ANALYSIS OF STRUCTURE, CONDUCT AND PERFORMANCE OF CABBAGE MARKET IN CENTRAL DISTRICT OF BOTSWANA

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DECLARATION

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

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This thesis is dedicated to my late mother Edith Phuu. Through her prayers, encouragement and support I was able to achieve beyond my expectations. May her soul rest in eternal peace.

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ABBREVIATIONS AND ACRONYMS

BAMS	Botswana Agricultural Marketing Strategy
BHM	Botswana Horticulture Market
BWP	Botswana Pula
CEDA	Citizen Entrepreneurial Development Agency
CSO	Central Statistics Office
DAR	Department of Agricultural Research
EDD	Economic Diversification Drive
GM	Gross Margin
IFAD	International Fund for Agricultural Development
MoA	Ministry of Agriculture
MoYSC	Ministry of Sports, Youth and Culture
MM	Marketing Margin
NMM	Net Marketing Margin
SCP	Structure Conduct and Performance

ABSTRACT

The commercial horticulture industry in Botswana has experienced remarkable growth in the last decade and it continues to grow. However, lack of a well-coordinated marketing system of horticulture products remains a major constraint in further development of the industry. The focus of the study, therefore, was to assess the structure, conduct and performance of the cabbage market in the Central District of Botswana in order to elucidate the performance of the marketing system before any interventions are made to change the existing conditions. The data for the study was sourced from both primary and secondary sources. The study employed descriptive statistics, Gini coefficient and the Lorenz curve to determine the degree of market concentration in the study area. The gross margin, marketing margin and marketing efficiency was used to measure the performance of the horticulture market in the Central District of Botswana. The results of the study showed that the Gini coefficient was 0.672 and 0.509 for wholesalers and retailers respectively, indicating a highly concentrated market hence an oligopoly market structure. Further, the study found that producers attained the highest gross margin of Botswana Pula (BWP) 76 964.80, followed by wholesalers and retailers with BWP 6 017.48 and BWP 4 326.70 respectively. The marketing margins revealed that retailers attained the highest marketing margin of 50 percent while wholesalers had 34 percent. In conclusion, cabbage production and trading in the Central District is profitable; however, it is characterized by uncompetitive practices. The study therefore, recommends that the Government of Botswana should develop a policy that restricts monopolistic tendencies currently obtaining in the cabbage market in order to create a fair playing field for all actors in the market.

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CHAPTER 1: INTRODUCTION

1.1 Background

The agricultural sector in Botswana covers both livestock and crop production. Small-scale farming is the most dominant in terms of geographical coverage and the number of people that practice it. The contribution of agriculture to Botswana's gross domestic product (GDP) has declined over the years from 40 percent at independence in 1966 to 2.9 percent currently, with the livestock industry, especially beef, being the major contributor (MoA, 2012).The arable agriculture sub-sector has been experiencing low performance mainly due to the fact that only 5 percent of the land is used for crop production. Among other contributing factors to the poor performance of the arable sub-sector is low and erratic rainfall patterns, poor soil fertility, low adoption of improved technology and poor farm management (Seleka, 2011).

The decline in agriculture's contribution to the nation's GDP can also be attributed to the rapid development of the mining sector which contributes more than 75 percent of export revenue and 53 percent of government revenue (Anon, 2009). Agriculture however still remains the backbone of rural livelihoods as it is a source of food, income and employment. In 1966, 90 percent of employment was mainly from agriculture, however there has been a sharp decline over the years to only 8 percent of the population employed in agriculture by the end of 2006 (Makochekanwa, 2008). This is attributed to more people shifting to employment in the mining sector, which to date is the largest single employer (25 percent) second only to the public sector (Makochekanwa, 2008).The over-reliance of Botswana's economy on mining and beef industries motivated the Government of Botswana (GoB) to devise a strategy, the Economic Diversification Drive (EDD2011-2016),aimed at developing and enhancing other sectors such as horticulture and

dairy, with major emphasis on horticulture because of its significant growth over the last decade (Ministry of Trade and Industry, 2011).

The horticulture sector in Botswana entails the production of fruits (watermelons and citrus fruits) and vegetables (cabbage, potatoes, onions, tomatoes, butternuts and carrots). Currently, there is no commercial flower production in Botswana. However, the country plans to explore flower production in the vicinity of the Zambezi River (MoA, 2011). The horticulture sector in Botswana has developed over the years with local production rising from 15 019 metric tons (MT) in 1997 to 39 000 MT in 2009 (Madisa *et al*., 2012). Between 1997/98 and 2008/09, the area of land dedicated to horticulture production rose from 22 percent to 32 percent (MoA, 2012). However, Botswana imports about 80 percent of its grains and 38 percent of its horticultural products from neighboring countries such as South Africa (Madisa, 2011). The increase in horticultural production is attributed to increased government support in the form of farm-level financial incentive schemes such as Citizen Entrepreneurial Development Agency (CEDA) (Madisa *et al*., 2012). The CEDA was established by the GoB in 2001 to provide financial and technical support to promote viable and sustainable citizen-owned business enterprises (CEDA, 2013). CEDA provides loans to farmers at a fixed rate, which is currently 7 percent per annum.

The increase in demand for horticultural products in Botswana has been identified as another contributing factor to the development of the horticulture sector (Figure1.1). As shown in the figure, the demand for horticultural products increased from 67 000 MT in 2003 to 75 000 MT in 2010, implying an average growth rate of 18 percent annually.

Annual horticultural production increased from 16 000 MT in 2003 to 36 000 MT in 2010. The sector has experienced an annual growth rate of 18 percent compared to other agricultural sub-sectors except beef. The production and technological advances in horticulture have been further enhanced through the National Master Plan for Arable Agriculture and Dairy Development (NAMPAADD), which also includes dairy development. NAMPAADD is a master plan intended to streamline arable agriculture and dairy development to address government policy objectives such as food security, poverty alleviation and economic empowerment of rural communities (MoA, 2012).

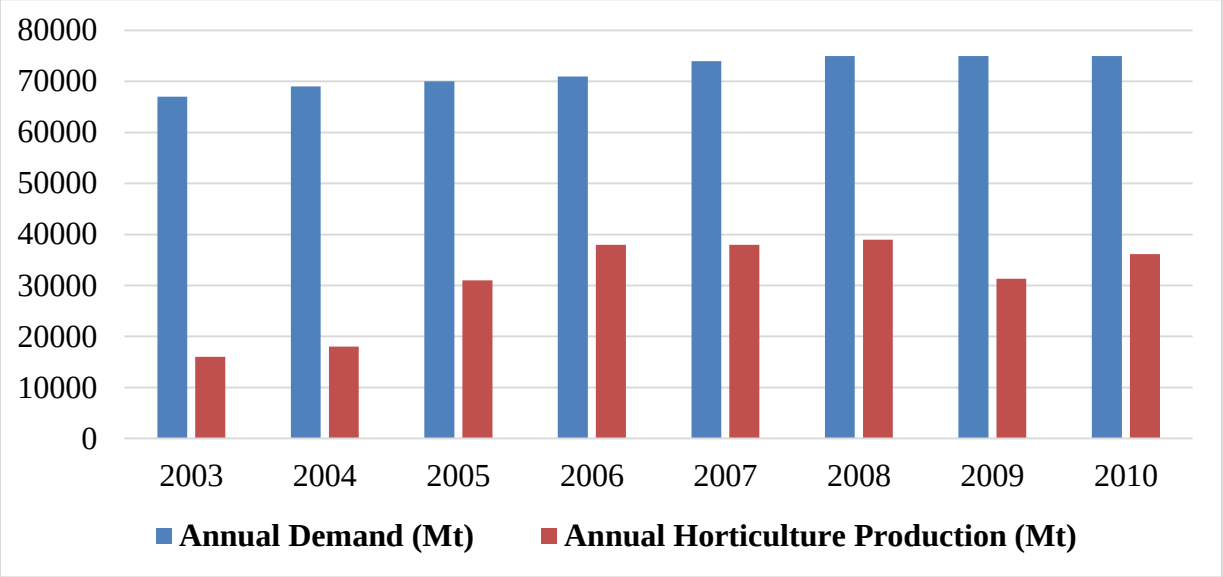

Figure 1.1: Annual production and demand trends (2004-2010)

Source: Central Statistics Office (2011)

The development of the horticulture sector through the NAMPAADD programme is coupled with Botswana Agricultural Marketing Strategy (BAMS) (2011-2016), which emphasizes a more market-led approach to the commercialization of horticulture (MoA, 2012).

The NAMPAADD and BAMS strategies were government's way of harmonizing both production and marketing of horticulture products in the country because no matter how many factors are introduced into the process of commercializing horticulture, the market will always be the final adjudicator (Galor, 1990). Without an efficient market, no matter how bountiful production may be, it may be considered useless if it cannot enter the market. The objective of BAMS is to help small-scale producers to transition from subsistence to commercial farming, while at the same time improving market access and returns for traders. Sound agriculture markets are of fundamental significance as they ensure fair returns to all market participants, from producers to the final consumer. Well-functioning markets provide remunerative prices to market participants and boost their efforts for increasing and sustaining agricultural production and marketing.

Despite government efforts to develop the horticulture sector, local producers and traders, in Botswana are faced with unfavorable market conditions such information asymmetry, lack of access to markets and competition from neighboring countries such as South Africa (Moepeng, 2013). The Central District of Botswana, which is the largest in terms of area and population, has more horticulture producers and traders compared to other districts in the country (MoA, 2013). The Central District is characterized by a widely dispersed population, which may restrict information transfer among market actors (MoA, 2011). Moepeng (2013) noted that lack of information among market participants may also be attributed to the fact that many private contracts between producers and traders are not in the public domain records and products in the market are not captured in national statistics records. Traders in the study area sometimes resort to sourcing their produce from neighboring South Africa because most of the farmers in the area

are in closed supply contracts with some few wholesalers and retailers. This ends up creating an imbalance in the market where these few contracted traders control a larger share of the market. Through the Control of Goods, Imports and Agriculture Products Act of 1996, the GoB regulates the amount of horticultural imports entering Botswana to protect the domestic market from unfair competition (MoA, 2011). The act is supposed to protect local producers and traders and create access to market; however, the benefits are not spread across all actors since only a few of them benefit (Moepeng, 2013).

While financial assistance from the government is vital to the commercialization of the horticulture sector, it is the market that provides the incentive for commercial activities. The fact that the supply of horticultural products to the formal market is mainly controlled by few firms contributes to reasons why some producers and traders have abandoned production and trading (Madisa, 2012). Of all the recorded horticulture producers and traders in the Central District, about half are still in business (MoA, 2014). The reduction in horticulture producers and traders in the study area may also be attributed to limited access to Botswana Horticulture Market (BHM), a central market situated in the Southern District in the capital, Gaborone. The central market is about 300 kilometers from the Central District, which means more transport costs incurred and reduced market accessibility. A report by Botswana Press Agency (2011) stated that even though BHM is a central market where horticulture producers can deliver their produce for sale and retailers can acquire commodities for sale, it is still under-utilized.

Most traders who are far from BHM face challenges of high transport cost and loss of commodities during transportation due to the perishable nature of horticulture products.

This result in high marketing costs incurred which affects the rate of return on investment (BPA, 2011). Marketing is a very essential component in any agricultural industry since it bridges the gap between producers, traders and consumers (Hilpi *et al*., 2007). A thorough understanding of the process of marketing by all relevant stakeholders is essential to the current horticulture commercialization drive. The performance of the market can be better understood by evaluating existing marketing channels and how market participants behave as a reaction to existing market conditions (market structure).

1.2 Problem Statement

Agricultural markets provide an important mechanism for efficient coordinated economic exchange (Dorward and Kydd, 2005). The well-functioning of the horticulture marketing system depends on its organizational structure and how efficient the marketing channels are in moving products from farm-gate to final consumers at prices that ensure fair returns to all market participants (Feyissa, 2009). Structure, conduct and performance analysis is key to understanding how the cabbage market in the Central District of Botswana functions in terms of its structure and the behavior of the market participants based on the type of market structure they are exposed to. The market structure and conduct of market actors determines the performance of the market in terms of prevailing prices, net returns, margins and costs. However, there is a little empirical information on the structural organization of the cabbage market in the Central District, the nature of different market participants and the subsequent impacts on the performance of the market.

There might be a number of reasons as to why only a few firms supply more horticulture products in the country. For example, the reasons may be that the government licenses only few

firms in an industry or that the cost of trading horticulture products is very high and prohibitive, resulting in barriers for new entrants into the market. These few firms controlling the supply of horticulture products may decide to collude and sell their products at a high price or price discriminate which may result in an uncompetitive market. The other reason could be that these few firms are more efficient than the rest of the firms in the market, and because of their low cost structure they can afford to lower their prices hence attain a larger market share. Analysis of the structure, conduct and performance of the horticulture market gives insight into what is happening in the market for horticulture products and provides an explanation of the current market situation in the Central District of Botswana.

Past studies on horticulture in Botswana have mainly focused on production trends and productivity enhancement (Madisa *et al*., 2012; Assefa, 2011; Obopile *et al*., 2010). There is limited information regarding the cabbage market in the Central District of Botswana generally and particularly how specific aspects of the market (such as market concentration, market share, the nature of competition, and behavior of market participants) affect the performance of the market. This information gap can be addressed by analyzing the market structure; conduct and performance of horticulture market in the Central District of Botswana, hence the current study.

1.3 Objectives of the study

The overall objective of the study was to examine the structure, conduct and performance of horticulture market in the Central District of Botswana with specific reference to cabbages. The specific objectives were:

1. To describe the cabbage marketing channel in the Central District of Botswana.
2. To determine the structure of the cabbage market in the Central District of Botswana.
3. To determine the conduct of the cabbage market participants in the Central District of Botswana.
4. To assess the performance of the cabbage market in the Central District of Botswana.

1.4 Hypotheses

The following hypotheses were tested: that

1. The horticulture market in the Central District of Botswana is highly concentrated.
2. Traders in the Central District of Botswana lower prices of cabbage in order to wade off new entrants into the market.
3. The performance of the horticulture market in the Central District of Botswana as proxied by gross margins and traders' marketing margins is low.

1.5 Justification of the study

The GoB through the BAMS (2011-2016), has embarked on a more market-led commercialization of the horticulture industry. One of the objectives of the market-led commercialization strategy is to provide more accurate and useful agricultural data and statistics on the costs, profitability and the viability of horticulture production and marketing in Botswana.

The commercialization drive that the GoB is undertaking is part of the goal to address its national policy strategies of economic diversification, employment creation and income generation.

An in-depth analysis of the SCP of the horticulture market in Central District of Botswana could provide a better understanding of the type of market structure the market participants are exposed to and the overall performance of the market, hence contributing to the achievement of government's strategy of availing accurate and useful agricultural data. The information is vital to policy makers in addressing the different challenges faced by horticulture producers and traders in Central District of Botswana. The findings of this study will also benefit producers and traders in the study area, by highlighting the critical areas where the market may be failing. Potential investors will also benefit from the findings through knowledge of where to invest, whether in production or trading of horticulture produce. This study contributes to existing literature in the horticulture sector in Botswana by evaluating the prevailing hypothesis driving the performance of the horticulture market in Central District of Botswana.

1.6 Organization of the study

The study is organized into five chapters. Chapter one covers the introduction which includes the background, problem statement, justification, objectives and hypotheses to be tested. Chapter two presents the literature review, while chapter three provides the conceptual framework, methodology and analytical tools employed in the study. Chapter four presents the major findings and discussion of the results. The conclusions and recommendations are presented in chapter five.

CHAPTER 2: LITERATURE REVIEW

2.1 The horticulture industry in Botswana

Horticultural production in Botswana is usually a secondary activity producing food for home consumption with surplus for sale locally or in nearby towns. Horticulture producers can be categorized into small-scale farmers (with less than 5 hectares of land under horticulture) and medium-scale emergent farmers (with landholdings between 5 to 10 hectares) as well as large-scale commercial producers with over 10 hectares (Hess, 2009). All horticultural production in Botswana is irrigated; most of the irrigation water comes from groundwater and recycled water (Madisa *et al*., 2010). The most common horticultural production in the country is vegetables such as cabbage, tomatoes, spinach, butternut and green pepper. Over the years, land under vegetable production in Botswana has increased from 407.85 ha in 1999/200 to 1026.0 in 2008/9 through government support. This represents a significant increase of more than 100 percent in 10 years (Assefa, 2011).

The increase in land area allocated to vegetable production is due to increased public support towards the horticulture sector through programmes such as CEDA, which commenced in 2002. The increase has been mostly in the Central District, where most vegetable farmers are located (MoA, 2013). The Horticulture Inventory for 2013/2014 revealed that cabbage is the most popular crop grown and marketed in the area, either alone or in combination with other crops such as tomatoes, spinach, butternut and watermelon. This is because of its hardiness and ease of adaptability to Botswana soils.

Cabbages in Botswana are marketed through fresh produce markets and chain stores, where from the farm-gate they reach retailers and through wholesalers or they are directly sold to retailers by producers. Some producers sell directly to consumers. Producers either transport cabbages to the wholesalers and retailers or wholesalers go directly to the farm-gate to buy cabbages from producers. The most common practice is where wholesalers go to the farm-gate for produce. Cabbage is usually sold per head or in 10 kilogram bags.

2.2Understanding structure, conduct and performance paradigm

The structure, conduct and performance (SCP) paradigm is a tool used to analyze markets in order to establish the relationship between market structure, market conduct and the market performance (Tirole, 1988). The paradigm is based on two theories; industrial organization and price theory. The industrial organization theory proposes the use of degree of vertical integration, industrial maturity, government participation, cost structure and diversification in examining how a particular firm behaves. The structure of the market, which refers to how the market is functioning, is the concept behind the industrial organization theory. Based on the industrial organization theory, the structure of a market has an influence on the strategy and decision making of a company in terms strategic supply management (Raible, 2013). According to Ramsey (2001), it is best to describe how the firm operates in terms of the type of market it operates in rather than only focusing on the firm itself and its internal components.

The price theory, on the other hand, is concerned with explaining the economic activities that create and/or transfer value in the trade of goods and services between different economic actors (Weber, 2012).

That is, the price of a good/service is the result of the relationship between the forces of supply and demand. The theory proposes three basic market structural variables: (a) degree of seller and buyer concentration (b) level of product differentiation, and (c) condition of entry. To best explain the theory, Adam Smith (1776) used the Diamond-Water Paradox, which tries to explain the complex question of why water is so cheap and diamonds are expensive yet water is vital for survival and diamonds are not. The explanation of the paradox is that it is much more difficult to acquire a kilogram of diamonds, in terms of the amount of labour involved than it is to acquire a kilogram of water. Therefore, labour forms the basic unit of the exchange value of goods hence their real price while the nominal price is connected to the value of the currency involved in the trade (Weber, 2012).

The Diamond-Water paradox can be used to explain the supply and marketing of other commodities, including agriculture. The labour which is required to get more of a commodity governs its supply of it; the supply determines whether people do or do not want more of the commodity eagerly; and this eagerness of want or demand governs its. If it requires more labour to source a commodity, the supply for that commodity will be limited leading to a higher price being paid for that commodity.

The SCP framework was initially developed in the 1930's by Edward Mason and Joe S. Bain. The central hypothesis behind the framework is that observable structural characteristics of a market determine the behavior of firms within that market and behavior of firms within a market give structural characteristics and determines measurable market performance (Lee, 2008).The SCP paradigm became the dominant framework used in the study of industrial organization

between the early 1950's up to the early 1980's and its influence began to decline during the 1980's after the emergence of game theoretical analysis of oligopolistic markets (Lee, 2008). The SCP paradigm postulates a causal relationship, where the structure influences conduct and conduct in turn influences performance (Lee, 2008). Over the years it has been used as a standard framework for empirical work in the field of industrial organization to analyze operations and performance of imperfectly competitive markets and the behavior of firms in such markets[1]

According to Edwards *et al*. (2006), there are two competing hypotheses in the SCP paradigm. These are (i) the traditional structure-performance and (ii) the efficient-structure hypotheses. The structure-performance hypothesis postulates that the degree of market concentration has an inverse relationship with the degree of competition because market concentration encourages firms in the market to collude (Edwards *et al*., 2006). The hypothesis of the SCP paradigm will be supported if there is a positive relationship between market concentration, measured in terms of concentration ratio and performance, which is measured in terms of profits, regardless of the firm's efficiency, which is usually measured by market share (Edwards *et al*., 2006). This implies that firms operating in more concentrated industries will earn higher profits than firms operating in less concentrated industries, irrespective of their efficiency.

The efficient-structure hypothesis, on the other hand, states that the performance of a firm has a positive relationship with its efficiency (Molyneux and Forbes, 1995). This is because market concentration reduces competition where firms with lower cost structures increase their profits by reducing prices and expanding their market share.

[1]According to Muslim *et al*. (2008), industrial organization entails the description of how a market or industry is formed into a particular organization and how this organization affects the performance of the market.

The positive relationship that arises between the firm profits and market structure is due to the gains made in the market share by more efficient firms. These gains will result in increased market concentration. This implies that more efficient firms accumulate more profits because of their high efficiency not because of assumed collusive behavior as the traditional structure-performance hypothesis proposes (Molyneux and Forbes, 1995).

Literature on the study of the two hypotheses finds more support of the efficient-structure hypothesis than the structure-performance, especially in the banking literature (Gilbert, 1984; Berger and Hannan, 1989 and 1997; Berger, 1995; Smirlock 1985; Molyneux and Forbes 1995). The efficient-structure hypothesis has been given more support in various industries and commodity markets other than the banking industry (Outreville, 2004; Allan and Shaik, 2005; French and Mobley, 2000).

2.3 Methods for assessing market structure, conduct and performance

As the name suggests, the SCP paradigm comprises of three elements: market structure, market conduct and market performance. The market structure refers to the way the market is organized in terms of the concentration or market share of firms. A high market concentration implies low competition and vice versa (Lee, 2008). According to Margetts (2006), there are three market structure models used for categorizing the structure of a market based on the degree of market control by the dominant market player(s). On the supply side, these are monopoly, monopolistic competition and oligopoly. On the demand side such models include monopsony, monopsonistic competition and oligopsony.

In empirical work, the variables used to determine structure include seller concentration, degree of product differentiation and barriers to entry (Smit and Trigeorgis, 2004). Lee (2008) further classifies these variables into two main groups namely, intrinsic and derived structural variables. Intrinsic structural variables are those which are determined by the nature of products and availability of production and marketing technologies. Derived structural variables, on the other hand, are those that are determined by firms and governments such as barriers of entry, seller and buyer concentration and product differentiation.

According to Tiku*et al*. (2009), market structure is mostly measured by the Gini coefficient and Lorenz curve. The Gini coefficient expresses the extent to which the market is concentrated. It ranges from zero to one, with zero indicating perfect equality in the size and distribution of buyers or sellers, and one implying perfect monopsony/monopoly in the market. The Lorenz curve, on the other hand, is used to represent income distribution by showing the proportion of income which goes to a particular percentage of the population (Onyango, 2013). In Lorenz curve analysis, high inequality in the distribution of market share reflects high market concentration, which is depicted by a wide gap between the Lorenz curve and the line of perfect equality. This indicates that a few firms control the market (Nellis and Parker, 1992).

To further explain the structure of the market, the degree of product differentiation and barriers to entry/exit are assessed. Product differentiation refers to the process of distinguishing a product or service from others in the market in order to make it more attractive to a particular target market (Michail, 2011).

Differentiation of a product may be viewed as a source of monopoly power such that if products in the market were homogenous, it means there would be perfect substitutes for products of a particular firm and such a firm would have no market power as a result (Hitt*et al*., 2007). A homogenous product in a market is one of the features of a competitive market. Barriers to entry/exit refer to factors that make it difficult to enter or exit a particular market (Mars, 2013). Barriers to entry act as a deterrent against new competitors and may be either innocent (for example, the dominating company's absolute cost advantage) or deliberate (for example, high spending on advertising by firms in the market to make it expensive for new entrants into the market) (Grant, 2002).

Market conduct refers to firm behavior (Lee, 2008). It refers to the price and other market policies which are pursued by market players and the way in which they coordinate their decisions (Haruna *et al*., 2012). The conduct of the actors in a particular market is considered to be a reaction pattern and/or adjustment behavior to the market structure. For example, firms in a highly concentrated market may decide to collude and fix or raise prices in order to make more profits and wade off competition from new entrants into the market (Edwards *et al*., 2006). The key variables used to capture market conduct include firm's pricing strategies, collusion, advertising, research and development. Market conduct is different from market performance in that it refers to behavior and strategies of market participants while market performance refers to the outcome of such behavior and market interactions (Holtzman, 2007).

Market performance refers to the outcome or the equilibrium assessed in terms of allocative efficiency (Lee, 2008; Haruna*et al*., 2012). Market performance is the ultimate impact of the

market to its participants in terms of pricing, volumes traded and marketing costs (Onyango, 2013). It is indicated by profitability and efficiency of firms in the market. Profitability is used as a proxy to assess the performance of a market and to test the two hypotheses in the SCP paradigm; whether profits are accrued because of efficiency of the firms (Efficient-structure hypothesis) or because of market concentration (Structure-performance hypothesis).There are other variable most commonly used to assess performance of a market is the marketing margin.

Marketing margin refers to the difference between the price paid to the first seller (farm-gate price) and the price paid by the final buyer (retail price) (Abankwah*et al*., 2010). It is a tool for assessing market performance by evaluating efficiency of price formation and transmission in a marketing system (Tadesse, 2011). Marketing margin is influenced primarily by shifts in retail demand, farm supply and marketing input prices. Other factors which influence marketing margin are degree of processing that has occurred along the marketing channel, length of marketing channel, channel efficiency, timing of sale, technical change and market power (Wohlgenant, 2001). Mendoza (1995) noted that the size of the marketing margin depends on a combination of both the quality and quantity of the marketing services and the costs of providing those services. Marketing margins tend to be higher with highly perishable goods like fruits and vegetables (Zulfiqar *et al*., 2005). Wider marketing margins usually indicate high prices to consumers and low prices to producers (Kariuki, 2011).

Abbassian (2010) emphasized the importance of splitting the marketing margin into two portions namely, retailer margin and wholesaler margin. The wholesaler margin refers to the difference in price at which wholesalers sell their products and the price they pay to producers to acquire the

products, while retailer margin refers to the difference in price at which retailers sell the produce acquired from the wholesaler and the price they pay to the wholesaler (Abbassian, 2010). Therefore, marketing margins indicate how much has been paid for processing and marketing services applied to a product at that particular stage in the marketing process (Smith, 1992). Marketing margin analysis helps identify significant weaknesses and inefficiencies in the marketing system. For example, if the margin for one product varies distinctively along different marketing channels, this may indicate inefficiencies in the performance of the market (Smith, 1992).

There have been some critiques in the SCP paradigm literature regarding the relationship between aspects of the market (structure, conduct and performance) and the calculation of the concentration ratio to explain the market structure. Some authors have argued that the chain relationship in SCP model is not always unidirectional; it can also be bi-directional in the sense of reverse causation (Lee, 2008; Pickering, 1974; Nyong, 1990). Performance of a particular industry may influence how certain organizations in a market conduct themselves which in turn influence the structure of the market as depicted by the nature of competition that exists in the market. Lee (2008) further stresses the reverse relationship that the firm's conduct (in form of predatory behavior or entry deterrence) can condition the market structure in which firms operate. This implies that the market structure can be endogenously determined. The relationship between conduct and performance has been termed as weak, such that performance can influence conduct of market actors. For example, firms with substantial accumulated profits may incur losses in the short-term to drive out rival firms (Pickering, 1974).

Another contradiction which has been reported in previous studies involves the calculation of the concentration ratio. Okereke and Anthonio (1988) emphasized the importance of market concentration because it depicts a situation in which a few firms have the largest share of the business. They developed a formula for calculating the concentration ratio which reflects the interaction between the few large firms and the small ones in an industry as follows:

$$C = \frac{D}{P} \qquad (2.1)$$

Where *C* is the industry concentration index, *D* is the percentage of industry employment sales or assets held by the largest firms and *P* is the percentage of industry employment, sales or assets held of all firms in the small size class. Tiku *et al*. (2009) have argued that this index is deficient in that the ratio indicates the economic power of the largest firm in the industry. The assumption of the exercise of power by the small firms may not always hold because these small firms may be so weak to the point that they are unable to organize themselves to exercise any market power. Tiku *et al*. (2009) suggested the use of a combination of the Gini coefficient and Lorenz curve as the best method for determining the market concentration.

2.4 Empirical review

Several studies have employed the SCP framework to evaluate the market conditions for particular agricultural markets. Teka (2009) assessed the efficiency of fruits and vegetable market and the profitability of fruits and vegetable production in Alamata District, Ethiopia, using the S-C-P model. The study found that producers, wholesalers, assemblers and retailers made profit from the production and marketing of fruits and vegetables despite the actors in the fruit and vegetable industry operating under an imperfect market. The calculated concentration ratio was 24.6 percent, indicating a competitive market. Kohls and Uhl (1985) suggested, as a

rule of thumb, a four largest enterprises concentration ratio of 50 percent or more as an indication of a strongly oligopolistic industry. However, market conduct did not demonstrate competitiveness because the Alamata fruit and vegetable industry was characterized by cheating on prices where wholesalers were aware that producers lacked cold storage facilities for the perishable fruits and vegetables, therefore offering producers lower prices for their products knowing that they do not have a choice but to sell (Teka, 2009).

The study further found a lack of efficient extension support as one of the challenges that hindered production and productivity in fruits and vegetable enterprises. Teka's study is relevant to the current study because it helps in highlighting those self-serving characteristics in the behavioral conduct of actors in a marketing chain which result in inefficiencies of fruits and vegetable markets. However, the study differs with the current study with regard to concentration calculations. Contrary to Teka's study, the current one assessed the cabbage market concentration using the Gini coefficient. The use of the concentration ratio, as used by Teka, fails to take into account the distribution of market share across all firms in an industry (Giroh *et al*., 2010). In the current study, the Gini coefficient combined with the Lorenz curve was chosen to analyze the market structure in the Central District of Botswana because of its ability to compare inequalities across different actors in the market and it is easier to interpret.

Enibe *et al*. (2008) used the SCP model to evaluate policy issues in the banana market in Anambra State of Nigeria. The study employed the Gini coefficient and Lorenz curve to assess the structure of the banana market which was found out to be 0.17, 0.31 and 0.21 for producers, wholesalers and retailers respectively.

A Gini coefficient of 0.17 among producers indicated that there is no single large banana plantation that supplies a major quantity in the market. There was a higher concentration among wholesalers where more quantities of bananas were controlled by a small group in the market. Retailers were observed to have lower concentration than wholesalers, indicating that among the retailers, there was no single group controlling a large quantity of bananas being sold in the market. The Lorenz curves of retailers and producers were therefore closer to the line of equality than that of the wholesalers.

Enibe *et al*. (2008) further identified some of the constraints faced by the actors in the banana industry. They found that middlemen mostly lacked capital and storage facilities while farmers lacked capital to increase production and high yielding and disease resistant banana varieties.To assess market performance, Enibe *et al*. (2008) used producer's share of the retail price, gross marketing margin and the proportion of consumer's income spent on food. The producer's share was 56 percent and the marketing margins for wholesalers and retailers were 16 and 28 percent respectively. The study concluded that the producers had a fair share of consumer spending and that traders accrued high profits (at 65 percent of the total margin), implying that consumers were subjected to higher prices as the traders attained more profits. The current study also employed the Gini coefficient, Lorenz curve, producer's share and marketing margin to assess the structure, conduct and performance of cabbage market in the Central District of Botswana. The Gini coefficient is best combined with the Lorenz curve because it summarizes the latter such that comparisons of cumulative shares of the product or income that accrue to producers and traders can be made.

The marketing margin best describes the gross percentage of the final retail price which accrues to different market participants other than the producer, in return of the marketing services rendered (Enibe *et al*., 2008).

Haruna *et al*. (2012) also used the SCP model to assess the structure, conduct and performance of tomato market in the Upper Eastern Region of Ghana. The study employed the Gini coefficient to determine the tomato market structure. It found market concentration ratios of 0.68, 0.58 and 0.64 for producers, wholesalers and retailers respectively. The ratios implied high market concentration among all the actors, especially producers. The study further revealed the presence of price discrimination in that tomatoes were sold at different prices to different consumers at various parts of the market due to lack of price information. Haruna *et al*. (2012) did not combine the Gini coefficient with Lorenz curve as the current study did. Use of Lorenz curve is essential because it provides a measure of profit share among the market actors. It also gives the degree of inequality in the distribution of benefits among the market actors (Onyango, 2013).

Haruna *et al*. (2012) used marketing margin, profit margin and returns on capital to assess the performance of the tomato market. They found that farmers, wholesalers and retailers achieved profit margins of US$ 6867.15, US$ 34 529.03 and US$ 366.75 respectively. The return on the capital was 1,127.6 percent for farmers, 237.6 percent for wholesalers and 66.0 percent for retailers, implying that tomato marketing was profitable. The marketing margins were US$ 7 621.35, 78 206.94 and 1 305.41[2] for producers, wholesalers and retailers respectively. These

[2]The yearly average interbank exchange rate for 2011stood at USD 1= GHC 1.5606 (accessed from www.oanda.com)

results indicate that while tomato marketing was highly profitable among the market actors, the market was not efficient as it was dominated by only a few firms.

Tiku *et al.* (2009) examined the structure, conduct and performance of the palm oil industry in Cross River State of Nigeria using the SCP model. The objective was to understand the effects of Commodity Marketing Board (CMB) on the performance of the palm oil market. The board was established to organize the markets for efficiency, however, it was observed to be exploitive of primary producers because they paid lower prices relative to production cost. This hampered the expansion of palm oil production. Accordingly, under CMB arrangements, Nigeria ceased from being the leading producer in Africa in 1990s. The CMB was later abolished to allowthe market mechanism to operate thus changing its structure, conduct and performance. Tiku and colleagues adopted the Gini coefficient and Lorenz curve to measure the degree of concentration post CMB. They found that processors, commissioned agents, merchants and retailers had Gini coefficients of 0.59, 0.54, 0.65 and 0.32 respectively. These implied that concentration was high among merchants and that few firms controlled trade at the merchant level. Other market participants showed that there existed sufficient competition among them such that no single individual or firm could influence the market. The conduct of the palm oil producers and trades revealed that the large merchants engaged in vertical integration in order to secure the supply of palm oil from producers.

To assess the performance of the market, Tiku *et al*. (2009) used marketing margin. Processors, merchants, retailers and commissioned agents had 37.2, 29.0, 26.1 and 7.8 percent respectively. Thus, processors received the highest share of the marketing margin, followed by merchants.

The overall results showed that the present market conditions were better than CMB market arrangements. Tiku *et al*. (2009) used the marketing margin only to assess the performance of the market. The authors did not calculate profit margin to identify which segment of the market was more profitable as well as assess the economic viability of each segment. The current study employed the calculations of profit margins in order to provide full information of performance of the cabbage market in the Central District of Botswana.

2.5 Summary

Based on the literature reviewed in the forgoing section, no study has examined the market performance of horticulture products in Botswana. Horticulture studies (e.g., Madisa *et al*., 2012; Moepeng, 2013) in Botswana have mainly focused on production and productivity enhancement, without critically assessing the performance of the horticulture market. Therefore, the current study is unique in the sense that it examined the horticulture market in the Central District of Botswana focusing on how the structure of the market influences the conduct of specific actors and the overall performance of the market.

The study employed the structure, conduct and performance model to assess the performance of the cabbage market in the Central District of Botswana. The Gini coefficient and Lorenz curve were used to examine the structure of the cabbage market in keeping with previous literature. To examine the conduct of the market participants, variables such as pricing strategies, collusion and advertising and promotion were used. To assess the performance of the cabbage market, the profit margin, marketing margin and marketing efficiency were used.

CHAPTER 3: METHODOLOGY

3.1 Conceptual Framework

The study is based on the theory of industrial organization which states that there is a causal link between the structure of a market in which a firm operates, the organization's conduct, and in turn the organization's performance in terms of profitability (Ramsey, 2001). The theory is captured in the SCP model first developed by Joe S. Bain. The model explores the relationship between market structure, conduct and performance and the effects of internal and external factors on all three. In the 1980's, McKinsey suggested a dynamic approach to the SCP model, rather than only focusing on the static element of the model. The dynamic approach suggests that the relationship among structure, conduct and performance is not only unidirectional but also flows both ways. The performance of the market can influence the conduct of market participants which in turn influences the structure of the market, as depicted by the blue arrows in Figure 3.1.

According to Frankt (2010), market structure is influenced by basic conditions of demand and supply such as the number, type and distribution of sellers in the market. In order to identify the structure of a market, variables such as type of product marketed, barriers to entry and exit and the availability and type of information are considered. The market structure is also influenced by objectives of particular firms in the market and government policies. The way the structure of the cabbage market in the Central District is organized will influence behavior of firms and individuals operating in the market. How cabbage market actors in the Central District price and promote their products is a resultant effect of the structure of the market. For example, a firm

with substantial amount of market power may misuse that power and set prices sufficiently low with the purpose of forcing a competitor to withdraw from the market (Frankt, 2010).

The type of behavior depicted by firms and individuals in the market determines the performance of the market. The performance of the market is measured by comparing the results of the firms along the industry in efficiency terms. Different ratios may be used to determine firm efficiency such as profit margins, marketing margins and technical progress (Frankt, 2010). In the current study, marketing margin, profit margin and marketing efficiency is used to sum up the results of the firms along the cabbage market in the Central District of Botswana.

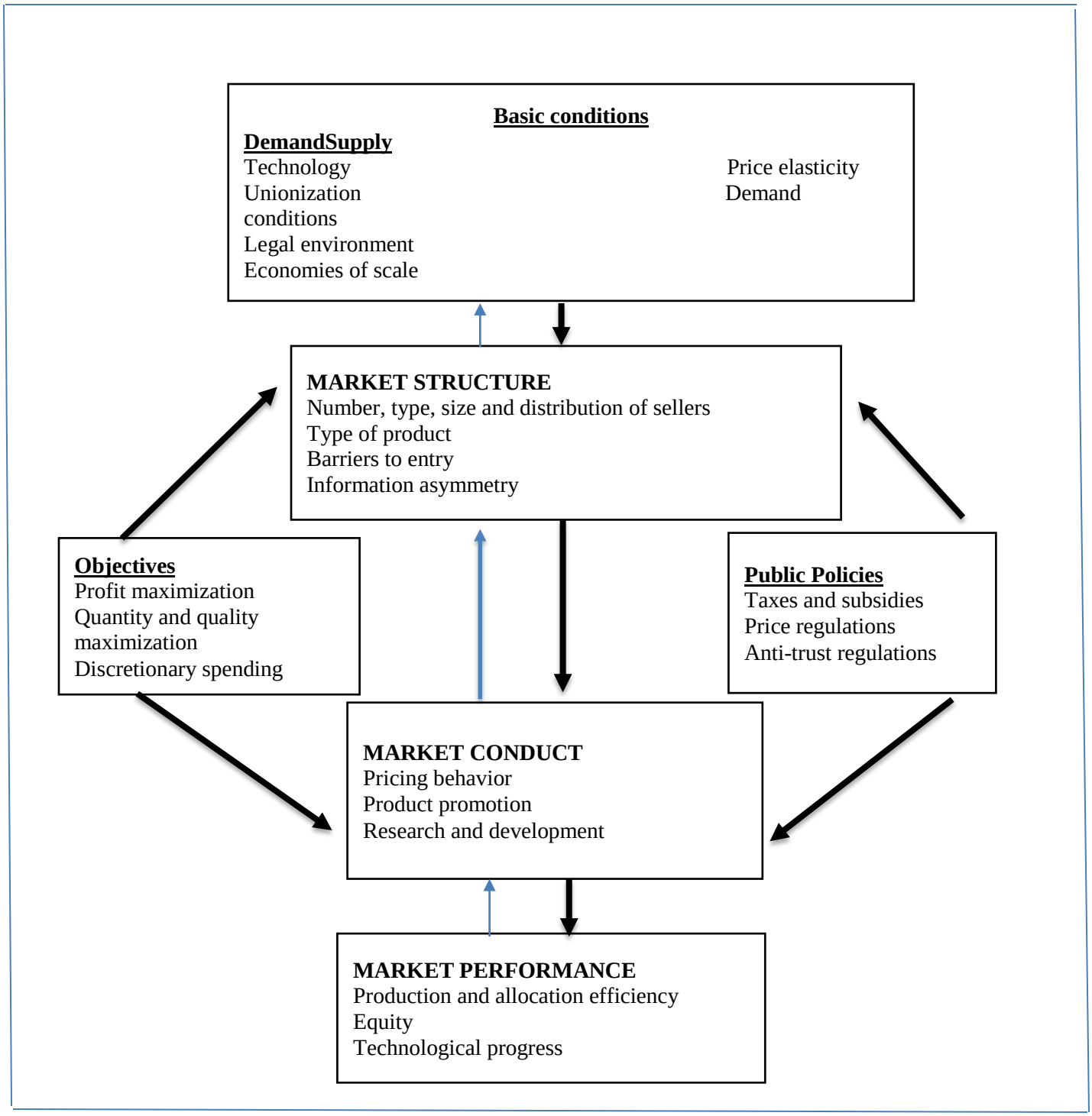

Figure 3.1: **Structure, conduct and performance framework**

Source: Adapted from Frakt (2010)

3.2 Research Design

The research design used was a cross-section study done at a single point in time. The study used both qualitative and quantitative data to describe the nature and performance of the horticulture market in the Central District of Botswana. This design was useful for descriptive purposes and in obtaining qualitative information as well as for determination of relationship between variables (Bailey, 1998).

3.3 Study Area

The Central District covers 142,302 square kilometers with a population of 638,604 people in 2011 (CSO, 2011). The major towns are as Francistown, Mmadinare, Serowe, Palapye, Orapa and Mahalapye. The Central District is the largest of nine districts in terms of size and population mainly around the areas of Palapye and Serowe. The average annual rainfall ranges from 180 mm to 210 mm and the soil types in this region are loam and sandy loam (Department of Meteorology, 2010). The most dominant horticulture crops grown in the Central District are cabbages, tomatoes, rape and citrus fruits for both subsistence and commercial purposes.

Figure 3.2: **Map showing the Central District**

Source: AfriGis, (2014)

The Central District was chosen because it has a greater concentration of horticulture producers and traders as compared to other districts in the country. The horticulture producers and traders there comprise of those funded by CEDA, a government funding scheme and those who are self-sponsored. Among the horticulture products in the study area, cabbage is the most dominant vegetable grown and marketed. According to the MoA (2013) report, of all the 236 horticulture producers identified in the Central District, about 80 percent grow either cabbage alone or in combination with other horticulture products such as tomatoes, butternuts, watermelons and spinach.

3.4 Data Needed

Data collected for the study included socio-economic characteristics of both producer and traders, such as age, gender, educational status, marital status, years of experience in cabbage production and trading, main occupation and primary source of income. Data also included farm size, amount of labour, seeds, fertilizer, pesticides, and water used in the production of cabbage. Transportation costs, loading and offloading costs, market charges were obtained from traders and information regarding amount of cabbage traded and prices was also compiled.

3.5 Data Sources

The study sourced the relevant data regarding the number of actors in the market from the Horticulture Inventory report of 2012/2013 and Central Statistics report of 2011. The Chief Extension Officer in the Central District provided information on the current market condition in the study area and some of the constraints faced by the different market actors.

3.6 Sampling Technique

The stratified random sampling technique was used by structuring the population into various strata to ensure fair representation of the different types of market participants. The stratification involved three homogeneous groups of producers, wholesalers and retailers. The proportional sampling method was used to select a specific number of respondents from each group based on their proportion in the market place. The information given by the extension officer in the area was that from the listed producers and traders, not all of them are still in business, therefore, a sample size of 125 was chosen, based on Yamane (1967) calculation.

3.6.1 Sampling cabbage producers

The producers sampled for the study included those commercial cabbage producers who have been in production for at least two years. The proportion of the producers in the market was forty percent, giving a sample size of fifty. Therefore, fifty producers were randomly selected. Out of the ten extension areas in the study area, purposive sampling based on areas with the largest number of producers and traders was employed to select five extension areas. These were Palapye, Serowe East, Madiba, Mmadinare South and Tonota East. From each of the five selected extension areas, ten producers were randomly selected in order to come up with a total of fifty producers in the study area.

3.6.2 Sampling cabbage wholesalers

Wholesalers included in the study comprised of those who bought cabbage from the producers in order to resell it to the retailers in the market. Wholesalers selected for the study had to have been in operation for at least two years. The proportion of wholesalers in the market was twenty percent, therefore the selected sample size for wholesalers was thirty five. From each of the five randomly selected extension areas, seven wholesalers were randomly selected in order to come up with a total of thirty five wholesalers.

3.6.3 Sampling cabbage retailers

The sample size for the retailers was forty respondents. These respondents comprised of respondents who bought cabbage from wholesalers in order to sell to consumers, with a minimum operation period of two years.

The proportion of retailers given by the trading license officer was thirty two percent and eight retailers were randomly selected from each of the selected extension areas to come up with a total of forty respondents.

3.7 Data Collection Instrument (Questionnaire)

The study used both primary and secondary data. Primary data was gathered using two types of structured questionnaire, for producers and traders. The questionnaire had sections on demographic characteristics of respondents as well as production and marketing information such as quantity of cabbage grown and traded by producers, quantity of cabbage traded by wholesalers and traders, pricing, availability of price information and access to market. The questionnaires targeted cabbage producers and traders who had been active for 2 years or more (see Appendices 1 and 2).

Pre-testing of the questionnaires was done one week prior to the general collection of data by trained enumerators who used both English and Setswana for easier understanding. The pre-test was done on 20 respondents in Palapye village in order to check if the questionnaires were comprehensive enough to carry out the whole process of data collection and modifications were made on the questionnaires where necessary. On average, it took 20 minutes to administer the questionnaire conducted in English and 30 minutes where translation to Setswana was necessary. Key informant interviews for the horticultural officer of the Central District and the trading license officer were conducted by the author. The questionnaires used in the study are included in the appendices.

Secondary data sourcing included extensive review of relevant published literature by the Ministry of Agriculture on horticulture production statistics and marketing in the study area as well as past surveys. Direct observation of activities in the market was also used to enrich the data.

3.8 Data capture and analysis

All the data were captured and analyzed using SPSS software. Descriptive statistics were computed to characterize respondents' socio-economic characteristics. This involved calculation of frequencies, means and standard deviations. A flow chart was used to illustrate the cabbage marketing channels in the study area.

3.9Determination of market structure, conduct and performance

(i)Assessing market structure

The concentration ratio -the Gini coefficient and the Lorenz curve were used to measure the degree of market concentration. The Gini coefficient was calculated following Tiku *et al*. (2009):

$$G = 1 - \quad xy \qquad (3.1)$$

where *G* is the value of the Gini coefficient, *x* is proportion of sellers and *y* is cumulative proportion of sales. In calculating the proportion of sellers (x), the quantity of cabbage traded was categorized into 6 different categories as proposed by Tiku *et al*. (2009), from the smallest quantity traded to the largest. In each of the category, the specific number of traders who traded in that amount was recorded then divided by the total number of the interviewed traders.

In order to obtain cumulative proportion of sales (y) from the different categories created, the total yearly sales for the particular category was calculated and weighed in terms of the total yearly sales of all the categories. Then the cumulative proportion was determined.

The Gini coefficient lies between 0 and 1 with values closer to 0 indicating perfect equality of market participants and those closer to 1 indicating inequality among the market participants (Tiku *et al*., 2009). The Lorenz curve was used to further illustrate the structure of the market. The Lorenz curve was derived in excel using the Gini values of wholesalers and retailers. A Lorenz curve closer to the line of equality indicates a equality among the market participants and a Lorenz curve further from the line of perfect equality indicates inequality among the market participants.

(ii) Assessing market conduct

I. The conduct of market participants was determined using the following variables: (i) degree of price collusion, (ii) buying and selling practices, (iii) differentiating products, and (iv) advertising and sales promotion strategies. The degree of collusion was determined by evaluating whether there are coordinated restrictions of products, in this case cabbages, in the market, thereby raising market prices. Collusion may also be observed where firms form trade associations in order to control the market by fixing prices or lowering them in order to wade off new entrants into the market, therefore resulting in uncompetitive practices in the market.

The different buying and selling practices in the market were also observed. In an uncompetitive market, prices of products may not be transparent or openly displayed and traders may charge different prices to different firms or individuals for the same product. The study also determined whether market participants differentiate their cabbage in any way in order to distinguish it and make it more attractive to the market. The product may be differentiated in variety, advertising, packaging and/or brand name. In a competitive market, products sold in the market are usually identical while in a monopoly structure, products are differentiated or unique to the firm.

(iii) Assessing market performance

In order to assess the performance of the market, the gross margin, marketing margin and marketing efficiency were calculated for each market player – producers, wholesalers and retailers. Producer's share of the final price was employed to determine if the producer get a fair share of the consumer spending on cabbage.

(a) Gross margin analysis

The gross margin is a tool that is used to assess the financial profitability of an enterprise. It is calculated as the difference between the gross income accrued and the variable costs incurred by an enterprise (Makeham *et al*., 1986). Gross margin is calculated using the formula as:

$$\mathrm{GM} = \mathrm{TR} - \mathrm{VC} \qquad (3.2)$$

Where *GM* is the gross margin of either producers or traders, *TR* is the total revenue from the sale of cabbage and *VC* is the variable costs incurred.

Gross margin analysis was used to identify which market participant accrues more returns and whether they pursue their economic activities sustainably.

(b) Analysis of marketing margin (MM)

The marketing margin is the difference between prices at two different points in a marketing channel (Smith, 1992). The total gross marketing margin was computed using the following formula:

$$TGMM = \frac{SP-BP}{SP} \times 100 \qquad (3.3)$$

Where *TGMM* is the total gross marketing margin, *SP* is the selling price of cabbage by a trader in BWP/head and *BP* is the buying price of cabbage by trader in BWP/head. The marketing margin indicates how much has been paid for processing and the marketing services applied to the product at that particular stage in the marketing process. It refers to the charge which firms make for providing marketing services (Smith, 1992). An uncompetitive market is usually characterized by high marketing margins given the fact that cabbage does not require much processing. This is reflected by a huge difference between farm-gate and retail prices, which indicates an inefficient market.

(c) Marketing efficiency analysis

The marketing efficiency criterion was used to analyze how efficient the marketing system is in the cabbage industry in the Central District of Botswana. The marketing efficiency was computed using the formula adopted from Haruna *et al*. (2012) as follows:

$$Me = 100 - \frac{marketing\ cost}{marketing\ margin} \times 100 \qquad (3.4)$$

The marketing efficiency estimates the financial marketing feasibility of executing any additional

services and a positive signed estimate would justify application of such services and a negative estimate will indicate otherwise (Abdou, 2004).

CHAPTER 4: RESULTS AND DISCUSSION

4.1 Socio-demographic characteristics of respondents

4.1.1 Age of producers

Table 4. 1: Age Distributions for producers in Central District

AGE (YEARS)	FREQUENCY	PERCENT
25 years and below	-	
30-39	13	26
40-49	19	38
50-59	12	24
60 years and above	6	12
Total	50	100

Source: Study Survey (2014)

The farming community comprised mostly of middle aged producers with an average age of 47.9. The results are lower than the Agricultural Survey Report (2011) which concluded that among the farming community, the average age was 59. The minimum age of a producer was 31 and the maximum age was 69 with a standard deviation of 10.57. The results further indicate that 65 percent of producers are younger than 50 years old. The results imply that horticulture producers fall within the productive age where they can actively participate in production and economic activities.

The findings concur with those of Lewu and Assefa (2009) who found out that about 70 percent of vegetable producers in Botswana are in their active stage. The lower age of horticulture farmers in Botswana may be explained by the introduction of Citizen Entrepreneurial Development Agency (CEDA) Young Farmers Fund in 2006 which attracted the youth to venture into agricultural activities (CEDA, 2006).

4.1.2 Gender of Producers

Table 4. 2: Gender of Producers in Central District

GENDER	FREQUENCY	PERCENTAGE
Male	36	72
Female	14	28
Total	50	100

Source: Study Survey (2014)

Horticulture producing community is mostly dominated by males. The study indicated that 72 percent of producers were males while 28 percent were females. The results of the study differ with those of the agricultural survey report which found male dominance in the farming community to be at 59 percent. However, both of the studies show that males dominated the farming community. These percentages reveal a gender imbalance that exists in the production population. These could be attributed to the fact that cabbage production, and farming in general is a tedious activity mostly handled by men.

4.1.3 Education level of producers

Table 4. 3: Education levels of producers in Central District

EDUCATION LEVEL	FREQUENCY	PERCENT
Primary level	13	26
Secondary level	30	60
Tertiary level	7	14
Total	50	100

Source: Study Survey (2014)

According to the results in Table 4.3, secondary education had the majority of the respondents at 60 percent, followed by primary education with 26 percent and college education at 14 percent. According to Lanyasunya *et al*. (2001), education level plays a major role in technology adoption, market participation as well as environmental and natural resource management during the production stage. Education level of the market participants is vital to the enhancement of trade and marketing through information sharing, price awareness, market costs and margin forecasts as well as the choice of inputs to use in production.

The results of the study differ with the findings of Madisa *et al*. (2010), who found the most dominant education level attained by producers to be tertiary level (43.8 percent). According to Kamara *et al*. (2001), this observation is not common in African small scale farming system; however, it explains the fact that education is free in Botswana up to tertiary level.

The results of this study showed a greater dominance of secondary education among the respondents which indicates that producers are able to participate in trade and marketing activities. In this case, producers have a lower risk of being cheated and taken advantage of by traders due to lack of education.

Gender inequality in the farming community in terms of education is observed from the results. Among the educated horticulture producers, males show a dominance of 85 percent among primary education, 67 percent in secondary education and 71 percent among those who went to college.

4.1.4 Cooperative societies for producers

Table 4. 4: Cooperatives among producers in Central District

COOPERATIVE	FREQUENCY	PERCENT
Yes	19	38
No	31	62
Total	50	100

Source: Study Survey (2014)

In a market setup, cooperatives tend to influence how the market performs by influencing the conduct of the market participants. Market cooperatives and social groups tend to exhibit collusive behavior in terms of market and pricing policies pursued by the actors and the way they coordinate their decisions (Staatz, 1993). This collusive behavior is characterised by firms or individuals coming together and agreeing to fix output quotas, set prices and avoid competitive pressures, as a way of increasing profits, leading to higher prices in the market.

The results of the study show that majority of the producers did not belong to any cooperatives. A total of 62 percent of the producers did not belong to cooperatives while 38 percent of the producers belonged to cooperatives. Of all the producers who belong to cooperatives, only 26 percent were females while 74 percent of them were males.

Furthermore, among the respondents who belonged to cooperatives and social groups, 48 percent of them stated that the reason for being in the cooperative was because of advocacy by the group in government support programmes and the horticultural council. A total of 34 percent of the respondents stated that they were in cooperatives in order to get production and marketing advice while the remaining 18 percent were for credit and savings support. Form the results of the study, it shows that cooperatives were not actively involved in the marketing of cabbage by producers in terms of dissemination of price information and collective sale of cabbage. Oladela and Monkhei (2009) reported a reduction in the participation and popularity of agricultural cooperatives and that most of the emphasis of the cooperatives was based on providing credit and savings services.

4.1.5 Experience in Cabbage Production

The minimum number of years the respondents have been in cabbage production was a year while the maximum number of years in production was 6 years. The mean number of years in cabbage production by producers was 2.52 years. The results show that most of the horticulture producers in the Central District have only just started the activity of producing and selling cabbage.

This is explained by the observation that the most dominant type of arable agriculture has been that of cereal production and horticulture production has not been a very common practice among farmers in Botswana until after the government restructured support towards commercial horticultural agriculture (Seleka, 2009). Public support for improvement of horticultural production has been shown by introduction of farm level financial incentive schemes that included Financial Assistance Policy (FAP) and currently Citizen Entrepreneurial Development Agency (CEDA) in 2001 (Rebaagetse, 1999).

4.1.6 Major Occupation of Cabbage Producers in Central District

A total of 96 percent of cabbage producers in the study area engaged fully in vegetable production while 4 percent of the respondents' major occupation was civil service. Of all the producers who are full time vegetable producers, only 29 percent were females while 71 percent were males. The results of the study are particularly unsettling considering the fact that a large percentage of the population is female (CSO, 2011). According to Quisumbing (1996), female farmers are reported to be as equally efficient farming activities as their male counterparts; therefore, more emphasis should be made on encouraging females to participate more in vegetable production.

The results of the study show that for a minimum size of 1.50 hectares in production, an average of 0.5 hectares was dedicated to cabbage production while for a maximum of 25 hectares, only 8 hectares was dedicated to cabbage production. A total of 80 percent of the producers owned the land used for production of cabbage while the remaining 20 percent had borrowed the land from family members and friends. The high percentage in land ownership is not surprising due to the

fact that every citizen of Botswana is eligible to apply for farm lands. The extent of land ownership in the farming community is an indicator of physical asset endowment and may reduce the cost of production and increase productivity (Madisa *et al*., 2009).

The average quantity produced per hectare was 15 720 heads of cabbage per farmer (10 000-786 000). The most common variety of cabbage grown among the producers was Star 3301 because of easier adaptation to Botswana soils. A total of 78 percent of the respondents grew Star 3301 variety while 22 percent produced Big Cropper. The Star 3301 is a medium head size variety and its popularity is attributed to its heat tolerance and its ability to strive in sandy-loam soils. According to producers in the area, the Star 3301 is mostly preferred by traders because of its size, its firm globe shaped head that does not crack easily and for its popularity among consumers.

4.1.7 Access to markets and market information for producers

The average distance travelled by producers of cabbage to the nearest market was 8 kilometers and most of the farms are located outside the villages and major towns. The study revealed that the infrastructure in the Central District was generally satisfactory and comparatively close to nearby horticulture markets in villages and major towns hence reduced transport costs for producers in the area. The reduced transport costs help farmers in augmenting their market surplus and margins (Haruna *et al*., 2012). The results of the study however, differ with those of Madisa *et al*. (2009) who identified lack of access to markets as a major constraint among vegetable producers.

It is evident from the results of the study that there is no formal system in place that systematically collects and disseminate information to the producers as the study revealed that the source of information is mostly fellow producers in the farming community. Moepeng (2013) also highlighted the problem of lack of information such that many private contracts between producers and retailers are not in public domain records and a lot of products that are in the market are not captured in national statistics records of Botswana. The results show that all the producers were aware of prevailing prices of cabbage in the market before engaging in the sale of producers. However, since producers mostly sold to wholesalers rather than directly to consumers, the producers relied on wholesalers for the dissemination of information regarding demand of cabbage and consumer preferences.

4.1.8 Start-up capital for producers

In analyzing the structure, conduct and performance of a market, the amount of the start-up capital is an indicator as to whether it is easier to get into the business of cabbage production and marketing or not. An average amount of BWP 16 924 (USD 2 115.50) was needed to start a cabbage enterprise, with a minimum amount of BWP 1 700 (USD 212.50) and a maximum of BWP 50 000 (USD 6 250). The most common source of the start-up capital was from personal savings (49 percent), followed by credit from the bank (38 percent), then loan from relatives and friends (13 percent). Among the respondents who acquired credit from the bank, 72 percent of them were males while the remaining 28 percent were females. This could be explained by the fact that males are the most dominant group of famers in the study area.

The amount of start-up capital required to grow and sell cabbage is considered to be moderately high considering the fact that most of the source is from personal savings. The interviewed producers noted that it takes long to acquire loans from banks and CEDA and the loans usually come with high interest rates. The high start-up capital and high interest rates may act as a barrier to entry into the production and marketing of cabbage. Moepeng (2013) stated that high start-up costs is one of the barriers impeding the growth of the horticulture sector in Botswana, as it hinders new entry into the business of horticulture production and marketing.

Among other constraints faced by producers were pests and diseases, high input costs, high water bills, shortage of labour and lack of market accessibility. These constraints disturb the availability of cabbage because producers have to incur high costs in addressing them. Madisa *et al*. (2009) stated that there is need to address producer constraints such as pests and diseases, high capital costs, and high input costs in order to keep the horticulture sector afloat and ensure that farmers get rewarding returns from marketing of horticulture products. It is evident form the study that males and females in horticulture production are faced with the same type of constraints and there are no discriminatory policies in terms of gender. The observation made from the study is that, horticulture production is mainly dominated by males because females view the activity as tedious and physically intensive, even though the government of Botswana highly encourages women to be involved in agriculture.

4.2 Socio-Demographic Characteristics of Cabbage Traders

4.2.1 The Age and Gender of respondents

Table 4. 5: Gender and Age distributions for traders in Central District

	Wholesalers		**Retailers**	
Characteristics	**Freq.**	**Percent.**	**Freq.**	**Percent.**
Gender				
Male	10	71.4	14	35
Total	35	100	40	100
Age (Years)				
25 years and below				
30-39 years	4	11.4	6	15
40-49 years	20	57.2	9	22.5
50-59 years	7	20	20	50
60 years and above	4	5	5	12.5
Total	35	100	40	100

Source: Study Survey (2014)

The mean age of wholesalers and retailers in the Central District was 39.1 (range= 27-56 years) and 35.9 (range=21-49) years respectively. Of all the wholesalers interviewed below the age of 40, 54 percent of them were female while 46 percent were male. For the age of 40 years and above, 64 percent were female while 36 percent were male. Among the retailers, 65 percent were female while 35 percent were male. For the age of 35 and below, 93 percent were female while 7 percent were male and for the age group 36 to 45 years the distribution was 40 percent female and 60 percent male. The distribution for the age of 46 and above was 80 percent female and 20 percent male. From the results of the study, it is evident that the trading of cabbage in the Central District is a female dominated business and mostly made up of young to middle aged people.

The findings of the study agree with FAO (2009) report that the trading of agricultural products in developing countries is particularly dominated by females, with the example of South Africa, where women represent 53 percent of the number involved in the trading of horticulture products.

A World Bank (2013) study also noted that a large number of women in Africa are engaged in one form of trade or another, either within the country or across national borders. The fact that traders in the study area are mostly young and middle aged can be explained by the extent of government support towards the youth through numerous youth development programmes, among them being young farmers fund and youth development fund. These programmes are administered by Citizen Entrepreneurial Development Agency (CEDA), through which Batswana citizens have access to finance and entrepreneurial training to enable them to engage in sustainable agricultural-based activities.

4.2.2 The Education level of traders

Table 4. 6: Education level for traders in Central District

Education level	**Wholesalers**		**Retailers**	
	Frequency	**Percent**	**Frequency**	**Percent**
Primary level	23	68	21	52.5
Secondary level	12	32	19	47.5
Tertiary level	-	-	-	-
Total	35	100	40	100

Source: Study Survey (2014)

The results of the study show that 68.8 percent of the wholesalers interviewed attained secondary education while 31.2 percent attained primary education. Among the retailers, 52.4 percent attained secondary education while 47.5 percent attained primary education. The results imply that the level of formal education among traders was relatively high. This can be explained by the fact that education is free for all in Botswana up to tertiary level. The gender distributions based on education level were as follows; primary education (male = 91 percent, female = 8 percent) and secondary education (male = 63 percent, female 27 percent). It is evident that even though the trading of cabbage in the study area is dominated by females, they are less educated than men. Even though the findings are surprising such that education is free for all in the country, they however substantiate those of World Bank (2013) report which highlighted that women traders are faced with lack of education and formal training which may limit their capacity to grow in their area of operation.

4.2.3 Experience in cabbage trading

When experience and knowledge are combined, there is momentum for progress and a greater chance of achieving the desired objectives (Raipur, 1998). Wholesalers and retailers had a mean of 5.60 and 4.88 years of experience in cabbage trading respectively. The years of experience in cabbage trading ranged from 2 to 10 years for wholesalers and 2 to 12 years for retailers. From the results, it is apparent that women had more experience in cabbage trading than men, with 54 percent of women with more than 5 year experience. The results could be explained by the fact that horticulture trading is still at its infancy stage and Botswana used to and still depends a lot on horticulture imports from South Africa (MoA, 2012).

4.2.4 Social and Trade Association groups

Table 4. 7: Social and Trade Associations of traders in Central District

Cooperative Status	**Wholesalers**		**Retailers**	
	Frequency	Percent	Frequency	Percent
Yes	10	28.6	3	7.5
No	25	71.4	37	92.5
Total	35	100	40	100

Source: Study Survey (2014)

Social and trade associations in this context refer to those organizations that create a means for firms and individuals in the horticulture industry to interact to the mutual benefit of all who are involved. They are usually funded by the member firms themselves and are commonly used as a platform for a unified voice either to influence the market or lobby on matters of legislation that are anticipated to have an impact on the industry (Tirole and Fudenberg, 1989).

From the results, only 28.6 percent of wholesalers belonged to social and trade associations while only 7.5 percent of retailers belonged to social and trade associations. Among the wholesalers who belonged to social and trade associations, 60 percent were female and among the retailers who belonged to social and trade associations, 58 percent of them were female. This could be explained by the fact that women tend to be vulnerable to malpractices and cheating behavior which may limit access to markets, especially in the agricultural trading business, so social and trade associations may act as a form of security and service delivery (USAID, 2012).

The prevalence of social and trade associations, however, may lead to collusive behavior in an industry. This refers to illegal behavior of competitors in coordinating their market behavior to restrict competition. This may be done through agreements among sellers to raise or fix prices and to reduce output in order to increase profits (Doree, 2004). It is evident from the results that members of the trade associations do not coordinate any purchasing or selling activities and every trader prices their commodity looking at prevailing prices in the market and their marginal costs. The respondents who reported to be members of the associations stated the advantages derived from such groups as credit access (wholesalers = 17.1 percent, retailers = 15 percent), credibility (wholesalers = 47.1 percent, retailers = 37.5 percent), to get market information (wholesalers = 8 percent, retailers = 10 percent) and encouragement to save (wholesalers = 28.6 percent, retailers = 32.5 percent). The above results rule out the possibility of collusion among market participants.

4.2.5 Start-up capital

The average start-up capital for wholesalers was BWP 11 185.71 (USD 1 392.21) and for retailers was BWP 1 823.75 (USD 227.97). Wholesalers' start-up capital was higher than that of retailers because 58 percent of the wholesalers indicated that they had to purchase a bakkie/ small truck before proceeding with the wholesaling activity. The source of the start-up capital for retailers was bank loan (11.4 percent), own savings (68.8 percent), youth grant (10 percent) and loan from trade association (9.8 percent). The source of the start-up capital for wholesalers was bank loan (8 percent) and own savings (92 percent).

For wholesalers, 30 percent of women acquired capital through loans and 71 percent of those who acquired capital through own savings were female. For the retailers, 42 percent of those who acquired capital through loan from bank were female, 59 percent of those who used their own savings were female, 29 percent of those who got the youth grant were female and none of those who got loans from trade associations were female. The results indicate a gender imbalance when it comes to loan procurement. Ben-Ari (2014) highlighted some of the challenges faced by women traders in Lesotho and acquisition of capital was among them. He stated that women traders tend to face more obstacles than men due to discriminatory social and cultural practices which results in limited access to financial resources.

The current study revealed that the wholesaling activity requires more start-up capital than retailing. This may be due to the fact that for most of the retailers, there are those organized market areas where they can sell their produce and pay a minimum government levy of not more than USD 20. Wholesalers are the ones who acquire produce from the producers and distribute it among retailers.

4.3 Cabbage Marketing Channel in Central District of Botswana.

According to Mendoza (1995), marketing channel refers to the sequence of intermediaries through which products pass from producers to consumers. Marketing channels provide a systematic knowledge of the flow of the goods and services from their origin (producer) to the final destination (consumer) (figure 4.1). There were different channels in which cabbage passed from producers to the final consumer.

The channels consisted of producers from the Central District who grow cabbage, wholesalers who buy cabbage from producers at the farm-gate and retailers who purchase cabbage from wholesalers. There were neither brokers nor transporters in the study area.

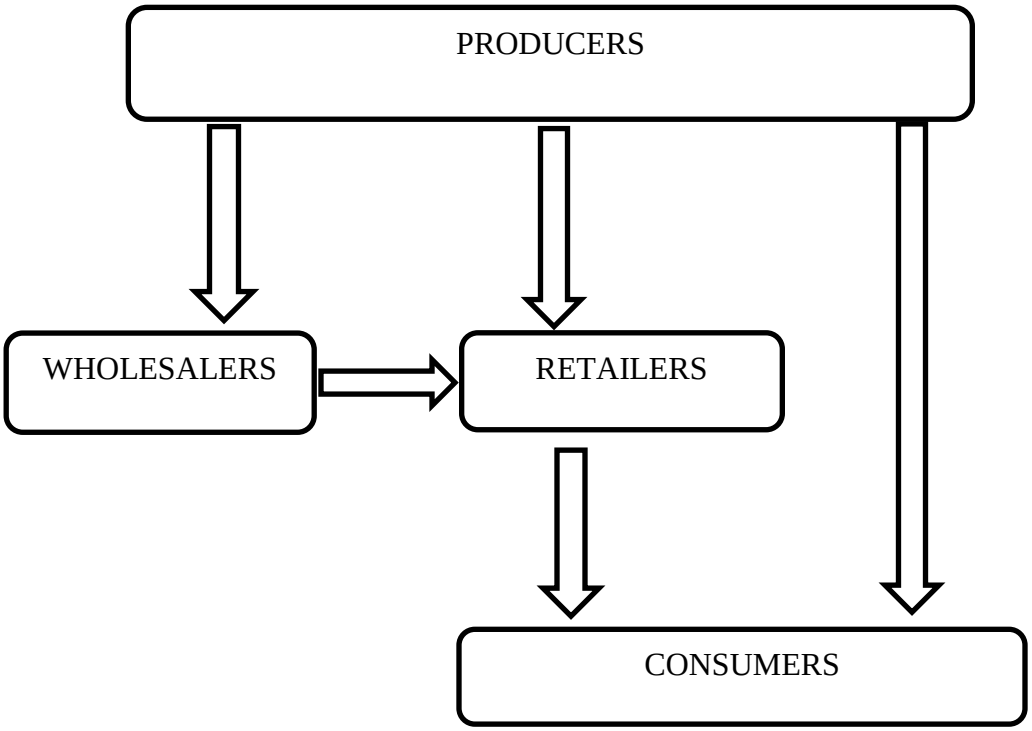

Figure 2.1: The cabbage marketing channel in Central District

Source: Survey Study (2014)

The producer-wholesaler-retailer-consumer channel carried the largest volume of cabbage at 10 550 (66%), followed by producer-retailer-consumer which handled a volume of 4 960 (32%) cabbages. The producer-consumer carried the least volume of cabbage at 210 (2%).Wholesalers acquires cabbage at the farm-gate and distributes it or delivers it to retailers at the local market.

On average, a total of 15 720 cabbages were produced per hectare by a single producer in a season (3 months) and sold to either wholesalers or retailers at an average farm-gate price of BWP 5, 65 per head of cabbage. Wholesaler sold cabbages to retailers at an average price of BWP 8, 56 per head. Wholesalers use small bakkie/truck to collect cabbages from the farm-gate to the local market where retailers are located. Retailers sold cabbages to consumers at a price of BWP 17, 06. Retailers can acquire cabbages directly from producers but majority preferred to buy from wholesalers in order to minimize transportation costs to the farm-gate. Producers also stated that they preferred to sell their produce to wholesalers, the reasons being that wholesalers are more reliable and provided a more detailed payment structure for cabbage acquired on credit as compared to retailers who sometimes delay payment.

The producer-wholesaler-retailer channel is the most common channel for horticulture products because of the perishable nature of the products and the intermediaries between producer and consumer reduce the amount of work that could have been done by producers, such as grading, storing and packaging (Mahoo, 2011). Tadesse (2011) identified the producer-wholesaler-retailer channel as the most common channel for fruits and vegetables in Ethiopia, with more than 25 percent of the total volume of fruits and vegetables handled through the channel.

4.4 Determination of market structure, conduct and performance

4.4.1 Market structure

(a) Market concentration among wholesalers

The average quantity of cabbage traded was 3,020 heads of cabbage per person per season. Majority of wholesalers sold between 1,000 and 2,500 heads of cabbage in a season. The average cabbage sales in a season by wholesalers amounted to BWP 899 825.

The Gini coefficient for wholesalers was 0.509 (Table 4.9) implying that the market for wholesalers was relatively highly concentrated and therefore less competitive.

(b) Market concentration among retailers

The majority of retailers traded between 100 and 500 heads of cabbage in a season, with an average of 619 cabbages traded in a season. The total cabbage sales by retailers was BWP 677 175 or US$ 71,281.58 per season. The Gini Coefficient for retailers was 0.509 according to the results in table 4.6. A Gini coefficient of 0672 indicates a relatively highly concentrated retailer market, hence less competition.

The Lorenz Curve (Figure 4.2) shows that retailers were closer to the line of equality than wholesalers, implying a highly concentrated market for both actors. This suggests that the cabbage market in the Central District of Botswana has an oligopoly structure where only a few actors control a large share of the market

Table4. 8: Gini coefficient for retailers in Central District

Quantity Sold(head)	Number of Traders	Proportion of Traders (X)	Cumulative %	Total Yearly Sales	Proportion Total Yearly Sales	Cumulative % (Y)	XY
100 – 500	23	0.575	0.575	131 325	0.194	0.194	0.112
501 – 1000	10	0.250	0.825	130 850	0.193	0.387	0.097
1001 – 1500	3	0.075	0.900	64 500	0.095	0.482	0.036
1501 – 2000	2	0.050	0.950	160 500	0.237	0.719	0.036
2001 – 2500	1	0.025	0.975	100 000	0.148	0.867	0.022
2501 – 3000	1	0.025	1.000	90 000	0.133	1.000	0.025
Total	**40**	**1.000**		**677 175**	**1.000**		**∑XY=0.328**
Gini Coefficient						**0.672**	

Source Study Survey (2014)

Table 4. 9: Gini coefficient for wholesalers in Central District

Quantity Sold(head)	Number of traders	Proportion of traders (X)	Cumulative %	Total Yearly Sales %	Proportion yearly sale	Cumulative (Y)	XY
1000- 2500	19	0.54	0.54	270 075	0.30	0.30	0.162
2501-4000	8	0.23	0.77	247 750	0.28	0.58	0.133
4001-5500	5	0.14	0.91	197 000	0.22	0.80	0.112
5501-7000	1	0.03	0.94	51 000	0.06	0.86	0.026
7001-8500	1	0.03	0.97	54 000	0.06	0.92	0.028
8501-10000	1	0.03	1.00	80 000	0.08	1.00	0.03
Total	**35**	**1.00**		**899 825**	**1.00**		**∑XY=0.491**
Gini Coefficient							**0.509**

Source: study survey (2014)

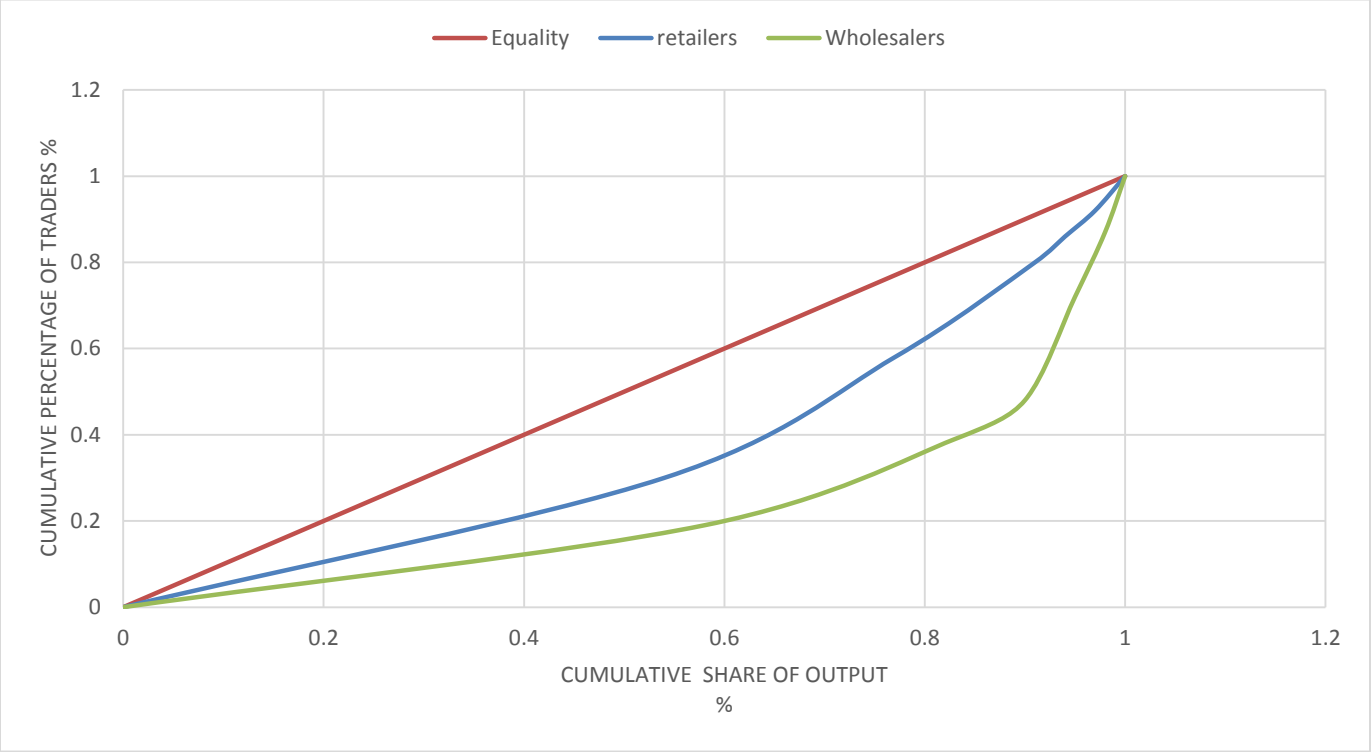

Figure 4.2: Lorenz curve for traders in Central District

Source: Study Survey (2014)

The Gini coefficient and Lorenz curve has been used by several researchers to determine the market structure for different agricultural commodities. Tiku *et al*. (2012) found a Gini coefficient of 0.65 and 0.54 for merchants and processors respectively, indicating an oligopoly market structure among palm oil marketers in Cross river state, Nigeria. Ngigi (2008) found a Gini coefficient of 0.7 for the grain market in South Sudan, indicating a highly concentrated market. Haruna *et al*. (2012) also identified a highly concentrated tomato market in Pwalungu, Ghana, with concentration ratios of 0.58 and 0.64 for wholesalers and retailers respectively.

However, different and contrasting results were reported by Enibe *et al*. (2008) in the case of banana marketing in Anambra state, Nigeria where the Gini coefficients were 0.21 and 0.17 for wholesalers and retailers respectively, depicting a competitive market.

(b) Type of Product in the Market

About 78 percent of farmers in the Central District of Botswana grew Star 3301 cabbage variety while 22 percent produced Big Cropper. The Star 3301 variety is popular among farmers because of its heat tolerance and its ability to strive in sandy-loam soils. According to producers in the area, the Star 3301 is mostly preferred by traders because of its size, its firm globe shaped head that does not crack easily and for its popularity among consumers. After harvesting of cabbage, it is immediately sold to traders without any form of processing or packaging done to it. Cabbages were harvested only when buyers were available at the farm to purchase it because it tends to lose its freshness when cut and stored waiting for buyers.

After buying it from producers, wholesalers deliver/sell it directly to retailers at the local market. The excess cabbage is stored in refrigerators. The average duration it takes to resell the cabbage to retailers was two days, with a minimum of a day and a maximum of five days. None of the wholesalers endeavored to add value or package the cabbage before reselling to retailers. About 35 percent of retailers wrapped cabbage with a clear plastic material in order to prolong its shelf life and make it more attractive to consumers. However, there was no price difference between wrapped and unwrapped cabbage. When the cabbage is still fresh and recently delivered, it is sold without any wrapping but after a few days the cabbage is wrapped with the material.

(c) Barriers to Entry and Exit

According to the information given by the chief horticulture officer for the Central District, there were no barriers to entry and exit into the cabbage trading in terms of licensing. Anyone could acquire a trading license for a fee of BWP 50.00 (US$ 5) per annum. However, only 65 percent of traders in the market had a license. The existence of unlicensed traders suggests weak monitoring and enforcement of compliance by regulatory authorities in the Central District. The results tally with those of Gessesse (2009) who reported that 69 percent of traders in Alamata region, Ethiopia had trading licenses. The freedom to enter and exit the market was not popular among retailers. About 59 percent of retailers who claimed that there were times when they lowered their selling price in order to wade off competition. Lowering of prices may act as a barrier for new entrants into the market because they would be forced to price their products even lower, hence risking a cost disadvantage. The observation tallies with that of Porter (1998) who argued that firms in an oligopolistic market structure tend to cut prices in order to win price wars. This is because such firms' long experience in the market may allow them to lower their prices unlike new entrants.

Barriers to entry may also be in the form of technical and managerial skills and availability of capital, both for start-up and working capital. Technical and managerial skills, in this context were assessed using level of education and business experience. Wholesalers had an average experience of six years in the trading of cabbage while retailers had an average of five years' experience. Most of the traders in the Central District of Botswana are educated. Traders who are better educated are generally more open to innovative ideas and new technologies that promote technical change (Lapar and Ehui, 2003). The results show minimal chances of technical and

managerial skills acting as barriers for traders to enter the market. The minimum years of experience were two years and the maximum was twelve years, which showed that a trader did not have to have a certain number of years in the trading business in order to enter the market. The results tally those of Tadesse (2011) who also reported that technical and managerial skills did not prevent traders from entering the fruits and vegetables market in Ethiopia.

Majority of traders financed their own start-up capital from their savings (68.8 percent) and traders reported that they had limited access to credit from loan institutions because most of them were at small-scale level. The limited access to credit may act as a barrier for traders to enter the market if they cannot raise their own capital. The results agree with those of Lewu and Assefa (2009) who reported that lack of access to credit is most common in African small-scale farming and trading.

4.4.2 Market Conduct

The aspects used to capture the pattern of behavior followed by cabbage traders in adapting to the market situation included pricing strategies, advertising and sales promotion, terms of sale and degree of collusion. The results of evaluating these aspects of market conduct are presented below.

(a) Pricing strategies

The most common pricing strategy observed among producers was that of competitive pricing, where they had three options: to lower their price, raise the price or set the same price as competitors.

Producers indicated that they observe prices of other producers in the area and decide how to price their cabbage looking at the price of the competitors. After observing competitors' pricing, 49 percent of the producers opted to maintain the same price as competitor while 51 percent chose to lower the price in order to attain more buyers. Among the wholesalers, it was observed that the common practice was that of maintaining the market price (45 percent), followed by negotiation/bargaining (35 percent) and lowering the price (20 percent). With regard to retailers, the common practice was that of lowering prices (60 percent) followed by maintaining them (40 percent).

The results differ with those of Olukosi *et al*. (2012) who found bargaining/negotiating as the most common pricing strategy for vegetable traders in Nigeria (50 percent). Tadesse (2011) also reported bargaining of prices (42) to be most common practice among traders of fruits and vegetables in Ethiopia as compared to lowering prices (33 percent) and maintaining them (25 percent).Uncompetitive behavior was observed among retailers who tend to lower prices in order to drive out competition in the market. Lowering prices to win price wars is a characteristic of an oligopoly market structure (Porter, 1998).

(b) Advertising and Sales Promotion

Some of the market participants engaged in some sort of advertising for their products. Among producers, 49 percent of them stated that they had contracts and lists of regular buyers whom they would alert by telephone when the cabbages were ready and as soon as the cabbage is ready they use telephone to let the buyers know. Fifty one percent of producers put adverts on boards at their gates indicating the availability of cabbage and the selling price. Seventy two percent of

wholesalers used telephone to advertise and alert regular retailers whom they had contractual agreements with. Another 28 percent advertised through regional advertisement papers (mainly The Northern Advertiser). Retailers advertised through print media (42 percent) while the rest did not. According to Caves (1992), it is common practice for firms in an oligopolistic market to engage in non-price competition such as advertising.

(c) Terms of sale

Terms of sale refers to the delivery and payment agreement between a buyer and a seller (Abu, 1996). The conduct of the market participants, which reflects the behavior of the firms, or the decision that firms make relating to their pricing and output policy and other competitive tactics, revealed that among producers, the two forms of terms of sale were contract selling (38 percent) and spot market selling (62 percent). Contract selling is whereby there is an agreement between the producer and the buyer on the quantity of cabbage required and the price, where the buyer can carry the cabbage and pay at a later agreed date. Spot market selling refers to cash and carry terms. A total of 54 percent of wholesalers had contracts with producers where they carried the cabbage with the agreement of paying after wholesalers had sold their cabbage to their buyers and 46 percent chose to buy where cabbage was available at the best price they could afford.

Retailers were the highest market actors involved in contract buying from wholesalers and some producers. About 58 percent of retailers were involved in some contracts with their supplier of cabbage, mainly wholesalers.

Downstream, about 23 percent of retailers had formal contracts with hotels and restaurants to supply them with an agreed quantity of cabbage and the payment was on monthly basis. Contract sale is most common in oligopolistic markets as it is a form of exclusive dealing arrangement, where the two parties in contract are bound by the terms of the contract to buy or sell to each other. This may deter new entrants from penetrating into the market (Caves, 1992).

(d) Degree of Collusion

When firms collude in an industry, they act in unison and usually set prices high and limit the amount of produce in the market in order to gain more profits (Porter, 2004). No market actor reported any collusion in price setting. In fact, 60 percent of retailers lowered prices relative to their competitors in order to attract more buyers and gain more market share in the Central District of Botswana. The fact that most market participants did not belong to cooperatives and trade associations where group buying and selling usually takes place implies that there was no collusion among market actors in the Central District of Botswana.

According to Porter (2004), collusion may either be tacit or explicit. Explicit collusion is whereby firms communicate directly either to raise prices or limit products in the market while tacit collusion refers to whereby communication is indirect, as firms infer competitor's intention from their action. In the Central District of Botswana, there is no limited amount of cabbage in the market and price setting is mostly competitive, which implies no collusion in the market. The results tally with several authors such as Enibe *et al*. (2008) who also found no evidence of collusion in the banana market in Nigeria. Teka (2009) and Tadesse (2011) reported no collusion in the fruits and vegetables market in Ethiopia.

4.4.3 Market Performance

(a) Producer's share of the retail price

Using the average producer price of BWP 5.65 for a head of cabbage and the average retail price of BWP 8.56/ head, producer share was 66 percent. Given the fact that the average distance to nearby markets was 8 kilometers, the infrastructure was good and that cabbage does not require a lot of processing, it can be concluded that cabbage producers in the Central District obtained a fair share of consumer spending.

(b) Gross Margin

(i) Producer's Margin

Table 4 summarizes costs, revenue and producers 'gross margin per hectare of land cultivated. The average time for cabbage to be ready was 3 months, therefore the cost were calculated for 3 months. A hectare of land produced an average of 15 720 heads of cabbage and the average selling price of cabbage was BWP 5.65. The calculated revenue acquired for cabbage per hectare was BWP 88 818.00 and the gross margin per hectare was BWP 76 964.80. A hectare of land produced an average of 15 720 cabbages at a cost of BWP 11 853.20. Therefore, the cost of producing one cabbage was BWP 0.75, and the gross margin generated per cabbage was BWP 4.90.

Table 4. 10: Producers costs, revenue and gross margin in Central District

Item	Unit	Quantity	Unit Cost(BWP)	Total(BWP)
A. Revenue				
Output	Heads	15,720	5.65	**88,818**
B.Variable Costs				
Labour	BWP/month/farmworker	1/month	1,350	4,050
Seed	Kg/Ha	1	400.90	400.90
Fertilizer	Kg/Ha	1 50kg bag	363.70	363.70
Pesticides	Ltr/ha	2	394.30	788.60
Fuel	Ltr/Ha	5	350	1,750
Irrigation bill	BWP	3 months	1500/month	4,500
Total variable Costs				**11,853.20**
Gross margin Per Ha				**76,964.80**

Source: Survey Study (2014)

(ii) Traders' Gross Margin

(a) Wholesalers

Table 4.5 summarizes the costs, revenue and gross margin for wholesalers. The average quantity of cabbage purchased from producers to be re-sold to retailers was 3 020 heads of cabbage in a month, at an average price of BWP 5.65/head. The average selling price was BWP 8.56/head. The calculated revenue per month was BWP 25 851.20 and the Gross margin was BWP 6 017.48. Wholesalers handled a batch of 3 020 cabbages per month at a cost of BWP 19 833.72.

The average cost per cabbage was BWP 6.57 and the gross margin attained per cabbage was BWP 1.99.

Table 4. 11: Wholesalers cost, revenue and gross margin in Central District

Item	**Unit**	**Quantity**	**Unit Cost(BWP)**	**Total(BWP)**
A. Revenue				
Output	Heads	3,020	8.56	**25,851.20**
B. Variable Costs				
Buying cost	BWP	3,020	5.65	17,063
Transport	BWP	4 times/month	301.43	1,205.72
Loading/offloading	BWP	4 times/month	250	1,000
Produce loss	BWP	100	5.65	565
Total variable costs				**19,833.72**
Gross margin/batch				**6,017.48**

Source: Survey Study (2014)

(b) Retailers

Retailers' cost, revenue and gross margin are summarized in table 4.6. The average quantity of cabbage that retailers purchase in a month was 619 heads at an average price of BWP 8.56. The average selling price was BWP 17.06. The calculated revenue for retailers was BWP 10 560.14 and the gross margin was BWP 4 326.70. Retailers incurred a cost of BWP 10.07 per cabbage handled and generated a gross margin of BWP 6.99 per cabbage.

Table 4. 12: Retailers cost, revenue and gross margin in Central District

Item	Unit	Quantity	Unit Cost(BWP)	Total(BWP)
A. Revenue				
Output	Heads	619	17.06	**10,560.14**
B. Variable Costs				
Buying cost	BWP	619	8.56	5,298.64
Transport	BWP		150/month	150
Loading/offloading	BWP		100/month	100
Produce loss	BWP	80	8.56	684.80
Total variable costs				**6,233.44**
Gross margin/batch				**4,326.70**

Source: Survey Study (2014)

Gross margin analysis is a key financial indicator used to assess the profitability of a firm's core activity, excluding fixed costs (Powell *et al*., 2002). Ignoring fixed costs, it is evident that all the market participants in the Central District realized profits from the sale of cabbage given the positive gross margins. The gross margins were BWP 4.90/cabbage for producers, BWP 1.99/cabbage for wholesalers and BWP 6.99 for retailers. The results of the study agree with those of Assefa *et al*. (2010) who stated that vegetable production and marketing in Botswana has become more profitable in the last decade. This has been attributed to farmer's access to improved extension services, increased demand for vegetables, and increased number of young and educated producers who are more likely to adapt to the system very easily and in a short

time. In addition, more Batswana, especially traders are becoming less reliant on South African imports preferring local products.

Cabbage retailers in the study area attained more profits followed by producers then wholesalers. This indicates that cabbage retailing is the most profitable (BWP 6.99/cabbage) venture compared to other actors in the Central district of Botswana. This could be attributed to the fact that most retailers (66 percent) in the study area do not incur a lot of transport costs sourcing cabbage but rather the cabbage is delivered directly to them by wholesalers. The results tally with those of Mahoo (2011) and Tadesse (2011). Mahoo (2011) reported that jatropha traders generated more profit compared to farmers in Tanzania. Tadesse (2011) reported that retailers in Ethiopian fruit and vegetable market attained more profits compared to other actors in the market. However, Olukosi *et al*. (2009) found contrasting results where retailers received less profit margin compared to other actors in the palm oil market in Nigeria.

(c) The Marketing Margin

Marketing margin refers to the charge which a firm makes for providing marketing services (Smith, 1992). The goal is to determine whether these charges are reasonable in relation to the services being offered. The average buying price of cabbage from producers, wholesalers and retailers was BWP 5.65, BWP 8.56 and BWP 17.06 per head, respectively. The wholesalers' marketing margin was 34 percent while that of retailers was 50 percent. The total gross marketing margin was 84 percent. This shows that cabbage retailers attained a higher marketing margin relative to wholesalers. The implication of the results is that consumers paid a high price of BWP 17.06 for a head of cabbage at the advantage of retailers who received a higher share of the consumer spending for a head of cabbage.

Nkegbe *et al.* (2012) also reported that retailers attained a high share of consumer spending (54 percent) in relation to other actors in the tomato market in Ghana. Enibe *et al*. (2008) found similar results in the banana market in Anambra State of Nigeria, where retailers received a large share of consumer spending (65 percent). The results show that there is an imbalance in the performance cabbage market since cabbage does not require any processing, yet traders especially retailers retain a large share of consumer spending.

(d) Marketing Efficiency

The marketing efficiency criterion was used to analyze the financial marketing feasibility of executing any additional marketing services. A positive sign value indicates the application of additional marketing services and a negative value indicates otherwise. Using equation (3.4) in chapter 3, the marketing efficiencies were as follows:

- For wholesalers, the marketing cost for a head of cabbage was BWP 6.57 and the marketing margin per head of cabbage was BWP 0.34. Therefore the marketing efficiency was 80.68.
- For retailers, the marketing cost per head of cabbage was BWP 10.07 and the marketing margin was BWP 0.50 per head of cabbage. Therefore the marketing efficiency was 79.86. Since the marketing efficiency values for the traders are positive, it justifies the application of additional marketing services at all levels. The results imply that cabbage trading is a viable business venture.

Conceptually, efficiency of any activity or process refers to the ratio of output to input, output being the value added by the marketing system and input referring to the real cost of marketing (Kohls and Uhl, 1985). An increase in the ratio represents improved efficiency and a decrease denotes reduced efficiency. Based on the results obtained, it can be concluded that the process of trading in the Central District of Botswana is efficient, in terms of moving products from producers to final consumers, consistent with the provision of the type of cabbage desired by consumers. Haruna *et al*. (2012) found similar results in the tomato market in Ghana where the efficiencies of wholesalers and retailers were 90.10 and 44.15, respectively.

4.5 Testing hypotheses

Hypothesis 1: The horticulture market in the Central District of Botswana is highly concentrated

It is generally believed that higher market concentration indicates non-competitive behavior and thus inefficiency in the market. The Gini coefficient and the Lorenz curve were used to measure the extent to which the market is concentrated. The Gini coefficient ranges from zero to one, with zero indicating perfect equality in the size and distribution of buyers or sellers, and one implying perfect monopsony/monopoly in the market. In Lorenz curve analysis, high inequality in the distribution of market share reflects high market concentration, which is depicted by a wide gap between the Lorenz curve and the line of perfect equality. This indicates that a few firms control the market (Nellis and Parker, 1992). The Gini coefficients for wholesalers and retailers were 0.672 and 0.509, respectively. This indicates a highly concentrated market for both actors. It can be concluded that cabbage traders in the Central District of Botswana operate in a

non-competitive market, where only a few firms control a large share of the supply of cabbage in the area.

Hypothesis 2: Traders in the Central District of Botswana lower prices of cabbage in order to wade off new entrants into the market

Lowering prices to win price wars is a characteristic of an oligopoly market structure (Porter, 1998). This type of conduct was observed mostly among retailers (59 percent) who claimed that there were times when they opted to lower their selling price in order to deter new entrants from the market. This meant that in order for new firms to enter the market they had to lower their prices even further, hence risking a cost disadvantage. Among wholesalers, it was not common practice to lower prices to wade off new entrants as only 20 percent of the wholesalers engaged in such conduct. This type of conduct comes as a result of the high concentration in the market, where only a few firms control the supply of cabbage in the study area.

Hypothesis 3: The performance of the horticulture market in the Central District of Botswana as proxied by gross margins and traders' marketing margins is low

The measures used in assessing the performance of the horticulture market in the Central District of Botswana were marketing margin and gross margin. The marketing margin was determined by calculating the average cost of marketing for each participant in the various stages involved in the supply of cabbage to the market. Retailers' marketing margin was 50 percent while that of wholesalers was 34 percent. The implication is that the highest share of the marketing margin goes to the retailers; however the share of the margin does not correspond to the marketing

services rendered by the retailers compared to other market actors. According to the results of the study, wholesalers incur more costs compared to retailers, yet retailers attain more marketing margin. This indicates inefficiencies in the performance of the cabbage market in the study area.

The gross margin calculated reveal that traders of cabbage in the Central District of Botswana realize profits in their business venture, retailing being the most profitable venture (BWP 6.99/head). The observations could be attributed to the fact that retailers in the study area incur minimal costs when it comes to transportation of cabbage to the market area. Even though cabbage trading may be a profitable business venture, the general performance of the market is not in a satisfactory state such that there are inequalities and uncompetitive practices in the market. The fact that only a few firms supply the majority of horticulture products in the country distorts the competition in the market as observed by Moepeng (2013). Moepeng (2013) observed that even though horticulture production and trading is said to be profitable, the existence of uncompetitive characteristics by the market actors prevent the efficient performance of the market. Such characteristics include blocking new entrants into the market by lowering prices as well as the existence of private contracts between sellers and buyers.

CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The main objective of the study was to analyze the structure, conduct and performance of horticulture market in the Central District of Botswana. moreover, the study intended to achieve the following specific objectives: (i) To describe the cabbage marketing channel in the Central District of Botswana, (ii) To determine the structure of the cabbage market in the Central District of Botswana, (iii) To determine the conduct of the cabbage market participants in the Central District of Botswana and (iv) To assess the performance of the cabbage market in the Central District of Botswana. Both secondary and primary data were used in the study. This chapter presents the conclusions and recommendations emerging from the findings of the study.

The producing community comprised of middle-aged producers with an average age of 47.9, with the majority being below the age of 50 years. The trading community was dominated by youths, with average ages of 39.1 and 35.9 for wholesalers and retailers respectively. Among producers, males were the most dominant group while the trading business was mostly handled by females.

It is evident that education level is high in the Central District of Botswana as majority of producers and traders had attained secondary education level. However, experience in cabbage production and trading was relatively low, with producers having an average of 2.52 years of experience and traders with 5.60 (wholesalers) and 4.88 (retailers). Access to markets was relatively good in the study area as the average distance travelled to the nearest market was 8 kilometers. The marketing channels consisted of producers from the Central District who grow

cabbage, wholesalers who buy cabbage from producers at the farm-gate and retailers who purchase cabbage from wholesalers. There were neither brokers nor transporters in the study area.

It is apparent that the cabbage market structure in the Central District is that of an oligopoly nature because of fewer market participants and high concentration. The Gini coefficients for wholesalers and retailers were 0.672 and 0.509, respectively, implying that the market was relatively highly concentrated and therefore less competitive. The barriers to entry created by individuals in the market, in relation to price made it harder for new entrants into the market. Even though there are minimal chances of collusion in the market, retail prices were relatively high in comparison to producer prices, even though cabbage does not require any processing in between the supply chain. Cabbage production and trading in the Central District of Botswana are profitable ventures as depicted by the profit margins realized by producers and traders.

5.2 Conclusion

The study revealed that the existing cabbage market channels involved a number of channels and not just one single channel. The cabbage market channels are limited to producers, traders (wholesalers and retailers) and ultimately to consumers. From the findings of this study, the marketing system of horticulture in the Central District can be regarded as non- competitive due to the existence of an oligopolistic market structure. Producers were found to earn higher gross margins compared to cabbage traders. However, retailers received a large share of the final consumer price compared to wholesalers even though wholesalers incurred more marketing costs. Generally, the cabbage market in the Central District of Botswana is not to a satisfactory

state despite the lack of collusive behavior among market participants and availability of market information, the existence of an oligopoly market structure still prevails, where only a few actors in the market get to control and benefit from the market.

The most prominent constraints faced by producers in the study area included pests and diseases, which all of the producers complained about, expensive inputs (86 percent) such as seeds, fertilizers and pesticides, minimal access to credit (78 percent) and minimal extension services (52 percent). These constraints disturbed the availability of cabbage because producers had to incur high costs in addressing them. Traders were faced with the problems of high transportation costs (93 percent), lack of credit access (65 percent) and lack of storage facilities (42 percent). If these constraints are not properly addressed, they could cripple the development of the horticulture sector.

5.3 Recommendation

Based on the results of the study, the following recommendations were made:

1. Formulating policies guiding cabbage and other horticulture products marketing

The government needs to develop a policy that restricts monopolization of the cabbage market in order to develop a fair balance of demand and supply. There is need for the government to implement an institutional framework to guide cabbage contracts to help market actors in contractual agreements so as to reduce the chances of a closed and uncompetitive market. Implementing these policies may help the general horticulture market in the country become more efficient and well-coordinated and ensure fair returns to all market actors.

2. Strengthening the pricing and market information system

Consumers in the study area seem to be paying a high price for cabbage in relation to producer prices. There is therefore the need for an integrated agricultural marketing information system which is linked to producers, traders and the final consumers in order to avoid exploitation of high prices.

3. Female support in cabbage production and trading

The observation from the results of the study is that cabbage production and trading is mostly dominated by males. The study recommends that the government in collaboration with financial institutions provide affordable financial services to women in order to enable them to participate in the market.

5.4 Further research

The study recommends that more research should be carried out regarding the structure, conduct and performance of horticulture markets in other districts of Botswana which were not covered in the current study. This will provide more information to the policy makers on the current condition of the horticulture market in the country so as to make well-informed decisions.

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APPENDICES

Appendix 1: PRODUCERS' QUESTIONNAIRE

ANALYSIS OF STRUCTURE, CONDUCT AND PERFORMANCE OF CABBAGE MARKET IN CENTRAL DISTRICT OF BOTSWANA.

Remark: The purpose of administering this questionnaire is purely for academic purposes, in addition to generating more knowledge on horticulture marketing in Central District of Botswana. The information provided is secure and confidential.

PRODUCERS QUESTIONNAIRE
Questionnaire number: _____
Date of interview: _____
Location: _____

PART 1: DEMOGRAPHIC CHARACTERISTICS OF THE RESPONDENT

1. Name of respondent _____
2. Gender Male { } 3. Age _____years
   Female { }
3. Education level 1. Primary level { }
   2. Secondary { }
   3. College { }
   4. Other _____
4. What is your major occupation?
   1. Vegetable production { } 3. Livestock production { }
   2. Other crop production { } 4. Trading { }
   5. Civil servant { } 6. Other (specify) _____
5. What is your source of income?
   1. Vegetable production { } 3. Remittances { }
   2. Other crop production { } 4. Other (specify) _____
6. Do you belong to any social cooperative groups? Yes { }
   No { }
7. What are the benefits you get as part of belonging to the social cooperative group?

_____

PART 2: PRODUCTION INFORMATION

8. Are you involved in cabbage production?

Yes { }

No { }

9. If yes, how many years have you been in cabbage production?

_____

10. What is the farm size under production?

_____ (ha)

11. Please indicate how many hectares of ploughing land is dedicated to cabbage production

_____

12. Please indicate the quantity of cabbage produced per hectare over the last season

_____

13. How much was the start-up capital for the cabbage production?

_____

14. What was the source of the start-up capital? Please indicate below

1. Personal savings { } 3. Cooperative society { }
2. Bank { } 4. Relative { }
5. Friend { } 6. Other (specify) _____

15. How much is the operational costs for cabbage production?

_____

Type of operational cost	**Quantity**	**Cost amount in Pula (BWP)**
Input costs:		
Seeds		
Fertilizer		
Herbicides/Pesticides		
Other (specify)_____		
Labour costs:		
Land preparation		
Weeding		
Fertilizer application		
Harvesting		
Irrigation cost		
Other (specify) _____		
		TOTAL=

PART 3: MARKETING INFORMATION

16. Please provide the relevant information below

Quantity sold	**Selling price Per bag**	**Where do you sell your cabbage**	**To whom is the cabbage sold**
		Options: 1. The farm-gate { } 2. Local market { } 3. Urban market { } 4. Others : please specify { } _____	Options: 1. Neighbor { } 2. Village collector { } 3. Wholesaler { } 4. Retailer { } 5. Others (specify) _____

17. What is the distance to the nearest market?

_____

18. How do you sell your cabbage produce?

1. Individually { }
2. Collectively { }
3. Other (specify) _____

19. What determines the choice of whom to sell your produce to? Please indicate below

1. Price { } 3. Fair scaling { }
2. Proximity { } 4. Other (specify) _____

20. Who sets the prices of the cabbage? Please indicate below

1. Yourself { } 3. Negotiations { }
2. Buyer { } 4. Other (specify) _____

21. Did you know the market prices before you sold the cabbage? Yes { }
No { }

22. If yes, how did you get market price information of cabbage?

_____
_____
_____
_____
_____

23. What has been the trend of cabbage market prices for the last 5 years?

Trend of the price (Tick)			If increasing, why?	If decreasing, why?
Increasing	Decreasing	The same		

24. Do you face difficulties in finding buyers for the cabbage when it is ready for sale?

Yes { }
No { }

25. If yes above, why? Please indicate below

1. Inaccessibility to the market { } 3. Lack of information { }
2. Low price offered { } 4. Other (specify) _____

26. After sale of the cabbage, when do you get the payment for the sale?

1. As soon as I sell { } 3. On other days { }
2. After some hours { } 4. Others (specify) _____

27. What are the costs you incur in selling the cabbage?

Cost type	**How much in Pula (BWP)**
Calling costs	
Loading	
Off loading	
Council levy	
Negotiation costs	
Loss of produce (cause: _____)	
	Total cost =

28. What are the challenges you face in cabbage production?

_____
_____
_____

End of the interview
Thank you for your cooperation.

Appendix 2: TRADERS' QUESTIONNAIRE

ANALYSIS OF STRUCTURE, CONDUCT AND PERFORMANCE OF CABBAGE MARKET IN CENTRAL DISTRICT OF BOTSWANA.

Remark: The purpose of administering this questionnaire is purely for academic purposes, in addition to generating more knowledge on horticulture marketing in Central District of Botswana. The information provided is secure and confidential.

TRADERS QUESTIONNAIRE

Questionnaire number: _____

Date of interview: _____

Location: _____

Status of the respondent: 1. Wholesaler { } 2. Retailer { } 3. Other (specify) _____

PART 1: DEMOGRAPHIC CHARACTERISTICS OF RESPONDENT

1. Name of respondent _____

2. Gender Male { } 3. Age _____years
Female { }

3. Education level 1. Primary level { }
2. Secondary { }
3. College { }
4. Other _____

4. How do you undertake the cabbage trade activity?
1. Alone { }
2. With a partner { }
3. Cooperative { }
3. Other (specify) _____

5. How long have you been in the cabbage trading business?
_____years

6. Do you participate in cabbage trading year round? Yes { }
No { }

7. If no, at what period of the year do you participate?
1. During high supply
2. When purchase price is low
3. Other (specify) _____

8. How much was your start-up capital when you started the business of trading?
_____

9. What was the source of the start-up capital?
1. Loan { } 2. Gift { } 3. Own savings { }

10. If it was a loan, what was the source of the loan?
1. Bank { } 3. Friend { }
2. Cooperative society { } 4. Relative { }
5. Other (specify) _____

11. What is the payment schedule for the loan?
1. Monthly { } 3. Semi { } 5. Other (specify) _____
2. Quarterly { } 4. When you get money { }

12. How much is the interest charged on the loan? _____

13. Are you a member of any of the following organization?

Organization	Yes = 1 No = 0	The benefits 1. ☐ Access to credit 2. ☐ Facilitate joint marketing 3. ☐ Get market information 4. ☐ Coordinate purchase & sale
1. Social association		
2. Trade association		
3. Other (specify)		

_____		5. ☐ Credibility 6. ☐ Encourage to save 7. ☐ No benefit 8. ☐ other (specify) _____

PART 2: TRADE PRACTICES

14. Please indicate the quantity and source of the cabbage you trade

Quantity of the cabbage collected	The source	From where was the cabbage bought	Buying Price
	Options: 1. Producer { } 2. wholesaler { } 3. village collector { }	Options: 1. The farm { } 2. The collection area { } 3. Local market { }	

15. How do you measure your purchase?

1. By sack { } 3. By basket { }
2. By weighing (Kg) { } 4. Other (specify) _____

16. What determines the choice of whom to buy your produce from? Please indicate below

1. Price { } 3. Fair scaling { }
2. Proximity { } 4. Other (specify) _____

17. Who sets the price you buy the cabbage for?

1. Myself { } 3. Negotiation { }
2. The seller { } 4. The Market { }
5. Other (specify) _____

18. Did you know the market prices before you bought the cabbage? Yes { }
No { }

19. If yes, how did you get market price information of cabbage?

1. The cooperative 3. Colleagues in the market
2. The commission agent 4. Other (specify) _____

20. Please indicate where you sell the cabbage after acquisition?

To whom do you sell to	The selling market point	The selling price

21. How long does it take for you to re-sell the acquired cabbage?

1. Immediately { } 3. Week { }
2. Days { } 4. Other (specify) _____

22. Do you have a storage facility for cabbage? Yes { }
No { }

23. If yes, please indicate the type of storage facility you use
1. Modern (Refrigerators & cold rooms) { }
2. Traditional storage { }
3. Other (specify) _____
24. Do you carry out any physical treatment to maintain product quality? Yes { }
No { }
25. If yes, please specify below
1. Sorting { } 3. Packaging { }
2. Grading { } 4. Other (specify) _____
26. Who sets the selling price?
1. Myself { } 3. Negotiations { }
2. The buyer { } 4. The market { }
5. Other (specify) _____

27. Do you know the market prices for cabbage before you sell your cabbage produce?
Yes { }
No { }
28. If yes, what is the source of the market price information for cabbage?
_____
29. How do you qualify the timeliness and effectiveness of the information you get regarding the prices of cabbage in the market?

Effectiveness	Timeliness
Options:	Options:
Highly effective { }	Very timely { }
Effective { }	Timely { }
Undecided { }	Undecided { }
Not effective { }	Not timely { }

30. What are the marketing costs incurred?

Cost type	Cost amount in Pula (BWP)
Transport	
Packaging	
Loading/off-loading produce	
Market charges	
City council levy	
Produce loss (cause:_____)	
	Total=

PART 3: MARKETING SERVICES

31. Do you have a trading license? Yes { }
No { }

32. How much did you pay for a trading license?

_____

33. How much is the yearly renewal payment for the trading license?

_____

34. Are there restrictions imposed on unlicensed horticulture traders? Yes { }
No { }

35. Are there any restrictions for entry and exit of the market? Yes { }
No { }

36. Are there problems in cabbage trading and marketing? If yes what are the problems, and your suggestion to overcome each problem? Please specify below

Problem	**Yes= 1** **No= 0**	**What do you think are the causes of the problem?**	**Possible solutions**
Price setting			
Credit			
Scaling/weighing			
Storage problem			
Information flow			
Perishability			
High marketing costs			

Other(specify)_____ _____ _____ _____			

End of the interview
Thank you for your cooperation.

Appendix3:BROKERS' QUESTIONNAIRE

ANALYSIS OF STRUCTURE, CONDUCT AND PERFORMANCE OF CABBAGE MARKET IN CENTRAL DISTRICT OF BOTSWANA.

Remark: The purpose of administering this questionnaire is purely for academic purposes, in addition to generating more knowledge on horticulture marketing in Central District of Botswana. The information provided is secure and confidential.

Questionnaire number: _____
Date of interview: _____
Location: _____

PART 1: DEMOGRAPHIC CHARACTERISTICS OF RESPONDENT

1. Name of respondent _____
2. Gender Male { } 3. Age _____years
   Female { }
3. Education level
   1. Primary level { }
   2. Secondary { }
   3. College { }
   4. Other _____
4. How do you undertake the cabbage trade activity?
   1. Alone { }
   2. With a partner { }
   3. Cooperative { }
   3. Other (specify) _____
5. How long have you been in the cabbage trading business?
   _____years
6. Do you participate in cabbage trading year round? Yes { }
   No { }
7. If no, at what period of the year do you participate?
   1. During high supply
   2. When purchase price is low
   3. Other (specify) _____
8. How much was your start-up capital when you started the business of trading?
   _____
9. What was the source of the start-up capital?
   1. Loan { } 2. Gift { } 3. Own savings { }
10. If it was a loan, what was the source of the loan?
    1. Bank { } 3. Friend { }
    2. Cooperative society { } 4. Relative { }
    5. Other (specify) _____
11. What is the payment schedule for the loan?
    1. Monthly { } 3. Semi { } 5. Other (specify) _____
    2. Quarterly { } 4. When you get money { }
12. How much is the interest charged on the loan? _____

13. Are you a member of any of the following organization?

Organization	Yes = 1 No = 0	The benefits
1. Social association		1. ☐ Access to credit 2. ☐ Facilitate joint marketing 3. ☐ Get market information 4. ☐ Coordinate purchase & sale 5. ☐ Credibility
2. Trade association		
3. Other (specify) _____		

		6. ☐ Encourage to save 7. ☐ No benefit 8. ☐ other (specify) _____

14. What is your role in the market? A broker between _____ and _____.

15. Please indicate the quantity and source of the cabbage you trade

Quantity of the cabbage collected	The source	From where was the cabbage bought	Buying Price
	Options: 1. Producer { } 2. wholesaler { }	Options: 1. The farm { } 2. The collection area { } 3. Local market { }	

16. Is the buying of the cabbage on a contractual basis? Yes { }
No { }

17. Who sets the price you buy the cabbage for?
1. Myself { } 3. Negotiation { }
2. The seller { } 4. The Market { }

18. Did you know the market prices before you bought the cabbage? Yes { }
No { }

19. If yes, how did you get market price information of cabbage?
1. The cooperative 3. Colleagues in the market
2. The commission agent 4. Other (specify) _____

20. Please indicate where you sell the cabbage after acquisition?

To whom do you sell to	The selling market point	The selling price

21. Is the selling of the cabbage produce on a contractual basis? Yes { }
No { }

22. How long does it take for you to re-sell the acquired cabbage?
1. Immediately { } 3. Week { }
2. Days { } 4. Other (specify) _____

23. Do you have a storage facility for cabbage? Yes { }
No { }

24. If yes, please indicate the type of storage facility you use
1. Modern (Refrigerators & cold rooms) { }
2. Traditional storage { }

3. Other (specify) _____

25. Who sets the selling price?

1. Myself { } 3. Negotiations { }
2. The buyer { } 4. The market { }
5. Other (specify) _____

26. Do you know the market prices for cabbage before you sell your cabbage produce?

Yes { }
No { }

27. If yes, what is the source of the market price information for cabbage?

_____

28. How do you qualify the timeliness and effectiveness of the information you get regarding the prices of cabbage in the market?

Effectiveness	Timeliness
Options:	Options:
Highly effective { }	Very timely { }
Effective { }	Timely { }
Undecided { }	Undecided { }
Not effective { }	Not timely { }

29. What are the marketing costs incurred?

Cost type	Cost amount in Pula (BWP)
Transport	
Packaging	
Loading/off-loading produce	
Market charges	
City council levy	
Produce loss (cause:_____)	
	Total=

30. Do you have a trading license? Yes { }
No { }

31. How much did you pay for a trading license?

_____

32. How much is the yearly renewal payment for the trading license?

_____

33. Are there restrictions imposed on unlicensed horticulture traders? Yes { }
No { }

34. Are there any restrictions for entry and exit of the market? Yes { }
No { }

35. Are there problems in cabbage trading and marketing? If yes what are the problems, and your suggestion to overcome each problem? Please specify below

Problem	**Yes= 1 No= 0**	**What do you think are the causes of the problem?**	**Possible solutions**
Price setting			
Credit			
Scaling/weighing			
Storage problem			
Information flow			
Perishability			
High marketing costs			
Other(specify)_____ _____ _____ _____			

End of the interview

Thank you for your cooperation.