BRANDING PRACTICES FOR FRESH FRUITS AND VEGETABLES, FARMER CHARACTERISTICS, OPERATING ENVIRONMENT AND PERFORMANCE OF COMMERCIAL FARMERS IN KIAMBU COUNTY, KENYA

ISAAC MICHENI NKARI

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DECLARATION

I declare that the work contained in this thesis is my original work and has not been presented for any award in any other university or institution.

Sign_____ _____

Isaac Micheni Nkari **Date**
D80/80024/2007

This thesis has been submitted for examination with our approval as university supervisors.

Sign: _____ _____

Professor Francis N. Kibera PhD **Date**

Department of Business Administration
School of Business
University of Nairobi

Sign: _____ _____

Professor Justus M. Munyoki PhD **Date**

Department of Business Administration
School of Business
University of Nairobi

Sign: _____ _____

Dr. Mary W. Kinoti PhD **Date**

Department of Business Administration
School of Business
University of Nairobi

DEDICATION

This work is dedicated to my wife, Dr. Elyjoy Muthoni, and my sons Cyrus Mugambi, Maurice Murimi and Brian Muchiri for their love, understanding and invaluable support. Their eagerness to make sacrifices and offer any assistance required of them strengthened my resolve to complete this work. My father Silas Nkari Mutani consistently reminded me of the unfinished task and his faith in my ability to complete this assignment was a source of inspiration.

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ABBREVIATIONS AND ACRONYMS

BP	Branding Practices
CF	Commercial Farmers
CV	Coefficient of Variation
EU	European Union
FC	Farmer Characteristics
FFV	Fresh Fruits and Vegetables
GDP	Gross Domestic Product
GPO	Geographical Place of Origin
HCDA	Horticultural Crop Development Authority
KARI	Kenya Agricultural Research Institute
KEPHIS	Kenya Plant Health Inspection Services
MOALF	Ministry of Agriculture, Livestock and Fisheries
OE	Operating Environment
PCF	Performance of Commercial Farmers
RBT	Resource Based Theory
SCA	Sustained Competitive Advantage
WTP	Willingness to Pay

ABSTRACT

The broad objective of this study was to establish the relationship between branding practices (BP) of fresh fruits and vegetables (FFV) and performance of commercial farmers in Kiambu County and the extent to which farmer characteristics and operating environment influenced this relationship. The specific objectives were to: establish the influence of BP of FFV on the performance of commercial farmers; examine the influence of farmer characteristics on the performance of commercial farmers; assess the effect of operating environment on the performance of commercial farmers; establish the influence of farmer characteristics on the relationship between BP of FFV and the performance of commercial farmers; establish the influence of operating environment on the relationship between BP of FFV and the performance of commercial farmers and finally determine the joint effect of BP of FFV, farmer characteristics and operating environment on the performance of commercial farmers. The study hypotheses were derived from the stated objectives. The population of the study consisted of 213 farmers from whom a sample of 140 farmers was drawn. A descriptive cross sectional survey design was used. Data was collected using a semi structured questionnaire and analyzed using both descriptive and inferential statistics. The study established a statistically significant relationship between BP and performance of commercial farmers, farmer characteristics and the performance of commercial farmers and operating environment and performance of commercial farmers. Farmer characteristics had a statistically significant moderating effect on the relationship between branding practices and performance of commercial farmers. The moderating effect of operating environment was not statistically significant. Taken jointly, BP, farmer characteristics and operating environment were found to have a statistically significant effect on the performance of commercial farmers. The study contributes to theory, policy making and enhances managerial practice in relation to marketing in general and branding practices in particular. The study offered further insight into the relationship between branding practices, farmer characteristics, operating environment and performance of commercial farmers. The study was limited by the narrow scope which focused on few constructs and elements within the variables; self reported data with no collaborative evidence and gathering of cross sectional data on BP that take time to yield results. The study recommends that farmers should enhance their abilities and engage in BP to improve their performance. The farmers should always consider relevant environmental factors while making branding decisions. The government should encourage branding of FFV as a means of adding value to the products by putting in place the requisite infrastructure and legislation. Future research should target other fresh agricultural products; increase the variables and constructs being investigated and target other counties with differing social economic and climatic conditions. A study adopting a time series design aimed at gathering continuous data would demonstrate the effect of BP throughout the life cycle of the product and increase objectivity in the collected data.

CHAPTER ONE

INTRODUCTION

This chapter lays the foundation of the study and provides the context for subsequent chapters. It sets the research background leading to development of the research problem and summarizes the objectives of the study. The chapter discusses the main concepts of the study namely; branding practices, farmer characteristics, operating environment, and performance of commercial farmers. Value of the study is outlined and the chapter is concluded with a summary of the thesis structure which highlights the key contents of the proceeding chapters.

1.1 Background

Over the years, producers and suppliers of goods and services have engaged in varying degrees of product differentiation. The industrial revolution led to mass production of goods and services and the segmentation of markets based on different modes of production (Dickson & Ginter, 1987). The rapid advancement in technology has resulted in all sectors of the economy getting saturated in the number of products being offered. This has necessitated producers to engage in product differentiation in order to create a niche for their products (Grimm & Malschinger, 2010).

Marketers undertake differentiation through different methods among them product branding. The theory of branding postulates that producers will strive to offer products with superior attributes to gain market dominance. These attributes signal the quality and characteristics of products as well as the characteristics of consumers (Meads & Sharma, 2008). Trienekens (2011) observes that for most fresh food products, there is limited differentiation and branding of the products at farm level despite the availability of numerous product differentiating attributes. The farmers therefore don't benefit from the value addition acquired through branding. However, due to increased competition, agricultural producers have started adopting branding as a value adding activity (Beverland, 2007). Aaker (2003) observes that it is difficult to build strong brands

because of both internal and external pressures which confront a marketer. These pressures demand extra effort on the part of the producer to convince consumers of the superiority of their products over competition. This effort is even more difficult for FFV which as noted by Cook (2013) lack year round supply of quality products and also require specialized handling due to their perishability.

Kiambu County has a number of factors that favour FFV farming. The County covers a wide agro-ecological zone which accords its products numerous differentiation attributes. The County also has a fast growing urban and sub urban population and is experiencing high unemployment (County Government of Kiambu, 2012). Fresh fruits and vegetables have a high value added per unit of land since they are labour and management intensive per crop and their short maturing period allows two or more crops to be grown per year. This makes their growing the most appropriate form of farming in the County (Government of Kenya, 2012). To increase its commercialization and transform the sector from subsistence to an innovative and modern undertaking, FFV farmers in the County need to engage in branding among other value addition activities.

1.1.1 The Concept of Branding and Branding Practices

As identified by Keller (1998), a brand is a perpetual entity that resides in the minds of consumers and is rooted in reality and reflects the perceptions of consumers. Kotler and Keller (2009) contend that branding a product involves teaching consumers "who" the product is by giving it a name and establishing "what" the product does and "why" consumers should be attracted to it. According to Keller (1998), successful branding occurs when the brand delivers consistently a clearly defined and appealing offering that sets it apart from its competitors. On his part, Aaker (2003) contends that building a strong brand calls for developing and implementing a brand identity (an indication of what the brand stands for in consumer's mind) and to effectively express that identity.

According to Wood (2000), the term brand has been highly conceptualized and its theory is evolving continuously. This makes it difficult to have one generally accepted definition of a brand. Amber and Styles (as cited in Weber & Favotto, 2010) identified the product

plus and holistic approaches of describing a brand. Other views include consumers' and owners' perspectives (Wood, 2000). By integrating the different perspectives, Wood (2000) described a brand as a mechanism for achieving competitive advantage for firms through differentiation. By combining the product-plus and owners' perspectives, Kotler and Keller (2009) present a brand as a name, term, sign, symbol, or design or a combination of them, intended to identify products of one seller and differentiate them from those of competition.

Aaker (2003) identifies functional, emotional and self-expressive benefits of successful branding. Functional benefits relate directly to the functions performed by the product and are based on a product's attributes that provide functional utility to the customer. Emotional benefits arise when purchase or use of a brand gives the customer a positive feeling and adds richness and depth to the experience of owning the brand. Self-expressive benefits result when a brand becomes a symbol of a person's self-concept and facilitates a person to communicate his or her self-image.

Meads and Sharma (2008) observe that the role of a brand has progressively evolved from a mark of ownership to a mark of differentiation, a badge of honour or trust and finally to an indication of value. Branding has acquired a pivotal social concept with brands providing stakeholders added value based on factors beyond their functional characteristics (Weber & Favotto, 2010). Branding practices (BP) are expected to enhance the value of products. The proposed study seeks to establish the influence of BP on the performance of commercial FFV farmers in Kiambu County.

Aaker (2003) notes that there is continued fragmentation of mass markets which creates multiple consumer offerings that require continuous identity clarification and modification. Consequently, suppliers engage in various BP by utilizing different brand elements to differentiate their products from competition (Kotler & Keller, 2009). Among the BP is the development of brand elements designed to differentiate and create a clear visual identity for the products. Kotler and Keller (2009) have identified the visual

identity creating elements to include brand names, logos and symbols, taglines, colours and shapes. The visible elements help to identify and distinguish a brand in the consumers' mind. To be effective, these visual identity elements should be memorable, meaningful, likeable, adaptable and protectable. Another category of BP consists of activities meant to communicate brand offerings to target customers. According to Kotler and Keller (2009) marketing communications represent the voice of the brand and are a means by which a brand can establish a dialogue and build relationships with consumers. They help establish a brand in the memory of consumers thereby crafting a desired brand image. Elements that constitute a communication practice are varied and the choice of any specific element will depend on the target communication objective. They include advertising, sales promotions, public relations, direct marketing and personal selling.

A third BP is geared towards classifying the brands and involves deciding on the nature of new and existing branding elements to be applied to new and existing products. The branding options are referred to by Kotler and Keller (2009) as branding strategies. Heding, Knudtzen and Bjerrre (2009), have identified the practices to involve deciding whether to develop generic, family, individual, transnational, local, fighter, producer or private/retailer brands and whether the brands should adopt descriptive, associative, GPO, or alpha-numeric brand names.

1.1.2 Commercial Farmers' Characteristics

Commercial farmers' demographic characteristics affect their performance capabilities in different ways. According to Sindi (2008), the mature farmers are more experienced and have more access to required resource as compared to the young ones. Sindi (2008) further established that the young farmers were more accommodative of new ideas and that male farmers had easy access to credit, extension services and other farm inputs while female farmers had constraints in acquiring resources including modern technology. In regard to education, farmers with secondary school level agricultural education used the right inputs leading to better performance (Saina, Kathuri, Rono, Kipsat & Sulo, 2012). Cooperative membership facilitated access to credit and other facilities (Verhofstadt & Maertens, 2013) and also enabled farmers to lobby for

government support including extension services. Farmers who were more capitalized, technically and financially empowered were more effective in farming and marketing FFV (Neven & Reardon, 2006). The farmers were found to own the land they farmed as individual or family sole proprietorships (Derden-Little, Erin & Feenstr, 2006) or as cooperatives, partnerships or limited liability companies (Verhostadt, 2013).

1.1.3 Operating Environment

The task and broad environments influence BP and performance of commercial farmers. Kotler and Keller (2009) identified micro-environmental forces that influence firm performance to include customers, competitors, suppliers and intermediaries. It was noted that even though FFV consumers working in urban and suburban areas had higher purchasing power, they had little knowledge and experience to pick the right products. They attached increased importance to FFV in their diets due to increased level of consciousness on personal health (Stanton & Herbst, 2005). The consumers were seen to prefer FFV over canned or frozen alternatives (Clarke & Moran, 1996). The competing FFV farmers had different financial abilities which lead to differences in the quality of inputs applied such as seeds, fertilizers and insecticides. This resulted in differences in productivity and product quality (Evenson & Mwabu, 1998). Narrod, Roy, Okello, Avendano, Rich and Thorat (2007) reported increased demand on food safety especially for the export market and noted that small FFV farmers were satisfying these conditions by either being sub-contractors to large farmers or forming groups under government and NGOs support.

Various macro-environmental factors affect BP and performance of commercial famers (PCF). Such factors include differences in agro ecological zones that lead to a wide variety of FFV in the market; improved transport and storage facilities (Clarke & Moran, 1996); development of rural fully equipped assembly points for handling the products; increased competition from other branded FFV; and increased importance of supermarkets as outlets for FFV (Neven & Reardon, 2006). Improved technology in form of mechanized farming leads to farm development and improved performance (Bremmer, Lansink, Olson, Baltussen & Huirne, 2002). There is increased competition for the

limited land between agriculture and other economic activities such as housing. To commercialize the agricultural sector, the Kenyan government has identified product branding as a key value addition initiatives to focus on (Government of Kenya, 2012).

This study sought to identify how operating environment (OE) influences performance of commercial farmers. It also assessed how OE moderates the relationships between branding practice of FFV and performance of commercial farmers on the one hand and farmers' characteristics (FC) and performance of commercial farmers on the other hand.

1.1.4 Firm Performance

The concept of firm performance relates to the manner in which a firm's resources are used to achieve its overall objectives. Kinyua-Njuguna (2013) presents it as the actual output of an organization measured against its intended outputs. Branding practices are demanding in terms of time, efforts and financial resources. Both financial and non financial parameters are used to measure firm performance arising from BP. The nonfinancial parameters used to measure the performance of a farmer include crop productivity or yield (Saina et al. 2012); brand awareness, image and loyalty (Kim, An, & Kim, 2013); farm size and yield (Makki, 2014); price sensitivity, volume increase, and level of marketing costs (Park, Eisingerich, Pol, & Park, 2013); level of innovativeness and the ability to attract premium pricing (Offermann & Nieberg, 2000).

Edwards (2013) contends that farmers need to establish the financial performance of their operations to be able to assess the profitability, debt capacity and financial risks currently faced by their businesses. He postulates that financial performance can be summarized by four financial statements namely net income statement, net worth statement, statement of cash flow and statement of owner's equity. Other Financial performance measures include financial statements of solvency, profitability and turnover (Makki, 2014) and profitability, liquidity, solvency, efficiency and repayment capacity (Dunaway, 2013). According to Offermann and Nieberg (2000), net profit is the most common and accepted indicator for success of an economic activity. Similarly, Ailawadi, Lehmann and Neslin

(2002) identified product revenue, product margin and profitability as the most commonly used measurement parameters to determine the performance of product management. Product output, price premium, profitability and satisfaction were the performance measures adopted for this study since as established by Ailawadi et al. (2002), they are easy to assign and are consistent with the focus of business executives.

The preceding sections introduced the key variables of this study. Commercial farmers engage in branding practices with an objective of improving the performance of their FFV products. Their ability to undertake effective branding practices are influenced by their individual characteristics (demographic characteristics, membership to associations and land ownership) and the favorableness of the environment where they operate. The success of their initiatives is evaluated by considering performance measures which include prices earned, volumes achieved, profitability and satisfaction. This study covered FFV farmers in Kiambu County and sought to establish the nature of branding practices they engaged in, how the operating environment influenced their undertakings and the outcomes achieved.

1.1.5 Relationships among the Study Variables

Social economic characteristics of commercial farmers have a bearing on their ability to undertake branding practices Sindi (2008). The practices determine what brand elements are to be applied either commonly or distinctively to craft and establish a clear image of brands in consumers' mind to enhance distinctiveness of individual brands. A farm's operating environment influences the caliber of social economic characteristics of customers served, variety and features of products available, nature of outlets for the products and the infrastructural facilities available (Poulton, Tyler, Hazel, Doward, Kyudd & Stockbridge, 2008). These factors influence branding practices and performance of commercial farmers.

The success of branding practices as value addition initiatives can be evaluated using different parameters. The parameters will differ depending on objectives of the branding initiatives. Park, et al. (Park, 2013) identified a performance measure incorporating both

financial and non financial parameters. Irrespective of the performance parameter preferred, the ultimate goal is to establish whether branding practices undertaken by farmers of differing characteristics exploiting the numerous opportunities presented by operating environments to achieve premium performance.

1.1.6 The Fresh Fruits and Vegetables Sub-Sector in Kiambu County

Kiambu County consists of twelve administrative sub counties namely Kiambu, Kikuyu, Limuru, Lari, Githunguri, Thika, Ruiru, Juja, Kiambaa, Kabete, Gatundu North and Gatundu South. The County has a wide agro-ecological zone ranging from the cold climate of the upper highlands of Limuru and Lari to the relatively dry and warm climate of the lower parts of Ruiru, Thika and Gatundu enabling the county to produce tropical FFV such as bananas and mangoes as well as temperate ones such as peaches and plums. Horticulture is widely practiced in the county in both small scale units and large farms. In 2010, FFV farming in the County covered 26,407 hectares equivalent to three percent of total area under FFV in Kenya. FFV earned the County Kshs. 12.92 billion equivalent to 5.7 percent of the crops' total earnings in Kenya (Republic of Kenya, 2011).

Kiambu County is served by a network of all weather roads which include the Thika–Nairobi superhighway and the Northern Bypass which facilitates delivery of FFV to the market. There is high competition for the small land plots (averaging 0.36 Ha) between agriculture and housing estates. This makes the farming of FFV most appropriate since they are labour and management intensive per crop and have short maturing period allowing for two or more crops per year (Government of Kenya, 2012). The county borders Nairobi City County and houses Thika, Kiambu, Kikuyu, Limuru and Juja towns which provide a ready market for its FFV (County Government of Kiambu, 2012).

1.2 The Research Problem

The choice of branding practices will depend on whether the objective of the exercise is name development aimed at creating clear and unique brand identity; advertising aimed at promoting the brand to prospective consumers or deciding on whether to adopt individual or family branding meant to classify the brand (Kotler & Keller, 2006). The

effectiveness of these practices in creating unique offerings is influenced by environmental factors which include weather, political and economic conditions as well as competitor, consumer and farm ownership characteristics. Farmer demographic characteristics (age, gender, education, income and experience) coupled with farm ownership will have a bearing on farm performance (Evenson & Mwabu, 1998).

The Horticultural subsector in Kenya accounts for 36 per cent of the agricultural GDP with vegetables and fruits accounting for 74.2 per cent of the horticulture (Ministry of Agriculture, 2012). To achieve the aspirations in Kenya's Vision 2030, the main strategic thrust for the agricultural sector is to increase productivity, commercialization, and competitiveness of agricultural commodities by transforming small holder agriculture from subsistence to an innovative, commercially oriented and modern sector. This will be achieved by engaging in such value addition activities as product processing, branding, quality certification and farm level quality improvements. To supplement the initiatives of the Ministry of Agriculture, Livestock and Fisheries (MOALF) towards vision 2030, there is need to determine how branding practices impact the performance of farmers and the influence of farmer characteristics and operating environment on this performance relationship.

Various shortcomings were noted in the reviewed studies which render them inadequate in establishing whether there is a significant relationship between branding practices of FFV and performance of commercial farmers in Kiambu County. Using a sample of 1850 German firms which yielded 310 responses, Homburg, Klarman and Schmitt (2010) established that under specific conditions, brand awareness is strongly related to performance. This study was not product or performance measure specific, had a low response rate at 16%, utilized Mplus 4.2 model for data analysis (non-probability samples) and focused only on business to business firms. In Netherlands, Bremmer, et al. (2002) sampled 141 farms with 122 responses and established that farmer's age, off farm income, and family labour input have no significant relationship with farm development while mechanization has a high marginal impact on farm development. The study used a

probit model for data analysis which can only evaluate two values of the independent variable. The study ignored financial aspects and only considered farm development and innovativeness as measures of performance.

A study in USA by Park et al. (2013) regarding the role of brand logos in firm performance that involved the evaluation of ten different logos by 450 randomly selected undergraduate students concluded that brands with symbols as logos were more effective at representing a brand and enhancing firm performance as compared to a firm whose logo consisted of brand name alone. Park et al. (2013) did not specify the population or the response rate and evaluated the effect of a single aspect of branding practices (brand logo) on firm performance. To evaluating the importance of innovation on the performance of small and medium enterprises (SME), Hafeez, Shariff and Lazim (2012) undertook a study in a developing economy (Pakistan). They reviewed 100 conceptual and empirical papers published between 1934 and 2012 and established that branding can assist SME's in building corporate image and introduction of innovative products which increased market share, long term growth and superior performance. However, the study was limited to literature review that was not product or sector specific.

Regionally, Verhofstadt and Maertens (2013) analyzed 401 responses from households served by 26 cooperative societies in Rwanda and established that membership in cooperative had a positive impact on farm performance in regard to volumes sold and income generated. The study was not sector specific, ignored the role of branding practices on performance and relied on descriptive data analysis. Among the studies conducted in Kenya, Evenson and Mwabu (1998) analyzed secondary data from the Central Bureau of Statistics covering seven districts, 676 farmers and 3682 observations and established that extension services, experience, male gender, education and highlands ecological zones improved farm productivity. The study measured performance in terms of volume productivity. McCulloch and Ota (2002) compared performance data from horticultural and non horticultural workers in Nairobi and Mount Kenya regions and small holder horticulture and non horticulture farmers in Mount Kenya region and

concluded that export horticulture contributes to an increase in income, job creation, access to credit and extension services. However, this study relied on descriptive data analysis and ignored the role of branding practices in enhancing performance of commercial farmers.

Studies in Europe, America and Asia were conducted under different social economic and regulatory conditions and are therefore location variant. Other than the studies by Bremmer et al. (2002) and McCulloch and Ota (2002) the other studies were not related to horticulture products. None of the cited studies evaluated the effect of more than one of the current study variables on performance. To bridge the identified gaps, the current study utilized descriptive and inferential statistics and undertook linear regression and correlation analysis of the secured data. The study simultaneously considered four variables namely: branding practices of fresh fruits and vegetables, operating environment, farmer characteristics and performance of commercial farmers in Kiambu County. It addressed the following research question: what is the influence of commercial farmer characteristics and operating environment on the relationship between branding practices of FFV and the performance of commercial farmers in Kiambu County?

1.3 Objectives of the Study

The general objective of the study was to assess the extent to which farmer characteristics and operating environment influenced the relationship between branding practices of FFV and performance of commercial farmers in Kiambu County. The specific objectives were to:

i) Establish the influence of branding practices for FFV on performance of commercial farmers.
ii) Examine the influence of farmer characteristics on performance of commercial farmers.
iii) Assess the effect of operating environment on performance of commercial farmers.
iv) Determine the influence of farmer characteristics on the relationship between branding practices of FFV and performance of commercial farmers.

v) Examine the influence of operating environment on the relationship between branding practices of FFV and performance of commercial farmers.
vi) Assess the joint effect of branding practices of FFV, farmer characteristics and operating environment on performance of commercial farmers.

1.4 Value of the Study

This study contributes to theory building by considering the combined effect of all branding practices on performance of a farmer. This expands the current theoretical approach whereby the effect of individual BP on creating a unique offering is considered individually. The study integrated farmer characteristics and operating environment as moderating variables on the relationship between BP and performance of a farmer. Material from this study enriches branding theory by focusing on FFV which had received minimal attention in the reviewed literature.

Results of the study will assist policy makers at both the farm and national level. At the farm level, the study provides guidance on how to set overall objectives to be achieved through BP among other marketing initiatives in support of the overall objectives of the farm. At the national level, the findings guide the setting of product differentiation and value addition objectives to be achieved through BP. Product differentiation and Value addition are key strategic objective of the MOALF in line with aspirations contained in Kenya's Vision 2030.

The study enhances managerial practice since farmers and their managers can appreciate the contribution of BP on performance. This encourages managers to evaluate both planned and implemented BP to determine their contribution to performance and avoid wastage of resources and underperformance. The farm managers will be able to determine the effectiveness of various BP and formulate task oriented and economical objectives which will yield enhanced performance.

1.5 Structure of the Thesis

This thesis comprises five chapters. Chapter one introduces the study and presents the main constructs of the study, the research problem, objectives of the study and value of the study. Chapter two reviews the relevant conceptual and empirical literature over the study variables and presents the existing research gaps. The chapter also presents a conceptual model and the hypotheses of the interactions of the study constructs.

Chapter three presents the research philosophy adopted for the study, research design, the population and sample of the study, the data collection method, the measurement skills used and an operationalization of the main study variables. A summary table of the indicators used to measure the key study variables and the data analysis model used in the study are also provided. Chapter four presents data analysis, research findings, interpretation and discussion of the results. Chapter five presents a summary of the research findings, conclusions and recommendations based on the findings, highlights the limitations of the study and provides suggestions for further research.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter reviews the relevant conceptual and empirical literature over key study variables with an aim of identifying the existing research gaps. A conceptual model and hypotheses arising out of the reviewed literature is also presented.

2.2 Theoretical Foundation of the Study

This study was anchored in the branding theory and supported by the product differentiation and resource-based (RBT) theories. Branding theory posits that suppliers will strive to produce and market a real or perceived quality attribute or characteristic of a product to capture a larger market share. Magil (2003) notes that branding theory is dynamic and has evolved over time from the initial stage where branding involved claims on product strength and prestige of the producer to the current situation where branding is a means for consumers to express their own identity. Magil (2003) further observes that branding theory is maturing into holistic branding which involves practicing of brand values across all customer touch points to create total customer experience. Meads and Sharma (2008) perceive branding as a process of signaling not only the quality and characteristics of products but also the characteristics of consumers of the product. Branding is also viewed as a culture which develops real brand values that never change and when consumer values match the brand values, the consumers join the brand culture (The Association of National Advertisers, 2009).

The product differentiation theory concerns the product. A product is anything that can be offered to a market to satisfy a want or a need (Kotler & Keller, 2009). It can be offered either as a commodity (product presumably so basic that it cannot be physically differentiated in the minds of consumers) or as highly differentiated with strong brand identifiers. Product differentiation involves designing a set of meaningful differences to distinguish the company's offerings from competitors' offerings (Kotler, 2000). In differentiation, the physical product need not change since differentiation is due to buyers

perceiving a difference in a product (McEwen, 2000). The causes of this difference are the functional aspects of products, how they are distributed and marketed or who buys them. Major sources of product differentiation include quality, functional features or design, ignorance of buyers' regarding essential characteristics and qualities of products, sales promotion activities especially advertising, and availability. McEwen (2000) further notes that successful product differentiation moves a product from competing primarily on price basis to competing on non-price factors. Together with facilitating the charging of a price premium, differentiation also adds higher value to a firm's products by making consumers less sensitive to all aspects of a competitor's offerings.

Kozlenkova, Samaha and Palmatier (2013) present the resource-based theory (RBT). This is a market-based resource perspective that focuses on intangible complementary resources, which influence the firm's sustained competitive advantage (SCA) and performance, more than the effects of tangible resources. These intangible resources include customer relationships, brand equity, brand names, in-house technology, skilled personnel, trade contacts, efficient procedures, firm attributes, information and knowledge. RBT argues that SCA is generated only when resources are valuable, rare, imperfectly imitable, and the firm has the organizational capacity to fully exploit the resources' potential. Kozlenkova et al. (2013) have extended the RBT to the marketing discipline and identify market-based resources as a subset of a firm's resources that relate to marketing activities. These resources enhance a firm's performance and include brands, relationships, innovations and knowledge.

2.3 Branding Practices and Firm performance

Branding practices are initiatives undertaken by brand owners in an effort to develop and promote their brands. The initiatives can be grouped as identification, communication, or classification practices depending on the objective of the branding task. For identity creating practices, Bitterman (2008) describe branding as a means of helping consumers identify a product by giving it a name and using other brand elements that create mental structures that organize their knowledge about the product. Brand identity is seen as a mechanism for communicating and shaping public perception of a brand. Heding,

Knudtzen and Bjerre (2009) observe that companies build and manage brand identity to express an exact set of values, capabilities and unique sales propositions for the product.

Three brand identity elements namely brand names, brand elements and brand slogans have been identified (Kotler & Keller, 2009). They are trade marketable devices that serve to identify and differentiate a brand. These elements are further subdivided by Hess and Bitterman (2008) into visual and nominal identifiers with visual identifiers including colour, design, name, logo, typography, illustrations, trademarks and icons while nominal identifiers include collateral materials such as proprietary publications, signage, corporate promotions and slogans. Visual identity as presented by Heding et al. (2009) is a vehicle to demonstrate the distinctiveness of the observable features of a brand.

Marketing communication practices represent the voice of a brand and are meant to establish dialogue and build relationships with consumers (Kotler & Keller, 2009). Communications aid in crafting an image and establishing the brand in the memory of the consumer. Firms engage in creative communication practices to improve the performance of their brands. Among these practices, merchandising can be used by firms exploiting third party brands under licensing arrangements to promote their offerings (Evans & Ellis, 2013). On his part, Mehta (2013) explains how a local Indian mobile phone brand undertook sponsorship of a cultural music festival and secured local language interface to build cultural connection that facilitated success against established global brands. Gokhale (2010) identify product placement and celebrity endorsement as communication tools that are widely used to effectively promote brands. For communication practices to be effective in promoting brand performance, an integrated approach should be adopted across all media and customer touch points with a consistent brand message and a standardized corporate image for maximum effect.

Brand classification practices are referred to by Kotler and Keller (2009) as branding strategies and are concerned with the process of deciding on the number and nature of common and distinctive brand elements to be applied to the different products sold by a

firm. The practices include brand extensions, family branding, line extensions, category extensions, branded variants and licensed products. Various brand classifications arising from different branding practices have been identified. Among them is corporate branding which involves the creation of one unified brand message across functions that elevate brand management from tactical operations tasks to a strategic corporate task involving the whole organization (Heding et al., 2009).

The literature in this section identifies three branding practices undertaken to improve the performance of a firm. Brand identification practices enhance distinctiveness of individual brands, brand communication practices craft and establish a clear image of brand in a consumer's mind while brand classification practices determine what brand elements are to be applied either commonly or distinctively among brands to enhance their effectiveness. Undertaking these practices successfully is expected to result in enhanced performance of commercial farmers.

2.4 Commercial Farmer Characteristics and Firm Performance

Two broad categories of farming have been identified. In subsistence farming, nearly all the crops or livestock raised are used to maintain the family, with little or no surplus for sale. Commercial farmers engage in either small holder or large scale production primarily for sale with a profit objective (Poulton et al., 2008). They use superior inputs and machinery resulting in higher performance (Chapoto & Bonus, 2013).

The social economic characteristics of farmers which affect BP and performance are grouped according to ownership structure and demographic characteristics. Ownership structure includes sole proprietorship, general partnership, Limited Liability Company and cooperatives. While some farmers engage in farming practices as individuals (Derden-Little, Erin & Feenstr, 2006), others do so as organization members. Membership in cooperatives has a strong positive effect on performance. They enhance agricultural intensification, value of inputs, commercialization, gross revenue and net income (Verhofstadt, 2013; Tolawase & Apata, 2012). Membership in cooperatives

allows farmers' easy access to information, capital, reduces cost of operations and strengthens their negotiation ability.

Farmers' demographic characteristics which influence their performance include age, household size, formal education, size of farm, experience in farming, farm income, nonfarm income, adoption of modern farming methods, land ownership and ownership of farm equipment (McCulloch & Ota, 2002). Among these demographic characteristics, Saina et al. (2012) established that secondary school agricultural education enables farmers to have a broader capacity, be more effective, self reliant, resourceful and capable of solving farming problems thereby improving their crop productivity.

Evenson and Mwabu (1998) established that male farmers had higher yields due to greater ability in accessing facilities and labour. Productivity was influenced by nonfarm income, size of farm and access to capital and markets. Dunaway (2013) established that even though large farms encounter problems of liquidity and solvency, they are better placed in profitability, efficiency, and repayment capacity. Toluwase and Apata (2012) found that farmers acquired more experience with age leading to improved agricultural productivity. Mechanization has greater impact on farm development and performance than personal characteristics and farm ownership (Bremmer et al., 2002).

Social economic characteristics of commercial farmers with a bearing on their brand practices and performance reviewed in this section have been grouped into two broad categories namely demographic characteristics and farm ownership characteristics. Demographic characteristics found to influence branding practices and performance of commercial farmers were age, gender, education and financial abilities. Similarly, ownership characteristics with relevance to branding practices and performance of commercial farmers were farm size and ownership and type and ownership of production facilities.

2.5 Operating Environment and Firm Performance

A review of the relevant literature points to a number of environmental factors that influence BP and financial performance of FFV. Stanton and Herbst (2005) observe that

today's households in urban and semi-urban areas comprise consumers with limited free time and skills to select the right FFV. These consumers prefer branded products that are clearly differentiated. Pearson (2003) indicated that since some of the attributes being sought by consumers such as taste in fresh fruits fluctuates and are hidden at the time of purchase and consumption, branding the products reduce these uncertainties and resultant search costs and improves the marketing of the products.

Factors such as availability of special product features due to geographic place of origin (GPO) (Willoughby, 2004), increased FFV in diets due to an increase in personal health consciousness (Poole and Baron, 1996), increase in variety and quality of FFV in the market, and demographic and lifestyle changes of consumers (Pearson, 2003) have presented opportunities for different BP for FFV. Other environmental factors include improvement in transport and storage facilities, growth of supermarkets, high product standards set by both local and export customers, and the development of rural fully equipped assembly points for handling the products (Clarke & Moran, 1996). These factors have strengthened the need for different BP of FFV aimed at improving the performance of farmers.

The literature in this section focuses on how a farm's operating environment influences the caliber of social economic characteristics of customers served, variety and features of available products, nature of outlets for the products and the infrastructural facilities available. The operating environment facilitates branding practices which in turn influence performance of commercial farmers.

2.6 Branding practices, Farmer Characteristics and Firm Performance

Branding practices are aimed at identifying, promoting or classifying a product so as to create a premium status for the product aimed at improving the performance of a farmer. Branding practices demand that farmers adopt modern technology and an innovative management approach and actively seek expert support in their operations (Chapoto & Bansu, 2013).

Farmers have to enhance their entrepreneurial ability by joining cooperatives to gain easy access to information, capital, reduced operational costs and enhanced negotiation skills (Toluwase & Apata, 2012). Farmers with relevant academic qualifications were found to be more suitable to undertake branding practice since they have more capacity and are more resourceful in undertaking commercial decisions that improve their performance (Saina et al., 2012).

This section focuses on empowerment of farmers in terms of educational qualifications, professional training and acquisition of financial and other resources that enhance their entrepreneurial abilities. The literature reveals that these abilities influence commercial farmers' effectiveness in undertaking branding practices for value addition and enhanced performance.

2.7 Branding Practices, Operating Environment and Firm Performance

According to Peace and Robinson (2011) technological, economic, political, natural and demographic environments affect BP and productivity. Adopting modern technology can improve BP while the natural environment will facilitate BP due to differences in product attributes arising from their GPO. Legal requirements and powerful buyers influence BP by putting demands on product packaging and identification. Demographic characteristics lead to different consumer categories which provide the basis for branding strategies while the economic environment will influence BP and performance due to its effects on a farmer's financial strength and cost of goods and operations.

Poulton et al. (2008) identifies the critical factors of an enabling environment for commercial agriculture to include security, macroeconomic stability, protection of private property, provision of infrastructure and extension services, supply of inputs and predictability of government policies. A favorable operating environment facilitates effective branding practices which results in improved performance by the farmer.

The literature in this section reveals that demographic and economic characteristics of farmers will influence their ability to exploit opportunities presented by the operating environment to develop fresh fruits and vegetables brands. The branding is part of the value addition initiatives undertaken by commercial farmers to achieve improved performance.

2.8 Branding Practices, Commercial Farmer Characteristics, Operating Environment and Performance

Branding practices aimed at improving performance are influenced by farmer characteristics and the operating environment. Generic brands are developed when farmers in a particular region give a common name to a product that is grown in the region (Pay et al., 1996) while health and nutritional brands are developed by individuals or associations who exploit special nutrition and health benefits in a product to attract consumers who would value such benefits (Poole & Baron, 1996).

Gonzalez-Diaz, Barcala, and Arrunanda (2002) presents GPO brands as brands developed by a group of farmers in a particular place based on unique product attributes associated with a certain geographic region. Dual brands are developed by individuals aiming to benefit from GPO attributes while creating a separate identity for their product alongside the GPO identification. State agencies partner with local farmers to develop state brands and Eco-brands to exploit the unique corporate image of the specific states (Halprin, 2006). State brands rely on the goodwill of belonging to a certain state and bear the identity of the state in its branding while eco-branding is based on the ability to maintain environmental and social standards set and managed by government agencies.

On the qualities of a good performance measurement, Neely, Richard, Mills, Plats and Bourne (1997) identified 15 characteristic which include simplicity, clear definition, cost effectiveness, timeliness, accuracy, objectivity, data availability, and applicability/ relevance. The performance indicators chosen for this study satisfy these requirements. Table 2.1 summarises the identified research gaps in the reviewed literature regarding

BP, farmer characteristics, operating environment and performance of commercial FFV farmers and how the current study proposes to bridge them.

As noted in the literature reviewed in this section, individual characteristics of commercial farmers will influence their ability to exploit the opportunities presented by the operating environment to develop and manage generic, health, dual, state and eco-brands. The brands are a tool for achieving improved performance by commercial farmers. Performance of commercial farmers is evaluated on the basis of specified parameters which in themselves must satisfy certain characteristics.

Table 2.1: Summary of Knowledge Gaps

Research	Objective of the study	Methodology	Findings	Knowledge Gaps	Focus of the current study
Evenson and Mwabu (1998)	Effect of farmer characteristics and operating environment on farm yield in Kenya	- Review of secondary data. - Quantile regression technique used.	Extension services, fertilizer input, schooling, age, male gender and highlands agro-ecological zones positively correlated to farm yields.	Study ignored the effect of branding on performance. Performance was measured in non financial terms.	The proposed study will focus on FFV and evaluate financial and non financial performance of the farmer.
McCulloch and Ota (2002)	Establishing the role of export horticulture on farmer performance	-Survey research, simulations and descriptive statistics used	Export horticulture increases house hold income, access to credit and extension services and creates employment.	Study did not address the marketing of farm produce and how branding affects performance.	Establish the effect of branding practices on financial and non financial performance of FFV farmers.
Bremmer et al. (2002)	Effect of farmer characteristics and farm structure on performance of Dutch farmers.	-Panel secondary data used -Survey research -Probit models developed	The study established factors with great influence on farm development to include farm structure, mechanization and farm size.	The measure of performance is farm development which is not quantified.	Establish if farmer characteristics affect performance of FFV farmers.
Homburg et al. (2010)	Effect of branding on firm performance in Germany.	-Mail interviews -Psychom-etric scales developed.	Branding was found to influence performance in business markets.	Generalized study with unspecified measure of performance.	Measure performance of FFV in financial and nonfinancial terms.
Saina et al. (2012)	Farmer characteristics and agricultural	-Ex-post facto design -Proportio-	Secondary school agricultural education broadens farmers' capacity	Performance measured only in terms of volume.	Impact of branding will be measured in terms of financial and

	productivity in Kenya.	nate sample -Descriptive /inferential statistics	making them more resourceful and results in improved crop productivity.	Role of marketing ignored.	non financial performance of FFV farmers.
Verhofstadt and Maertens (2013)	Impact of farmer characteristics on farm performance in Rwanda	-Survey research -Stratified random sampling -Econome- tric analysis	Cooperative membership improves volumes sold, increases value of inputs, gross revenues, net farm income and income per worker.	Product(s) covered not specified and the role of branding in performance ignored.	Evaluating the impact of branding on financial and non financial performance of FFV farmers.
Kinyua-Njuguna (2013)	Effect of strategic social marketing and operating environment on performance of community based HIV and AIDS organizations in Nairobi, Kenya	-Descriptive cross-sectional survey design. -Area and random sampling -Descriptive, correlation and multiple regression analysis	Strategic social marketing and operating environment (internal and external) influenced performance at both individual and joint levels even though social marketing had low impact on financial viability.	Study focuses on a service offering non-profit organization and evaluated three variables.	Focus on farmers growing agricultural products with a profit motive and covers four variables.

Source: Researchers' Own, 2015.

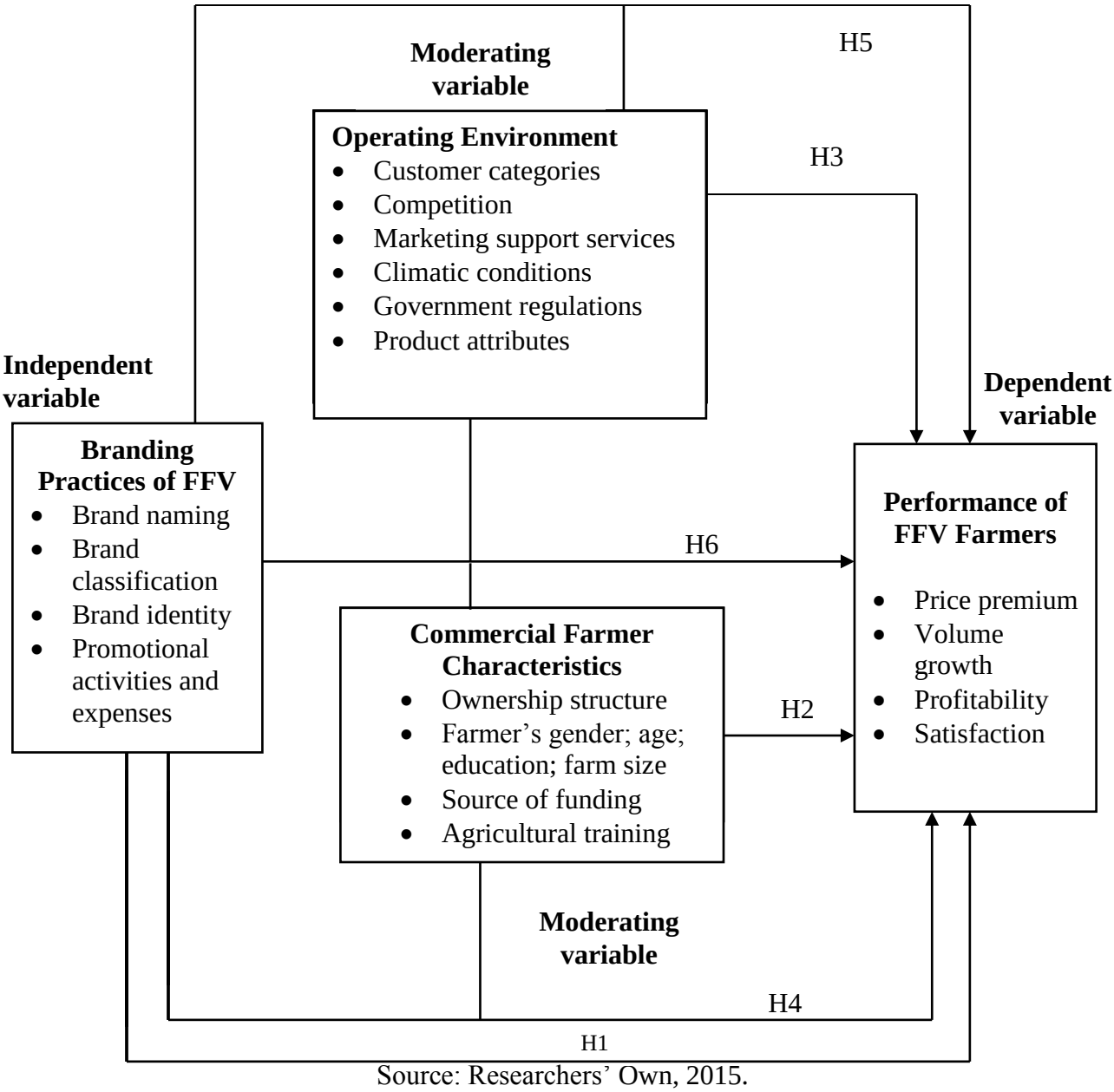
2.9 Conceptual Framework and Hypotheses

2.9.1 Conceptual Framework

The conceptual framework arises from the concepts discussed in the reviewed literature.

The framework maps the relationships between branding practices of FFV, operating environment, farmer characteristics, and performance of commercial farmers in Kiambu County. The model in Figure 2.1 depicts the key relationships of the pertinent variables.

Figure 2.1: Conceptual Model



Source: Researchers' Own, 2015.

The conceptual model and conceptual hypotheses presented above depicts the relationship between the independent, moderating and dependent variables.

2.9.2 Conceptual Hypotheses

Current conceptualization on the theory of branding practices of FFV and performance of commercial farmers reviewed in the literature lead to formulation of the following conceptual hypotheses:

H1: There is a statistically significant relationship between branding practices for FFV and performance of commercial farmers in Kiambu County.

H2: There is a statistically significant relationship between commercial farmer characteristics and farm performance.

H3: There is a statistically significant relationship between operating environment and firm performance.

H4: The relationship between branding practices for FFV and performance of commercial farmers in Kiambu County is significantly moderated by farmer characteristics.

H5: The relationship between branding practices for FFV and firm performance of commercial farmers in Kiambu County is significantly moderated by operating environment

H6: The joint effect of branding practices, farmer characteristics and operating environment on performance of commercial farmers is statistically significant.

2.10 Chapter Summary

This chapter has presented the theoretical foundation of the study as anchored on pertinent literature reviewed in regard to branding practices and performance; farmer characteristics and performance; operating environment and performance; branding practices, farmer characteristics and performance; branding practices, operating environment and performance and branding practices, farmer characteristics, operating environment and performance. In addition, the chapter has presented documented empirical evidence on the relationship between branding practices and performance of commercial farmers, farmer characteristics and performance of commercial farmers, operating environment and performance of commercial farmers and also the joint

implication of branding practices, farmer characteristics and operating environment on performance of commercial farmers. Knowledge gaps identified from reviewed literature are presented. A conceptual framework and hypotheses that guided the study are also provided. The next chapter presents the research methodology adopted for this study.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research philosophy, research design, the population that was studied, the survey methods, the measurement skills and the operationalization of the main study variables. The chapter ends with a summary table of indicators used to measure the key study variables and a data analysis model.

3.2 Research Philosophy

Researchers are guided by one among philosophical viewpoints including positivism, phenomenology and realism (Saunders, Lewis and Thornhill, 2007). The two main philosophies that guide social scientists are positivism and phenomenology. Positivism is based upon reason, truth and validity and focuses on facts gathered through direct observations and experience and measured empirically using quantitative methods of surveys and experiments and subjected to statistical analysis (Flowers, 2009). The current researcher focused on facts and causes in relationships through the formulation and testing of hypothesis.

Phenomenology which is also referred to as interpretivism or constructivism focuses on immediate experiences and gives prominence to cognition. It relies on reasoning or application of judgment. The phenomenologist believes that all knowledge can be deducted from known laws or basic truths about nature with problems best resolved through formal logic or mathematics and independent of observations and data collection (Cooper & Schindler, 2003). The phenomenologist uses multiple flexible study designs to establish different views of phenomena (Saunders, Lewis and Thornhill, 2007).

According to Flowers (2009), realism has been borne from a frustration with positivism and phenomenology. Realism takes aspects from both positivist and phenomenology positions. It accepts that reality may exist in spite of science or observation, and so there

is validity in recognizing realities that are simply claimed to exist, whether proven or not. It also holds that science must be empirically-based, rational and objective and so social objects may be studied 'scientifically' and not simply through language and discourse.
This study was guided by the positivistic research philosophy which involved developing a conceptual framework based on existing marketing literature and the objective testing of the relevant hypotheses. It focused on cause and effect relationships and empirically tested the relationships between branding practices of fresh fruits and vegetables and the performance of commercial farmers in Kiambu County as moderated by farmer characteristics and operating environment.

3.3 Research Design

To establish the associations among branding practices and performance, a descriptive cross sectional survey design was adopted. This design facilitated in establishing and describing the relationships among the key study variables (Kothari, 2004). It was cross sectional since it was conducted once to pick out the parameters of a phenomenon at a specific time with an aim of accurately capturing the characteristics of the population relating to what, where, how and when of the research topic (Cooper & Schindler, 2003).

The descriptive cross section survey enabled the capture of quantitative and qualitative characteristics to test for significant associations between branding practices of fresh fruits and vegetables, farmer characteristics, operating environment and performance of commercial farmers in Kiambu County and allowed for generalization regarding the target population (Kothari, 2004). The research design had been used in previous studies by Munyoki (2007), Kinoti (2012) and Njeru (2013).

3.4 Population of the Study

The population of the study consisted of 213 commercial farmers of fresh fruits and vegetables in Kiambu County. The farmers were identified through the Horticultural Crop Development Authority (HCDA, 2012) who provided a list of the farmers in Limuru and Lari Sub Counties and contacts of the agents in the other Sub Counties who in turn provided lists of the farmers in their respective Sub Counties. Assistance of

Agricultural Extension Officers in each of the sub counties was used to compile the final list. The population consisted of individual commercial farmers, women groups, resident groups, cooperatives, limited liability companies and government departments growing between one and three crops in farms ranging from 5.5 to 0.125 acres. A list of the population is provided in Appendix II.

3.5 Sample Design

This study adopted stratified random sampling which allowed for making of probability based confidence estimates of various parameters (Cooper & Schindler, 2003). The targets were the owners or managers of commercial fresh fruits and vegetables farms. From the target population, the farmers were stratified into seven sub-counties and a proportionate sample drawn relative to the size of each. To determine the sample size, a formula proposed by Israel (2009) was applied as follows:

$$n = \frac{N}{1 + N(e)^2}$$

where n is sample size, N is the population size, and e is the error term (0.05). Using N = 213 in the formula, the resulting sample size (n) is 140 farmers. The sampled farmers were selected by randomly picking the first name and every other second name. To minimize the problem of periodicity or monotonic trends, the population was randomized by alphabetically arranging the names before the sampling was done (Coopers & Schindler, 2003). A list of the selected respondents is presented in Appendix III.

Table 3.1: Sample Structure

Sub County	Population	%	Sample size
Gatundu (Juja)	20	9.4	13
Githunguri	16	7.5	10
Kiambu	27	12.7	18
Kikuyu	15	7.0	10
Lari	47	22.1	31
Limuru	79	37.1	52
Ruiru	09	4.2	06
Total	**213**	**100.0**	**140**

Source: Researchers' Own, 2015.

3.6 Data collection

The data was collected using a semi structured questionnaire (Appendix I) through the direct interrogation method (Cooper & Schindler 2003). The questionnaire was subdivided into four parts. Part one gathered farmer characteristics data (age, gender, education level, income levels, farm size and ownership and membership to organizations). Part two covered branding practices of fresh fruits and vegetables (identification activities, promotional activities and brand classification activities). Questions in part three covered operating environment (product attributes, climatic conditions, government regulations, customer categories, support agencies and competition). Part four dealt with performance of commercial farmers (price, volume, turnover, satisfaction and profitability).

Assistance of Agricultural Extension Officers in the respective sub-counties was enlisted to administer the questionnaire and assist in filling in responses in the provided spaces. The extension officers were familiar with the specific areas and were in regular contact with the farmers in their normal course of duty. They contacted the respondents in advance to schedule the interviews which ensured maximum cooperation.

3.7 Reliability and Validity Tests

3.7.1 Reliability Tests

Reliability determines the degree to which a research instrument supplies consistent results. Determining reliability was concerned with estimating the degree to which a measurement is free of random or unstable errors. Reliability testing measured the internal consistency of each variable and investigated if each individual question used to investigate the variable was measuring the same criteria. The questionnaire was pre-tested using 14 fresh fruits and vegetables farmers randomly selected from the list but not the ones identified for the sample used in the study. The pretesting was meant to measure if all the respondents interpreted the questions the same way, and whether all the response choices were relevant. It was also meant to anticipate any problems of comprehension or other sources of confusion on the part of the respondents (Walliman,

2011). The instrument was also discussed with the agricultural extension officers to establish their appreciation of the variables under investigation. To assess the relationship among the study variables, a reliability test was computed using the Cronbach's alpha Coefficient which range from 0 to 1. The closer it is to 1, the greater the internal consistency of the items in the scale (Coopers & Schindler, 2003). If no correlation exists, Cronbach's alpha coefficient is zero and the sub- indices are independent. All items with a reliability value of 0.7 or higher were used in the analysis since such a value indicates a higher reliability of the instrument (Polgar & Thomas, 2009). The Cronbach's Alpha reliability coefficients results are presented in Appendix III. The results indicate high levels of reliability of the instrument with values ranging from 0.7235 (operating environment) to 0.7364 (branding practices). This is above the acceptable minimum value of 0.50 (Cronbach, 1951) and also above the recommended value of 0.7 (Polgar & Thomas, 2008). The instrument was considered to have sufficiently measured the relevant study variables.

3.7.2 Validity Tests

Validity refers to the extent to which a test measures what it is purported to measure and demonstrates the extent to which differences found with a measuring tool reflect the true differences among respondents being tested (Coopers & Schindler 2003). Content validity is adopted for this study. To check for any weaknesses in the questionnaire, it was pre-tested among 14 fresh fruits and vegetable farmers from Kiambu County who were not part of the selected sample. Comments from the farmers gathered during the pre-test and expert input from university supervisors were incorporated in the final questionnaire.

3.8 Measurement of variables

The study variables were operationalized and measured using direct measures and 4 point rating scales ranging from 1=Not important to 4=Very important; 1=Not strong to 4=Very strong; 1=Not at all to 4=Great extent. Rating scales are psychometric response scales used in questionnaires to obtain participants preferences or degree of agreement

with a statement or set of statements. They are non-comparative scaling technique and measure a single underlying trait.

The study was guided by previous studies that measured some of the variables in branding practices; farmer characteristics; operating environment and performance of commercial farmers. Evenson and Mwabu (1998) utilized the quantile regression techniques to evaluate dimensions of farmer characteristics and the operating environment while McCuloch and Otta (2002) and Saina et al. (2012) utilized descriptive/inferential statistics to measure farmer characteristics and the operating environment. To evaluate farmer characteristics, Bremer et al. (2002) developed probit models while Verhofstadt and Maertens (2013) undertook econometric analysis to evaluate the same parameter. Psychometric scales were developed by Homburg et al. (2012) to evaluate branding practices. A summary schedule of measurement scales operationalizing the study variables and the scale indicators used for the study are provided in Table 3.2.

Table 3.2: Operationalization of the Study Variables

Variables	Nature	Indicators	Measures	Supporting evidence	Questions
Branding practices	Independent	(i) Brand name (ii) brand Logo (iii) advertisements (iv) Family or Individual brand	Direct measure and 4 point rating scale.	(i) Homburg et al. (2012) (ii) Toluwase and Apata (2012) (iii) McCulloch and Ota (2002)	13-20
Farmer characteristics	Moderating	(i) farm ownership (ii) Farmer's gender, education and age (iii) professional training	Direct measure and 4 point rating scale.	(i) Verhofstadt and Maertens (2013) (ii) Saina et al. (2012) (iii) Neven and Reardo (2006).	1-12
Operating environment	Moderating	(i) Consumers (ii) Competition (iii) Customer categories (iv) Support Services (v) Climatic conditions (vi) government regulations	Direct measure and 4 point rating scale.	(i) Bremmer et al. (2002) (ii) Evenson and Mwabu (1998).	21-28
Performance of commercial farmers	Dependent	(i) Price premium (ii) Volume (iii) turnover (iv) profitability (v) Satisfaction.	4 point rating scale.	(i) Kim et al. (2013) (ii) Park et al. (2013) (iii) Offerman and Nieberg (2000) (iv) Njeru (2013)	29-35

Source: Researchers' own, 2015.

3.9 Data Analysis

Data was analyzed using both descriptive and inferential statistics. Descriptive statistics namely frequencies, percentages and measures of central tendency especially the mean, standard deviation and coefficient of variations were used to describe the characteristics of the collected data. To determine the relationship between branding practices of FFV, farmer characteristics, operating environment and performance of commercial farmers and also test the hypothesized relationships, fundamental statistical measures such as correlation analysis and regression analysis were used. Pearsons product moment correlation (r) was derived to show the nature and strength of the relationship between variables. Coefficient of determination (r^2) was used to measure the amount of variation between the independent and dependent variables. Regression analysis was used to estimate the regression coefficients and determine the prediction level of the general model for predicting farmer characteristics and was expressed as follows: $Y= b_0 + b_1x_1 + b_2x_2 + \ldots + b_nx_n + e$ whereby: Y = dependent variable; b_0 = intercept constant; b_1x_1, b_2x_2, $\ldots$ b_nx_n = regression coefficients showing rate of change of dependent variable with a change in independent variables; x_1, x_2, $\ldots$ x_n = independent variable; and e = random error. Stepwise regression analyses were used to bring out the individual effects of the variables in the form:

$Y_1= a_0+b_1X_1+e_1$; for effect of branding practices on performance of commercial farmers

$Y_1=a_0+b_1X_2+e_2$; effect of farmer characteristics on performance of commercial farmers

$Y_1=a_0+b_1X_3+e_3$; effect of operating environment on performance of commercial farmers

$Y_1=a_0+b_1X_1+b_2X_2+e_4$; the moderating effect of farmer characteristics on the relationship between branding practices for fresh fruits and vegetables and performance of commercial

$Y_1=a_0+b_1X_1+b_2X_3+e_5$; the moderating effect of operating environment on the relationship between branding practices for fresh fruits and vegetables and performance of commercial.

$Y_1=a_0+b_1X_1+b_2X_2+b_3X_3+e_6$; the combined effect of branding practices, farmer characteristics and operating environment on performance of commercial farmers.

whereby: Y1=financial performance of commercial FFV farmers; X_1= branding practices of FFV farmers; X_2=environmental factors, X_3=farmers characteristics; e_1, e_2, ... e_6 = error terms for each of the 6 relationships; a_0, b_0, c_0, d_0, h_0, p_0, q_0 = intercept constants for each of the 6 relationships; a_1, b_1, c_1, d_1, h_1, p_1, q_1= regression coefficients of the independent variables in each of the 6 relationships.

To measure the moderating effects of operating environment and farmer characteristics, the following multiple linear regression equation was used:

$$Y_1 = a_0+b_1X_1+b_2X_2+b_3X_3+b_4(X_1*X_2) +b_5(X_1*X_3) + e.$$

A summary schedule covering the study hypotheses, analytical models and interpretation of results is presented in Table 3.3.

Table 3.3: Study Hypotheses, Analysis Methods and Interpretation of Results

Objective	Hypotheses	Analytical Models	Interpret-ation of results
1) Establish the influence of BP for FFV farmers on the performance of commercial farmers.	H_1: There is a statistically significant relationship between BP for FFV and performance of commercial farmers.	Multiple linear regression model: Performance of commercial farmers (PCF) = f(branding practices of FFV farmers (BP)): $Y_1 = a_0+b_1X_1+b_2X_2+\ldots b_5X_5$; where: Y_1= performance of commercial farmers; a_0 = intersect constant; b_1, b_2, …, b_5= regression coefficients: whereby: X_1 = brand name development, X_2= promotional activities, X_3= promotion budget; X_4 =brand identity elements; X_5 = brand classification	The value of R^2, Product moment correlation (r), Regression coefficient and conduct an F test (ANOVA).
2) Examine the relationship between farmer characteristics and the performance of commercial farmers.	H_2: There is a statistically significant relationship between Farmer characteristics and performance of commercial farmers.	Multiple linear regression model: Performance of commercial farmers = f(farmer Characteristics (FC)): $Y_1 = a_0+b_1X_1+b_2X_2+\ldots b_7X_7$; where: Y_1= composite index for performance of commercial farmers; a_0 = intersect constant; b_1, b_2, …, b_7= regression coefficients: whereby; X_1 = demographic characteristics, X_2 = membership to associations, X_3=source of funding; X_4 = production facilities; X_5 = Size of farm; X_6 = farm ownership; X_7 = agricultural training.	The value of R^2, Product moment correlation (R). Regression coefficient and conduct an F test (ANOVA).
3) Examine relationship between the operating environment and the performance of commercial farmers.	H_3: There is a statistically significant relationship between the operating environment and performance of commercial farmers.	Multiple linear regression model: Performance of commercial farmers = f(operating environment (OE)): $Y_1 = a_0+b_1X_1+b_2X_2+\ldots b_6X_6$; where: Y_1= composite index for performance of commercial FFV farmers; a_0 = intersect constant; b_1, b_2, …, b_6= regression coefficients: whereby; X_1 = product attributes, X_2= government regulations, X_3= customer categories; X_4 = competitors; X_5 = climatic conditions ; X_6=marketing support agencies	The value of R^2, Product moment correlation (R), Regression coefficient and conduct an F test (ANOVA)

4) Asses the mediating effect of farmer characteristics on the relationship between BP for FFV and performance of commercial farmers.	H_4: The relationship between BP for FFV and performance of commercial farmers is significantly moderated by farmer characteristics.	Multiple linear regression model: The relationship between branding practices and performance of commercial farmers = f(branding practices of FFV and farmer characteristics): $Y_1 = a_0+a_1BP+a_2FC$ ie; Y_1 (BP+FC) where: Y_1=composite index for performance of commercial farmers; a_0 = intersect constant; a_1, a_2= regression coefficients; BP = composite score of branding practices; FC= composite score of farmer characteristics.	The value of R^2, Product moment correlation (R), Regression coefficient and conduct an F test (analysis of variance (ANOVA).
5) Asses the moderating effect of operating environment on the relationship between BP for FFV and performance of commercial farmers.	H_5: The relationship between BP for FFV and performance of commercial farmers is significantly moderated by the operating environment.	Multiple linear regression model: Performance of commercial farmers = f(branding practices of FFV, farmers and the operating environment): $Y_1 = a_0+a_1BP+a_2OE$ ie: Y_1=f(BP+OE); where: Y_1= composite index for performance of commercial farmers; a_0 = intersect constant a_1, a_2= regression coefficients: BP =composite score of branding practices and OE = composite score of operating environment,	The value of R^2, Product moment correlation (R), Regression coefficient and conduct an F test (ANOVA).
6) Determine the Joint effect of BP for FFV, farmer characteristics and operating environment on the performance of commercial farmers.	H_6: The Joint effect of BP, farmer charac-teristic and operating environment on performance of FFV farmers is Statistically Significant.	Multiple linear regression model: Performance of commercial farmers = f(branding practices of FFV, farmer characteristics and the operating environment): $Y_1 = a_0 +a_1BP+a_2FC+a_3OE$; ie, Y1=f(BP+FC+OE); where: Y_1 = composite index for performance of commercial farmers; a_0 = intersect constant; a_1,a_2,a_3 = regression coefficients and BP =composite score of branding practices; FC=composite score of farmer characteristics; OE = composite score of operating environment	The value of R^2, Product moment correlation (R) and Regression coefficient and conduct an F test (ANOVA).

Source: Researcher's Own, 2015

3.10 Chapter Summary

This chapter has presented the research methodology adopted for the study and describes the research philosophy; research design; population of the study; sampling procedure and data collection method. The chapter explains how reliability and validity of the research instrument was established as well as how the measurement of variables and data analysis was undertaken. Chapter four presents data analysis, research findings and discussions and an interpretation of the results.

CHAPTER FOUR

DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents the outcome of the data analysis in respect to the key objectives of the study. The data used for this research was corrected from 140 farmers spread in seven sub-counties in Kiambu County. The questionnaire was administered directly to the respondents through the assistance of Agricultural Extension Officers who were recruited as research assistants due to their close association with the farmers. They contacted the farmers in advance to arrange for the interviews which ensured maximum cooperation. The 140 questionnaires were successfully filled and found suitable for further analysis resulting in a response rate of 100%. This compared favourably with a similar study conducted among farmers by Bremmer et al. (2002) which had a response rate of 86.5%.

4.2 Reliability and Validity Tests

The study sought to establish the reliability of the research instrument by computing the Cronbach's Alpha coefficient in regard to each of the study variables. The pertinent results are summarized in Table 4.1

Table 4.1: Cronbach's Alpha Reliability Coefficients

Variable	No. of items	N	Cronbach's Alpha Coefficient
Branding Practices	40	140	0.7364
Farmer Characteristics	50	140	0.7233
Operating environment	39	140	0.7318
Performance of commercial farmers	13	140	0.9210

Source: Primary data

The Cronbach's Alpha reliability coefficients contained in table 4.1 indicate reliability levels of the instrument ranging from 0.7273 for farmer characteristics to 0.9210 for performance of commercial farmers. These levels are above the acceptable minimum value of 0.50 (Cronbach, 1951) and above the recommended value of 0.7 (Nunnally & Bernstein, 1994). The internal consistency of the measures used was therefore considered

to have adequately measured the relevant study variables. The detailed results for the constructs in each variable are provided in Appendix 1V.

4.3 Response Rate

The target sample for the study was 140 farmers out of a population of 213 farmers identified at the time of the study to engage in commercial farming of FFV within Kiambu County. A total of 140 farmers were interviewed as indicated in Table 4.2.

Table 4.2: Sample Response Rate

Sub-County	Population	Sample Size	Achieved Sample (n) %
Lari	47	31	100
Limuru	79	52	100
Githunguri	16	10	100
Kiambu	27	18	100
Thika/Gatundu/Juja	20	13	100
Kikuyu	15	10	100
Ruiru	9	6	100
Total	**213**	**140**	**100.0**

Source: Primary data.

The field work was carried out with support of seven agricultural extension workers hired as research assistants at the Sub-County level. The extension workers offer technical advice and other related services to the workers in their normal day to day activities. The farmers therefore willingly accepted the request for interview and fully cooperated in providing the required information.

4.4 Assessment of Normality, Linearity and Homoscedasticity

The corrected data was tested to confirm the major assumptions for parametric data analysis. Normality was tested using Kolmogrov-Smirnov (K-S) one-sample test, a non parametric goodness of fit test. The test compares the cumulative distribution function for variables within a specified distribution (Malhotra & Dash, 2011**)**. The goodness-of-fit test evaluated whether the observations could reasonably have come from the specified distribution. The results of the K-S tests for the branding practices, farmer characteristics,

operating environment and performance of commercial farmers revealed that the study data were normally distributed. Test results are presented in Appendix X.

ANOVA and linearity tests were conducted to test for linearity among independent and dependent variables. Linearity tests for the variables yielded statistically significant results for branding practices (linearity significance = 0.000), farmer characteristics (linearity significance = 0.008) and operating environment (linearity significance = 0.024). Each of the variables recorded a significance value smaller than 0.05. This indicated that there was a linear relationship between branding practices and performance of commercial farmers, farmer characteristic and performance as well as operating environment and performance of commercial farmers. The Anova and linearity test results are presented in Appendix XI.

Homoscedasticity (homogeneity of variance) is based on the assumption that the dependent variable exhibits similar amounts of variance across the range of values for an independent variable (Hair et al., 1998). To test for homoscedasticity, a Levene test for equality of variance recommended by Levene (1960) was computed using one-way Anova procedure. The Levene values for the three variables tested against the dependent variable (performance of commercial farmers) were statistically significant (branding practices sig. =0.001; farmer characteristics sig. =0.009 and operating environment sig. =0.012). This implies that the variances between branding practices and performance of commercial farmers, farmer characteristics and performance of commercial farmers and operating environment and performance of commercial farmers are equal. The test table is present in Appendix XII.

4.5 Characteristics of Respondent Commercial Farmers

Social economic characteristics of commercial farmers influence their performance. Their gender and age influences land ownership and ability to secure farm inputs. Academic qualifications and training influence managerial skills while membership to associations assists in securing markets and government support. The characteristics evaluated in this

study were gender, age, education level, membership to associations, farm size, farm ownership, production facilities, funding and agricultural training.

4.5.1 Respondents' Gender and Age

The results on age and gender of the respondents are presented in Table 4.3.

Table 4.3: Respondents' Gender and Age

Age Bracket	N	Males %	Female %	Total %
18-29 years	3	100	0	100
30-39 years	26	46.2	53.2	100
40-49 years	38	42.1	57.9	100
50-59 years	53	60.4	39.6	100
60 years and above	20	75.0	8.1	100
Total	**140**	**55.7**	**44.3**	**100**

Source: Primary data.

The results presented in Table 4.3 indicate that male respondents in all age categories were involved in farming of FFV and accounted for majority of the respondents (55.7%). The female respondents accounted for majority of the respondents aged 30-39 years (53.2%) and 40-49 (57.9%). They were not represented in the 18-29 years category and had only 8.1% representation among those aged 60 years and above.

4.5.2 Education Level

The level of formal education achieved was considered an important factor in broadening a farmers' capacity to be more effective, self reliant, resourceful and capable of solving problems they encounter in their farming endeavors. The education level of the interviewed farmers is provided in Table 4.4.

Table 4.4: Highest Education Level Attained by Farmers

Education Level	Frequency	Percent
Gumbaro (adult education)	1	0.7
KCPE	36	25.7
KCSE	81	57.9
Certificate in agriculture	1	0 .7
P1	1	0 .7
Diploma	13	9.3
Bachelor's degree	6	4.3
Master's degree	1	0 .7
Total	**140**	**100.0**

Source: Primary data.

The data in table 4.4 indicated that 73.6% of the farmers had achieved a minimum of form four level of education. These results revealed that majority of the farmer respondents were academically empowered to engage in effective commercial farming of FFV.

4.5.3 Agricultural Training

The respondents had been requested to indicate the type of agricultural training they had received in preparation for their farming activities. Their responses are summarized in Table 4.5

Table 4.5: Agricultural Training of Farm Owner/Manager

Agricultural training	Frequency	Percent
None	26	18.6
Short courses	106	75.7
Diploma	3	2.1
Degree	1	0.7
Masters	2	1.4
PhD	1	0.7
Field days/seminar	1	0.7
Total	**140**	**100.0**

Source: Primary data.

The results in Table 4.5 reveal that majority of the respondents (75.7%) had attended short courses. The results also show that 26 (18.6%) of the respondents did not have any formal agricultural Training.

4.5.4 Membership to Associations

The respondents were required to indicate all the agricultural related associations they belonged to. Their responses are contained in Table 4.6.

Table 4.6: Membership to Associations

Association	N	Yes %	No %	Total %
Cooperative society	140	5.0	95.0	100
Women's group	140	12.9	87.1	100
Residents group	140	20.0	80.0	100

Source: Primary data.

The findings in Table 4.6 indicate that there were three alternative associations' namely cooperative societies, women's group and resident's group that the farmers could belong to. The association with the highest membership was residents group (20%) while cooperative societies had the lowest membership (5%). These results revealed low membership to any association. Therefore, the farming of fresh fruits and vegetables farming is largely an individual activity in the county whereby all the functions are undertaken at an individual level.

4.5.5 Farming Experience

Experience in undertaking any activity is gained by engaging in that undertaking over a period of time. The respondents' experience in fresh fruits and vegetables farming is indicated in Table 4.7

Table 4.7: Farming Experience in Years

Years of Farming	Frequency	Percent
0-11 Months	2	1.4
1-2 Years 11 Months	9	6.4
3-4 Years 11 Months	21	15.0
5-10 Years	55	39.3
More than 10 Years	53	37.9
Total	**140**	**100.0**

Source: Primary data.

As presented in Table 4.7, majority of the respondent commercial farmers 108 (77.1%) had engaged in FFV farming for 5 years and above. Those with less than three years experience accounted for only 7.8%. This indicated that majority of the farmers (92.2%) had over three years experience in their FFV farming activities.

4.5.6 Size of Farm

To establish farmer characteristics, respondents were requested to indicate the size of their farms. Their responses alongside their gender are summarized in Table 4.8.

Table 4.8: Size of Farm

		Male	**Female**	**Total**
Farm size	**N**	**%**	**%**	**%**
<0.5 Acre	29	34.5	65.5	100
0.5 – 0.9 Acres	39	56.4	43.6	100
1 - 1.4 Acres	24	62.5	37.5	100
1.5 - 2 Acres	19	57.9	42.1	100
>2 Acres	29	69.0	31.0	100
Total	**140**	**55.7**	**44.3**	**100**

Source: Primary data.

The data in Table 4.8 indicate that female respondents accounted for 65% of the farmers with less than one acre and 31% of those with more than 2 acres. The data further shows that male respondents accounted for majority of those with more than 2 acres (69%) and a minority (34.5%) of those with less than 0.5 acres. This implies that female respondents had on average smaller farm sizes than their male counterparts.

4.5.7 Farm Ownership

Farm ownership was used as one of the descriptors of farmer characteristics. The responses as to farm ownership are presented in Table 4.9

Table 4.9: Farm Ownership

Ownership of farm	**Frequency**	**Percent**
Family	41	29.3
Individual	81	57.9
Cooperative society	1	0 .7
Public through shares	2	1.4
Members group	3	2.1
Government department	2	1.4
Leased	4	2.9
Rented	6	4.3
Total	**140**	**100.0**

Source: Primary data.

The outcome on the survey on farm ownership presented in Table 4.9 identified eight types of land ownership. Most of the farms (87.2%) were owned by either individual farmers or by the family. The results further indicated that even those not owning land participated in FFV farming through land leasing (2.9%) and land renting (4.3%) arrangements.

4.5.8 Sources of Labour

The source of labour utilized in the farms was also used to determine farmer characteristics. The responses on source of labour is summarized in Table 4.10

Table 4.10: Sources of Labour

Main source of labour for the farm	Frequency	Percent
Family members	42	30.0
Hired workers	32	22.9
Family members and hired workers	59	42.1
Group members	3	2.2
Family member and Group members	1	0.7
Family members plus group members and hired workers	1	0.7
Family members plus group members and machines	1	0.7
Group members and hired workers	1	0.7
Total	**140**	**100.0**

Source: Primary data.

The data in Table 4.10 represents eight sources of labour for FFV farmers. The three main sources were family members (30%), hired workers (22.9%) and a combination of both family members and hired workers (42.1%). The other five sources accounted for only 5% of labour supply.

4.5.9 Sources of Funds

The respondents had been asked to mention their main source of funding and the importance of each of the sources for their farming activities. Their responses are presented in Table 4.11.

Table 4.11: Sources of Funds

Source of Funding for the farmers	N	Mean Score	Standard Deviation	Coefficient of Variation (CV) %
Farm sales income	139	3.83	0.505	13.19
Bank Financing	131	1.52	0.835	54.93
Sales from others farming activities	135	2.92	1.100	37.67
Earnings from others family business	127	1.35	0.780	57.78
Salary of the owner	124	1.35	0.865	64.07
Government subsidies	131	2.49	1.091	43.81
Savings and credit society	126	1.68	0.836	49.76
Table banking	7	4.00	0.000	0.00
Overall Average Score	**-**	**2.39**	**0.752**	**31.41**

Source: Primary data.

As per the results presented in Table 4.11, the respondents identified eight sources of funds for their FFV farming activities. The three main sources of funding with the highest mean scores were table banking (mean score= 4.00, CV= 0.00), farm sales income (mean score= 3.83, CV= 13.19) and sales from others farming activities (mean score= 2.92, CV= 37.67). The remaining four sources of funding were considered less important as depicted by the low mean scores and high CV. Details on the importance of each source of funding are provided as Appendix V.

4.5.10 Farming Facilities

Accessibility to farming facilities is an important characteristic of commercial farmers. Responses as to what facilities were available to the farmers are presented in Table 4.12.

Table 4.12: Farming Facilities

Production Facility	N	Own	Hired	Total
		%	%	%
Transportation vehicles	72	33.3	66.7	100
Irrigation pumps	55	96.4	3.6	100
Refrigeration equipments	26	100	0	100
Packaging machines	15	93.3	6.7	100
Advisory services	32	59.4	40.6	100
Government extension services	87	0	100	100

Source: Primary data.

The results in Table 4.12 show that government extension services and use of transportation vehicles are the services accessed by majority of the farmers. They were mostly accessed from third parties. Refrigeration equipments and packaging machines had the lowest accessibility and were mainly owned and utilized by individual farmers.

4.5.11 Summary on Farmer Characteristics

The constructs used to describe commercial farmer characteristics included farmer's gender, education level, agricultural training, membership to associations, farming experience, farm ownership, farm size, source of funding and access to production facilities. Table 4.13 contains a summary of the individual characteristics of the respondent commercial farmers.

Table 4.13: Summary of Commercial Farmer Characteristics

Farmer Characteristics	N	Mean Score	Standard Deviation	CV (%)
Demographic characteristics	140	2.30	0.498	21.65
Membership to Associations	84	1.54	0.474	30.78
Source of funding	140	2.39	0.752	31.41
Production Facilities	133	1.28	0.354	27.66
Farm size	140	2.86	1.437	50.24
Farm ownership	140	2.26	1.728	76.46
Training	140	1.96	0.812	41.43
Overall Average Score	**-**	**2.08**	**0.865**	**41.49**

Source: Primary data.

The summary results in Table 4.13 present average mean scores (mean score=2.08, CV=41.49) implying that all farmer characteristics contributed at an average level to performance of commercial farmers. The characteristics considered to make the greatest contribution were demographic characteristics (mean score=2.30, CV=21.65), source of funding (mean score=2.39, CV=31.41) and farm size (mean score=2.86, CV=50.24). The characteristics reported to be of least importance were membership to associations (mean score=1.54, CV=30.78) and production facilities (mean score=1.28, CV=27.66).

4.6 Branding Practices of Fresh Fruits and Vegetables

Brand owners engage in different branding practice with an aim of differentiating their offerings from those of competitors. A well differentiated product will acquire some level of monopoly status and attract a premium over competitors. Branding practices which FFV commercial farmers could undertake to improve the performance of their products included brand identification practices (brand name development and brand identity); brand promotion practices (promotion activities and promotion budgets) and brand classification practices (adopting family or individual brand name). This study sought to evaluate the influence of branding practices on the performance of commercial FFV farmers.

4.6.1 Product Identification

To establish whether producers engaged in any brand identification practices, the respondents were requested to indicate the means by which they identified their products in the market. Their responses indicated two main means of product identification. The most common means of identification was use of generic name plus place where product was grown which was identified by 125 (93.3%) of the respondents. The second means of product identification involved the development and use of individual brand names which was identified by 9 (6.7%) of the farmer respondents.

4.6.2 Importance of Brand identifiers

The respondents who had taken the initiative to develop their own brand names were requested to indicate the importance attached to various brand identifiers. Their responses are presented in Table 4.14

Table 4.14: Brand Identifiers

Branding identification	N	Mean Score	Standard. Deviation	CV (%)
Brand name	9	4.00	0.000	0.00
Pack design	8	3.67	0.707	19.48
Brand colours	8	3.63	0.744	20.50
Logos (Graphic Design)	8	3.63	1.061	29.28
Background song	8	1.25	0.707	56.56
Symbol(sign)	8	2.50	1.604	64.16
Trademark	8	2.63	1.506	57.26
Overall Average Score	**-**	**3.04**	**0.904**	**29.74**

Source: Primary data.

The data depicted in Table 4.14 on brand identifiers utilized by FFV farmers indicated six alternatives. The three activities with the highest mean scores and lowest CV and therefore considered most important are brand name (mean score = 4.0, CV=0.000), pack design (mean score = 3.67, CV=19.48) and brand colours (mean score = 3.63, CV=20.50). The other identifiers were not considered very important as evidenced by the relatively lower mean scores and higher CV.

4.6.3 Branding Strategies Applied

The respondents who had developed their own brand names were required to indicate the importance accorded to different brand name selection strategies by ranking various alternatives. Responses on five possible strategies are presented in Table 4.15.

Table 4.15: Brand Name Selection Strategies

Branding strategies	N	Mean Score	Standard Deviation	CV (%)
Adapting family name	9	2.33	1.581	67.85
Adapting corporate name	8	2.50	1.414	56.56
Adapting a generic name	8	2.00	1.069	53.45
Extending name to new product	8	3.00	1.414	47.13
Name reflects place of origin	7	2.57	1.272	49.49
Overall Average Score	**-**	**2.48**	**1.350**	**54.44**

Source: Primary data.

Results presented in Table 4.15 indicate an average mean score of 2.48 and an average CV of 54.44 implying that brand name selection strategies were not considered very important in branding practices. Extending existing name to new product (mean score=3.00, CV=47.13) and name reflects geographic place of origin (mean score=2.57, CV=49.49) received some consideration in brand name selection strategies. The other strategies received lower consideration as per their lower mean scores and higher CV.

4.6.4 Product Attributes Applied in Branding

To establish the extent to which product attributes were utilized in branding of FFV, the respondents were required to indicate the importance attached to different attributes in the choice of branding practices. Their responses are provided in Table 4.16.

Table 4.16: Product Attributes Utilized in Branding Practices

Attributes	N	Mean Score	Standard Deviation	CV (%)
Special seed variety	9	3.20	1.229	38.41
Geographical place of origin (GPO)	9	3.22	1.093	33.94
Health/nutrition value	9	3.11	1.167	37.52
Owner's identity	8	2.63	1.506	57.26
Generic name (local Product name)	8	2.00	1.069	53.45
Overall Average Score	**-**	**2.83**	**1.213**	**42.86**

Source: Primary data.

As shown in Table 4.16, five products attributes were considered in the choice of branding strategies. They included special seed variety, GPO, health/nutrition value of product, owner's identity, and use of generic brand name. The relatively lower average mean score (2.83) and higher CV (42.86) indicated that product attributes were not given prominence in branding practices. Geographical place of origin (mean score = 3.22, CV= 33.94) had the highest rating among the attributes. Adoption of a generic name and exploiting owner's identity with the lowest mean scores were rated lowest.

4.6.5 Use of Marketing Support Agencies

To establish the extent to which farmers with individual brand names sought the assistance of marketing support agencies to strengthen their BP to improve their performance, the respondents were requested to state the rate of use of various agencies. Their responses are provided in Table 4. 17.

Table 4.17: Use of Marketing Support Agencies

Support Agencies	N	Mean Score	Standard Deviation	CV (%)
Advertising Agencies	8	1.25	0.463	37.04
Public Relation Agencies	8	1.63	0.916	56.81
Merchandising Agencies	8	1.38	0.744	53.91
Research Agencies	7	1.43	0.787	55.03
Overall Average Score	**-**	**1.42**	**0.727**	**51.20**

Source: Primary data.

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The data in Table 4.17 indicate that the level of adoption and usage of marketing support agencies is low as demonstrated by the low average mean score (1.42) and high average CV (51.20). Advertising agencies (mean score = 1.25, CV = 37.03) had the highest preference among the agencies. Public relations agencies despite having the highest mean score (1.63) had the highest CV at 56.38 implying that they had minimal preference among the respondents.

4.6.6 Promotion Activities Undertaken

Among the branding practice undertaken by a brand sponsor are brand promotion activities. To establish the usage of promotion activities to improve performance of FFV farmers, the respondents were requested to state their first preference for various promotion activities. Their responses are recorded in Table 4.18.

Table 4.18: Promotion Activities

Promotion Activities	N	Mean Score	Standard Deviation	CV (%)
Radio advertising	105	1.00	0.000	0.00
Newspaper advertising	105	1.03	0.217	21.07
TV advertising	106	1.05	0.254	24.19
Shows and exhibitions	102	1.22	0.556	45.57
Price discounts	111	1.78	0.779	43.76
Product Sampling	110	1.68	0.690	41.07
Event sponsorship	108	1.23	0.504	40.98
Word of mouth communication	139	2.69	0.624	23.20
Phone communication	28	3.00	0.000	0.00
Overall Average Score	**-**	**1.77**	**0.631**	**35.65**

Source: Primary data.

The results given in Table 4.18 identify nine promotional activities preferred by farmers the promotion of their FFV products. The two activities with the highest level of usage and preference were phone communication (mean score=3.00, CV=0.00) and word of mouth communication (mean score=2.69, CV=23.20) implying that farmers had higher preference for non mass media promotion activities.

4.6.7 Promotion Expenditure

To evaluate the level of support for FFV products, respondents were asked to indicate the amount of money in Kenya shillings that they had used in all their branding activities during the previous year. Table 4.19 contains the relevant responses.

Table 4.19: Expenditure on Branding Practices

Approximate Expenditure (Kshs. "000")	Frequency	Percent
Less than 50	74	70.5
50-100	21	20.0
101-500	5	4.7
501-1,000	2	1.9
More than 1,000	3	2.9
Total	105	100.0

Source: Primary data.

As shown in Table 4.19, some 70.5% of the respondents had spent less than Ksh. 50,000.00 the whole of the previous year, and only 2.9% had spent more than Ksh.1million. These results reflect the low promotional expenses on branding of FFV.

4.6.8 Summary on Branding Practices

Branding practice undertaken by farmers included brand identification practices, brand name selection practices, and brand promotion activities. Table 4.20 contains a summary of the performance indicators of the activities undertaken by the farmers in furtherance of branding practices.

Table 4.20: Summary of Branding Practices

Branding Practices	N	Mean Score	Standard Deviation	CV (%)
Brand Name Selection strategies	9	2.48	1.350	54.44
Use of Support agencies	8	1.42	0.727	51.20
Brand Promotion activities	140	1.77	0.631	35.65
Overall Average Score	-	**1.99**	**0.612**	**30.75**

Source: Primary data.

The branding practices summary data in Table 4.20 (mean score=1.99, CV=30.75) show that branding as a marketing practice had low adoption among the respondent farmers. Brand name selection strategies (mean score=3.05, CV=15.87) were the most common branding practices the respondents engaged themselves in. Making decisions on brand identification (mean score=1.14, CV=42.19) was the least adopted among the branding practices.

4.7 Environmental Factors and Performance of Commercial Farmers

The performance of a firm will be influenced by both internal and external factors inherent in its operating environment. These factors present either opportunities to be exploited or obstacles to be overcome as the firm strives to achieve its objectives. For commercial FFV farmers to undertake effective branding practices that would result in improved performance, they have to contend with factors within its operating environment. Factors in the operating environment of interest to this study were product attributes, government regulations, special production/processing methods, climatic conditions, customer categories and competition. The influence of individual factors on branding practices and performance of commercial farmers is presented in the proceeding sections.

4.7.1 Product Attributes and Performance

Product attributes attract customer's attention and are a basis for branding practices. To establish the effect of these attributes on performance, the respondents were asked to mention the importance of various attributes in motivating consumers' preference for their products. Their responses are summarized in Table 4.21.

Table 4.21: Product Attributes and Performance of Fresh Fruits and Vegetables

Importance of Attribute	N	Mean Score	Standard Deviation	CV (%)
They have longer shelf life	133	3.26	1.086	33.31
Have higher nutritional value	132	2.55	1.094	42.90
Have a unique place of origin	126	2.10	1.196	56.95
They have special taste/colour	135	2.81	1.026	36.51
They have medical value	126	2.05	1.225	59.76
Use unique production method	134	2.09	1.223	58.52
They mature faster	129	2.35	1.123	48.41
Overall Average Score	**-**	**2.49**	**0.621**	**48.05**

Source: Primary data.

According to the results presented in Table 4.21, seven product attributes were mentioned as those that influenced consumer preference for FFV products. The product attributes with the highest mean scores were longer shelf life (mean score= 3.26, CV= 33.31), special taste/colour (mean score= 2.81, CV= 36.51) and higher nutritional value (mean score = 2.55, CV=42.90). The attributes rated highest are those the consumer is able to confirm such as colour/taste, shelf life and maturing period while the attributes that were more difficult to confirm such as production method, health value and place of origin were considered less important.

4.7.2 Product Inspection and Certification

Product certification is an attribute that is used to demonstrate superiority of FFV products. Inspection eases entry to export markets. The farmer respondents had been asked to indicate whether their products were certified, and if they were, to name the certifying body.

The survey results revealed a very low level of certification. Only 5.6% of the farmer respondents had their products inspected and certified. Further, only two inspecting and certifying bodies were mentioned namely SGS and Global Gap Certification. The farmers engaging in inspection and certification practices had an opportunity to differentiate their products on the basis of inspection and certification. They also had a greater opportunity to penetrate export markets.

4.7.3 Types of Government Regulations

Government regulates activities of players in all sectors of the economy. The respondents were requested to indicate the type of regulation the government had instituted to regulate the growing and marketing of their products. Their responses are summarized in Table 4.22

Table 4.22: Types of Government Regulations

Government Regulations	N	YES %	NO %	Total %
Zoning of growing areas	126	0.8	99.2	100
Issuing of permits for growing the product	126	0.8	99.2	100
Only source of seeds and other farm inputs	126	0.8	99.2	100
Inspecting and issuing of certificates before sale	126	5.6	94.4	100
Registration and issuing of permits to buying agents	125	8.0	92.0	100

Source: Primary data.

As shown in Table 4.22, five forms of government regulations were indentified. The two types of regulations identified by more than 1% of the respondents were inspecting and issuing of certificates before sale of products (5.6%) and registering and issuing permits to buying agents (8%). All other regulations were identified by less than 1% of the respondents. Overall, direct government control in form of regulations was found to be low within the sector.

4.7.4 Special Production/Processing Methods

Farmers with special production or processing methods can claim superiority for their products. They can use such an advantage as a basis for branding practices to improve their performance. The farmers' responses on the use of special production/processing methods are presented in Table 4.23.

Table 4.23: Presence of Special Production/Processing Methods

		Yes	No	Total
Special production/processing methods	**N**	**%**	**%**	**%**
Green house farming	140	12.9	87.1	100
Organic farming	140	50.7	49.3	100
Irrigation	140	63.6	36.4	100
Special storage method	140	5.7	94.3	100
Use of special seeds	140	27.9	72.1	100
Packaging	140	15.0	85	100

Source: Primary data.

The responses in Table 4.23 identified six special production/processing methods that were utilized in FFV farming. The two methods identified by majority of the respondents were irrigation farming (63.6%) and organic farming (50.7%). Use of irrigation farming improved output since farming was not restricted to rainy seasons. Special storage facilities and product packaging had the lowest usage among the respondent farmers.

4.7.5 Climatic Conditions and Performance

Climatic conditions affect performance of agricultural products. The conditions will also dictate the type and quality of products grown in specific areas. The respondents had been requested to mention the importance of specific climatic conditions to their level of production. The relevant responses are as provided in Table 4.24.

Table 4.24: Climatic Conditions and Farm Performance

Climatic conditions	**N**	**Mean Score**	**Standard Deviation**	**CV (%)**
Special soils	133	2.37	1.097	46.33
Adequate rains	132	3.50	0.786	22.47
Right temperature	133	3.52	0.734	20.87
Special growing skills	136	2.83	1.051	37.12
Overall Average Score	**-**	**3.06**	**0.917**	**30.02**

Source: Primary data.

The results presented in Table 4.24 reveal four climatic conditions that affect productivity of FFV in respective areas. Right temperature (mean score = 3.52, CV = 20.87) and adequate rains (mean score = 3.50, CV = 22.47) were the most important climatic factors.

The other two factors with slightly lower scores and therefore of less importance in determining farm performance were special growing skills (mean score = 2.83, CV = 37.12) and special soils (mean score = 2.37, CV = 46.33).

4.7.6 Importance of Customer Categories for Fresh fruits and Vegetables

The characteristics of customers served by FFV farmers will dictate the type of product grown. The respondents were requested to indicate the importance of various customer categories for their products. The responses ranged from 1 for not important to 4 for very important. Mean scores ranging from 4 for very important to 1 for not important was adopted. The responses are summarized in Table 4.25.

Table 4.25: Importance of Customer Categories

Customer categories	**N**	**Mean score**	**Standard Deviation**	**CV (%)**
Local shopping Center	132	2.30	1.277	55.61
Neighbours	128	2.22	1.129	50.88
District Headquarters' FFV market	130	2.27	1.244	54.81
Wholesale FFV markets in Nairobi	129	2.59	1.418	54.75
Supermarkets	126	1.58	1.038	65.73
Direct export	125	1.37	0.938	68.56
Hospitals and consumers on special diet	123	1.17	0.539	46.02
Children	119	1.52	0.955	62.81
Overall Average Score	**-**	**1.88**	**1.087**	**56.84**

Source: Primary data.

As evidenced by the level of mean scores and CV for all the customer categories presented in Table 4.25, none of the customer categories was ranked by majority of the respondents as being very important. The wholesale FFV markets were identified as possible markets by the highest number of respondents but fewer of them considered it the most important outlet for their products (mean score = 2.59, CV = 54.75). The outlets considered least important were direct exports, supermarkets and children. Details on the importance attached to each customer category are provided as appendix VI.

4.7.7 Competition for Fresh Fruits and Vegetables

Competition affects performance of a product. It influences the quality and pricing of products. To establish the influence of competition on the performance of commercial farmers the farmer respondents were requested to state the level of competition from both local and foreign branded and non-branded products. The responses ranged from 1 for not strong to 4 for very strong. Mean scores ranging from 1 for not strong to 4 for very strong were adopted. Table 4.26 presents the pertinent results.

Table 4.26: Level of Competition

Main competitors for own product	N	Mean Score	Std. Deviation	CV (%)
Other branded product from within the county	106	1.98	1.171	59.10
Non-branded products from within the county	135	2.30	0.931	40.54
Other branded products from outside the county	105	2.15	1.215	56.46
Non-branded products from outside the county	132	2.12	1.019	48.04
Overall Average Score	**-**	**2.14**	**1.084**	**50.71**

Source: Primary data.

The survey results on level of competition for FFV products grown in Kiambu County are contained in Table 4.26. The low mean score and high CV reflected the presence of low level of competition from all categories of competitors. Relatively strong competition was experienced from non-branded products from within the County (mean score = 2.30, CV = 40.54) followed by other non branded products from outside the county (mean score = 2.12, CV = 48.04). The lowest level of competition was offered by branded product from within the County (mean score = 1.98, CV = 59.10).

4.7.8 Summary on Environmental Factors.

Factors of the operating environment found to influence the performance of commercial farmers were product attributes, climatic conditions, customer categories and competition. The extent to which each individual factor influenced performance is summarized in Table 4.27.

Table 4.27: Summary on Effects of Environmental Factors

Environmental Factors	N	Grand Mean Score	Standard Deviation	CV (%)
Product Attribute	140	2.46	0.621	48.05
Climatic Conditions	138	3.06	0.917	30.02
Customer Categories	140	1.88	1.087	56.84
Competition	138	2.14	1.084	50.71
Overall Average Score	**-**	**2.39**	**0.927**	**38.79**

Source: Primary data.

The overall average performance data on effect of environmental factors on performance of commercial farmers is summarized in Table 4.27. Climatic conditions which had the highest mean score and the lowest CV (mean score = 3.06, CV = 30.02) had the greatest influence on performance of commercial farmers. The second most important factor was product attributes (mean score = 2.46, CV = 48.05) while customer categories (mean score = 1.88, CV = 56.84) had the least influence on performance.

4.8 Performance of Commercial Fresh Fruits and Vegetable Farmers

Firm performance involves evaluating how a firm's resources are used to achieve its overall objectives. Commercial farmers invest financial and nonfinancial resources in their branding practices. They have to evaluate performance to establish the success of their branding initiatives. The success of commercial FFV farmers from Kiambu County was evaluated on the basis of the prices, volumes, profits and satisfaction achieved by the farmer.

4.8.1 Prices Paid For Products

The price paid for a product is reflective of the quality of product and level of competition. The farmer respondents were requested to state how the prices paid for their products compared to those paid for similar competitive products. Their responses are summarized in Table 4.28.

Table4.28: Price of Own Versus Competitor Products

Product categories	Price categories (%)	N	Higher (%)	Lower (%)	Total (%)
Non-branded local products	Less than 10	40	47.5	52.5	100
	Between (10-20)	48	31.2	68.8	100
	Greater than 20	7	28.6	71.4	100
Branded local products	Less than 10	25	72.0	28.0	100
	Between (10-20)	29	75.9	24.1	100
	Greater than 20	13	46.2	53.8	100
Non-branded products from outside the County	Less than 10	43	51.2	48.8	100
	Between (10-20)	43	32.6	67.4	100
	Greater than 20	8	25.0	75.0	100
Branded products from outside the County	Less than 10%	33	66.7	33.3	100
	Between (10-20%)	33	54.5	45.5	100
	Greater than 20%	19	42.1	57.9	100

Source: Primary data.

The results presented in Table 4.28 reveal that on average, prices for own products were lower than those for competitor branded products from within and outside the County. On comparing prices for own products against branded local products, 72% of the farmer respondents indicated that prices for branded local products were higher than for own products by less than 10% while 75.9% of the farmer respondents indicated that prices for branded local products were higher than own prices by between 10 and 20%. Similarly, when prices for own products were compared with prices for branded products from outside the county, 66% and 54.5% of the farmer respondents indicated that prices for branded competitor products were higher than below 10% and by between 10 and 20% respectively. The results also suggest that, on average, own products earned higher prices than competitor non-branded products. Prices for competitor local products were said to be below 10% the prices for own products by 52% of the farmer respondents, lower by between 10 and 20% by 68% of the farmer respondents and lower than 20% by 71.4% of the farmer respondents. Similarly, prices for competitor products from outside the County were said to be between 10 and 20% lower than own prices by 67.4% of the respondents and 20% lower than own prices by 75% of the respondents in the two price categories.

4.8.2 Contribution of Branding on Prices of Fresh Fruits and Vegetables

Suppliers engage in various branding practices to differentiate their products from competition. These activities include identity creating activities, communication activities and activities meant to establish the nature of new and existing brands. These activities involve expenses. To determine whether the costs incurred undertaking the activities were justified, the respondents were asked to indicate the proportion of current prices contributed by branding practices. Their responses are summarized in Table 4.29.

Table 4.29: Contribution of Branding Practices on Prices

	Price Category (%)	2012		2013		2014	
		Frequency	%	Frequency	%	Frequency	%
Lower	<10	3	3.2	1	1.0	4	4.1
	10-20	1	1.1	2	2.1	1	1.0
	>20	1	1.1	2	2.1	1	1.0
Total		5	5.4	5	5.2	6	6.1
Higher	<10	10	10.6	11	11.3	9	9.2
	10-20	12	12.8	15	15.4	18	18.3
	>20	2	2.1	2	2.1	3	3.1
Total		24	25.5	28	28.8	30	30.6
No effect		65	69.1	64	66.0	62	63.3
Grand total		**94**	**100**	**97**	**100**	**98**	**100**

Source: Primary data.

The data in Table 4.29 indicates that even though about 69.1%, 66.0% and 63.3% of the responding farmers indicated no effect of branding practices on their prices in the year 2012, 2013 and 2014 respectively, those indicating a price premium due to branding practices increased from 25.5% to 28.8% and finally to 30.6% in the years 2012, 2013 and 2014 respectively. Only a small percentage of the responding farmers (5.4, 5.2 and 6.1) mentioned lower prices due to branding practices. The overall indication is that the few farmers engaging in branding practices earned a premium price.

4.8.3 Volumes Harvested

The farmer respondents had been asked to state the harvest volumes achieved in the last three years. Table 4.30 summarizes their responses.

Table 4.30: Volumes Harvested (2012-2014)

Volumes sold per Year in Kg	2012		2013		2014	
	Frequency	%	Frequency	%	Frequency	%
Less than 500	35	27.7	29	21.9	33	24.1
500-1000	31	26.3	43	32.6	40	29.2
1001-2000	30	25.4	33	25.0	34	24.8
2001-5000	13	11.0	17	12.9	22	16.1
Over 5000	9	7.6	10	7.6	8	5.8
Total	**118**	**100.0**	**132**	**100.0**	**137**	**100.0**

Source: Primary data.

The survey results in Table 4.30 show that the total number of farmers presenting their crops to the markets increased from 118 in 2012 to 137 in 2014. The results also indicate that it was only farmer respondents in the volume categories 1001kg to 2000kgs and 2001kg to 5000 kg who increased every year over the three year period.

4.8.4 Volumes Attributed to Branding Practices

Investing in branding practices is an involving and expensive exercise. For the investment to be worthwhile, branding practices in higher performance. Respondents in this study were requested to indicate the contribution of branding practices to volume achieved over the three years period. Table 4.31 summaries their responses.

Table 4.31: Branding Practices and Volumes Harvested

% of Volumes attributed to B P	2012		2013		2014	
	Frequency	%	Frequency	%	Frequency	%
Less than 10%	10	7.1	12	8.6	10	7.1
10-20%	9	6.4	12	8.6	14	10.0
21-30%	7	5.0	5	3.6	7	5.0
More than 30%	3	2.2	5	3.6	6	4.3
Total	30	20.7	34	24.4	37	26.4
None	111	79.3	106	75.6	103	73.6
Overall Total	140	100.0	140	100.0	140	100.0

Source: Primary data.

The results in Table 4.31 show that majority of the respondents (79.3% in 2012, 75.6% in 2013 and 73.6% in 2014) attributed no percentage of volume achieved to branding practices. However, it was noted that the percentage of volume attributed to branding

practices increased over the three years from 20.7% in 2012 to 24.4% in 2013 and 26.4% in 2014. This implies that an increasing number of both small and large scale farmers are engaging in and benefiting from branding practices.

4.8.5 Profitability of Commercial Farming

Profitability is a key indicator of performance for any profit oriented business. To evaluate the performance of commercial farmers, the respondents were requested to indicate the gross profit of their farms for the test three years. Their responses are contained in Table 4.32.

Table 4.32: Annual Profitability of Commercial Farmers

Approximated annual gross profit (ksh "000")	2012		2013		2014	
	Frequency	%	Frequency	%	Frequency	%
<50	41	32.8	36	26.9	39	28.2
50-100	26	20.8	29	21.6	31	22.5
101-200	19	15.2	21	15.7	15	10.9
201-500	11	8.8	16	11.9	17	12.3
>500	28	22.4	32	23.9	36	26.1
Total	125	100.0	134	100.0	138	100.0

Source: Primary data.

The results in Table 4.32 suggest that the farmer respondents who earned profits from their farms increased by 10.4% between 2012 and 2014 from 125 in 2012 to 134 in 2013 and then to 138 in 2014. This justifies the need for more attention in this sector as a means of improving the livelihood of residents in the County.

4.8.6 Profitability and Branding Practices

Effectiveness of branding practices can be measured by assessing the level of profitability attributed to branding practices. In this study, FFV farmers were asked to indicate the proportions of their profitability they would attribute to branding practices. Their responses are summarized in Table 4.33.

Table 4.33: Proportion of Annual Profitability Attributed to Branding Practices

% of profitability attributed to BP	2012		2013		2014	
	Frequency	%	Frequency	%	Frequency	%
Less than 10	13	9.3	17	12.2	16	11.4
10-20	12	8.6	13	9.3	14	10.0
21-30	3	2.1	3	2.1	6	4.3
More than 31	2	1.4	2	1.4	2	1.4
Total	30	21.4	35	25.0	38	27.1
None	110	78.6	105	75.0	102	72.9
Overall Total	140	100.0	140	100.0	140	100.0

Source: Primary data.

The results in Table 4.33 show that the proportion of farmers attributing no effect of branding practices to profitability decreased over the three years even though they remained the majority. On the other hand the proportion of those attributing profitability to branding practices increased over the three years. The responses indicated that the number of farmers engaging in and benefiting from branding practices increased over the three year period.

4.8.7 Farmer Satisfaction with Results of Commercial Farming

To assess the success of commercial farming of FFV, the respondents were requested to state the extent to which they were satisfied with the achieved price, volume and profitability. Table 4.34 summarizes the pertinent results.

Table 4.34: Farmer Satisfaction with Results of Commercial Farming

Level of satisfaction with results	N	Mean score	Standard Deviation	CV (%)
Price earned	138	2.78	0.702	25.22
Volume harvested	139	2.78	0.623	22.37
Profitability	135	2.60	0.745	28.66
Overall Average Score	**-**	**2.72**	**0.619**	**22.77**

Source: Primary data.

The results in Table 4.34 revealed relatively average levels of overall mean score (2.72) and CV (22.77). This suggests average levels of satisfaction with the three indicators.

However, volume harvested and price earned had slightly higher mean scores of 2.78 each implying slightly higher levels of satisfaction with the two constructs compared to profitability which had the lowest scores (mean score=2.60, CV=28.66) . Details of the level of satisfaction with each performance measure are provided in Appendix VIII.

4.8.8 Summary on Performance of Commercial Farmers

The constructs used to describe performance of commercial farmers were price, volume, profitability and satisfaction achieved by the respondent farmers. Table 4.35 contains a summary of the individual indicators of the achieved performance.

Table 4.35: Summary on Performance of Commercial Farmers

Overall summary of Performance of Farmers	N	Mean score	Standard Deviation	C.V (%)
Price premium	99	1.25	0.493	39.41
Sales Volume	126	1.59	1.089	68.62
Profitability	124	1.51	0.917	60.68
Satisfaction	140	2.72	0.619	22.77
Overall Average Score	**-**	**1.77**	**0.780**	**44.11**

Source: Primary data.

The summary results in Table 4.35 show low overall average levels with the applied performance constructs of commercial farmer (mean score=1.90, CV=40.23). Farmer satisfaction had the highest mean score (mean score=2.72, CV=22.77) implying that on the average, the farmers were satisfied with their undertakings. Price premium had the lowest mean score (mean score=1.25, CV=39.41) which indicated that the farmers were not earning the piece premiums they expected.

4.9 Summary of Descriptive Statistics

A summary of descriptive statistics covering the four thematic areas of the study is presented in Table 4.36.

Table 4.36: Summary of Descriptive Statistics

Thematic Area	N	Average Mean score	Standard Deviation	C.V
Branding practices	140	1.99	0.612	30.75
Farmer characteristics	140	2.08	0.865	41.59
Operating environment	140	2.39	0.927	38.79
Performance of commercial farmers	140	1.77	0.780	44.07
Overall mean score	**-**	**2.06**	**0.796**	**38.64**

Source: Primary data.

The summary data in Table 4.36 presents results of average mean scores for the study variables. Farmer characteristics (average mean score=2.08, CV=41.59) and operating environment (average mean score=2.39, CV=38.79) had the highest average mean scores implying greater contribution to performance of commercial farmers. Branding practices with lowest average scores at (average mean score=1.99, CV=30.75) had the least contribution to performance of commercial famers.

4.10 Results of Correlation Analysis

The general objective of the study was to establish the influence of branding practices of FFV, farmer characteristics (FC) and operating environment on performance of commercial farmers in Kiambu County. In order to assess the relationships among the independent variables (IV), dependent variable (DV) and moderating variables (MV) a correlation analysis was conducted. Results of the analysis are presented in Table 4.37.

Table 4.37: Correlation for Branding Practices, Farmer Characteristics, Operating Environment and Performance of Commercial Farmers

Correlation Coefficients					
		Performance of Commercial Farmers	**Farmer Characteristics**	**Branding Practices**	**Operating Environment**
Performance of commercial farmers	Pearson Correlation	1			
	Sig. (2-tailed)				
Farmer characteristics	Pearson Correlation	.234**	1		
	Sig. (2-tailed)	.005			
Branding practices	Pearson Correlation	.397**	.034	1	
	Sig. (2-tailed)	.000	.687		
Operating environment	Pearson Correlation	.164	.004	.172*	1
	Sig. (2-tailed)	.052	.964	.043	
** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed). Sample (N) = 140					

Source: Primary data.

The results of the Pearson's product moment correlation analysis as presented in Table 4.37 show varied degrees of interrelationships. Farmer characteristics are statistically significantly correlated with performance of commercial farmers (r= 0.234; $p < 0.01$ and sig. 2 tailed = $0.005 < 0.05$). Similarly, branding practices are statistically significantly correlated with performance of commercial farmers (r=0.397; $p<0.01$ and sig. 2 tailed=$0.000<0.05$). The results suggested that an empowered commercial FFV farmer undertaking branding practices will achieve improved performance. Operating environment and performance of commercial farmers were also statistically significantly correlated (r=0.164; $p<0.04$; sig. 2 tailed =$0.052=0.05$). This suggests that operating environment is also a major determinant of performance of commercial farmers. As commercial fresh fruits and vegetable farmers carefully evaluate their ability to effectively undertake branding practices and also determine the most appropriate

branding practices to adopt, they should also take cognizance of their operating environment and the opportunities and challenges it may present. This will ensure the farmer obtains optimum results.

The strongest relationship was between practices and performance of commercial farmers ($r=0.397$; $p<0.01$ and sig. 2 tailed=$0.000<0.05$) followed by farmer characteristics and and performance of commercial farmers. This implied that branding practice and characteristics of commercial farmers play a crucial role in influencing the performance of commercial farmers.

4.11 Results of Regression Analyses and Hypotheses Testing

This study was based on the premise that the influence of branding practices on performance of commercial farmers in Kiambu County was moderated by farmer characteristics and operating environment. In order to test the respective hypotheses, simple and stepwise multiple linear regression analyses were conducted at 95 percent confidence level. Since branding practices, farmer characteristics, operating environment and performance of commercial farmers were measured using more than one construct; each performance indicator was regressed against each dimension of independent and moderating variables using simple regression analysis. To evaluate the contribution of each construct in the independent and moderating variables, stepwise multiple regression analysis was carried out.

4.11.1 Simple Regression: Branding Practices, Farmer Characteristics and Operating Environment

To evaluate the influence of branding practices (independent variable (IV) and farmer characteristics and operating environment (moderating variables (MV), simple regression analyses were conducted for each pair of variables. The results are contained in Table 4.38.

Table 4.38: Simple Regression: Branding Practice, Farmer Characteristics and Operating Environment

	Branding Practices	Farmers Characteristics	Operating Environment
R	0.397	0.234	0.164
R^2	0.158	0.055	0.027
F	25.84	7.968	3.838
Sig (p)	0.000	0.005	0.052
Constant	1.063	1.012	0.875
B	0.547	0.420	0.441
s.e.	0.108	0.149	0.225
Beta	0.397	0.234	0.164
T	5.083	2.823	1.959
Sig (p)	0.000	0.005	0.052

Where: B = Un-standardized coefficient; s.e. = Standard error; beta= Standardized Coefficient ; $R^{2=}$coefficient of determination; P=Significance of the regression
Dependent Variable: Performance of Commercial Farmers
Independent Variables: Branding Practices, Farmer Characteristics, Operating environment

Source: Primary data.

The simple regression results presented in Table 4.38 produced an R^2 of 0.158 for branding practices, 0.055 for farmer characteristics and 0.027 for operating environment. The results imply that branding practices accounted for highest variation of the performance of commercial farmers at 15.8% followed by farmer characteristics at 5.5% and then operating environment at 2.7%. The results further reveal a significant relationship between branding practices and performance (beta=0.397, P=0.000), farmer characteristics and performance of commercial farmers (beta=0.234, P=0.005) and operating environment and performance of commercial farmers. Based on these results, we accept the hypotheses at 5% significance and conclude that branding practices, farmer characteristics and operating environment influenced the performance of commercial farmers. The results also show that the regression equations for branding practices (F computed=25.841, p=0.000<0.05), farmer characteristic (F computed=7.968, p=0.005<0.05) and operating environment (F computed=3.838, p=0.052=0.05) were significantly related to performance of commercial farmers. The statistically significant relationships between performance of commercial farmers and branding practices, farmer

characteristics and operating environment imply that the three variables are strategically important to achieving the desired performance levels of commercial farmers. Commercial farmers should therefore empower themselves to be able to undertake effective branding practice and also take due consideration of their operating environment to ensure positive results.

4.11.2 Multiple Regression Model: Dimensions of Branding Practices and Performance of Commercial Farmers

To assess the influence of Branding Practices on Performance of commercial farmers, the research had set the following hypothesis:

H1: There is a statistically significant relationship between Branding Practices for FFV and Performance of commercial farmers in Kiambu County.

The simple regression results of branding practices against each dimension of performance are presented in Tables 4.39A and 4.39B.

Table 4.39A: Results of Goodness-of-Fit of the Regression of Price, Volume, Profitability and Satisfaction on Branding Practices

Model Summary

i). Price

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.117[a]	.014	.003	.49244

a. Predictors: (Constant), Branding practices

Dependent variable: Price

a. Predictors: (Constant), Branding practices

ii). Volume

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.126[a]	.016	.008	1.08490

a. Predictors: (Constant), Branding practices

Dependent variable: Sales Volume

iii). Profitability

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.101[a]	.010	.002	.91581

a. Predictors: (Constant), Branding practices

Dependent variable: Profitability

iv). Satisfaction

Model	*R*	R Square	Adjusted R Square	Std. Error of the Estimate
1	.214[a]	.046	.039	.60721

a. Predictors: (Constant), Branding practices

Dependent variable: Satisfaction

Source: Primary data.

Table 4.39B: Significance of the Regression of Branding Practices on Performance of Commercial Farmers

Coefficients[a]

i). Price

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.071	.164		6.522	.000
Branding practices	.122	.106	.117	1.158	.250

a. Dependent Variable: Price

ii). Volume

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.135	.333		3.407	.001
Branding practices	.317	.224	.126	1.418	.159

a. Dependent Variable: Sales Volume

iii). Profitability

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.210	.281		4.303	.000
Branding practices	.210	.187	.101	1.120	.265

a. Dependent Variable: Profitability

iv). Satisfaction

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.354	.151		15.614	.000
Branding practices	.240	.093	.214	2.580	.011

a. Dependent Variable: Satisfaction

Source: Primary data.

The results of the simple regression of performance constructs of price, volume, profitability and satisfaction as regressed against the mean scores of branding practices are presented in Table 4.39A. The results indicate an R^2 of 0.014 for price, 0.016 for volume, 0.010 for profitability and 0.046 for satisfaction. These results imply that branding practices have minimal individual influence on the performance of commercial farmers. The practices account for only 1.4% of the variations in price, 1.6% in volume, 1.0% in profitability and 4.6% in satisfaction.

These results suggest that branding practices on their own will have limited influence on performance of commercial farmers with the highest score at 4.6% and the lowest at 1.0%. Branding practices which involve product identification, promotion and classification are limited in the extent to which they can influence price. Together with branding practices, price for FFV is influenced by such other factors like competition, product quality and the type of markets served. Similarly, volumes sold will also be influenced by such other factors like nature and size of market, product attributes, level of competition and quantities harvested. Other than branding practices, profitability is affected by such other factors like costs incurred, price paid for the product and volumes sold. Since branding practices had minimal influence on price paid for the products and volumes sold, the influence on profitability was negatively affected. As regards farmer satisfaction, the slightly higher influence by branding practices (4.6%) is attributed to the subjective nature of the performance construct. Farmers could have derived satisfaction from their own branding efforts, their own objectives being met and the progress they were making in the farming efforts.

The regression results in Table 4.39B reveal a statistically significant positive linear relationship between branding practices and satisfaction (beta 0.214, p-value=0.011). The results also reveal a statistically insignificant relationship between branding practices and price (beta 0.117, p-value=0.250); volume (beta 0.126, p-value=0.159) and branding practices and profitability (beta=0.101, p-value=0.265). These results indicate that a unit change in branding practices has minimal contribution to the variations in the three

performance constructs and accounts for 0.117 of the changes in prices, 0.126 in volume; 0.101 in profitability and 0.214 in satisfaction. The statistically significant relationship between farmer characteristics and satisfaction (beta 0.214, p-value=0.011) suggests that branding practices positively influenced the level of satisfaction of commercial farmers.

To further evaluate the impact of branding practices on performance of commercial farmers, aggregate mean scores of performance (price, volume, profitability and satisfaction) were regressed against aggregate mean scores of branding practices. The results of these analyses are presented in Table 4.40A and 4.40B.

Table 4.40A: Results of Goodness-of-Fit of the Regression of Performance of Commercial Farmers on Branding Practices

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.397[a]	.158	.152	.70328
a. Predictors: (Constant), Branding practices				
Dependent variable: Performance of commercial farmers				
a. Predictors: (Constant), Branding practices				

Source: Primary data.

Table 4.40B: Regression of Performance of Commercial Farmers on Branding Practices

Coefficients[a]

Model		Unstandardized Coefficients		Std. Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.063	.175		6.087	.000
	Branding practices	.547	.108	.397	5.083	.000

a. Dependent Variable: Performance of commercial farmers

Source: Primary data.

Regression of aggregate mean scores of performance of commercial farmers against branding practices produced an R^2 of 0.158 as shown in Tables 4.40A. This implies that branding practices explained 15.8% of the variation in composite scores for performance of commercial farmers. The results have revealed a statistically significant positive relationship between branding practices and performance of commercial farmers

(beta=0.397, p-value=0.000). We therefore accept the hypothesis at 5%significance and conclude that Branding Practices have statistically significant influence on performance of commercial farmers. The statistically significant positive relationship between Branding Practices and Performance of commercial farmers suggests that branding practices influence the ability of farmers to achieve superior performance.

Based on the results in Tables 4.40A and 4.40B, a simple regression equation can be used to estimate performance of commercial farmers in Kiambu County as follows:

$Y = 1.063 + 0.397BP$ …… (i)

Where

Y= Performance of Commercial Farmers

BP= Branding Practices

1.063= y-intercept; constant

0.397= an estimate of the expected increase in performance of Commercial Farmers in response to a unit increase in branding practices

The regression coefficient of 1.063 under constant indicates the value of performance when branding practice is at zero while a unit increase in branding practices would lead to a 0.397 increase in the performance of commercial farmers. On the basis of these findings, we conclude that branding practices contribute significantly to the prediction of the performance of commercial farmers.

4.11.3 Multiple Regression Model: Dimensions of Farmer Characteristics and Performance of Commercial Farmers

To assess the influence of farmer characteristics on Performance of commercial farmers, the research had set the following hypothesis:

H2: There is a statistically significant relationship between farmer characteristics and performance of commercial farmers in Kiambu County.

The simple regression results of farmer characteristics regressed against each dimension of performance are presented in tables 4.41A and 4.41B

Table 4.41A: Results of Goodness-of-Fit of the Regression of Price, Volume, Profitability and Satisfaction on Farmer Characteristics

Model Summary

i) Price				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.376[a]	.142	.038	.50485
Predictors: (Constant), Farmer Characteristics				
Dependent Variable: Price				
ii) Volume				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.512[a]	.262	.186	1.03403
Predictors: (Constant), Farmer Characteristics				
Dependent Variable: Sales Volume				
iii) Profitability				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.376[a]	.142	.038	.50485
Predictors: (Constant), Farmer Characteristics				
Dependent Variable: Profitability				
iv) Satisfaction				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.466[a]	.217	.142	.52021
Predictors: (Constant), Farmer Characteristics				
Dependent Variable: Satisfaction				

Source: Primary data.

Table 4.41B: Regression of Farmer Characteristics on Performance of Commercial Farmers

Coefficients[a]

i) Price

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.647	.268		2.411	.018
Farmer Characteristics	.298	.130	.227	2.295	.024

a. Dependent Variable: Price

ii) Volume

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.601	.508		1.183	.239
Farmer Characteristics	.473	.239	.175	1.977	.050

a. Dependent Variable: Volume

iii) Profitability

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.581	.428		1.357	.177
Farmer Characteristics	.446	.202	.196	2.213	.029

a. Dependent Variable: Profitability

iv). Satisfaction

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.614	.267		9.789	.000
Farmer Characteristics	.050	.124	.035	.407	.685

a. Dependent Variable: Satisfaction

Source: Primary data.

As shown in Table 4.41A the influence of farmer characteristics explains more of the variations in volume at 26.4% and least in the variations in price and profitability at 14.2% each. These results suggest that farmer characteristics on their own will have limited influence on performance of commercial farmers. The slightly higher influence on volume (26.4%) can be explained by the fact that farmer characteristics will determine the nature of inputs expended to the farms and also the sourcing and delivering of the products to suitable markets. The little influence on price is because of such other influencing factors like level of competition and product attributes that are beyond the control of an individual farmer. With limited influence on price, the farmer will have little influence on profitability as shown above.

The regression results in Table 4.41B revealed a statistically significant linear relationship between farmer characteristics and price (beta 0.227, p-value=0.024) farmer characteristics and profitability (beta 0.196, p-value=0.029) and farmer characteristics and volume (beta 0.175, p-value=0.050). The results reveal a statistically insignificant relationship between farmer characteristics and satisfaction (beta 0.035, p-value=0.685). The statistically significant relationship between farmer characteristics and price, volume and profitability suggests that farmer characteristics positively influence the three performance measures of commercial farmers. There is however no significant relationship between farmer characteristics and satisfaction. For a relationship to be considered to be significant, its outcomes are not left to chance. The statistically insignificant relationship between farmer characteristics and satisfaction implies that it was not possible to attribute any specific farmer characteristic to a specific level of satisfaction with the price, volume and profitability achieved.

To evaluate the impact of farmer characteristics on performance of commercial farmers, aggregate mean scores of performance were regressed against aggregate mean scores of farmer characteristics. The results are presented in Table 4.42.

Table 4.42A: Results of Goodness-of-Fit of the Regression of Performance of Commercial Farmers on Farmer Characteristics

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.234[a]	.055	.048	.74509
a. Predictors: (Constant), Farmer characteristics				
Dependent variable: Performance of Commercial Farmers				

Table 4.42B: Significance of the Regression of Performance of Commercial Farmers on Farmer Characteristics

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.012	.320		3.159	.002
	Farmer characteristics	.420	.149	.234	2.823	.005
Dependent Variable: Performance of commercial farmers						

Source: Primary data.

Regression of the aggregate mean scores of performance of commercial farmers against farmer characteristics produced an R^2 of 0.055 as shown in Table 4.42A. This implied that farmer characteristics explained 5.5% of the variation in scores for performance of commercial farmers. The results also revealed a statistically significant positive relationship between farmer characteristics and performance of commercial farmers (beta=0.234, p-value=0.005). Therefore, we accept the hypothesis at 5% significance and conclude that farmer characteristics had statistically significantly influenced performance of commercial farmers. This implies that farmer characteristics influence the ability of farmers to achieve superior performance.

Based on the results in Tables 4.42A and 4.42B, simple regression equation can be used to estimate performance of commercial farmers in Kiambu County as follows:

$Y = 1.012 + 0.234FC$…… (ii)

Where

Y= Performance of Commercial Farmers

FC= Farmer Characteristics

1.012= y-intercept; constant

0.234= an estimate of the expected increase in performance of Commercial Farmers in response to a unit increase in farmer characteristics

The regression coefficient of 1.012 under constant indicates the value of performance when farmer characteristic is at zero. The regression coefficient of 0.234 implies that a unit increase in farmer characteristics would lead to a 0.234 increase in Performance of commercial farmers. We therefore conclude that farmer characteristics contribute significantly to prediction of the performance of commercial farmers.

4.11.4 Multiple Regression Model: Dimensions of Operating Environment and Performance of Commercial Farmers

To assess the influence of operating environment on performance of commercial farmers, the research had set the following hypothesis:

H3: There is a statistically significant relationship between Operating Environment and Performance of commercial farmers in Kiambu County.

The simple regression results of operating environment regressed against each dimension of performance are presented in Tables 4.43A and 4.43B.

Table 4.43A: Results of Goodness-of-Fit of the Regression of Price, Volume, Profitability and Satisfaction on Operating Environment

Model Summary

i) Price				
Model	R	R Square	Adjusted R Square	Std. Error Of The Estimate
1	.032[a]	.001	-.009	.49558
Predictors: (Constant), Operating Environment				
Dependent Variable: Price				
ii) Volume				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.116[a]	.013	.006	1.08626
Predictors: (Constant), Operating Environment				
Dependent Variable: Volume				
iii) Profitability				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.108[a]	.012	.004	.91510
Predictors: (Constant), Operating Environment				
Dependent Variable: Profitability				
iv) Satisfaction				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.163[a]	.026	.019	.61341
Predictors: (Constant), Operating Environment				
Dependent Variable: Satisfaction				

Source: Primary data.

Table 4.43B: Significance of the Regression of Operating Environment on Performance of Commercial Farmers

Coefficients[a]

i). Price

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.380	.414		3.334	.001
Operating environment	-.055	.174	-.032	-.313	.755

a. Dependent Variable: Price

ii). Volume

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.567	.789		.718	.474
Operating environment	.443	.340	.116	1.303	.195

a. Dependent Variable: Volume

iii). Profitability

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.709	.672		1.056	.293
Operating environment	.347	.289	.108	1.203	.231

a. Dependent Variable: Profitability

iv). Satisfaction

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.901	.427		4.454	.000
Operating environment	.354	.183	.163	1.935	.055

a. Dependent Variable: Satisfaction

Source: Primary data.

The simple regression results in Table 4.43A show that operating environment had minimal explanation for the variations in all the performance constructs of commercial

farmers. Adjustments in operating environment on its own had minimal influence on performance of commercial farmers with the highest score at 2.6% for satisfaction and the lowest at 0.1% for price. The slightly higher influence on satisfaction is attributed to respondent farmer appreciation of the environment under which they operate. The results further indicate that operating environment had least influence on the prices paid for the products. Since there were minimal government regulations in the sector and competition was limited, there was therefore no significant environmental influence on prices charged.

The regression results in Table 4.43B reveal a weak and statistically insignificant linear relationship between operating environment and three performance constructs namely price (beta -0.032, p-value=0.755); volume (beta 0.116, p-value=0.195) and profitability (beta 0.108, p-value=0.231). However, there is a marginally significant relationship between satisfaction of commercial famers and operating environment (beta=0.163, p=0.055). As per the results, a unit change in operating environment results in a negative and statistically insignificant effect on prices earned by commercial farmers. This is due to the fact that an increase in such factors like level of government control and level of competition may contribute to lower prices. The statistically insignificant relationship between operating environment and price, volume and profitability suggest that operating environment on its own will not influence the three measures of performance and will marginally contribute to farmer satisfaction.

To further evaluate the effect of operating environment on performance of commercial farmers, aggregate mean scores of performance (price, volume, profitability and satisfaction) were regressed against aggregate mean scores of operating environment. The results are presented in Table 4.44A and 4.44B

Table 4.44A: Results of Goodness-of-Fit of the Regression of Performance of Commercial Farmers on Operating Environment.

Coefficients[a]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.164[a]	.027	.020	.75586
a. Predictors: (Constant), Operating Environment				
Dependent variable: Performance of Commercial Farmers				

Table 4.44B: Significance of the Regression of Performance of Commercial Farmers on Operating Environment

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.875	.526		1.665	.098
	Operating environment	.441	.225	.164	1.959	.052

a. Dependent Variable: Performance of commercial farmers

Source: Primary data.

Regression of aggregate mean scores of performance of commercial farmers against operating environment produced an R^2 of 0.027 as shown in Table 4.44A. This implied that operating environment explained 2.7% of the variation in scores for performance of commercial farmers. The results also revealed a marginally significant relationship between operating environment and performance of commercial farmers (beta=0.164, p-value=0.052). Therefore, we accept the hypothesis at 5% and conclude that Operating Environment has a significant influence on Performance of commercial farmers.

Based on the results in Tables 4.44A and 4.44B, a simple regression equation can be used to estimate performance of commercial farmers in Kiambu County as follows:

$Y = 0.875 + 0.164OE$ ……. (iii)

Where

Y= Performance of Commercial Farmers

OE= Operating Environment

0.875= y-intercept; constant

0.164= an estimate of the expected increase in performance of Commercial Farmers in response to a unit increase in operating environment

As shown by the results in Table 4.44B and the model above, regression coefficient of 0.164 implies that a unit increase in operating environment would lead to a 0.164 increase in performance of commercial farmers. The value of performance when operating environment is at zero will be 0.875 as shown by the constant intercept. The results imply that operating environment will have a positive but marginal influence on performance of commercial farmers.

4.11.5 Moderating effect of Farmer Characteristics on the Relationship between Branding Practices and Performance of Commercial Farmers

To assess the moderating effect of farmer characteristics on the relationship between branding practices and performance of commercial farmers, the following hypothesis was set:

H4: The relationship between branding practices for fresh fruits and vegetables and performance of commercial farmers in Kiambu County is significantly moderated by farmer characteristics.

By adopting a method proposed by Baron and Kenny (1986), the moderating effect of farmer characteristics was determined by first testing the main effect of independent variable (branding practices) and moderator variable (farmer characteristics) on the dependent variable (performance of commercial formers) and the interaction between branding practices and farmer characteristics. Moderation is assumed to take place if the interaction between branding practices and farmer characteristics is statistically significant.

To create an interaction term, the independent (branding practices) and dependent (farmer characteristics) variables were converted to standardized scores. The two standardized variables were then multiplied to create an interaction variable. An increase in R^2 and a statistically significant interaction between branding practices and farmer characteristics

would suggest that a moderating effect of farmer characteristics on the relationship between branding practices and performance of commercial farmers could be supported. The regression results are presented in Table 4.45.

Table 4.45: Regression Results of the Moderating Effect of Farmer Characteristics

(A) Goodness-of-Fit

Model 1	R	R^2	Adjusted R^2	Std. Error of the Estimate	Change Statistics				
					R^2 Change	F Change	df 1	df 2	Sig. F Change
a	.397[a]	.158	.152	.70328	.158	25.841	1	.138	.000
b	.454[a]	.206	.195	.68525	.048	8.365	1	.137	.004

a. Predictors: (Constant), Branding practices
b. Predictors: (Constant), Operating environment, Branding practices

(B) The overall Significance

Model		Sum of Squares	df	Mean Square	F	Sig.
A	Regression	12.781	1	12.781	25.841	.000[a]
	Residual	68.255	138	.495		
	Total	81.036	139			
B	Regression	16.709	2	8.354	17.792	.000[b]
	Residual	64.327	137	.470		
	Total	81.036	139			

a. Predictors: (Constant), Branding practices
b. Predictors: (Constant), Branding practices, Farmer characteristics
c. Dependent Variable: Performance of commercial farmers

(C) The Composite Score Test

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.063	.175		6.087	.000
	Branding practices	.547	.108	.397	5.083	.000
2	(Constant)	.243	.331		.736	.463
	Branding practices	.536	.105	.390	5.115	.000
	Farmer characteristics	.396	.137	.220	2.892	.004

a. Dependent Variable: Performance of commercial farmers
Source: Primary data.

As shown by the moderation results in Table 4.45A and 4.45B, there was a statistically significant change in the percentage of the variation explained by the interaction of farmer characteristics and branding practices. The results in Table 4.45A indicate a change in R^2 when interaction of farmer characteristics and branding practices is introduced (0.158, 0.206). The significance results in Table 4.45C indicate a significant variation in the relationship between branding practices and performance of commercial farmers on the introduction of farmer characteristics (beta= 0.390, 0.220; P-value=0.000, 0.004). Therefore, we accept the hypothesis at β=0.005 and conclude that Farmer Characteristics have a statistically significant moderating effect on the relationship between Branding Practices and Performance of commercial farmers. This implies that the influence of branding practices on performance of commercial farmers is substantially modified by the presence of farmer characteristics. Based on these results, performance of commercial farmers can be predicted as follows:

Y= 1.063+0.390BP +0.220FC+ 0.206BP*FC …… (iv)

Where:

Y= Performance of commercial farmers

BP= Branding Practices

FC= Farmer Characteristics

BP*FC= Interaction of branding practices and farmer characteristics

1.063= y-intercept; constant

0.390= an estimate of the expected increase in performance of commercial farmers corresponding to an increase in branding practices

0.220= an estimate of the expected increase in performance of commercial farmers corresponding to an increase in farmer characteristics

0.206= an estimate of the expected increase in performance of commercial farmers resulting from the interaction of branding practices and farmer characteristics.

The above results show that farmer characteristics have a positive and statistically significantly contribution to the relationship between branding practices and performance of commercial farmers. The regression coefficient of 0.390 implies that a unit change in

branding practices would lead to a 0.390 change in performance of commercial farmers while a unit increase in farmer characteristics would lead to a 0.220 increase in performance of commercial farmers. The coefficient of 0.206 indicates the change in performance of commercial farmers when branding practices and farmer characteristics interact with each other.

4.11.6 Moderating effect of Operating Environment on the Relationship between Branding Practices and Performance of Commercial Farmers

To assess the moderating effect of operating environment on the relationship between branding practices and performance of commercial farmers, the following hypothesis was set:

H5: The relationship between branding practices for fresh fruits and vegetables and performance of commercial farmers in Kiambu County is significantly moderated by operating environment.

The moderating effect of operating environment on the relationship between branding practices and performance of commercial farmers was evaluated by first testing the main effect of branding practices and operating environment on performance of commercial farmers and the interaction between branding practices and operating environment. An increase in R^2 and a statistically significant interaction between branding practices and operating environment would suggest that a moderating effect of operating environment on the relationship between branding practices and performance of commercial farmers could be supported. Table 4.46 presents the moderating results.

Table 4.46: Regression Results of the Moderating Effect of Operating Environment

(A) Goodness-of-Fit

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	Change Statistics				
					R^2 Change	F Change	df 1	df 2	Sig. F Change
1	.397[a]	.158	.152	.70328	.158	13.761	1	.138	.000
	.409[a]	.167	.155	.70182	.167		2	.137	.000

a. Predictors: (Constant), Branding practices

b. Predictors: (Constant), Operating environment, Branding practices

(B) The Overall Significance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.556	2	6.778	13.761	.000[a]
	Residual	67.480	137	.493		
	Total	81.036	139			

a. Predictors: (Constant), Operating environment, Branding practices
b. Dependent Variable: Performance of commercial farmers

(C) The Composite Score Test

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.482	.495		.974	.332
	Branding practices	.523	.109	.380	4.803	.000
	Operating environment	.266	.212	.099	1.254	.212

a. Dependent Variable: Performance of commercial farmers
Source: Primary data.

Results presented in Table 4.46A indicate a significant change in the percentage of variation explained by the interaction of operating environment and branding practices. The regression results presented in Table 4.46A show a change in R^2 when interaction of farmer characteristics and branding practices was introduced (0.158, 0.167). Results in Table 4.46C suggest that the variation in the relationship between branding practices and performance of commercial farmers on the introduction of operating environment (beta= 0.380, 0.099; P-value=0.000, 0.212) was not statistically significant. Therefore, we reject the hypothesis at 5% and conclude that Operating Environment had no statistically significant moderating effect on the relationship between Branding Practices and Performance of commercial farmers. This implies that the influence of branding practices on performance of commercial farmers is not substantially altered by operating environment. Based on these results, performance of commercial farmers can be predicted as follows:

Y= 0.482+0.380BP +0.099OE+ 0.167BP*OE …….. (v)

Where:

Y= Performance of Commercial Farmers

BP= Branding Practices

OE= Operating Environment

BP*OE= Interaction of Branding Practices and Operating Environment

0.482= y-intercept; constant

0.380= an estimate of the expected increase in performance of commercial farmers corresponding to an increase in branding practices

0.099= an estimate of the expected increase in performance of commercial farmers corresponding to an increase in operating environment

0.167= an estimate of the expected increase in performance of commercial farmers resulting from the interaction of branding practices and farmer characteristics.

As presented in Table 4.46A, 4.46B and 4.46C and the model above, the regression coefficient of 0.380 implies that a unit change in branding practices would lead to a 0.380 change in performance of commercial farmers while a unit increase in operating environment would lead to a 0.090 increase in performance of commercial farmers. The coefficient of 0.167 shows the increase in performance of commercial farmers resulting from a unit increase in the combined effect of branding practices and operating environment. It can then be concluded that the contribution of operating environment to the variation of the relationship between branding practice and performance of commercial farmers was not statistically significant.

4.11.7 Joint Effect of Branding Practices, Farmer Characteristics, Operating Environment and Performance of Commercial Farmers

To test whether the joint effect of branding practices, farmer characteristics, and operating environment and performance of commercial farmers is statistically significant; the study had the following hypothesis:

H6: The Joint effect of branding practices, farmer characteristics and operating environment on performance of commercial farmers is statistically significant.

The aggregate mean scores of performance of commercial farmers were regressed on the aggregate mean scores of branding practices, farmer characteristics and operating environment using both multiple regressions analysis and step wise multiple regression. The stepwise multiple regression results are summarized in Table 4.47.

Table 4.47: Regression Results of Branding Practices, Farmer Characteristics and Operating Environment on Performance of Commercial Farmers

a) The Goodness-of-Fit

Model	Variables Entered	Variables Removed	Method
1	Operating environment, Farmer characteristics, Branding practices	.	Enter

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.465[a]	.216	.199	.68355

a. Predictor: (Constant), operating environment, farmer characteristics, branding practices

b) The overall Significance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	17.491	3	5.830	12.478	.000[a]
	Residual	63.545	136	.467		
	Total	81.036	139			

a. Predictors: (Constant), Branding pracctices, Farmer characteristics, Operating environment
b. Dependent Variable: Performance of commercial farmers

c) The Composite Score Test

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.341	.559		-.610	.543
	Branding practices	.513	.106	.372	4.829	.000
	Farmer characteristics	.396	.137	.220	2.902	.004
	Operating environment	.267	.207	.100	1.294	.198

a. Dependent Variable: Performance of commercial farmers

Table 4.47 Continued.

d) The Joint Effect of Variables

	Joint effect of BP, FC and OE	**Joint effect of BP and FC**		**Joint effect of BP and OE**	
		BP	**FC**	**BP**	**OE**
R	.465a	.454[a]	.409[a]	.409[a]	.404[a]
R^2	.216	.206	.167	.167	.167
R^2 change	.199	.206	.167	.167	.167
Sig. (p)	.000	.000	.004	.000	.212
Constant	-.341	.243	.243	.482	.482
s.e.	.68355	.105	.137	.109	.212
Beta	.341	.372	.220	.372	.100
T	-.610	5.115	2.892	4.803	1.254
Sig. (p)	.000	.000	.004	.000	.212
F	12.478	17.792	17.792	13.761	13.761

Source: Primary data.

The data in Table 4.47(a) reveals that the joint effect of branding practices; farmer characteristics and operating environment explained 21.6% of the variation in performance of commercial farmers (R^2=.216). The responses in Table 4.47(d) further indicated that 20.6% of the variation in performance of commercial farmers (R^2=.206) was explained by BP and 16.7% by both farmer characteristics and operating environment (R2=.167). As evidenced by the results in Table 4.47(c), the joint effect of the study variables are statistically significant (F=12.478, p-value=.000). Based on these findings we accept the hypothesis at 5% significance and conclude that the joint effect of Branding Practices, Farmer Characteristics and Operating Environment on Performance of commercial farmers is statistically significant. This implied that the study variables jointly predicted performance of commercial farmers. The regression coefficients revealed that BP had the largest contribution to performance of commercial farmers (beta=.372, t-value=5.115, p-value=.000) followed by farmer characteristics (beta=.220, t-vale=2.892, p-value=.004) while operating environment had the lowest contribution (beta=.100, t-value=1.254, p-value=.212).

To estimate performance of commercial farmers taking into consideration the joint effect of BP, farmer characteristics and operating environment the regression model used was stated as follows:

$$Y = -0.341+0.372BP+0.220FC+0.100OE+0.216BP*FC*OE \quad \text{..... (vi)}$$

Where;

Y= Performance of Commercial Farmers

BP=Branding Practice

FC=Farmer Characteristics

OE=Operating Environment

BP*FC*OE= Product of Branding Practice, Farmer Characteristics and Operating Environment

Based on the regression results presented above, the hypothesis that the joint effect of branding practices, farmer characteristics and operating environment on performance of commercial farmers is statistically significant is accepted.

4.12 Summary of Study Findings

The preceding sections have presented the findings of the study. Data analysis involved descriptive statistics, establishment of relationships between variables and testing of hypotheses. The independent, moderating and dependent variables were found to positively correlate even though at different levels. Branding Practices and Farmer Characteristics were found to significantly influence performance of commercial farmers. Table 4.48 summarizes the key hypotheses, statistical tests carried out and the pertinent results.

Table 4.48: Summary of Research Hypotheses, Findings and Conclusions

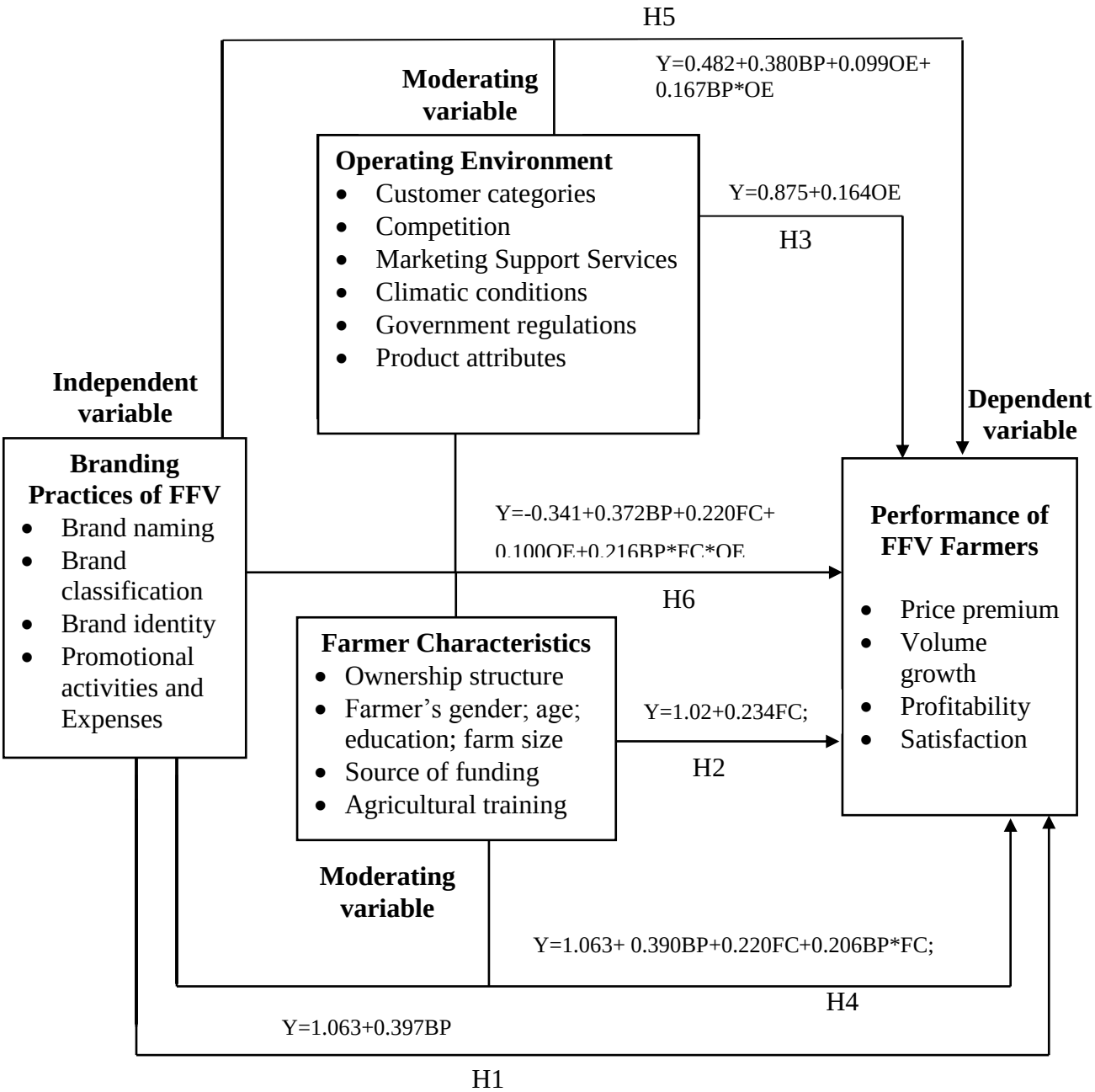
Hypotheses	Basis for evaluation	Findings	Conclusion
H1: There is a statistically significant relationship between branding practices for FFV and performance of commercial farmers in Kiambu County.	Accept hypothesis if P-value is < 0.050; reject if p-value is ≥ 0.050	P-value= 0.000 < 0.050	Accept hypothesis H1
H2: There is a statistically significant relationship between farmer characteristics and performance of commercial farmers in Kiambu County.	Accept hypothesis if P-value is < 0.050; reject if p-value is ≥ 0.050	P-value = .005 < 0.050	Accept hypothesis H2
H3: There is a statistically significant relationship between operating environment and performance of commercial farmers in Kiambu County.	Accept hypothesis if P-value is < 0.050; reject if p-value is ≥ 0.050	P-value= 0.052 = 0.050	Accept hypothesis H3
H4: The relationship between branding practices for FFV and performance of commercial farmers in Kiambu County is significantly moderated by farmer characteristics.	Accept hypothesis if P-value is < 0.050; reject if p-value is ≥ 0.050	P-value= 0.000 < 0.050	Accept hypothesis H4
H5: The relationship between branding practices for FFV and performance of commercial farmers in Kiambu County is significantly moderated by operating environment	Accept hypothesis if P-value is < 0.050; reject if p-value is ≥ 0.050	P-value= 0.212 > 0.050	Reject hypothesis H5
H6: The combined effect of branding practices, farmer characteristics and operating environment on performance of commercial farmers is statistically significant.	Accept hypothesis if P-value is < 0.050; reject if p-value is ≥ 0.050	P-value= 0.000 < 0.050	Accept hypothesis H6

Source: Researcher's Own, 2015.

The summarized test results in Table 4.48 indicated that five hypotheses (H1, H2, H3, H4 and H6) were accepted implying that the hypothesized linear relationships between the

variables existed. Hypothesis H5 was rejected implying that the hypothesized linear moderating influence of operating environment did not appear to exist. Based on the results, the relationships between the variables are reconceptualized as indicated in Figure 4.1.

Figure 4.1: Empirical Model and Summary of Hypotheses Results



Source: Researcher's Own, 2015.

Figure 4.1 illustrates the new conceptual model based on the research findings and the tests of hypotheses. The model shows that the three variables (branding practices, farmer characteristics and operating environment) have statistically significant effects on performance of commercial farmers. However, the moderating effect of operating environment on the relationship between branding practices and performance of commercial farmers was not statistically significant. The joint effects of branding practices and farmer characteristics and branding practices and operating environment are also statistically significant. The test results ascertain five of the six hypothesized relationships. It is only the hypothesis concerning the moderating effect of operating environment (H5) which was rejected because it did not yield a statistically significant influence to the relationship between branding practices and performance of commercial farmers.

4.13 Discussion of the Results

This section summarizes the established relationships between branding practices of FFV and performance of commercial farmers as moderated by farmer characteristics and operating environment. It presents the highlights and discussions based on the results of correlation and hypotheses tests and the results established in earlier sections. The section is organized along the objectives of the study.

4.13.1 Branding Practices of Fresh Fruits and Vegetables and Performance of Commercial Farmers

Branding practices were measured against five constructs (brand identification, promotional activities, brand name development, promotion budget and brand classification). Performance of commercial farmers had four individual constructs (price, volume, profitability and satisfaction). It was found that branding practices produced statistically significant influence on performance of commercial farmers. This result was supported by findings by Park et al. (2013) that branding practices results in superior performance. Since the joint effect of all branding practices was better than the individual results of the different constructs, the results are in agreement with the recommendations by Kotler and Keller (2009) that there is need to adopt an integrated approach to branding

practices to achieve superior performance. Performance measurement should be considered at a combined level rather than evaluating each construct on its own.

4.13.2 Farmer Characteristics and Performance of Commercial Farmers

Farmer characteristics consisted of eight measurement constructs namely demographic characteristics (age, gender, education level and experience), membership to associations, accessing production facilities, farm size, sources of funding, farm ownership and agricultural training. Data analysis was conducted for both the joint constructs of farmer characteristics and at individual level of each construct. The combined results indicated that farmer characteristics had statistically significant influence on performance of commercial farmers. The result was supported by the findings of Verhofstadt and Maertens (2013) which indicated that membership in cooperatives (an aspect of farmer characteristics) will lead to enhanced performance. Farmers with membership in associations have greater bargaining power and better access to more lucrative markets which yields higher prices. Higher prices will lead to increased profitability. Most of the respondent farmers were found to be academically empowered and therefore, the results confirm the findings by Saina et al. (2012) that secondary school agricultural education improved the farmer's capacity resulting in improved performance.

4.13.3 Operating Environment and Performance of Commercial Farmers

Operating environment consisted of six measurement constructs namely product attributes, government regulations, customer categories, competitors, climatic conditions and marketing support agencies. The analysis of the combined construct of performance of commercial farmers on operating environment and on individual constructs of performance produced statistically significant results. These results are supported by the findings by Evenson and Mwabu (1998) that highlands agro-ecological zones positively correlated to high yields. Consumers were also found to value product attributes associated with a unique geographic place of origin. This was in agreement with the findings by Willoughby (2004) that consumers will prefer products with special product features due to their place of origin. At an individual construct level, operating

environment had a marginally significant influence on personal satisfaction of a farmer while the influence on the other performance constructs was not statistically significant. This implied that the farmer may be generally happy with product attributes, government initiatives, climatic conditions and other factors of the operating environment. This is in agreement with the findings by Clemens (2002) that farmers strongly identify with their local environment and with government support, can develop a place of origin based brand to improve the performance of their products.

4.13.4 Moderating Effect of Farmer Characteristics

To evaluate the moderating effect of farmer characteristics on the relationship between BP and performance of commercial farmers, a regression analysis was carried out. The results indicated that the interaction of farmer characteristics and branding practices resulted in statistically significant effect on performance of commercial farmers. These results imply that as a moderator, farmer characteristics influenced the relationship between branding practices of FFV and performance of commercial farmers. The results are supported by the findings by Jekanowski, Williams, and Schick. (2000) who established that state FFV brands recorded improved performance in terms of doubling consumer awareness of the products in one year, having more inelastic demand in respect to price, more elastic income response, and fewer substitutes relative to similar unbranded products. Similarly, Chapato and Bansu (2013) established that farmers who adopted modern technology and more a innovative management style registered superior results. Similarly, majority of the respondent farmers (92.8%) were found to have a minimum of three years experience in farming FFV with 79.3% of them being in the 40 years and above age category. The significant relationship is therefore supported by the finding by Toluwase and Apata (2012) that farmers acquired more experience with age leading to improved productivity.

4.13.5 Moderating Effect of Operating Environment

Evaluation of the moderating effect of operating environment on the relationship between branding practices of FFV and performance of commercial farmers established that the interaction of branding practices and operating environment yielded statistically

insignificant results. This implies that individual constructs of the operating environment expected to positively and significantly influence the relationship between branding practices and performance of commercial farmers did not offer any tangible contribution to the relationship. Narrod, Okello and Thorat (2007) in their study established that small scale FFV farmers were able to supply restricted export markets and earn high returns by engaging in product inspection and certification practices which separated their products from uninspected competitors. Contrary to this finding, the level of product inspection and certification was found to be low (5.0%).

Clarke and Moran (1995) established that supermarkets had immense power to drive the branding of FFV leading to improved performance of the products. The current study found that supermarkets were ranked poorly (mean score=1.58, CV=65.73) in the importance of outlets for FFV in the County. This implies that the two constructs of the operating environment (inspection and certification and supermarkets) did not make the expected contribution to the relationship between branding practices and performance of commercial farmers. The development of brand names was found to be at a low level (6.7%). This is despite the recommendation by Pearson (2003) that brand names be developed as a form of endorsement since some product attributes fluctuate and are hidden at the time of purchase. Despite the presence of many product attribute due to the unique nature of the agro-ecological zone of the study, branding practices did not exploit them to improve the performance of the products.

The gaps identified above explain some of the reasons why operating environment did not have any statistically significant influence on the relationship between branding practice and performance of commercial farmers in Kiambu County. Based on these findings, the hypotheses that operating environment has a statistically significant moderating influence on the relationship between branding practices and performance of commercial farmers is rejected.

4.13.6 Branding Practices, Farmer Characteristics, Operating Environment and Performance of Commercial Farmers

The combined effect of branding practices, farmer characteristics and operating environment on performance of commercial farmers was assessed using simple regression and step wise regression analysis. The results indicated statistically significant variations in R^2 implying that jointly branding practices, farmer characteristics and operating environment influenced performance of commercial farmers. These results are supported by the findings by Evenson and Mwabu (1998) that farmers' demographic characteristics, provision of government extension services and the agro-ecological characteristics of an area affects performance of farmers. The farmers with form four level of education, those able to receive government extension services and those in the highland ecological zones were found to have higher yields. Similarly, a study by a Canadian Senate Sub-Committee on Agriculture (2004) established that farmers forming groups were able to exploit geographic place of origin attributes to brand their FFV products. The branded products had added identity and differentiation which promoted the products recognition, loyalty and premium pricing.

On evaluating the individual contribution of the three predictor variables, it was established that branding practices had the highest contribution followed by farmer characteristics while operating environment had the lowest contribution. However, the three variables were considered together, they produced statistically significant results. The three variables have synergistic effect and to achieve improved performance, there should be careful selection of the branding practices to be applied, adequate preparation of farmers and an enabling environment. Chapter five presents the summary, conclusions and recommendations of the study.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The objective of this study was to establish the influence of branding practices of fresh fruits and vegetables, farmer characteristics and operating environment on the performance of commercial farmers in Kiambu County. This chapter presents a summary of the research findings, conclusions and recommendations. The chapter also highlights limitations of the study and suggestions for further research.

5.2 Summary

The summary findings arise from analysis of the objectives of the study which sought to establish the influence of branding practices of FFV on the performance of commercial farmers; impact of farmer characteristics on performance of commercial farmers; effect of operating environment on the performance of commercial farmers; effect of farmer characteristics on the relationship between branding practices of FFV and performance of commercial farmers; the influence of operating environment on the relationship between branding practices of FFV and performance of commercial farmers and finally determine the joint effect of branding practices of FFV, farmer characteristics and operating environment on performance of commercial farmers.

The study established that majority of the farmers respondents were aged 40 years and above, had secondary level of education, did not belong to any FFV farming association had farm units 2 acres and below, individually owned the land, relied on both family and hired labour, used both personal and hired production facilities and had table banking and farm sales income as main sources of funding. The study also established that use of word of mouth and phone communication and product identification through the development of individual brand names were the most common branding practices employed by commercial farmers. The number of respondents identifying the positive contribution of branding practices to sales volumes, profitability and price premium increased over the three research years (2012, 2013 and 2014). The farmers were found to

operate in a relatively free environment with minimal government regulations. The level of competition for both branded and unbranded products from within and outside the county was reported to be low and had minimal effect on volumes sold and prices charged. Farmers were generally satisfied with their results with the highest satisfaction recorded for the achieved price and volume.

Simple and multiple regression analysis conducted among the independent and dependent variables established that the relationships between branding practices and performance of commercial farmers; farmer characteristics and performance commercial farmers and operating environment and performance of commercial farmers were statistically significant. The analysis to establish the moderating effect of farmer characteristics on the relationship between branding practices and performance of commercial farmers established a statistically significant moderating effect. However the moderating effect of operating environment on the relationship between branding practices and performance of commercial farmers was not statistically significant. When the individual constructs of branding practices, farmer characteristics and operating environment were analyzed against the individual constructs of performance, they recorded different levels of performance. Some of the constructs recorded statistically insignificant individual results.

An analysis to establish the joint effect of branding practices, farmer characteristics and operating environment on performance of commercial farmers established a statistically significant contribution. This implied that when the contribution of the three independent variables is considered jointly, the result is positive and statistically significant. The regression coefficients further revealed that branding practices had the largest contribution to performance of commercial farmers followed by farmer characteristics while operating environment had the lowest contribution. The realization that joint consideration of the constructs produced statistically significant results despite some of the constructs recording statistically insignificant individual results mitigates for an integrated appreciation of all the variables involved in the commercial FFV farming initiative achieve premium results.

5.3 Conclusions

This study sought to establish whether branding practices of FFV can influence the performance of commercial farmers and how farmer characteristics and operating environment moderated this relationship. The respondents were both male and female aged 18 years and above with majority having form four level of education plus other additional qualifications. Majority of the farms were two acres and below and relied mainly on family and hired labour. Most of the respondents recorded some profit from their farming initiatives. Based on these findings, it can be concluded that FFV farming has the capacity to improve the economic wellbeing of farmers in highly populated areas.

The study established that among the methods used in identifying the products in the markets was the development of individual brand names. A variety of product attributes were used in branding practices and a number of promotional activities undertaken to support the products. The most popular among the activities were phone and word of mouth communication, product sampling and price discounts. The amount spent on various branding practices was found to be low with majority of the respondents indicating no spend on promotional activities. It can be concluded that despite the presence of adequate product attributes and reasonable level of education for farmers, branding as a value addition activity for FFV has not been appreciated and therefore the benefits of branding are only available to a minority of the farmers.

Performance of commercial farmers was evaluated on the basis of price, volume, profitability and satisfaction. The results indicated that the number of respondents attributing some level of their price premium and profits to branding practices was on the increase even though the proportions are lower than those indicating there was no influence. This leads to the conclusion that engaging in branding practices leads to financial benefits. Most of the farmers are not aware of these benefits and have therefore not adopted the practice.

Results of a Pearson's moment correlation analysis conducted among the study variables established that branding practices were significantly correlated with performance of commercial farmers. Based on this finding, it is concluded that performance of commercial farmers will be substantially influenced by branding practices. The results also indicate a statistically significant correlation between farmer characteristics and performance of commercial farmers. The stated hypothesis is accepted at 5% and it's concluded that there is a significant relationship between farmer characteristics and performance of commercial farmers. It can therefore be concluded that operating environment will have significant influence on branding practices by FFV farmers. The results also indicated that operating environment and performance of commercial farmers were not significantly correlated and it's concluded that operating environment is not a major determinant of performance of commercial farmers. Therefore, the hypothesis that the operating environment significantly influences performance of commercial farmers is rejected at 5% level of confidence. On the other hand, the results indicated that the relationship between farmer characteristics and branding practices was not statistically significant. It can therefore be concluded that farmer characteristics on their own do not significantly influence branding practices

Results of a multiple regression analysis to test the moderating effect of farmer characteristics on the relationship between branding practices and performance of commercial farmers indicated a significant variation in the relationship between branding practices and performance of commercial farmers on the introduction of farmer characteristics. Therefore, we accept the stated hypothesis at 5% and conclude that farmer characteristics have a statistically significant moderating effect on the relationship between branding practices and performance of commercial farmers. Consequently, we conclude that the influence of branding practices on performance of commercial farmers is substantially altered by the presence of farmer characteristics.

The analysis to test the moderating effect of operating environment on the relationship between branding practices and performance of commercial farmers indicated that the

variation in the relationship between branding practices and performance of commercial farmers on the introduction of operating environment was not statistically significant. Consequently, the stated hypothesis was rejected at 5% and it's concluded that operating environment had no statistically significant moderating effect on the relationship between branding practices and performance of commercial farmers. As a result, it is noted that the influence of branding practices on performance of commercial farmers was not substantially altered by the presence of operating environment.

A stepwise multiple regression analysis to test the joint effect of branding practices, farmer characteristics and operating environment on performance of commercial farmers revealed that the joint effect of the independent variables was greater and statistically more significant than the sum of the individual effects on performance of commercial farmers and that the stated hypothesis was acceptable at 5% level of confidence. This implies that the study variables jointly predict performance of commercial farmers. The regression coefficients further revealed that branding practices had the largest contribution to performance followed by farmer characteristics while the contribution by operating environment was statistically insignificant. The results lead to the conclusion that the combined effect of branding practices, farmer characteristics and operating environment on performance of commercial farmers is significantly greater than the sum of the effect of the individual variables on the same.

5.4 Limitations of the Study

This study provided insights in regard to the contribution of branding practice, farmer characteristics and operating environment to the performance of commercial farmers. However the study experienced the following limitations which also provide opportunities for further research. First, the study focused only on fresh fruits and vegetables among all other agricultural products. It did not cover other fresh agricultural products including fresh agricultural animal products. The generalizations of the study findings are therefore limited to a small portion of fresh agricultural products. The study findings also indicated that just a small portion of farmers have adopted individual brand

name development as an identification strategy. This limited the depth of expose of branding practices since majority of the respondents did not provide their input on some of the branding practices.

Secondly, the study had branding practices as the independent and farmer characteristics and operating environment as the moderating variables. The level of significance of the interactions among these variables could have been different if farmer characteristics were considered as the independent variable and branding practices and operating environment moderating variable. Thirdly, even though the research instrument was designed to minimize response bias by providing for options within a given range, the data gathered was self reported data from self filled questionnaires. The respondents provided own information on prices, volumes, profitability and satisfaction. They provided information on promotion activities and amount of spend on the various activities. There was no secondary data provided as collaborative evidence to ensure objectivity and improved reliability. Finally, the study gathered cross sectional data which captured specific information at a specific period in time. While the data gathered covered up to three years, some of the initiatives under branding practices, farmer characteristics and operating environment (advertising, brand name development, farmer training, and customer acquisition) are long term and take time to yield any results. Time series data may have been more appropriate to accommodate the continuous monitoring of an initiative across its life cycle.

5.5 Recommendations

Based on findings of the study, the following recommendations are made to commercial farmers. First, the study has established that branding practices influence the financial performance of farmers. Investing in branding practices is justified by the expected improvement in financial performance. Secondly, the study established that farmer characteristics influenced both financial and non financial performance of commercial farmers. The farmers should therefore enhance their abilities through such initiatives as joining associations, improving their education and training, acquiring required inputs

and increasing their funding. Thirdly, since operating environment influences branding practices, farmers should put into consideration such constructs of the operating environment as government regulations, product attributes, customer categories, competitor activities and input from marketing support agencies while making branding decisions. Fourthly, the significance of the combined influence of branding practices and farmer characteristics to the performance of commercial farmers was established by this study. Farmers are therefore encouraged to enhance their capacity as they engage in branding practices to improve their performance. The fifth recommendation arise from the fact that the joint influence of branding practices, farmer characteristics and operating environment on the performance of commercial farmers was confirmed by the study. The farmer should always ensure optimum combination of these variables to guarantee superior performance. Since the results of the study indicated that operating environment on its own had statistically insignificant moderating influence on performance of commercial farmers, the sixth recommendation is that farmers should avoid over relying on favorable operating environment as a means of achieving premium performance. They should instead undertake extra initiatives such as branding practices and acquiring adequate knowledge and funding to maximize results.

To achieve the aspirations in Kenya's Vision 2030, the Ministry of Agriculture, Livestock and Fisheries has identified product branding among other initiatives as one of the targeted value addition initiatives. The findings of this study confirm that branding practices have statistically significant influence on the performance of commercial farmers. The study also reveals that only a minority of the farmers engage in branding practices. The eighth recommendation is that for the country to achieve the stated aspirations there should be concerted effort to promote branding practices of fresh agricultural produce as a value addition initiative. The ministry should set up the requisite infrastructure and provide the facilitation and resources required to enlighten and support farmers in their branding initiatives. Qualified personnel on branding and marketing in general should be availed to enhance farmers' branding initiatives.

Finally, the government should realize that the operating environment jointly with branding practices and farmer characteristics influence performance of commercial farmers. The government should therefore enact the requisite legislation to protect trademarks and other branding initiative by fresh fruits and vegetable farmers. The government should also protect unique regional product attributes from infringements by both local and foreign competitors. The government should provide practical demonstration by branding fresh agricultural produce from its own farms and also sponsor branding of fresh products produced in its irrigation schemes across the country.

5.6 Suggestions for Further Research

This study established that branding practices of FFV, farmer characteristics and operating environment influenced the performance of commercial farmers. The study focused only on FFV among all other agricultural products offered to the market in their fresh unprocessed form. This limits the generalization of the study to only a small section of the agricultural sector. To expand the scope of the study, future research should cover other fresh agricultural products. The study consisted of an independent and dependent variable and two moderating variables. Each of the variables had a specified number of constructs. The variables and constructs were not exhaustive and it is possible to extend the number of variables and constructs such as marketing knowledge and training under farmer characteristics to expand the study's scope and level of generalization.

The study population was limited to Kiambu County which has unique characteristics that favour the commercialization of the fresh fruits and vegetables sub-sector of the horticultural sector. While the findings of the study provide useful insight into the interrelationship among the study variables, the unique characteristics of the county may limit the extent of generalization to other counties. This calls for an extension of the study to other counties with differing social economic and climatic conditions to confirm the hypothesized relationships in the current study. The findings of the study revealed that only a small proportion of farmers engage in brand name development among other branding practices. This limited the number of respondents who contributed to most of

the branding issues. To get an in depth expose on branding practices, a study targeting only farmers undertaking branding practices would be preferred.

This study focused on the relationship between branding practices and performance of commercial farmers. The arising interactions resulted in statistically significant relationships where branding practices and farmer characteristics were involved and marginally significant and statistically insignificant relationships where operating environment was involved. More studies should be conducted to uncover why operating environment had low contribution as compared to branding practices and farmer characteristics. A study designed with farmer characteristics as the independent variable and branding practices and operating environment as moderating variables would lead to different interactions and different levels of relationships. Such a study would also add to the current level of knowledge in this subject matter.

The current study adopted a descriptive cross sectional survey design which involved collecting data once at a specific time. The study relied on data provided by the respondents to evaluate the contribution of different variables to performance of commercial farmers. Branding practices take time to generate results. A time series design would enable the gathering of continuous data to demonstrate the effect of the practices throughout the life cycle of the product. A study should be designed to correct collaborative secondary data to confirm the self reported data provided by the respondents. This would reduce subjectivity in the provided data and strengthen the reliability of the study findings.

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APPENDICES

Appendix I: Questionnaire

Hello. My name is Isaac Micheni Nkari. I am a Doctoral (Ph.D) Student in the School of Business at the University of Nairobi. I am conducting a study concerning the effect of branding practices on financial performance of Fresh Fruits and Vegetable (FFV) farmers in Kiambu County.

As a farmer dealing in these products, you are deemed to be most informed regarding these products and I have chosen you as my study respondent. Please take a few minutes to provide the information required in this questionnaire. I assure you that your answers will be kept completely confidential and will be used for academic purpose only. Your participation in facilitating this study is highly appreciated.

TO BE FILLED BY THE FARM OWNER OR FARM MANAGER:

Part 1: Farmer Characteristics

Please provide the following details regarding your farm:

1). Provide details regarding the physical location of your farm as follows:

- Sub-County _____
- Ward _____
- Village _____

2). What is the size of your farm in acres? (Tick one only).

Size of farm in acres	
Below ½ of acre	
½ - 1 of acre	
1 – 1½ of acres	
1½ - 2 acres	
Above 2 acres	

3). Indicate the type of ownership of your farm:

Type of farm ownership	
Family	
Individual	
Cooperative society	

Public through shares	
Members' group	
Government department	
Others (specify)	

4) State the gender of the owner/manager by ticking in the appropriate box

Gender of respondent	
Male	
Female	

5) Under what age category does the owner/manager fall?

Age category of respondent	
18 – 29 years	
30 – 39 years	
40 – 49 years	
50 – 59 years	
60 years and above	

6). State the highest attained education level of the owner/manager (Tick one only)

Highest education level of farm owner/manager	
KCPE	
KCSE/EACE	
Diploma	
Bachelor's degree	
Master's degree	
PhD	
Others (name of certificate)	

7) State the highest level of agriculture related training by the owner/manager (Tick only one).

Highest training in agriculture by farm owner/manager	
None	
Short courses	
Certificate	
Diploma	
Degree	
Masters	
PhD	
Others (name of certificate)	

8). Please indicate the main source of labour for the farm by ticking as appropriate:

Main source of labour for the farm	
Family members	
Group members	
Hired workers	
Machines	
Others (give name)	

9). Which of the following facilities do you utilize in your farm? (Tick as many as are applicable).

Accessibility to production facilities	Own	Hired
Using vehicle for farming activities		
Using pump for irrigating the farm		
Using refrigeration or preservation equipments		
Using packaging machine		
Advisory services		
Government extension services		
Other(s) (give name)		

10). State the members' association you belong to in regard to your main product by ticking "Yes" or "No" in the appropriate box

Membership to farmers' association	Yes	No
Cooperative society		
Woman's group		
Residents group		
Others (give name)		

11). How many years of farming experience does the farm owner/ manager have? (Tick in the appropriate box).

Years of farming experience	
0-1	
1-3	
3-5	
5-10	
10 years and above	

12). State the importance of the following sources of funding for your farming activities by ticking in the appropriate box as follows: 1- not important, 2- somewhat important,

3- important, 4- very important.

Sources of funding for the farm	1	2	3	4
Farm sales income				
Bank financing				
Sales from other farming activities				
Earnings from family business				
Salary of the owner				
Government subsidies				
Savings and credit society				
Others (give name)				

Part 2: Product branding practices:

13). Tick in the appropriate box below to identify the basis on which you identify your product:

Basis of product identification	
Generic Product Name	
Associated with place where product is grown	
Specific brand name	

If answer is "generic name" or "place where product is grown", go to question 18 and if answer is "specific brand name", continue to question 14.

14). Show the importance attached to each of the following brand identification practices in your farm by ticking in the appropriate box as follows: 1- not important, 2- somewhat important, 3- important, 4- very important.

Branding identification	1	2	3	4
Brand name				
Pack design				
Brand colours				
Logos (Graphic Design)				
Jingle (Background song)				
Symbol (Sign)				
Trademark (Identifier)				
Others (name)				

15) How important are the following factors in the choice of a branding strategy in your farm? Tick in the appropriate box as follows: 1- not important, 2- somewhat important, 3- important, 4- very important.

Branding strategies	**1**	**2**	**3**	**4**
Adapting family name				
Adapting corporate name				
Adapting a generic name				
Extending name to new product				
Name reflects place of origin				

16). How important are the following product attributes in the choice of branding practices? Tick in the appropriate box as follows: 1 – not important, 2 – somewhat important, 3 –important, 4 – very important.

Attribute	**Importance of attribute**			
	1	**2**	**3**	**4**
Special seed variety				
Geographical place of origin				
Health/nutrition value				
Owner's identity				
Generic (common) name				

17). To what extent do you use any of the following marketing support agencies to strengthen your marketing activities? (Tick as appropriate):

Type of Agency	**Extensive use**	**Moderate use**	**Not used**
Advertising Agencies			
Public Relation Agencies			
Merchandising Agencies			
Research Agencies			
Others (give name)			

18). Indicate the preference of the following promotion activities for your product: (Tick as appropriate):

Promotional activity	Mostly used	Used at times	Not used
Radio advertising			
Newspaper advertising			
TV advertising			
Shows and exhibitions			

Price discounts			
Sampling			
Event sponsorship			
Word of mouth			
Other (give name)			

19). What is the approximate expenditure incurred for branding/promotional activities for your product last year?

Approximate expenditure for branding last year in Kshs. "000"	
Below 50	
51-100	
101-500	
501-1,000	
Above 1,000	

Part 3: Effect of Environmental Factors on performance of commercial farmers.

20). How important are the following product attributes in motivating consumer preference for your product? (Tick as appropriate): 1- not important, 2- slightly important, 3- moderately important, 4- very important.

Name of product:				
Importance of attribute	**1**	**2**	**3**	**4**
They have longer shelf life				
Have higher nutritional value				
Have a unique place of origin				
They have special taste/colour				
They have medical value				
Use unique production method				
They mature faster				
Others (specify				

21). Are any of your products inspected and provided with inspection certificates before being released to the market? Yes_____ No _____

22). If yes, indicate the certifying body by ticking in the appropriate box below:

Name of product:	
Certifying body	
Burea Veritas Kenya	
Kenya Bureau of Standard	
SGS	

EnCert (Organic) Certification	
Other (give name)	

23). Has the government instituted any of the following measures to regulate the growing and marketing of your product? (Tick "Yes" or "No).

Name of product:		
Type of government regulation	Yes	No
Zoning of growing areas		
Issuing of permits for growing the product		
Only source of seeds and other farm inputs		
Inspecting and issuing of certificates before sale		
Registering and issuing permits to buying agents		
Others (name regulation)		

24). Which of the following special production and/or processing methods are practiced in your farm? (You can tick more than one): 1- Green house farming, 2 - Organic farming; 3 – Irrigation; 4 - Special storage method; 5 – use of special seeds; 6- packaging 7– others (give name).....

Name of product	Special production or processing methods						
	1	**2**	**3**	**4**	**5**	**6**	**7**

25). State the importance of the indicated Geographic Place of Origin (GPO) factors in determining the level of productivity of your products. (Tick as appropriate): 1- not important, 2- slightly important, 3- moderately important, 4- very important

Name of product:				
GPO related attribute	**1**	**2**	**3**	**4**
Special soils				
Adequate rains				
Right temperature				
Special growing skills				
Others (specify)				

26). How important are the following market outlets for your main product (Tick as appropriate): 1- not important, 2- slightly important, 3- moderately important, 4- very important

Name of product:	1	2	3	4
Local Shopping Center				
Neighbors				
District Headquarters FFV Market				
Wholesale FFV markets in Nairobi				
Supermarkets				
Direct exports or through Export Agents				
Hospitals and Consumers on special diet				
Young children				
Others (give name)				

27). How strong is the competition posed to your main brand by the indicated competitors? (Tick as appropriate): 1 – not strong, 2 – slightly strong, 3 – moderately strong and 4 – very strong.

Name of product:				
Main competitors for own product	**1**	**2**	**3**	**4**
Other branded products from within the county				
Non-branded products from within the county				
Other branded products from outside the county				
Non-branded products from outside the county				

Part 4: Performance of Commercial Fresh Fruit and Vegetable Farmers.

28). How does the latest price paid for your product compare with the prices of the indicated competitors for the same period? (Tick as appropriate)

Name of product:	% lower			% higher			same
Competitor products	Less than 10	10 to 20	Over 20	Less than 10	10 to 20	Over 20	
Non branded local products							
Branded local products							
Non branded products from outside the county							
Branded products from outside the county							

29). What proportion of the price paid for your product in the last two years would you attribute to branding practice(s) you have undertaken in your farm/ (Tick as appropriate).

Name of product:	% lower			% higher			No effect
Prices paid in the year	Less than 10	10 to 20	Over 20	Less than 10	10 to 20	Over 20	
2012							
2013							
2014							

30). What is the approximate volume in kilograms sold in the last two years. (Tick one box per year). 1- less than 500kg, 2- 500-1,000 kg, 3 – 1,001 – 2,000 kg, 4 – 2,001 – 5,000 kg and 5 – over 5,000 kg

Name of product:				
Volumes sold per year in kg	**1**	**2**	**3**	**4**
2012				
2013				
2014				

31). What percentage (%) of the volume indicated in question 31 above can you attribute to branding practice(s) undertaken for your product? (Tick the appropriate box): 1 – none, 2 – less than 10%, 3 – 10-20%, 4 – 21-30%, 5– 0ver 40%.

Name of product :					
Volumes attributed to branding practices	**1**	**2**	**3**	**4**	**5**
2012					
2013					
2014					

32). Indicate the approximate annual gross profit in Kshs. “000” for your farm in the last three years by ticking in the appropriate box as follows: 1–less than Kshs 50; 2– 50–100; 3 – 101–200, 4 – 201-500, 5- over 500.

Name of product :					
Gross profit of the farm in Khs. “1000”	**1**	**2**	**3**	**4**	
2012					
2013					
2014					

33). Please indicate the percentage (%) of the profitability indicated in question 32 above you can attribute to branding practice(s) undertaken for your product? (Tick the appropriate box): 1 – none, 2 – less than 10%, 3 – 10-20%, 4 – 21-30%, 5 – 0ver 31%.

Name of product :					
Volumes attributed to branding practices	**1**	**2**	**3**	**4**	**5**
2012					
2013					
2014					

34). To what extent are you satisfied with the results from your farm (Tick as appropriate): 1 – not at all, 2 – to a small extent, 3 – moderate extent, 4 – great extent.

Name of product:				
Level of satisfaction with results	**1**	**2**	**3**	**4**
Price earned				
Volume harvested				
Total turnover				
Profitability				

Thank you very much for your cooperation.

Appendix II List of Commercial FFV Farmers in Kiambu County

FARMER NUMBER	AREA	ACRES	CROPS
1	Kiambu	1	Tomatoes, Spinach, Kale,
2	Kiambu	1	Spinach, Tomatoes
3	Limuru	1	Spinach
4	Kiambu	0.25	Cucumber, Spinach
5	Kikuyu	2	Spinach, Spider Plant
6	Limuru	0.25	Kales
7	Gatundu	1	Garden Peas
8	Lari	1	Passion Fruits, Coriander
9	Kikuyu	2.5	Thorn Tree, Ethiopian Kales
10	Lari	0.25	Onions
11	Kiambu	1	Tomatoes, Onion
12	Limuru	1.25	Tomatoes
13	Limuru	0.25	Irish potatoes
14	Kiambu	0.25	Capsicum, Tomatoes
14	Kikuyu	3	Managu, Spinach
16	Kikuyu	0.25	Spinach, Tomato
17	Lari	1	Passion Fruits, Coriander
18	Lari	0.125	Brocolli
19	Kiambu	0.25	Tomatoes, Bananas,
20	Kikuyu	0.25	Strawberry
21	Lari	2.5	Tree tomato
22	Kikuyu	3	Lettuce, Cauliflower
23	Kiambu	0.75	Capsicum, Tomatoes,
24	Limuru	3	Tree tomatoes
25	Kiambu	1.25	Hoho, Spinach, Kales
26	Lari	1.25	Potatoes, Kales
27	Limuru	2	Cabbages
28	Limuru	0.25	Capsicum
29	Lari	2.5	Pears fruits
30	Lari	2	Courgettes
31	Lari	0.25	Tree tomato
32	Limuru	0.75	Coriander
33	Ruiru	0.75	Tomatoes, Spinach
34	Lari	3	Cucumber
35	Limuru	2.5	Kales
36	Kiambu	1	Irish Potatoes, Tomatoes
36	Githunguri	2.5	Tomatoes, Cabbages
38	Lari	1.75	Tree tomatoe
39	Lari	12	Potatoes, Kales

40	Kiambu	0.75	Red cabbage, butternut
41	Limuru	2.75	Tomatoes, Capsicum
42	Kiambu	0.25	Spinach, Dhania
43	Lari	1.5	Broccoli
44	Lari	0.75	Potatoes, Kales
45	Kiambu	0.75	Tomatoes, Cucumber
46	Limuru	0.25	Irish Potatoes
47	Limuru	1.5	Ornis
48	Githunguri	1.25	Cabbage, Kales
49	Githunguri	0.25	Strawberry, Cabbage
50	Lari	1.25	Strawberry
51	Limuru	1	Potatoes
52	Kiambu		Capsicum, Cucumber
53	Ruiru	0.25	Watermelons
54	Limuru	0.25	Potatoes
55	Limuru	0.25	Tree tomato
56	Lari	0.75	Tree tomato
57	Limuru	0.75	cabbages
58	Lari	1.25	Kale
59	Gatundu	2.5	Tomatoes
60	Limuru	1.5	Cabbages
61	Limuru	1. 25	Kales
62	Lari	2	Tree tomato
63	Githunguri	2.5	Cabbage, Tomatoes
64	Limuru	3.5	Tree Tomato
64	Limuru	0.25	Strawberries
66	Limuru	1	Night Shades
67	Lari	1.25	Managu
68	Ruiru	0.25	Tomatoes
69	Kikuyu	0.5	Potatoes, Kales
70	Limuru	3	Managu, Cabbage, Ndania,
71	Kiambu	0.25	Strawberry, Spinach
72	Limuru	0.25	cabbages
73	Lari	3	Kale Spinach
74	Limuru	1.25	Corriander
75	Ruiru	0.25	Managu
76	Githunguri	2.5	Strawberry, Capsicum
77	Limuru	2.5	Coriander, Kales
78	Limuru	1	Irish Potatoes
79	Lari	1.5	Cabbage
80	Limuru	1	Tomatoes
81	Limuru	0.25	Potatoes
82	Thika	3	Water Melon
83	Limuru	1.5	Cabbage, potatoes

84	Lari	0.5	Kales
85	Limuru	1.25	Kales
86	Lari	2	Kale
87	Limuru	0.5	Potatoes
88	Lari	1.5	Cabbages, Kales
89	Limuru	2	Potatoes, Red Onions
90	Ruiru	0.25	Avocado (Harsh)
91	Kiambu	0.5	Passion Fruits, Cabbages,
92	Limuru	1	Kales
93	Gatundu	2.5	Pineapples
94	Lari	1.25	Potatoes, Brocolli
95	Thika	2	Tomatoes
96	Kiambu	0.25	Cabbages, Kales, Tomatoes
97	Limuru	2	Managu, Kale
98	Githunguri	0.25	Passion fruits, , Managu
99	Limuru	3	Kale, Terere, Broccoli,
100	Kiambu	0.25	Spinach, Kales, Strawberry
101	Limuru	0.75	Potatoes
102	Ruiru	0.25	Capsicum, Green Peper
103	Githunguri	2.5	Kales, Cabbages
104	Githunguri	1.5	Tomatoes, Kale
105	Githunguri	3	Passion fruit, tree tomato
106	Kiambu	3	Strawberry
107	Kikuyu	1	Pepper, Ndania, Kales
108	Githunguri	3.5	Broccoli, Hoho, Tomatoes
109	Kiambu	0.25	Strawberry, Tomato
110	Limuru	0.22	Kales
111	Kiambu	0.5	Kales, Tomatoes, Bananas
112	Limuru	1	Strawberry, Spinach, Kales,
113	Thika	3	French Beans
114	Limuru	2	Yellow capsicums
115	Lari	1.75	Kale, Courgettes
116	Limuru	3	Mushrooms, S/Berries
117	Lari	0.75	Potatoes
118	Githunguri	1	Kales, Dania
119	Limuru	0.25	Tree tomatoe
120	Lari	3	Tomatoes
121	Lari	2	Tree tomato
122	Limuru	0.25	Kales
123	Githunguri	0.75	Cabbages, Spinach
124	Kikuyu	0.25	Dania, Black Night Shade
125	Kiambu	1	Potatoes, Kale
126	Limuru	1.5	Garden Peas
127	Limuru	1.75	Cabbages

128	Githunguri	2.5	Tree tomato, courgettee
129	Limuru	0.5	Tomatoes, Strawberry
130	Kiambu	0.25	Kale, Bananas
131	Lari	1.5	Kale
132	Githunguri	3	Tomatoes, Cabbages
133	Limuru	3	potatoes
134	Limuru	2	Tree tomato
135	Limuru	0.5	Cabbages
136	Kiambu	3	Tomatoes, Strawberry
137	Kiambu	0.25	Tissue culture Bananas
138	Limuru	0.5	Potatoes
139	Kikuyu	1	Pepper, Beetroots
140	Limuru	2.75	Irish Potatoes
141	Kikuyu	0.25	Strawberry, Spinach
142	Limuru	3	Irish Potatoes
143	Kiambu	0.75	Chili, Hoho, Capsicum
144	Juja	1.5	Amarantus
145	Limuru	0.75	Cabbage
146	Limuru	1.5	Statice
147	Juja	1.5	Tomatoes
140	Limuru	1.5	Arabicum
149	Kiambu	0.25	Tomatoes, Shallots
150	Juja	3	Tomatoes, Spinach
151	Gatundu	Gatundu	Tissue Bananas
152	Juja	1	Tomatoes, Kales
153	Ruiru	0.5	Watermelon, Tomatoes
154	Juja	1	Tomatoes, Spinach
155	Lari		Cucumber
156	Limuru	2	Kales
157	Limuru	2.5	Kales
158	Lari	1.25	Onions, Tomatoes
159	Kikuyu	2	Spinach
160	Githunguri	0.75	Kales, Avocados
161	Limuru	1	Cabbange
162	Lari	1.75	Potatoes, Kales, Cabbages
163	Lari	1.25	Tree tomato
164	Limuru	1	Cabbages
165	Gatundu	0.75	Bananas
166	Lari	1.5	Tree Tomato
167	Lari	1	Courgettes
168	Limuru	1.25	Potatoes, Kales, Cabbages
169	Limuru	2.5	Irish Potatoes
170	Thika	1	Tree Tomato
171	Limuru	0.5	Potatoes

172	Limuru	0.25	Potatoes, Kales, Carrots
173	Lari		Cabbages
174	Limuru	1.5	Tree tomato
175	Kikuyu	1.5	Spinach, Dhania
176	Thika	5	French Beans
177	Thika	5	French Beans
178	Gatundu	3	Harsh Avocado
179	Limuru	0.25	Potatoes
180	Limuru	0.25	Potatoes
181	Limuru	0.25	Kales
182	Limuru	1.25	Cabbage, Potatoes
183	Limuru	2.75	Tomatoes
184	Limuru	0.125	Potatoes
185	Lari	1	Onions, Kale
186	Lari	3	Kale
187	Lari	0.25	Kales
188	Lari	1	Cabbages
189	Limuru	0.25	Potatoes
190	Lari	0.25	Cabbages
191	Kiambu	0.5	Spinach, Bananas
192	Ruiru	0.75	Tomatoes
193	Gatundu	1	Passion Fruits
194	Kikuyu	0.25	Tomato
195	Kiambu	0.25	Irish Potatoes
196	Limuru	1	Potatoes, Snow Peas
197	Limuru	0.25	Tomatoes
198	Limuru	0.125	Potatoes
199	Limuru	0.25	Courgettes
200	Lari	1	Cabbages, beetroots
201	Kiambu	0.125	Tissue Culture Bananas
202	Kiambu	1.5	Cowpeas, onions
203	Limuru	0.125	Potatoes
204	Gatundu	2	Bananas
205	Juja	1	Capsicum
206	Limuru	0. 25	Cabbages
207	Ruiru	0.25	Tomatoes, Courgettes
208	Limuru	2.75	Kales
209	Kikuyu	0.75	Black Night Shade, Kales
210	Githunguri	0.5	Kales, Amaranthus
211	Limuru	0.5	Potatoes
121	Limuru	0.5	Kales, Potatoes, Spinach
213	Lari	2.5	Cabbages

Appendix III: List of Selected Respondents per Sub County

	FARMER'S NUMBER	Sub County
1.	**1**	Kiambu
2.	**2**	Kiambu
3.	**4**	Kiambu
4.	**11**	Kiambu
5.	**19**	Kiambu
6.	**23**	Kiambu
7.	**25**	Kiambu
8.	**36**	Kiambu
9.	**40**	Kiambu
10.	**42**	Kiambu
11.	**45**	Kiambu
12.	**52**	Kiambu
13.	**100**	Kiambu
14.	**106**	Kiambu
15.	**109**	Kiambu
16.	**143**	Kiambu
17.	**201**	Kiambu
18.	**202**	Kiambu
1.	**3**	Limuru
2.	**6**	Limuru
3.	**12**	Limuru
4.	**13**	Limuru
5.	**24**	Limuru
6.	**54**	Limuru
7.	**27**	Limuru
8.	**28**	Limuru
9.	**23**	Limuru

10.	**35**	Limuru
11.	**41**	Limuru
12.	**46**	Limuru
13.	**47**	Limuru
14.	**51**	Limuru
15.	**55**	Limuru
16.	**57**	Limuru
17.	**60**	Limuru
18.	**61**	Limuru
19.	**66**	Limuru
20.	**64**	Limuru
21.	**65**	Limuru
22.	**72**	Limuru
23.	**74**	Limuru
24.	**77**	Limuru
25.	**80**	Limuru
26.	**85**	Limuru
27.	**92**	Limuru
28.	**97**	Limuru
29.	**112**	Limuru
30.	**114**	Limuru
31.	**116**	Limuru
32.	**119**	Limuru
33.	**122**	Limuru
34.	**126**	Limuru
35.	**127**	Limuru
36.	**129**	Limuru
37.	**134**	Limuru
38.	**140**	Limuru

39.	**142**	Limuru
40.	**146**	Limuru
41.	**148**	Limuru
42.	**156**	Limuru
43.	**157**	Limuru
44.	**161**	Limuru
45.	**164**	Limuru
46.	**169**	Limuru
47.	**171**	Limuru
48.	**174**	Limuru
49.	**183**	Limuru
50.	**197**	Limuru
51.	**206**	Limuru
1.	**21**	Lari
2.	**29**	Lari
3.	**30**	Lari
4.	**31**	Lari
5.	**34**	Lari
6.	**38**	Lari
7.	**43**	Lari
8.	**50**	Lari
9.	**56**	Lari
10.	**58**	Lari
11.	**62**	Lari
12.	**67**	Lari
13.	**73**	Lari
14.	**79**	Lari
15.	**86**	Lari
16.	**88**	Lari

17.	**94**	Lari
18.	**116**	Lari
19.	**117**	Lari
20.	**120**	Lari
21.	**121**	Lari
22.	**131**	Lari
23.	**163**	Lari
24.	**166**	Lari
25.	**167**	Lari
26.	**173**	Lari
27.	**186**	Lari
28.	**187**	Lari
29.	**190**	Lari
30.	**200**	Lari
31.	**213**	Lari
1.	**7**	Gatundu
2.	**59**	Gatundu
3.	**93**	Gatundu
4.	**113**	Thika
5.	**144**	Juja
6.	**151**	Gatundu
7.	**165**	Gatundu
8.	**170**	Thika
9.	**176**	Thika
10.	**178**	Gatundu
11.	**193**	Gatundu
12.	**205**	Juja
13.	**204**	Gatundu
1.	**9**	Kikuyu

2.	**15**	Kikuyu
3.	**20**	Kikuyu
4.	**22**	Kikuyu
5.	**124**	Kikuyu
6.	**141**	Kikuyu
7.	**159**	Kikuyu
8.	**175**	Kikuyu
9.	**194**	Kikuyu
10.	**209**	Kikuyu
1.	**37**	Githunguri
2.	**49**	Githunguri
3.	**48**	Githunguri
4.	**76**	Githunguri
5.	**105**	Githunguri
6.	**118**	Githunguri
7.	**128**	Githunguri
8.	**132**	Githunguri
9.	**160**	Githunguri
10.	**210**	Githunguri
1.	**53**	Ruiru
2.	**75**	Ruiru
3.	**152**	Ruiru
4.	**90**	Ruiru
5.	**102**	Ruiru
6.	**192**	Ruiru

Appendix IV: Cronbach's Alpha Reliability Coefficients

Variable	Measure	No. of items	N	Cronbach's Alpha Coefficient
Branding Practices	Brand name development	7	140	0.698
	Promotional activities	9	140	0.750
	Promotion spending	10	140	0.833
	Brand classification	6	140	0.726
	Brand classification	8	140	0.675
Average for BP		40	140	0.7364
Farmer Characteristics	Farm size	5	140	0.764
	Agricultural training	9	140	0.731
	Membership to associations	4	140	0.774
	Production facilities	7	140	0.699
	Sources of funding	8	140	0.701
	Age	5	140	0.729
	Education level	7	140	0.711
	Farm ownership	5	140	0.709
Average for FC		50		0.7273
Operating environment	Marketing Support agencies	5	140	0.714
	Product attributes	7	140	0.679
	Government regulations	7	140	0.762
	Climatic condition	5	140	0.749
	Competition	4	140	0.701
	Consumer categories	11	140	0.786
Average for OE		39		0.7318
Performance of commercial farmers	Price premium	3	140	0.964
	Volume	3	140	0.943
	profitability	3	140	0.980
	Satisfaction	4	140	0.973
Average for PCF		13	140	0.9210

Appendix V: Importance of Various Sources of Funding

a) Farm sales income

		Frequency	%	Valid %	Cumulative %
	Not important	1	.7	.7	.7
	Important	5	3.6	3.6	4.3
	Somewhat important	10	7.1	7.2	11.5
	Very important	123	87.9	88.5	100.0
	Total	139	99.3	100.0	
Missing	System	1	.7		
Total		140	100.0		

b) Bank Financing

		Frequency	%	Valid %	Cumulative %
	Not important	86	61.4	65.6	65.6
	Important	28	20.0	21.4	87.0
	Somewhat important	11	7.9	8.4	95.4
	Very important	6	4.3	4.6	100.0
	Total	131	93.6	100.0	
Missing	System	9	6.4		
Total		140	100.0		

c) Sales from others farming activities

		Frequency	%	Valid %	Cumulative %
	Not important	23	16.4	17.0	17.0
	Important	18	12.9	13.3	30.4
	Somewhat important	41	29.3	30.4	60.7
	Very important	53	37.9	39.3	100.0
	Total	135	96.4	100.0	
Missing	System	5	3.6		
Total		140	100.0		

d) Earnings from others family business

		Frequency	%	Valid %	Cumulative %
	Not important	101	72.1	79.5	79.5
	Important	14	10.0	11.0	90.6
	Somewhat important	6	4.3	4.7	95.3
	Very important	6	4.3	4.7	100.0
	Total	127	90.7	100.0	
Missing	System	13	9.3		
Total		140	100.0		

e) Salary of the owner

		Frequency	%	Valid %	Cumulative %
	Not important	104	74.3	83.9	83.9
	Important	6	4.3	4.8	88.7
	Somewhat important	5	3.6	4.0	92.7
	Very important	9	6.4	7.3	100.0
	Total	124	88.6	100.0	
Missing	System	16	11.4		
Total		140	100.0		

f) Government subsidies

		Frequency	%	Valid %	Cumulative %
	Not important	29	20.7	22.1	22.1
	Important	41	29.3	31.3	53.4
	Somewhat important	29	20.7	22.1	75.6
	Very important	32	22.9	24.4	100.0
	Total	131	93.6	100.0	
Missing	System	9	6.4		
Total		140	100.0		

g) Savings and credit society

		Frequency	%	Valid %	Cumulative %
	Not important	64	45.7	50.8	50.8
	Important	44	31.4	34.9	85.7
	Somewhat important	12	8.6	9.5	95.2
	Very important	6	4.3	4.8	100.0
	Total	126	90.0	100.0	
Missing	System	14	10.0		
Total		140	100.0		

h) table banking

		Frequency	%	Valid %	Cumulative %
Very	important	7	5.0	100.0	100.0
Missing	In System	133	95.0		
Total		140	100.0		

Appendix VI: Test for Significance

a)i) Branding Practice

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.325	1	.325	1.340	.250[a]
	Residual	23.522	97	.242		
	Total	23.847	98			

a. Predictors: (Constant), Branding practices
b. Dependent Variable: Price

ANOVAb

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.367	1	2.367	2.011	.159[a]
	Residual	145.950	124	1.177		
	Total	148.317	125			

a. Predictors: (Constant), Branding practices
b. Dependent Variable: Volume

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.053	1	1.053	1.255	.265[a]
	Residual	102.322	122	.839		
	Total	103.375	123			

a. Predictors: (Constant), Branding practices
b. Dependent Variable: Profitability

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.454	1	2.454	6.655	.011[a]
	Residual	50.880	138	.369		
	Total	53.334	139			

a. Predictors: (Constant), Branding practices
b. Dependent Variable: Satisfaction

b) Farmer Characteristics

ANOVAb

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.228	1	1.228	5.266	.024[a]
	Residual	22.619	97	.233		
	Total	23.847	98			

a. Predictors: (Constant), Farmer characteristics
b. Dependent Variable: Price

ANOVAb

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.531	1	4.531	3.907	.050[a]
	Residual	143.787	124	1.160		
	Total	148.317	125			

a. Predictors: (Constant), Farmer characteristics
b. Dependent Variable: Volume

ANOVAb

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.990	1	3.990	4.898	.029[a]
	Residual	99.385	122	.815		
	Total	103.375	123			

a. Predictors: (Constant), Farmer characteristics
b. Dependent Variable: Profitability

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.064	1	.064	.165	.685[a]
	Residual	53.270	138	.386		
	Total	53.334	139			

a. Predictors: (Constant), Farmer characteristics
b. Dependent Variable: Satisfaction

c) Operating Environment

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.024	1	.024	.098	.755[a]
	Residual	23.823	97	.246		
	Total	23.847	98			

a. Predictors: (Constant), Operating environment
b. Dependent Variable: Price

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.002	1	2.002	1.697	.195[a]
	Residual	146.316	124	1.180		
	Total	148.317	125			

a. Predictors: (Constant), Operating environment
b. Dependent Variable: Volume

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.211	1	1.211	1.446	.231[a]
	Residual	102.163	122	.837		
	Total	103.375	123			

a. Predictors: (Constant), Operating environment
b. Dependent Variable: Profitability

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.409	1	1.409	3.745	.055[a]
	Residual	51.925	138	.376		
	Total	53.334	139			

a. Predictors: (Constant), Operating environment
b. Dependent Variable: Satisfaction

Appendix VII. Importance of Customer categories:

a). Local shopping Center

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	52	37.1	39.4	39.4
	slightly Important	30	21.4	22.7	62.1
	Moderately important	9	6.4	6.8	68.9
	Very important	41	29.3	31.1	100.0
	Total	132	94.3	100.0	
Missing	System	8	5.7		
Total		140	100.0		

b). Neighbors

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	44	31.4	34.4	34.4
	slightly Important	38	27.1	29.7	64.1
	Moderately important	20	14.3	15.6	79.7
	Very important	26	18.6	20.3	100.0
	Total	128	91.4	100.0	
Missing	System	12	8.6		
Total		140	100.0		

c). District Headquarters FFV market

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	54	38.6	41.5	41.5
	slightly Important	20	14.3	15.4	56.9
	Moderately important	23	16.4	17.7	74.6
	Very important	33	23.6	25.4	100.0
	Total	130	92.9	100.0	
Missing	System	10	7.1		
Total		140	100.0		

d). Wholesale FFV markets in Nairobi

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	53	37.9	41.1	41.1
	slightly Important	7	5.0	5.4	46.5
	Moderately important	9	6.4	7.0	53.5
	Very important	60	42.9	46.5	100.0
	Total	129	92.1	100.0	
Missing	System	11	7.9		
Total		140	100.0		

e). Supermarkets

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	90	64.3	71.4	71.4
	slightly Important	14	10.0	11.1	82.5
	Moderately important	7	5.0	5.6	88.1
	Very important	15	10.7	11.9	100.0
	Total	126	90.0	100.0	
Missing	System	14	10.0		
Total		140	100.0		

f). Direct export

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	106	75.7	84.8	84.8
	Slightly Important	5	3.6	4.0	88.8
	Moderately important	1	.7	.8	89.6
	Very important	13	9.3	10.4	100.0
	Total	125	89.3	100.0	
Missing	System	15	10.7		
Total		140	100.0		

g). Hospitals and consumer on special diet

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	110	78.6	89.4	89.4
	Slightly Important	6	4.3	4.9	94.3
	Moderately important	6	4.3	4.9	99.2
	Very important	1	.7	.8	100.0
	Total	123	87.9	100.0	
Missing	System	17	12.1		
Total		140	100.0		

i). Young children

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	87	62.1	73.1	73.1
	Slightly Important	11	7.9	9.2	82.4
	Moderately important	12	8.6	10.1	92.4
	Very important	9	6.4	7.6	100.0
	Total	119	85.0	100.0	
Missing	System	21	15.0		
Total		140	100.0		

Appendix VIII: Level of Satisfaction with Performance Measures

a). Price earned

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at all	10	7.1	7.2	7.2
	To a small extent	22	15.7	15.9	23.2
	Moderate extent	94	67.1	68.1	91.3
	Great extent	12	8.6	8.7	100.0
	Total	138	98.6	100.0	
Missing	System	2	1.4		
Total		140	100.0		

b). Volume harvested

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at all	6	4.3	4.3	4.3
	To a small extent	27	19.3	19.4	23.7
	Moderate extent	97	69.3	69.8	93.5
	Great extent	9	6.4	6.5	100.0
	Total	139	99.3	100.0	
Missing	System	1	.7		
Total		140	100.0		

c). Total turnover

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at all	11	7.9	8.1	8.1
	To a small extent	42	30.0	31.1	39.3
	Moderate extent	72	51.4	53.3	92.6
	Great extent	10	7.1	7.4	100.0
	Total	135	96.4	100.0	
Missing	System	5	3.6		
Total		140	100.0		

d). Profitability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at all	11	7.9	8.0	8.0
	To a small extent	44	31.4	31.9	39.9
	Moderate extent	63	45.0	45.7	85.5
	Great extent	20	14.3	14.5	100.0
	Total	138	98.6	100.0	
Missing	System	2	1.4		
Total		140	100.0		

Appendix IX: Fresh Fruits and Vegetables Grown in Kiambu County

		Frequency	Percent
	Valid	54	38.6
	Cabbages	7	5.0
	Corgetles	2	1.4
	Coriander	3	2.1
	Cucumber	2	1.4
	Dhania	1	0.7
	Garden Peas	2	1.4
	Tomatoes	9	6.4
	Irish Potatoes	5	3.6
	Kales	14	10
	Spinach	7	5.0
	Lettuce	1	0.7
	Black_Night_Shade (Managu)	4	2.8
	Mushrooms	1	0.7
	Night_Shades	1	0.7
	Avocado	1	0.7
	Pears (Fruit)	2	1.4
	Potatoe	2	1.4
	Cowpeas	1	0.7
	Onion	2	1.4
	Brocolli	2	1.4
	Statice	1	0.7
	Strawberry	4	2.8
	Thorn_Melon	1	0.7
	Tree_Tomato	11	7.8
	Total	140	100.0

Appendix X: Test for Normality

One-Sample Kolmogorov-Smirnov Test

		Branding Practices	Farmer Characteristics	Operating Environment	Performance of Commercial Farmers
N		140	140	140	140
Normal Parameters[a],b	Mean	1.5269	2.1100	2.3172	1.8979
	Std. Deviation	.55461	.42472	.28465	.76354
Most Extreme Differences	Absolute	.284	.084	.049	.249
	Positive	.284	.084	.049	.249
	Negative	-.198	-.058	-.042	-.127
Kolmogorov-Smirnov Z		3.361	.996	.579	2.945
Asymp. Sig. (2-tailed)		.000	.274	.890	.588

a. Test distribution is Normal.
b. Calculated from data.

Appendix XI: Test for Group Linearity

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
Performance of commercial farmers * Branding practices	Between Groups	(Combined)	56.991	39	1.461	6.077	.000
		Linearity	**12.781**	**1**	**12.781**	**53.155**	**.000**
		Deviation from Linearity	44.210	38	1.163	4.839	.000
	Within Groups		24.045	100	.240		
	Total		81.036	139			
Performance of commercial farmers * Farmer characteristics	Between Groups	(Combined)	68.261	115	.594	1.115	.394
		Linearity	**4.424**	**1**	**4.424**	**8.311**	**.008**
		Deviation from Linearity	63.838	114	.560	1.052	.465
	Within Groups		12.774	24	.532		
	Total		81.036	139			
Performance of commercial farmers * Operating enviroment	Between Groups	(Combined)	74.088	120	.617	1.688	.094
		Linearity	**2.193**	**1**	**2.193**	**5.997**	**.024**
		Deviation from Linearity	71.896	119	.604	1.652	.104
	Within Groups		6.948	19	.366		
	Total		81.036	139			

Appendix XII: Test for Homogeneity of Variance

Variables	Levene Statistic	df1	df2	Sig.
Branding practices	4.190	18	100	0.001
Farm characteristics	3.387	18	100	0.009
Operating enviroment	2.897	18	100	0.012