturing products and distributing them in a timely manner. In a broad-spectrum, effective business value can end in enhanced cost-effective operations in a firm (Hoehn, 2003; Huang et al., 2009), therefore according to Blanchard (2008), the value chain management has turn out to be further significant in the present day businesses owing to worldwide sourcing and customers.

2.7 Efficiency Measurement

Efficiency is mostly seen as the ability to avoid wasting materials, energy, efforts, money and time in doing something or in producing a desired result. In light of this, the efficiency was measured using the cost and returns approach where the costs incurred in the farmers' cropping activities was compared to the returns generated in order to estimate the returns or loss incurred. The literature therefore review studies conducted by some researchers using this approach.

2.7.1 Cost and returns analysis approach as a of measurement of Efficiency

The costs and returns analysis has been widely used in research studies to measure the efficiency of productive activities as evident in the research by Iheanacho (2000) who employed cost-returns analysis to estimate cost of production and returns for farmers in the Borno State of Nigeria who are into millet based cropping system. Consequently, Hill et al. (2001) and Yusuf et al. (2008) employed it in the study of profitability in incremental generic promotion of dairy products in Australia and determination of the

profitability of production of Egusi melon in Okahi local Government area in the Kogi State. The latter discovered that this form of cropping system contributes the most to gross margin, increases the mixture of crops and reduces the level of gross margin but this finding was contrary to that of Haruna (2008), who used the same analysis to investigate the components of profitability of cassava crops among farmers in Kaduna State, precisely in the Jama'a local government area. His work found out that, the cassava alone generated the highest revenue but produced the least gross margin when measured with outputs of the mixed cropping system.

Umoh (2006) in estimating the profitability of urban farming discovered that proceeds from farming in an urban area is inadequate for the sustenance of an average farmer. In another study, by Yusuf et al. (2010) the technique was used in measuring the profitability of cultivating improved variety of maize in the Sabon Gari Local Government of the Kaduna State and concluded that there are high levels of profitability in the cultivation of improved variety of maize. Finally in separate studies, Musa et al. (2010) and Jabo et al. (2010) employed this technique in determining the level of profitability of some crop production activities. Whilst the former applied it to the study of marketing soya beans in the Kuje area council of Abuja, the latter used it to determine the profitability of storage of cowpea by comparing proceeds from selling yields from chemical and non-chemical methods and concluded that more profit is generated from using chemicals than the use of non-chemicals although the two methods were found to yield profits.

In spite of the reliability in using the findings from the use of this technique, there are few major problems that hinder the profitability assessment thus according to Bernard (2003) are: the inability to reveal the relative importance of each unit of inputs used in production

and also since it is uses money as the basic unit of measurement, it is location bound and applicable to only specific locations therefore cannot be varied.

2.8 Efficiency measurement of a value chain

Performance appraisal is tremendously significant therefore companies using performance measurement are more probable to attain leadership positions in their industry and are nearly twice as likely to handle a major alteration effectively (Wisner et al., 2004). Today, business performance is appraised not only in terms of a lone business unit but reasonably the entire value chain. Performance measurement of the entire value chain is a lot more tough and intricate likened to the performance measurement of a lone business unit. When handling a value chain, to one side from the challenging multiple performance procedures problem, evaluating the performance of numerous levels, e.g., suppliers, manufacturers, retailers and distributors further complicates the matter. Fundamentally, there are two key complications in value chain performance measurement, which are the actuality of multiple measures that describe the performance of each member, for which the data must be attained and also the presence of intermediary measures among them, e.g., the production from the upstream can become the input to the downstream which further confounds the performance assessment. Efficacy is thus a very significant aspect of growth in production particularly in emerging agricultural markets, where resources are scanty and prospects for developing and embracing better technologies are declining. Such economies can profit from efficiency studies which show that it is conceivable to increase productivity by improving efficiency devoid of growing the resource base or developing new technologies. Increasing productivity and output of small farmers would

not only bring about upsurge in their incomes and food security, but also arouse the rest of the economy and add to broad-based food security and poverty mitigation (Lipton, 2005).

2.9 Firm survival

Much exertion has been used in describing firm survival and industry dynamics (Agarwal and Gort 2002; Dunne et al. 1988; Klepper and Simons 1997; Klepper and Thompson 2006). Although innovation features conspicuously in case studies of industry advancement, logical analysis of the issue has nose-dived in accounting for the intricacy of the innovation process. The distinctive line of thought embraced in most studies of firm survival is that firms that strive to gain competitive advantage in the market place are most likely to survive since they are able to successfully establish and maintain a strong hold of activities in the market (Bruderl et al. 1992; Wagner 1999). Though there is some amount of veracity in this line of argument, it only tells a side of the story as it disregards the fact that innovation, especially new-to-the-world innovation, is exclusive to this success.

In the works of Cefis and Marsili (2005), to discover evidence of an innovation premium which is the increase in survival time due to successful innovation. In order to comprehend whether innovation actually does increase the probability of firm survival, both in positive aspect and downside risks linked with innovative activity should be correctly accounted for. Part of the strain in appreciating the multifaceted relationship between firm innovation and survival lies in the fact that ineffective innovative activity is difficult to discern. In that regard, learning-by-doing and capabilities as proxied in diverse studies by firm age (Agarwal and Gort 2002), “initial endowments” (Dunne et al. 1988; Agarwal and Gort 2002), “prior experience” (Bruderl et al., 1992; Klepper 2002; Klepper

and Simons 2000; Thompson 2005), "the parent company" (Caroll et al. 1996), and "firm-level heterogeneity" (Audretsch 1995b; Caves 1998) have been established to have an affirmative effect on survival. More definitely, capabilities and skills of employees as at the time of entering the market have also been revealed to have long-lasting effects on survival (Bruderl et al., 1992; Baldwin and Rafiquzzaman 1995; Thompson 2005). In certain cases, first-mover advantages in a new technological area have been insightful (Klepper and Simons 1997) but survival rates has also been revealed to differ according to pre-entry experience and entry time (Bayus and Agarwal 2006).

On a positive note, Cockburn and Wagner (2006) found that "current internet-related IPO-firms were more probable to survive if they held registered patents, after controlling for age, venture-capital backing, financial characteristics and stock market conditions". Perez and Castillejo (2004) found a positive relation between Research and Development (R&D) expenditure and existence but only for companies in most manufacturing industries. Whilst, Ortega et al., (2005) also found that dichotomous product and process innovation had positive effects on small-firm survival, other studies were more ambiguous, finding no relationship, a negative one or a mixture (Wagner 1999; Audretsch and Mahmood 1995; Audretsch and Lehmann 2004; Segarra and Callejon 2002). More interesting findings include Bayus and Agarwal (2006) who found that it is only once the technological course is recognized that being an innovative start-up firm confirms a higher likelihood of survival. In initial stages of development when the trajectory is less clear, it can be a drawback to be an autonomous start-up firm. Audretsch (1995) found that survival rates for small firms vary contrariwise with the level of innovation in their industry: "more innovative industries have higher neo-natal death rates than less

innovative industries. However, for those that survive beyond the first few years, survival is positively associated with the innovative intensity of the industry''.

2.10 Value chain challenges

One of the main tests in handling supply chains for most manufacturers is how to evade miscommunication (Zhao et al., 2001; Hilletofth, 2009). According to Helo (2005), regular product changes, lack of continuous communication and information sharing, new product developments, technology upgrades, staff turnovers, labor and management disputes, and emerging competitors are considered as the sources of the value-chain uncertainty. This uncertainty destabilizes a firm's performance and ability for client satisfaction. As a result, juxtaposing internal operations (IO) with suppliers has been one of the many options taken during the past decade (Rungtusanatham et al., 2003; Sarkis et al., 2007; Wu, 2009). To guarantee better business value chains, manufacturers tend to work further closely with their customers (Collin and Lorenzin, 2006) as a result sharing information between customers and manufacturers reduces in cost and be more effective (Hoehn, 2003). Some specific productions, technological and marketing related challenges faced in value chains are discussed below:

2.10.1 Production constraints in a value chain

The principal concept underpinning maintainable production aims to manufacture products using scarce resources and causing negligible pollution. Lean principles as envisioned by Womack and Jones (1996) highlight the significance of constantly refining production processes by concentrating on eradicating wastes. These not only aid in quality improvement, waste reduction and increased market share; but they also have the extra

advantage of being environment-friendly (de Ron, 1996). In this client centric era, it turn out to be vital to offer highly personalized products at mass production prices while decreasing the design-to-market times through swift manufacturing, firms that take a rounded systems methodology according to Udah (2010) in the of management operations using lean principles, dexterity concepts and viable production practices continue to remain economically feasible and effective at probing into fresher markets. They use productivity and innovative methods to save resources, take full advantage of consumption ratio of product to resource and prolonging the life of the product.

Turning off unwanted machines automatically in manufacturing processes can be reduce energy consumption (Mouzon et al. 2007) by means of multi-objective optimization techniques that take into concern the speed at which parts arrive at the machine and the warm-up times linked with each machine. One way to take full advantage of utilization ratio of product to resource is to have elastic and reconfigurable products which can be used in multiple applications. This “principle of modularity” is the key concept behind bulk customization (Pine, 1993). The ability to take apart and get back together products as needed is key to make the product more adaptable.

Recycling is desirable as compared to remanufacturing as parts are being reused. Making use of used parts or products though presents a quality and dependability issue (Anityasari, and Kaebernick, 2008; Rusinko, 2008). The reuse of products/parts faces some issues such as technological life of parts. In sectors where technological developments ensue at a fast pace, the off age parts might be outmoded thus preventing their reuse. For those parts that can in fact be used again, obtainability and dependability are important properties to be assessed. Obtainability is shows the extent of how well the

part is able to carry out its function and dependability measures the possibility of the part working adequately over a period of time (Rusinko, 2008).

2.10.2 Technology Systems

As companies start effecting viable practices, it is imperative to view the whole system as one interconnected unit. The diverse methods such as lean manufacturing, quality control and regulatory standards have to be entirely incorporated into one single workable management system (Rusinko, 2008) which emphases on the whole value chain. Recreation models produced using separate event simulation concepts (Heilala et al. 2008) help envisage the whole manufacturing system and examine possible environmental influence on the up-to-date system design bring about thus enabling designers and engineers to remake the system to increase its efficiency. Information systems can be efficiently used to uninterruptedly observe the organization behavior in terms of resource usage, waste generation emission levels and production output. A smart manufacturing system (Nagel and Tomiyama, 2004) uses the data gathered to rapidly respond to set itself back on the sustainable path.

2.10.3 Marketing challenges

The increased quest for quality in the global marketplace has created pressure on manufacturers to maintain greater marketing schemes and quality criteria (Muthiah, 2006). Ellis (2005) felt that marketing practices are the best forecaster of business performance as there is a solid relation between marketing practices and overall business performance. Marketing mix is amalgamation of the product, price, place and promotion activities. Upon understanding their customer needs which enable them to serve

customers better than competitors, organizations develop their marketing mix programme. Designing appropriate marketing programmes, bringing together the resources and guiding of all programmes and efforts are the key areas of concern for firms. The marketing department efficiency rest on not only how it is organized but also on how well its personnels are chosen and trained. Recent trends in the marketing practices have affected the running of companies (Dutta, 1989). Some conveyed concern that manufacturers have nothing to do with marketing, whereas others felt that it was not given due standing, acknowledgment, or resource by industry (Sivan and and Murthy, 1999) consequently firms in the relaxed era have to comprehend the developing trends in several areas of marketing though charting out marketing mix policies.

It is worthy of note that firms are principally not doing well on the marketing front following the lack of suitable marketing approaches since in the era of globalization these firms have to contend with medium, large and foreign companies as they are facing intense rivalry directly or indirectly from these companies which according to Chaston (1997) are crucial causes of the botch of small firms. More and more customers are becoming influential due to accessible product ranges and negotiating powers which are generating rigid rivalry in the local and foreign markets. Therefore, due to amplified rivalry there is need to choose suitable strategies in the marketing mix (product, price, place and promotion) for the accomplishment of organization and to continue to be operational and competitive in the markets.

Product Mix

The customer derives key value from the product. Product is the item which eventually gets swapped because customer wants the product and firm wants cash from client to remain in business. Making a choice of product to manufacture is grounded on the longstanding factor and on the lack of research geared towards marketing. Beginning with the manufacturing strategy, further devotion is required to the way in which quality of product, flexibility of processes, delivery reliability and manufacturing cost influence the firm's business (Meijboom and Bart, 1997).

The client is enticed to the company because of product or services. Substandard quality and outmoded products will no longer aid in persistence. The products manufactured by diverse sized units contrast in terms of features and total performance. The choice of sizes/procedures of production must be made among the sizes/techniques which are closest to ideal ones, bearing in mind the direction in which product is envisaged to move in future. The small-scale sector should recognize the area where small industry does not have first-rate competition from large industry in market place (Sandesra, 1988). A significant component of product strategy is new product development with new product range and product line. Firms need to change the out-of-date products with new product design, new wrapper look, good quality, if possible branded product. In modern era the developing issues in product managing such as technology, branding, brand building and growing trend for foreign products should be attached with the help of reasonable tools and strategies. Brand building exertions aid the organization to convey the assurances to customer throughout all company departments, mediators and suppliers (Ghodeswar, 2008). In modern era consumers favor low cost goods with better quality (Nag, 2000).

Price Mix

The accomplishment in marketing rests on the valuing strategies embraced by the companies because customer develops sturdy link between price and quality. Pricing policies are targeted at growing market share therefore if the product is costly, consumers will not patronise but if prices are modest it has better chance of being sold swiftly**.** Pricing makes up one of the key complications of marketing management. Pricing being a vital part of marketing produces proceeds, while the other three Ps are linked to cost (Shanker and Vijendranath, 1997). Therefore companies need to be very cautious about pricing decisions, and the products should be obtainable at extremely competitive prices after doing relative market analysis thus clear cut policies linking to discount and allowances are essential to meet the pricing challenges.

Promotion Mix

By promotional methods target customers are made mindful of the presence of product and other associated features and benefits of the product. Modern day organizations cope with a multifaceted marketing communication system. As consumers from time to time position products in their minds in a way completely unpremeditated by manufacturers as information sifted and image generated by advertising might differ from product characteristics. The company communicates with its intermediaries, patrons and various publics. Thus, the promotional mix entails key tools such as publicizing, sales promotion, personal selling, public relation and others. Apart from these publicity methods, advertising via mobiles is an innovative and customer centred approach to reach potential clients. It comprises publicity in through short message service (sms), messaging service, mobile alerts, and multimedia among others. Using mobile phone to advertise can be cost

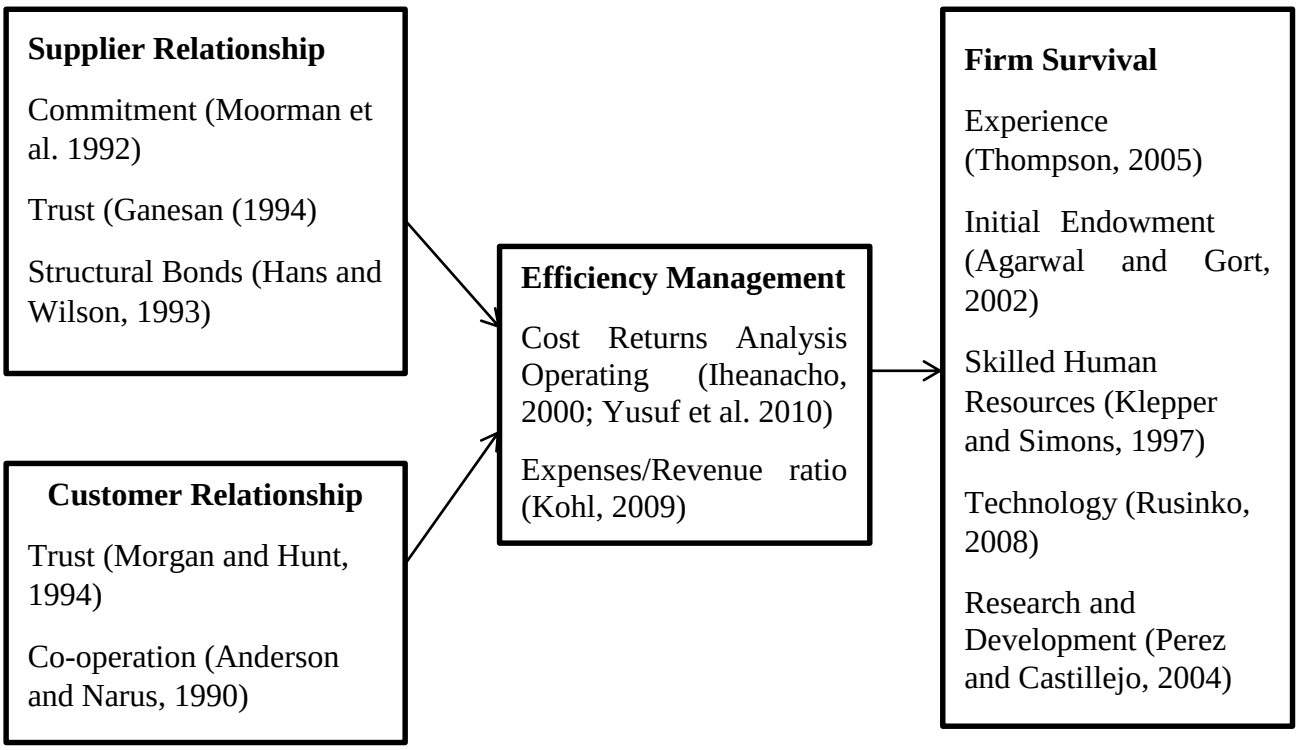
saving, essay to update target group and aids in instant response which in the end aids in brand recall and brand interactivity (Labh, 2008). Usually, the company makes its initial contact with client via its promotional exertions. Using the right promotional apparatuses and methods would benefit the organization to place its product in the target market.

Place Mix

The spreading mix stands for the identical agreement for the even flow of goods and services from manufacturer to client. The products should be made obtainable at the exact time in the accurate quantity and at the right place. Place denotes organizational decisions concerning site of outlet, mode of transportation and inventory level to be kept. The use of intermediaries mostly goes down to their greater efficiency in making goods extensively obtainable and near to target markets. Market mediators via their associates, knowledge, specialty and scale of operation, give the company more than it can generally accomplish on its own. Thus firms have to agree on the use of diverse networks in transporting the goods to consumers (Nagayya, 2005).

2.11 Conceptual Framework of the study

Figure 2.1 Value Chain of ASCo



Source: Researcher's Own Construct, 2015

The framework depicts the interaction between the members of the value chain of ASCo. It is evident that in value chains, relationships exist to strengthen the importance actors attach to their individual activities. In the operations of ASCo, relationships are formed and strengthened with suppliers through commitment (Moorman et al. 1992), trust (Ganesan; Dwyer at al. 1987) and building of structural bonds (Hans and Wilson. 1993). Commitment here is defined by Moorman et al. (1992) as a lasting desire to sustain a relationship valued by partners and this implies the importance the partners attach to the relationship and their intention for it to last into the future. Also, trust is described by Ganesan (1994) as the fulfillment of a party's obligations in a relationship based on reliability of the other party's intention to honour a promise while Hans and Wilson

(1993) is of the view that higher structural bonding among firms denotes higher commitment to continuing a relationship than lower structural bonding among firms.

Building and strengthening relationships by ASCo with customers is done through trust (Morgan and Hunt, 1994) and co-operation (Anderson and Narus, 1990). While trust is seen as the extent to which firms and customers share similar values as well as costs associated with interruptions in the relationship (Morgan and Hunt, 1994), co-operation is considered relevant in forming a lasting relationship and used in areas such as partnership and alliances built by firms (Anderson and Narus, 1990). This attitudinal cooperation is further dependent on the satisfaction level and experience gained during the transactions

Aside the relationships is the measurement of efficiency to determine the performance of the players of the value chain that ensures maximum output which is regarded a precondition for continued existence of the actors of the value chain and hence firm survival. Amongst others, the cost returns analysis method which is widely used in agriculture settings was used to measure the efficiency of cassava farmers in ASCo's value chain. This approach was used in studies conducted by Iheanacho (2000) to analysis the cost-returns analysis of production and returns for farmers in the Borno State of Nigeria who are into millet based cropping system as well as Yusuf et al. (2010) who used this technique to measure the profitability of cultivating improved variety of maize in the Sabon Gari Local Government of the Kaduna State. Also, as a way of measuring the efficiency of the firm, the Operating Expense/Revenue Ratio (Kohl, 2009) for mostly owned firms was used. This measurement of efficiency compared the cost of operating to

the revenue generated out of that production process in order to determine the gains or losses that accrue in during the period.

Finally, the factors that guarantee the survival of most manufacturing firms of which ASCo is part are experience (Thompson, 2005), initial endowments (Agarwal and Gort, 2002), skilled human resources (Klepper and Simons, 1997), technology (Rusinko, 2008) as well as research and development (Perez and Castillejo, 2004).

CHAPTER THREE

RESEARCH METHODOLOGY AND ORGANISATIONAL PROFILE

3.1 Introduction

This chapter presents the research methodology adopted in accomplishing the study. It discusses the research design, the study population, sampling and sampling techniques, data collection instruments and data analysis.

3.2 Research Design

A research design is the primary framework or plan for a study used as a guide in collecting and analyzing data. In line with this study, the researcher adopted the descriptive approach which comprises directly exploring, analyzing and describing the occurrence of specific phenomena, normally from presuppositions that are generally unexplained but the study is aimed at maximizing natural presentations (Streubert and Carpenter 1999). Thus, this approach involves gathering data that describes the events, organizes them, tabulates the events and finally describe the data collection (Glass and Hopkins, 1984). This was adopted in this research because it helped in creative exploration and served to organize the findings in order to fit them with explanations so as to test or validated those explanations.

3.3 Study Population

A population refers to the complete set of cases or elements from which a sample is taken (Saunders et. al, 2007). It is also generally seen as a collection of groups and individuals that have same characteristics are well defined. The population for this study comprised

all the value chain actors of ASCo, thus management, cassava farmers and customers which summed up to 570 respondents. Below is the breakdown of the components of the population in table 3.1:

Table 3.1 Components of the population

Category	**Population**
Farmers	560
Customers	8
Management	2
Total	**570**

Source: Researchers' Field Survey, 2015

3.4 The Sample Size and Sample Selection Methods

Sampling is defined as a process of selecting a section to represent a whole (Polit and Beck, 2004). Stratified sampling and judgmental sampling techniques were used to select the respondents. In using stratified method, the researcher selected cassava farmers from the block farming and individual farming groups respectively. Also, the purposive method helped the researcher to select only those management members who have information concerning the day to day production (Managing Director and Accountant) as well as customers that buy starch and pulp from the company on regular basis. This was considered to be a cheap and effective way of sampling from such a large population of potential respondents, thus a sample of 250 cassava farmers which represented half of the total number of cassava farmers, two (2) management members and eight (8) customers of ASCo resulted in selecting 260 respondents for the study. Below in table 3.2 is a breakdown of the sample and the sampling technique adopted by the researcher:

Table 3.2 Sample Size of Respondents

Population	Sample Size	Sampling Technique
Farmers	250	Stratified Sampling
Customers	8	Judgemental
Management	2	Judgemental
Total	**260**	

Source: Researchers' Field Survey, 2015

3.5 Data Collection tools and Procedures

Questionnaires and interview guides were the primary data collection tools used in soliciting responses from the selected respondents of the value chain of ASCo. A total of two hundred and Fifty (250) and eight (8) questionnaires were distributed among cassava farmers and customers respectively. Also, two (2) interview guides were administered to the Managing Director and the Accountant who form the two main management members to seek their opinion on the subject matter.

3.6 Ethical Considerations and Field problem

The principles of voluntary participation in researches by respondents are mostly confronted by some ethical issues. It is important people voluntarily relay information than are coerced into participating against their will. Informed consent is thus a notion of voluntary participation which means that before allowing participants to partake, they must be fully informed and aware of the accompanying procedures and risks. Ethical standards therefore stipulate that respondents should not be put in any form of risk of harm both physically and psychologically by virtue of their participation (Saunders et al,

2007). At the commencement of administering the questionnaires, the consent of the respondents was sought and there were made to decide which questions to answer. Finally, there was an assurance of confidentiality whereby the information solicited from them will be relayed to third parties who are not directly involved in the study.

3.7 Data Analysis

The researcher analysed data based on the three steps defined by (Saunders, et al 2007), data reduction, data display and conclusion. Data collected from the field was analysed into descriptive statistics, regression analysis, methods of efficiency measurement and content analysis.

In analysing the production and supply levels of ASCo, the researcher compared the projected output (in tonnes) of two (2) main finished products (starch and pulp) with the actual output to determine the percentage shortfall or increase in production for the five year period.

Thus mathematically: $\frac{\text{Projected Tonnage-Actual Tonnage}}{\text{Projected Tonnage}} \times 100\%$

Also, the efficiency of production was measured from the farmers' view point using the Productivity Efficiency Index (PEI).

Thus mathematically, $\text{PEI} = \frac{\text{Average Total Revenue (ATR)}}{\text{Average Total Cost (ATC)}}$

In addition, measuring efficiency from the perspective of the firm, the researcher used the Operating Expense to Revenue Ratio (OP/R) (for mostly owned firms).

Thus, mathematically, OP/R = Operating Expenses (less depreciation and Interest)

Gross Revenue

In explaining the results, 65% implies strong operating efficiencies, 65%-80% are considered stable operating efficiencies and finally percentages above 80% are considered weak operating efficiencies.

The researcher measured the factors that contribute to the survival of ASCo from the perspective of cassava farmers and the firm. While a regression analysis was used to test the relationship between the farming practices of cassava farmers and ASCo's survival. That of management was done using a content analysis to explain key determinants for ASCo's survival.

Finally, the various challenges which were categorised into productions, technological and marketing constraints spelt out by management was analysed using a content analysis.

3.8 Organisational Profile of ASCo

The Ayensu Starch Company (ASCo) Limited was established in September 2001 as an agro-processing business involved in the processing of cassava roots into food grade starch for local consumption and export. The offices and factory of the company are located at Bawjiase in the Central Region of the Republic of Ghana on a 100 acre plot. ASCo currently operate a state-of-the-art cassava starch plant with capacity to produce 22,000 metric tonnes of starch per annum and management is currently considering the procurement of additional production lines to meet increasing demand. The mission of the company is to become a leading producer of high quality food grade cassava starch for the local and export markets. In order to meet customers' needs, the company is currently

producing 14,000 metric tonnes of cassava starch under contract terms with a local beverage industry for the production of lager beer and also producing 1,000 metric tonnes of starch for other local food industries for the production of biscuits, cassava bread etc. The starch produced is expected to be maintained under ambient temperature and kept away from water, direct sunlight and flames and has a shelf life of four years from the date of manufacture.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter focuses on the presentation, analysis and discussion of the data obtained from the field survey. This was done with the aid of Statistical Package for Social Sciences (SPSS) and Microsoft Excel and the results presented in forms such as descriptive statistics and a regression analysis which gave more meaning to the raw data gathered. In all, a total of 250 questionnaires were administered to cassava farmers and the researcher retrieved a total of 234 giving a recovery rate of 93.6% which was used in the analysis. Also, two interview guides were administered to two key management members (Managing Director and Accountant) and both were retrieved. Finally, eight (8) questionnaires were administered to customers of ASCO, thus seven (7) was administered to pig farmers who buy pulp and one (1) administered to the main starch customer of ASCo (Guiness Ghana Limited).

4.2 Demography of Farmers

The study looked at demographic factors such as gender of respondents, age distribution of respondents, main occupation, number of years in farming/cassava farming and land occupancy status. These demographic data are discussed below:

Table 4.1 Demographics of Respondents (Farmers)

Socio-Economic Characteristics	N	%
Gender		
Male	147	63%
Female	87	37%
Total	**234**	**100%**
Age		
Less than 20 years	4	1.70%
20 - 30 years	7	3%
31 - 40 years	71	30.30%
41 - 50 years	53	22.60%
Above 50 years	99	42.40%
Total	**234**	**100%**
Main Occupation		
Farming	210	89.70%
Civil/Public Servant	17	7.30%
Artisan/Vocational	1	0.40%
Trading/Commerce	5	2.10%
Other	1	0.40%
Total	**234**	**100%**
Years in Farming/Cassava Farming		
1 - 10 years	33	14.10%
11 - 20 years	65	27.70%
21 - 30 years	73	31.30%
31 years and above	63	26.90%
Total	**234**	**100%**
Land Occupancy Status		
Own Land	31	13%
Family Land	45	19%
Rented Land	126	54%
Block Farming	9	4%
Sharecropping	23	10%
Total	**234**	**100%**

Source: Researchers' Field Survey, 2015

Per the socio-economic characteristics of the respondents, 55.9% of the farmers fall within the age range of (20-49 years) which is defined by the FAO (2008) as population that is economically productive, the remaining 44.1% fall within that age bracket

described as dependents with a mean age of 52 years, meaning that most of the respondents are economically viable and active although farming does not appeal to the modern day youth.

The main occupation undertaken by majority of the respondents is farming as represented by 89.7% of them who actively engage in farming as their primary occupation and the remaining are into trading, civil/public service, vocational undertakings and other professions such as lotto agents, electricians and religious leaders.

The years spent in farming also corresponds with the number of years spent in cassava farming since majority of the farmers (85.9%) have farming experiences of more than 10 and also the average number of years in farming is 32 years for a farmer. This development is appreciable since the respondents possess rich information especially about cassava farming which they made available to the researcher. Finally, the land tenure system showed that majority (87%) are not original owners of their farmlands thus their continued cultivation of those lands is dependent on the decisions of the owner. While sharecropping here refers to the sharing of the cassava equally between the farmer and the land owner, block farming is the allocation of farmlands acquired by ASCo and distributed among some farmers to cultivate cassava and feed the company.

4.3 Tests for Reliability of Data

The reliability of the data collected was analysed by a Concrach's alpha test. The results as illustrated in the table 4.2 showed that the data is reliable since it has a score of 0.722 which according to the interpretation is deemed acceptable in measuring the reliability since value above 0.7 are considered reliable whilst values that exceed 0.8 are considered preferable.

Table 4.2 Reliability Test

Cronbach's Alpha	N of Items
.722	30

Source: Researchers' Field Survey, 2015

4.4 Production and supply levels of Ayensu Starch Company Limited.

Table 4.3 Projected and Actual production and supply of Starch and Pulp

		2010	**2011**	**2012**	**2013**	**2014**
Starch	**Projected Tonnage**	10,000	10,000	10,000	22,000	22,000
	Actual Tonnage	150	210	300	600	715
	Percentage shortfall	**98.5%**	**97.9%**	**97%**	**97.2%**	**96.8%**
Pulp	**Projected Tonnage**	40,000	40,000	40,000	85,000	85,000
	Actual Tonnage	600	800	1,200	2,400	2,800
	Percentage shortfall	**98.5%**	**98%**	**97%**	**97.2%**	**96.7%**

Source: Researchers' Field Survey, 2015

In analysing the production and supply levels of ASCo for the five (5) year period, the yearly projected tonnage of starch and pulp was compared with the actual tonnage for the five (5) year period to determine the shortfall or increases in relation to productivity. As shown in the table above, the projected tonnage for the year 2010 was 10,000 and 40, 000 tonnes for starch and pulp respectively but ASCo was able to meet an actual production of 150 and 600 tonnes for starch and pulp respectively resulting in a production shortfall of 98.5% for both outputs. This development was due to the inadequate supply of cassava from the out growers within the catchment areas coupled with the reduced efficiency of

the company's plant, machinery and other equipment needed for production thereby making ASCo inefficient since the level of production for the year is so low in relation to the plant's minimum capacity production of 70%. This inadequate supply of cassava is due to the fact that only 6.4% of cassava cultivated by the out growers is directly supplied to ASCo for their production activities.

Also, the year 2011 showed a projected output of 10,000 and 40,000 tonnes for starch and pulp respectively but unfortunately, ASCo's output for that year was 210 and 800 for cassava and pulp respectively resulting in a shortfall of 97.9% and 98% for both finished products. This shortfall was attributed largely to inadequate supply of cassava coupled with intermittent breakdown of the production plant. These occurrences made ASCo inefficient in starch and pulp production since the actual production was so low compared to the annual target set. Just as the previous year, the inadequate supply of cassava was due to the fact that only 6.4% of cassava cultivated by the out growers is directly supplied to ASCo for their production activities.

Furthermore, the year 2012 also recorded an actual output of 300 and 1,200 tonnes for starch and pulp respectively as against a projected annual tonnage of 10,000 and 40,000 tonnes for starch and cassava respectively. This resulted in a production shortfall of 97% for both finished products. This shortfall was due largely to inadequate supply of cassava to meet the production target as well as less efficient factory machines, plant and equipment needed for production.

In addition, the year 2013 witnessed a projected tonnage of 22,000 and 85,000 tonnes for starch and pulp but the actual output for the year was 600 and 2,400 tonnes for starch and pulp respectively. This production levels showed a shortfall of 97.2% for both products

which according to management was largely due to the inadequate supply of cassava and reduced efficiency of plant, machinery and other equipment needed in production.

Finally, the year 2014 showed an annual projected starch and pulp target of 22,000 and 85,000 tonnes out of which only 715 and 2,800 tonnes was realized resulting in a production shortfall of 96.8% and 96.7% for starch and pulp respectively. This low level of production for both products was due to low supply of cassava from farmers and inefficient plant, equipment and machinery used in production.

4.5 Efficiency of production of Ayensu Starch Company Limited.

The efficiency of ASCo was measured from the perspective of two key actors in the value chain of the company. These are the suppliers (cassava farmers) on one side and ASCo on the other. The Production Efficiency Index (PEI) and the Operating Expense/Revenue ratio were used to measure efficiency of the farmers and ASCo respectively.

Productivity efficiency index for the five (5) year period is given as:

$$\text{Production Efficiency Index (PEI)} = \frac{\text{ATR}\{1, 2, 3, 4 \text{ and } 5\}}{\text{ATC}}$$

Where ***ATR is the Average Total Revenue***

ATC is the Average Total Cost

$$\text{Average Acreage (AA) for the 5 years} = \frac{0.5+1+2+3+4+5+6}{7}$$

$$= 3.07$$

Average Total Revenue (ATR) = Average Annual Revenue per farmer x Average Acreage x Total Number of Respondents

Total Revenue per farmer in 2010 = GHC 800

Total Revenue per farmer in 2011 = GHC 1,000

Total Revenue per farmer in 2012 = GHC 800

Total Revenue per farmer in 2013 = GHC 570

Total Revenue per farmer in 2014 = GHC 660

Average Total Cost (ATC) = Total Production Cost per farmer x Average Acreage x Total Number of Respondents

Total Production Cost per farmer in 2010 = GHC 104

Total Production Cost per farmer in 2011 = GHC 871

Total Production Cost per farmer in 2012 = GHC 148

Total Production Cost per farmer in 2013 = GHC 109

Total Production Cost per farmer in 2014 = GHC 200

The table below shows the computation of the Average Total Revenue and the Average Total Cost for the five (5) year period:

Table 4.4 Average total revenue and average total cost

	TR/Farmer	**AA**	**N**	**TR(GHC)**
ATR for 2010	800	3	234	561,600
ATR for 2011	1,000	3	234	702,000
ATR for 2012	800	3	234	561,600
ATR for 2013	570	3	234	351,000
ATR for 2014	660	3	234	463,320
	TC/Farmer	**AA**	**N**	**TC(GHC)**
ATC for 2010	104	3	234	73,008
ATC for 2011	871	3	234	611,442
ATC for 2012	148	3	234	103,896
ATC for 2013	109	3	234	76,518
ATC for 2014	200	3	234	140,400

Source: Researcher's Field Survey, 2015

Table 4.5 Production Efficiency Index of Cassava Farmers from 2010 to 2014

	COMPUTATION OF PRODUCTION EFFICIENCY INDEX OF CASSAVA FARMERS				
	2010	**2011**	**2012**	**2013**	**2014**
	GHC	**GHC**	**GHC**	**GHC**	**GHC**
Average Total Revenue	561,600	702,000	561,600	351,000	463,320
Average Total Cost	73,008	611,442	103,896	76,518	140,400
Production Efficiency Index (PEI)	**7.692308**	**1.148106**	**5.405405**	**4.587156**	**3.3**

Source: Researchers' Field Survey, 2015

The table above compared the average total revenue to the average total cost of the each of the 234 cassava farmers within the catchment area of ASCo used in the survey and arrived at the productivity index of each single cassava farmer.

The results as shown in the table depicted a generally impressive productivity efficiency index of a single cassava farmer. Thus, in the 2010 cropping season, the Productivity Efficiency Index (PEI_1) was 7.69 indicating that the returns of a single cassava farmer in that cropping season covers the cost of production almost eight (8) times indicating a high level of production efficiency. This high index was because ASCo offered a good price for the 6.4% of cassava supplied after it was revamped and also the remaining 93.6% also sold to the other outlets and has earned competitive prices for their produce.

Also, the Productivity Efficiency Index (PEI_2) of a single cassava farmer in the 2011cropping season was 1.15 indicating that the returns of a single cassava farmer for that year covered the cost of production once which is almost close to breakeven. This low returns was attributed to the breakdown of the processing plant at ASCo for several

months leading to post harvest losses and reduction in the sale of the produce at the farm gate to traders since the supply outweighed demand.

Furthermore, in the 2012 cropping season, the Productivity Efficiency Index (PEI_3) of a single farmer was 5.41 indicating that the returns from the sale of cassava by a single farmer covered the cost of production more than five (5) times showing a high level of production efficiency. This increase is due to the farmers' decision to sell the farm produce to traders at the farm gate or process them into cassava dough and gari for sale in the market.

In the 2013 cropping season, the Productivity Efficiency Index (PEI_4) for a single farmer was 4.59 which showed that the returns derived from the production for that particular season covers the cost of production for that year almost five (5) times indicating a high level of production efficiency. Compared to the previous year, this index was relatively low due to the decision of the farmers to supply some of the produce to ASCo as well as sell the rest to traders.

Finally, the 2014 cropping season revealed a Productivity Efficiency Index (PEI_5) of 3.3 which indicated that the returns earn by a single cassava farmer in that cropping season covers the cost of production more than thrice showing an appreciable level of production efficiency. This was due to that fact that most farmers lost quite substantial acres of their farms to pineapple growers therefore reducing the quantity of produce generated for the year.

Measuring the efficiency of ASCo, the operating expense to revenue ratio for **mostly owned firms** is given as:

$$OP/R = \frac{\text{Operating Expenses (less depreciation and interest)}}{\text{Gross Revenue}}$$

The table below calculated the operating efficiency to revenue ratio of ASCo for the five (5) year period by comparing the operating expenses (less depreciation and interest) to the total revenue generated for that particular year. Thus for 2010, the operating efficiency to revenue ratio (R/E_1) was 1.06. When converted into percentages, it gave a value of 106% showing a weak operating efficiency since the value is greater than 80% which is considered a weak operating efficiency of mostly owned firms.

In the year 2011, the operating expense to revenue ratio (R/E_2) was 3.29. Converting this figure in percentage terms gave a value of 329% which showed that ASCo worked at a very weak operating efficiency level since the score is higher than 80% which is considered a weak operating efficiency level of mostly owned firms.

The year 2012 experienced an operating expense to revenue ratio (R/E_3) of approximately 1.2, a value when expressed in percentage terms is 120% which indicated that ASCo operated at a weak efficiency level since the value is greater 80% which is considered a weak operating efficiency level of mostly owned firms.

The 2013 production year as measured by the operating expense to revenue ratio (R/E_4) was approximately 1.37 which when converted into percentages record a score of 137% which is greater than 80% indicating a weak operating efficiency level for mostly owned firms.

Finally, the operating expense to revenue ratio (R/E_5) for the year 2014 was 0.64. This value when converted into percentages produced a score of 64% which indicated a strong level of operating efficiency since the value is less than 65% indicating a strong operating efficiency level.

Table 4.6 Computation of Operating Expenses to Gross Revenue of ASCo

Operating Expenses	**2010**	**2011**	**2012**	**2013**	**2014**	**Averages**
Cost of Cassava	37,500	68,250	97,500	390,000	536,250	225,900
Transportation	11,250	26,250	37,500	90,000	107,250	
Water	7,074	11,004	17,292	37,728	52,452	
Labour	18,600	28,100	50,372	76,985	82,104	
Plant Maintenance	7,400	286,499	6,524	4,864	12,820	
Electricity	12,820	38,540	54,620	110,020	126,580	
Engine Oil	4,550	6,260	7,850	10,080	11,280	
Packaging	20	35	40	45	70	
R.F.O	8,211	10,584	15,750	50,400	75,075	
Total Operating Expenses	**107,425**	**475,522**	**287,448**	**770,122**	**1,003,881**	**225,900**
Interest	0	0	0	0	0	0
Depreciation	930,875	930,875	930,875	930,875	930,875	930,875
Total Cost	**1,038,300**	**1,406,397**	**1,218,323**	**1,700,997**	**1,934,756**	**1,156,775**
Revenue						
Starch	98,970	141,750	236,250	558,000	1,501,500	
Pulp	2,400	3,000	4,000	4,800	56,000	
Total Revenue	101370	144750	240250	562800	1557500	521,334
		-		-		
Profit b/f Tax	-936,930	1,261,647	-978,073	1,138,197	-377,256	
Tax	0	0	0	0	0	
		-		-		
Profit after Tax	**-936,930**	**1,261,647**	**-978,073**	**1,138,197**	**-377,256**	
TC/TR	10.24267535	9.7160415	5.071063	3.0223827	1.242219	2.218875
Prod. Eff. Index						**0.450679**
Operating Expense to revenue ratio	**1.059731676**	**3.2851261**	**1.196454**	**1.368376**	**0.644546**	**0.433311**

Source: Researchers' Field Survey, 2015

4.6 Factors that contribute to the survival of Ayensu Starch Company Limited

The factors that contribute to the survival of ASCo are measured in two folds. The first is measured from the perspective of cassava farmers who are the main suppliers of ASCo's input. This involves issues such as main objective of cultivating cassava, cropping system practiced on largest cassava farm, diseases and pests' infestation and treatment, main source of funds for farming activities and major point of sales.

4.6.1 Measuring survival of ASCo from the perspective of the cassava farmers

Table 4.7 Regression to establish relationship between farmers' activities and survival of ASCo

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.799	6	.633	1.995	.067[b]
	Residual	72.030	227	.317		
	Total	75.829	233			

a. Dependent Variable: Firm Survival

b. Predictors: (Constant), Major point of sale, What is the main target produce for cultivating cassava, Was your cassava affected by any disease(s), Main objective for cultivating cassava, Main source of funds for your cassava production activities, What cropping system is practiced on your largest cassava farm

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.224[a]	.050	.025	.56331

a. Predictors: (Constant), Major point of sale, Was your cassava affected by any disease(s), Main objective for cultivating cassava, Main source of funds for your

cassava production activities, What cropping system is practiced on your largest cassava farm

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.990	.370		2.678	.008
Main objective for cultivating cassava	.046	.038	.079	1.197	.233
What cropping system is practiced on your largest cassava farm	.143	.150	.067	.948	.344
Diseases and pests infestation and treatment	.097	.076	.084	1.268	.206
Main source of funds for your cassava production activities	.036	.022	.110	1.618	.107
Major point of sale	-.020	.035	-.039	-.565	.573

a. Dependent Variable: Firm Survival

Source: Researcher's Field Survey, 2015

R depicts the relationship that exist between the dependent and the independent variables

R^2 explains the extent to which the dependent variable can be explained by the independent variables.

B explains the coefficients of the independent variables.

Sig. depicts the model's statistical significance level

Beta measures the contribution each independent variable has on the dependent variable

The results as displayed in the regression table above shows the multiple regressions that explain the factors that shows the relationship between cassava farmers' activities and

survival of ASCo. The equation for the regression therefore is: $y= a +b_1X_1+ b_2X_2+ b_3X_3+ b_4X_4+ b_5X_5$. By inputting the values, the equation is: $y = .990 + .046(X_1) + .143(X_2) + -.097(X_3) + .036(X_4) + -.020(X_5)$.

The analysis above (ANOVA[a]), score of .224[a] showed that a moderate relationship between the activities of farmers and survival of ASCo since the correlation value falls below .70. It also shows a positive figure which suggested that holding all other factors constant, as the dependent variable (firm survival) increases, the independent variables (activities of farmers) will also increase and vice versa. Further, the R^2 of .050 indicated that the dependent variable could be explained using 5% of the independent variables.

As shown in the table, the main objective for cultivating cassava by farmers scored a coefficient of .046 indicating a positive relationship with firm survival which suggested that when all other independent factors are held constant, firm survival will increase by 4.6% if the respondents cultivate cassava mainly to supply ASCo. A significance value of .233 indicated adverse statistical significance which made no favourable contribution to predicting firm survival since it is less than 0.05.

The coefficient value for the form of cropping system practiced on the largest cassava farm is .143 (positive relationship) which explained that holding other factors constant, firm survival will increase by 14.3% when all farmers engage in mono cropping instead of mixed cropping. A significance value of .344 showed negative statistical significance which made no favourable contribution in determining firm survival since it is less than 0.05. Mono cropping or monoculture as described by Gallaher (1995) as a system in

which only single or the same types of crop is grown on the course of a 12 months period and this will help maximize more yield from that single crop than from mixed cropping. The treatment of diseases and pests infecting the cassava farms scored a coefficient of .97 (positive relationship) which suggested that when other factors are held constant, firm survival will increase by 97% when all pests and disease are controlled and treated by agro chemicals other than other crude methods (uprooting, burning or burying infected plants, allowing rains to wash away these diseases and pests). The significance value was .206 which indicated a negative statistical significance which contributed unfavorably to predicting firm survival since it is less than 0.05.

The major source of funds for the cassava production activities of the farmers scored a coefficient of .036 (positive relationship) which indicated that when other factors were held constant, firm survival increased by 3.6% as a result of the increase in own funds which respondents asserted to as the major source of funds for their cassava cultivation activities. The significance value of this factor was .107 which indicated an adverse statistical significance which contributed unfavorably to predicting firm survival since it is less than 0.05. Although Henriques (2008) proposed that many farmers are consolidating their small plots of land into larger ones in order to increase productivity, efficiency of farmers has become an opportunity to invest in agricultural activities, most farmers in the catchment areas of ASCo do not have access to funds from major outlets, therefore they rely on meager savings from previous cropping seasons for cassava cultivation.

The cassava harvested by the farmers had many sales point. Among them, the major point of sale for majority of farmers which are other places other than to ASCo scored a coefficient of -.020 (negative relationship) which indicated that when other factors are held constant, the survival of ASCo will decrease by 2% as a result of 100% increase in the supply of cassava to other sales points other than ASCo. The significance value was also .573 which indicated a negative statistical significance which contributed unfavorably to predicting firm survival since it is less than 0.05.

The contribution of the independents variables to predicting the occurrence of the firm survival was also measured using the beta values (ignoring the negative signs). Main objective for cultivating cassava, cropping system practiced on your largest cassava farm, diseases and pests' infestation and treatment, main source of funds for cassava production activities and major point of sale have beta values of .079, .067, .084, .110 and -.039 respectively. The results above showed that proper control and treatment of diseases and pests on the cassava farms contributes more to firm survival since it has the highest beta value of .084.

Also, from the view point of management, factors such as experience from the number of years in operation, skilled human resources, technology, research and development, relationship with suppliers and finally relationship with customers are key determinants of ASCo's survival. These factors were analysed using a content analysis of the responses from two management members.

In explaining the experience from the number of years in operation as a factor that contributes to survival, management stated that:

> *"ASCo tries to retain workers who have long years of experience at the factory as evidenced in the retention of 90% of the workforce who were engaged since the inception of the company and are still at post. This has brought about much experience at the factory."*

In using ASCo's experience from the number of years in operation, management has in spite of the challenges persuaded its core technical staff to remain at post due to the hands on experience they have acquired over the years. This development has resulted in maintaining about 90% of the company's staff since its inception in 2003. This has contributed to the ability of staff to overcome certain minor challenges that they encounter in the course of performing their daily routines. Also, since ASCo needed abundance of skilled human resources to undertake all aspects of the production process, management has recruited specialized individuals into sensitive areas of production. Typical of this is the recruitment of mechanical, electrical and chemical engineers to set up and monitor the chain of production activities from the input of raw materials through transformation to packaging of the finished products.

Management further suggested that the use of technology is a contributory factor to firm survival by stating that:

> *"ASCo has a plant that undertakes the entire processing activity from start to finish and this installed plant require less human intervention because it is automated."*

In addition, ASCo adopts a state-of-the-art technology to process raw cassava into starch and pulp. This technology is highly automated and requires less human intervention

during the production process. This is because the plant receives raw cassava and undertakes the process of peeling, washing, grating and processing of the starch and pulp therefore these processes requires little or no human activity. This finding corresponds with that of Rusinko (2008) who emphasized that the entire value chain be viewed as a set of fully integrated systems that ensures lean manufacturing, quality control and adherence to regulatory standards.

Also, in explaining the research and development as a means of ensuring ASCO's survival, management stated that:

> *"ASCo consults the Crops Research Institute from time to time for improved cassava varieties and education on best farm practices."*

Finally, research and development which helps bring out new ideas and improved ways of undertaking an activity is viewed as an important factor in the production activities of ASCo. In this regard, ASCo continuously work closely with the crop research institute to develop high starch yielding cassava varieties which are made available to farmers in order to increase their output. This factor which has been instrumental in aiding ASCo to survive as a manufacturing firm is directly in alignment with that of Perez and Castillejo (2004) who arrived at a positive relationship between the ability of a firm's expenditure on research and development (R&D) and its survival for most industries which are into manufacturing.

Consequently, in explaining the relationship with suppliers as a means of ensuring ASCo's survival, management stated that:

> *"The extension unit of ASCo engages cassava farmers in fora from time to time to educate them on new ideas and new varieties of cassava from time to time."*

Furthermore, ASCo has formed a relationship with its suppliers (cassava farmers) as a sure of ensuring that their raw materials are readily available. These relationships have been formed around some variables such as commitment to continue the relationship, winning the trust and confidence of suppliers, cooperation with suppliers, achievement of mutual goals with suppliers, performance satisfaction and building structural bonds. This commitment to continue the relationship has been formed by ASCo through the various activities such as organising fora to educate the farmers on modern ways of farming in order to maximize the efficiency of the cassava farmers. This finding on commitment corresponds with that of Anderson and Weitz (1990); Moorman et al., (1992) who suggested that the dependent variable that is common in any buyer-seller relationship and ensures that relationship is solid is commitment.

Finally, forming a relationship with customers is also seen as a way of guaranteeing the survival of ASCo. To this, management stated that:

> *"ASCo maintains a good working relationship with its major customers and keep them updated on matters that affect production on daily basis."*

Worth considering is the nature of relationship ASCo forms with its customers which is important since they serve as the major revenue generating avenue for the company. The company forms a close relationship with its customers and this has been built around maintaining a good and cordial working relationship with customers by providing them with up-to-date information on all matters relating to production on daily basis. This cordial relationship has led to the injection of funds into ASCo's operation for the past three (3) years by Guiness Ghana Limited to save the company from near collapse and

this has ensured that ASCo remains in active operation which is a guarantee to the existence of the other value chain actors. This relationship with customers has been built around key variables such as trust, commitment, interdependence, reciprocity and cooperation. The findings on trust corresponds with that of Morgan and Hunt (1994) who viewed trust as the level to which an organisation and its customers share common values which helps in attaining and sharing mutual aims of the relationship as well as the costs that are borne as a results of the interruption in the relationship. That of commitment also agrees with the work of Hardwick and Ford (1986) who pointed out that the importance of commitment in a relationship yield benefits and values to the partners in their future dealings. Further, the findings on interdependence are in line with that of Anderson and Narus, (1990) who pointed the importance of interdependence by stating that to form a strong relationship, the level of interdependency is determined by the extent to which the relationship between the buyer and the seller are closely tied since interdependency has its roots in traditional and relational channels thus the need to increase its level between a buyer and a seller is generally high (Han et al., 1993). In addition, ASCo and its customers exhibit some form of reciprocity whereby Guiness Ghana Limited has consistently made funds available for ASCo to continue production making Guiness Ghana the sole customers of starch. The findings has been confirmed by Stern and El Ansary (1992); Bucklin and Sengupta (1993) who see reciprocity as characterised by continuous learning and investment in the activities of partners. Finally, cooperation which ASCo, viewed as a way of ensuring a lasting relationship with its customers corresponds with that of Anderson and Narus (1984; 1990) who view cooperation as a useful predictor of forming a longer term partnership and alliances since the level of

cooperation is dependent on satisfaction levels that are experienced during business transactions.

4.7 Production, Technology and Marketing constraints of Ayensu Starch Company Limited.

There are some constraints that affect ASCo in its quest to remain competitive and survive. These challenges have been categorised under three (3) main groups which are production, technology and marketing constraints and explained using a content analysis.

4.7.1 Production constraints

From the management perspective of ASCo, one key production constraints that management faces is ineffective quality control mechanisms. To overcome this:

> *"Management has requested for retooling of the laboratory which has lost most of its equipment overtime through overuse and aging."*

To overcome the production challenge of ineffective quality control mechanism, management has requested for a retooling of the laboratory which has lost most of its equipment overtime through overuse and aging. This request is yet to be honoured by government in order to enhance ASCo's laboratory work. This has also resulted in the inability of the company to develop new range of products as a way of extending its product line which can generate extra revenue since among others, it is noted that new product development is one of the sources of uncertainties in the value chain. This finding corresponds with that of Trelevan (1987) who view the value chain as a joint action to design systems that enhance development of quality control mechanisms as well

as effective systems of delivery therefore it is imperative that all players in a value chain possess a primary objective of delivering to meet customers' needs.

Furthermore, in resolving the unreliable energy source to support production:

> *"Management has managed to procure and install a standby generator to power the production plant in the event of power outage from the national grid."*

Also, unreliable energy source to ensure a smooth production process due to the intermittent supply of electricity has been a challenge to ASCo. This is because management does not have a high capacity plant to power the plant and machinery needed for continuous production in times of power outages. There is therefore a total halt in production when electricity supply become erratic causing the value chain players to lose revenue since the firm suspends the carting of cassava from the farmers and the customers are also unable to receive finished products to serve the end users.

4.7.2 Technology constraints

Management is confronted with technological constraints. One of them is outmoded components and parts of the production plant. To this management stated that:

> *"Major parts of the plant are outmoded and needs to be replaced as well as in order to ensure efficient and interrupted production.''*

Key among the technological challenges facing ASCo is the inability of the plant to undertake continuous production process of transforming the raw cassava into starch and pulp. This is due largely to the outmoded component parts of the plant which results in the frequent breakdown of the plant causing stoppage in the production process. To

complicate issues, ASCo lacks the needed funds to procure these essential parts since revenue they accrue from the sale of starch and pulp is used to re-purchase raw cassava and also cater for other administrative expenses. Management therefore rely solely on government to make the funds available for such purchases which mostly take quite a long time for it to be approved due to the bureaucratic nature of the process.

Also, in explaining the lack of information systems that regulate production activities, management stated that:

> *"Currently ASCo does not have any information systems to monitor and regulate all production activities."*

ASCo also lacks an effective information system which is important in monitoring the entire activities of the value chain thereby making the value chain management ineffective which is a threat to the survival of ASCo. This result corresponds with the study of Heilala et al. (2008) who emphasized the importance of applying information systems in manufacturing in order to analyse the existing design and improve upon the inefficient manufacturing system. Also, that of Nagel and Tomiyama (2004) underscored the importance of using information systems to continuously monitor the behaviour of a manufacturing firm in relation to utilising resources, controlling waste generation and emission level as well as production outputs.

4.7.3 Marketing constraints

Also, some marketing challenges bothers on the four (4) marketing mixes that are blended to achieve the marketing activities of the firm. These four (4) marketing mixes are; price, product, promotion and place.

In explaining the constraints that are product related, management stated that:

> *"ASCo is persistently inability to implement all quality control mechanisms in production."*

In coming out with ASCo's outputs that can meet all quality standards and criteria, management of ASCo has designed effective quality control mechanisms but these mechanisms have not been effectively implemented due to the outmoded and over aged laboratory equipment and tools needed to conduct such experiments. These occurrences have over the years compromised the total quality management practices of ASCo especially in relation to starch production and have threatened its continued existence since according to Meijboom and Bart (1997), the production of inferior quality products do not help in the survival of manufacturing firms, thus an effective manufacturing strategy that aid in survival should pay requisite attention to the influence of quality of the product, degree of flexibility in the process, dependable delivery and the cost of manufacturing on the firm's core business.

Also, in pricing its products, management of ASCo stated:

> *"The price at which ASCo sells the finished products is lower than the cost of production but the selling price is not lower than what pertains in other places. It is just that our cost of production is affected by the inefficient plant. We are therefore working at improving the efficiency of the plant"*

In pricing ASCo's products, management adopt pricing strategies which are intended to make the company competitive. This the company does by quoting prices of its finished products slightly higher that what competing firms in the same industry charge. The challenge here is although these prices are relatively high, they still fall below ASCo's cost of production therefore posing a threat to the survival of ASCo since the firm incurs losses from one production period therefore has no funds available for production activities for the next production period. This finding corresponds with that of Shanker and Vijendranath (1997) who sees pricing as a problem of any marketing management activity since it is the component that generates revenue hence companies should offer products at competitive prices by setting out policies that fall in line with findings from competitive market analyses.

In line with promotion challenges, management stated that:

> *"ASCo has a sinking brand image among potential and old customers due to its inability to serve all of its old and potential customers."*

Since ASCo has established customers who readily purchase its finished products, management has not undertaken any form of promotional activity. This has resulted in the inability of ASCo to establish its brand in the minds of other potential customers who may patronise the company's product in the future. ASCo is therefore unable to establish a recall of its brand since no promotional activity (such as advertising, direct marketing, personal selling, public relations, exhibition, etc) has been done to position the brand in the mind of potential customers. This finding correspond with that of Labh (2008) who suggested that cost effective and flexible promotional activities help to inform target

groups in receiving immediate feedback which eventually results in recall and interactivity of brands.

Finally, in explaining the place related challenges, management stated that:

> *"ASCo lack vans to cart finished products to from the company's premises to the final customers"*

Management of ASCo in distributing its finished products communicates with customers who normally pick up the finished products from the company's premises. The company therefore does not make use of intermediaries to undertake the activity of making the finished products available to target markets. The company itself does not also have effective transportation systems that can cart the finished products to the premises of the customers, a situation that will attract some charges which will boast the revenue base of ASCo. The company therefore loses out on these minor sources of revenue which is needed to augment proceeds made from the sale of the finished products (starch and pulp). This result correspond with that of Nagayya (2005), who observed that the use of marketing intermediaries helps firms achieve more than the company operating on its own since the these intermediaries make available their unique trade secrets such as contacts, trading experiences, job specialization and scope of operation for use by the firm.

CHAPTER FIVE

SUMMARY OF FINDINGS, RECOMMENDATIONS AND CONCLUSIONS

5.1 Introduction

This last and final chapter summarized the findings, made recommendations and conclusions based on the study. The summary of findings is specific to each objective of the study which are stated below:

5.2.1 Examining the production and supply levels of Ayensu Starch Company Limited

The production and supply levels of ASCo's finished products (starch and pulp) revealed shortfalls for the production years used in the study. The highest among the five years was 2010. These shortfalls over the five year period were due largely to inadequate supply of cassava by the farmers and reduced efficiency of plant, equipment and machinery used for the production activities at ASCo.

5.2.2 Measurement of the efficiency of production of Ayensu Starch Company Limited

The efficiency of production at ASCo was measured from the perspective of two actors of the value chain which were the cassava farmers and the firm. The efficiency of the farmers was measured using Production Efficiency Index (PEI) which calculated the number of times the revenue generated by a single farmer covers the cost of production for that farmer for a particular cropping season. The results gave a range of between one

to eight (8) times the revenue generated by each farmer covered the farmer's cost of production. The highest was in the year 2010 and the least was in the year 2011.

That of ASCo was measured using the Operating Expense/Revenue ratio for mostly owned firms. This measured the operating efficiency by comparing the operating expenses of a particular cropping season to the revenue generated for that particular cropping season. When converted into percentages, the values determine whether the operating efficiency level for the year was strong, stable or weak. Thus any value that falls below 65% is considered a strong operating efficiency level, that of a stable level are values between 65% to 80% and finally percentages above 80% are considered weak operating levels. The results showed that the operating levels of 4 years (2010, 2011, 2012 and 2013) showed weak operating efficiency levels with year 2011 being the weakest while the firm's production in 2014 shows a strong efficiency level of operation.

5.2.3 Determining factors that contributes to the survival of Ayensu Starch Company Limited

The factors that contribute to the survival of ASCo were determined from the activities of the farmers and ASCo. Since the cassava farmers are the main suppliers of ASCo's input, their activities such as the type of cropping system, disease/pest infestation and treatment, main source of funds for cassava cultivation and major sales point of their produce have a bearing on the survival of ASCo.

Also, management of ASCo requires certain factors that aid in strengthening the activities of the players in the chain in order to ensure continuous production hence the long term

survival of ASCo. These factors are experience from the number of years in operation, skilled human resources, technology, and relationship with suppliers, relationship with customers and finally research and development.

5.2.4 Identifying the production, technological and marketing constraints of Ayensu Starch Company Limited

It is important to note that certain constraints confront activities of most manufacturing firms. In the case of ASCo, these constraints have been categorised into three (3) main groups which are production, technological and marketing constraints. The production constraints faced by ASCo are ineffective quality control mechanisms and unreliable energy source to support production.

Furthermore, technological constraints faced by ASCo in its day-to-day operations are the inefficiencies of plant to undertake the production process as well as the lack of effective information systems that can monitor and regulate the entire activities and that of various actors in the value chain. Finally, effectively blending the 4Ps of marketing which are Product, Price, Promotion and Place is the marketing challenge that confront ASCo since a good blend of these variables are important in achieving competitiveness hence a catalyst for long term survival of ASCo

5.3 Conclusion

In taking a critical view at the operations of the value chain actors of ASCo, it is clear the actors have built relationships around the element of interdependence and this has helped in coordinating the activities of the players. The inefficiencies in the production that

have occurred over the five year period was due largely to the inadequate raw materials needed for production as a result of the farmers engaging in mono cropping or selling their cassava to traders at the farm's gate instead of supplying them to ASCo. These have led to huge production shortfalls by ASCo for the past five years. Also non-availability of ready funds to change inefficient components of the plant has resulted in frequent halts in production together with the production, technological and marketing constraints that threatens survival of ASCo.

5.4 Recommendations

The following are recommendations made by the researcher based on the study:

Management of ASCo should offer competitive prices to cassava farmers in order to encourage mono cropping, discourage the sale of raw cassava to other sales outlets and also motivate the farmers to increase the acreage of their cassava farms. This the company can achieve by paying higher prices for cassava compared to what competitors pay and also by liaising with government through the Ministry of Agriculture (MoFA) to ensure that basic farm implements and inputs are either given to the farmers for free or highly subsidized and made readily available within the various farming communities.

Also, the production, technological and marketing challenges that threaten the survival of ASCo must be addressed by management. That of production should be resolved by stocking the company's laboratory with modern tools and equipment in order to improve on the quality of final products produced and also management should acquire a plant with the high kilovolt-ampere (KVA) that can power the processing plant and other

equipment during periods of electricity power outages. The technological constraint can be resolved by developing effective information systems that can monitor and regulate the activities of the various value chain actors as well as the changing of all inefficient components of the plant in order to ensure efficiency in the delivery of output. Management can further resolve those issues that bother on the 4Ps by producing standardized products with high quality, pricing the products competitively above the company's cost of production, using intermediaries/agencies to establish the company's brand in the minds of customers and finally undertaking the carting of the finished products to the customers and charging a premium.

Finally, a private-public partnership is needed to inject substantial capital into the operations of ASCo in order for the company to expand its backward integration of increasing acreage of the block farms so that the consistency with the supply of cassava is guaranteed all year round.

5.5 Recommendations for Further Studies

For further studies, the researcher recommends that the study is carried out in other districts and regions where cassava is cultivated and supplied to ASCo and also how customers can integrate backwards to support and strengthen the entire chain.

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APPENDIX

Questionnaire to Cassava Farmers

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF BUSINESS

Department of Marketing and Corporate Strategy

Efficient value chain management and firm survival. The case study of ASCo

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Introduction

I would like to invite you to participate in a detailed research study in cassava production and processing into starch as part of a project on value analysis from roots and tuber crops. This survey therefore seeks to know more about the efficiency in cassava production and the constraints that the value chain players face in order to propose suitable solutions to addressing such constraints. I kindly request that you cooperate to complete the following short questions. It should take no longer than 20 minutes of your time.

Your utmost response is of importance to us.

Thank you.

Preface

a) Name of Enumerator……

b) Date of the interview……

c) Time interview started……Time ended:

……

d) Region:

……

e) District:

……

f) Name of Community:

……

Part 1: Demographics

1. Name of Respondents *(Not compulsory)*

   ……..

2. Telephone/Contact:

   …….....

3. Sex of respondent: Male [ ] Female [ ]

4. Age of Respondent: Less than 20 years [ ] 20 - 30 years [ ] 31 - 40 years [ ] 41 – 50 years [ ] Above 50 years [ ]

5. Main Occupation: Farming [ ] Civil/Public Servant [ ] Artisan/Vocational [ ] Trading/Commerce [ ] Other…….

Part II: Efficiency and Production levels of Cassava farmers

6. Years in farming: ……years

7. Years in cassava farming: ……years

8. Land occupancy status: Own land [ ] Family land [ ] Rented [ ] Block farming [ ] Sharecropping [ ] others [ ]

   specify……

9. What is the main objective for cultivating cassava? Only for household food [ ] Mainly for food, sell surplus [ ] Equally for food and sale [ ] Mainly for sale [ ] Mainly for supply to ASCo [ ] Others [ ] Specify:

   ……

10. **Farm size information (in acres)**

	2010	2011	2012	2013	2014
a. Total farm size for all crops (acres)					
b. Number of cassava farms					
c. Farm size for the largest cassava farms (acres)					

11. What cropping system is practiced on your largest cassava farm?

    Mono [ ] Mixed [ ]

12. If mixed, which other crops else are cultivated on your largest cassava farm?

    [Tick all that apply]

Main Intercrops	Tick all that apply	Proportion (%) on cassava farm
a. Plantain	[ ]	
b. Vegetables	[ ]	
c. Maize	[ ]	
d. Tiger Nuts	[ ]	
e. Cocoa	[ ]	
f. Other……		

NB: The following questions (q21 to 36) should be based on the main/largest cassava farm.

13. What is the main target produce for cultivating cassava? Tubers [ ] Leaves [ ] Sticks [ ]

14. What main variety/varieties of cassava do you cultivate?

……

15. Do you know of any or use any improved variety of cassava? Yes [ ] No [ ]

15a. If yes, please mention the variety……

16. What is the main source of labour? Family Labour [ ] Hired Labour [ ] Both [ ]

17. What is the main source of planting material? Own Farm [ ] Friends/Relatives [ ] MoFA [ ] Other farmers [ ] Cooperative [ ] Other, specify……

17a. If not from own farm, did you buy from other sources as stated in **17** above? Yes [ ] No [ ]

17b. How much was spent in acquiring the planting material? GHc……

18. Was your cassava affected by any disease(s)? Yes [ ] No[ ]

19. If yes, which disease(s) (**tick all that apply**)? Root rots [ ] White Leaf spot [ ] Brown Leaf spot [ ] Stem rot [ ] cassava mosaic [ ] others, specify……

20. Did you treat the disease? Yes [ ] No [ ]

20a. If yes, what was your mode of treatment: Spraying with agrochemicals [ ] Uprooting and throwing away infected plant [ ] Burying infected pant [ ] Other, please specify……

21. Is your cassava farm infected by any pests? Yes [ ] No [ ]

22. If yes, which pest(s) have affected your farm? Cassava Mealy Bug [ ] Cassava Green Mite [ ] Variegated grasshopper [ ] White flie [ ] Other please specify……

23. **Information on Production (output) Levels**

Cassava Production	**2010**	**2011**	**2012**	**2013**	**2014**
Total Number of Bags					
Total Revenue (GHC)					

24. Which year was the **best production** year?.....

24a. Production cost for the **best production**

year……

25. Please tick where applicable information on average cassava farming expenses for a cropping season

Activity	Number of Days	Unit Cost	Total Cost	Activity done by (*see below for codes*)
Clearing of Vegetation				
Land Preparation				
Planting Materials				
Carting of sticks				
Planting				
1st Weeding				
2nd Weeding				
3rd Weeding				
Weedicides/Pesticides				
Fertilizer				
Application of Fertilizer				
Harvesting				
Other expenses: ……				
Other expenses: ……				

1. Male Adult 2. Female Adult 3. Both 1 4. Children 5. Hired Labour

Part III: Factors that contribute to the survival of Ayensu Starch Company Limited

26. What is the frequency of harvesting of your produce? Quarterly [ ] Half Yearly[ ] Yearly [ ]
27. What is your main source of funds for your cassava production activities? Own funds [ ] Friends/Relatives [ ] Financial Institutions [ ] Middlemen/Traders [ ] Money Lenders [ ] Others, specify……
28. Are you able to save some money after every previous cropping seasons? Yes [ ] No [ ]
29. Do you get extension visits for your cassava cultivation? Yes [ ] No [ ]

29a. If yes, how many times in a year?.....

30. What is your major point of sale? ASCo [ ] Farm gate [ ] District market [ ] Outside District [ ] Other, please specify……
31. Do you usually get cassava market information before sale? Yes [ ] No [ ]

31a. If yes, what is your source of market information? Radio [ ] Friends/Fellow traders [ ] MoFA [ ] ASCo [ ] Others, please specify……..

32. **Any other comment**

……

……

……

……

……

Thank you so much for your time

Questionnaires to Customers of ASCo

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF BUSINESS

Department of Marketing and Corporate Strategy

Efficient value chain management and firm survival. The case study of ASCo

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Introduction

I would like to invite you to participate in a detailed research study in cassava production and processing into starch as part of a project on value analysis from roots and tuber crops. This survey therefore seeks to know more about the efficiency in cassava production and the constraints that the value chain players face in order to propose suitable solutions to addressing such constraints. I kindly request that you cooperate to complete the following short questions. It should take no longer than 20 minutes of your time.

Your response is of uttermost importance to us.

Preface

a) Name of

Enumerator…….

b) Date of the

interview……

c) Time interview started……Time ended: ……

d) Country:

……

Part 1: Demographics

1. Name of Organisation (*Not compulsory)*

   ……

2. Telephone/Contact:

   ……

3. Nature of business Brewery [ ] Paper [ ] Textile [ ] Petrochemical [ ]

   Pharmaceutical [ ] Plywood Manufacturing [ ] Biscuits [ ] Piggery [ ]

   Cattle Rearing [ ] Other, please specify……

4. How long have you been in this business Less than a year [ ] 1 – 5 years [

   ]

   6 – 10 years [ ] 11 – 15 years [ ] 16 -20 years [ ] Above 20 years

5. How many years have you been buying from ASCo

   Less than a year [ ] 1 – 3 years [ ] 4 – 6 years [ ] 7 – 8 years [ ]

6. Tick as appropriate the product(s) you buy from ASCo Starch [ ] Pulp [ ]

Cattle Fodder [ ] Other, please specify……

Part II Production and supply Levels

7. **Projected yearly product(s) requirement for production activities (in tonnes)**

Product(s)	**2010**	**2011**	**2012**	**2013**	**2014**
Starch					
Cattle Fodder					
Pulp					

7. **Actual yearly product(s) supplied to your company (in tonnes)**

Product(s)	**2010**	**2011**	**2012**	**2013**	**2014**
Starch					
Cattle Fodder					
Pulp					

8. **What quantity of supplies do you get from other suppliers (in tonnes) for the following years?**

Product(s)	**2010**	**2011**	**2012**	**2013**	**2014**
Starch					

Cattle Fodder					
Pulp					

Part III Constraints customers of ASCo encounter

9. The following are possible constraints that one is likely to encounter in receiving supplies from ASCo. **Please tick where applicable 1. Strongly Agree 2. Agree 3.Neutral 4. Disagree 5. Strongly Disagree**

Constraints	**1**	**2**	**3**	**4**	**5**
Poor lead time to receive supplies					
Inability of ASCo to meet expected product(s) requirement					
Poor quality products					
Transportation challenges					
High prices charged on ASCo's products					
Lack of information on product(s) specification and usage					
Other					
Other					

10. What has the management of your organisation done to mitigate the following constraints?

i. Poor lead time to receive supplies

……

……

……

……

ii. Inability of ASCo to meet expected product(s) requirement

……

……

……

iii. Poor quality products

……

……

……

……

iv. Transportation challenges

……

……

……

v. High prices charged on ASCo's products

……

……

……

……

vi. Lack of information on product(s) specification and usage

……

……

……

……

11. Any other comments

……

……

……

……

……

……

……

Thank you for your cooperation

Interview Guide to Management of ASCo

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF BUSINESS

Department of Marketing and Corporate Strategy

Efficient value chain management** and **firm survival. The case study of ASCo

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Your utmost response is of importance to us.

Thank you.

Part 1: Demographics

1. Name of Respondents *(Not compulsory)*

   ……

2. Telephone/Contact:

   ……

3. Sex of

   respondent:…….....

4. Age of

   Respondent…….

5. Highest educational

   Level……..

6. How long have you been working with ASCo……..

7. Which department do you belong

   to……...

8. How long have you been in your current managerial position……...

Part II Production and Supply Levels of ASCo

8. What was the **projected production level** of ASCo for the following products in the production years below **(in tonnes):**

	2010	**2011**	**2012**	**2013**	**2014**
Starch					
Cattle Fodder					
Pulp					

9. What was the **actual production level** of ASCo for the following products in the production years below **(in tonnes):**

	2010	**2011**	**2012**	**2013**	**2014**

Starch					
Cattle Fodder					
Pulp					

10. What accounted for the variations in each of the years above:

2010:……

2011:……

2012:……

2013:……

2014:……

Part III Efficiency of ASCo

11. **Total Production Cost Incurred for the following years (in Ghana Cedis)**

Year/Cost	**2010**	**2011**	**2012**	**2013**	**2014**
Cassava					
Transportation					
Water					
Labour					
Plant maintenance					
Electricity					
Engine Oil					
Packaging					
Others Costs:					
1.					
2.					

3.					
TOTAL					

12. Revenue generated from production for the following years (in Ghana Cedis)

	2011	**2012**	**2013**	**2014**
Starch				
Cattle Fodder				
Pulp				

Part IV Factors that contribute to survival of ASCo

13. What factor(s) contribute to the survival of

ASCo?.....

14. What mechanisms are put in place by management to ensure the following factors

stated in (**question 14)** above contribute to the survival of ASCo?

……

15. Which variable(s) are important to ASCo in forming relationship with

customers?.....

……

…

16. What factor(s) are used by ASCo to develop relationship with its

suppliers?.....

……

…

PART V Production, technological and marketing constraints that affect the operation of ASCo

17. What **production** challenge(s) confront ASCo?.....

18. What has management done to overcome these challenge(s)?.....

19. What **technology** challenge(s) confront ASCo?.....

20. What has management done to overcome these challenge(s)?.....

21. What **marketing** challenge(s) confront ASCo?.....……

22. Any other comments…….

Thank you for your cooperation