

## THE JOINT EFFECT OF BRANDING PRACTICES FOR FRESH FRUITS AND VEGETABLES, FARMER CHARACTERISTICS AND OPERATING ENVIRONMENT ON PERFORMANCE OF COMMERCIAL FARMERS

Dr. Isaac Micheni Nkari (PhD)  
Lecturer in the Department of Business Administration,  
Chuka University, Kenya.

### ABSTRACT

The objective of this study was to determine the joint effect of branding practices (BP) for fresh fruits and vegetables (FFV), farmer characteristics and operating environment on performance of commercial farmers in Kiambu County, Kenya. The study hypothesis stated that: The joint effect of branding practices for fresh fruits and vegetables, farmer characteristics and operating environment on performance of commercial farmers is statistically significant. The sample size was 140 farmers. 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 performance of commercial farmers while operating environment had a statistically marginal effect on performance of commercial farmers. Taken jointly, BP, farmer characteristics and operating environment had a statistically significant effect on performance of commercial farmers. The study contributes to theory and policy making and enhances managerial practice in relation to the joint effect of the three independent variables. The study offered further insight into the relationship between the study variables. The study was limited by the self-reported data with no collaborative evidence and gathering of cross sectional data. The study recommends that farmers should enhance their individual abilities; engage in such value addition activities like BP and always consider relevant environmental factors while engaging in farming initiatives. The government should encourage branding of FFV by putting in place the requisite infrastructure and legislation. Future research should adopting a time series design; target other fresh agricultural products; increase the variables and constructs being investigated and target other counties with differing social economic and climatic conditions.

**Keywords:** *Joint Effect, Branding Practices, Fresh Fruits and Vegetables, Farmer Characteristics, Operating Environment, Performance of Commercial Farmers.*

## 1. Introduction

Due to the rapid advancement in technology, all sectors of the economy are 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). However, 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.

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. 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.

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. Kotler and Keller (2009) have identified BP to include visual identity creating activities, brand communication activities and brand classification activities.

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, Tyler, Hazel, Doward, & Kydd, 2008). They use superior inputs and machinery resulting in higher performance (Chapoto & Bonus, 2013). The commercial farmers' demographic characteristics that affect their performance capabilities include age and gender (Sindi, 2008), education level (Saina, Kathuri, Rono, Kipsat & Sulo, 2012), membership to associations (Verhofstadt & Maertens, 2013), financial ability (Neven & Reardon, 2006), and farm ownership (Derden-Little, Erin & Feenstr, 2006).

A firm's BP and performance are influenced by both the task and broad environments. Kotler and Keller (2009) identified micro-environmental forces that influence firm performance to include customers, competitors, suppliers and intermediaries. The macro-environmental factors that affect BP and performance of commercial farmers 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 processing, branding, quality certification and farm level quality improvements as key value addition initiatives to focus on (Government of Kenya, 2012).

## **1. 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, White and Zwart, 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 geographic place of origin (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).

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. The qualities of a good performance measurement are identified by Neely, Richard, Mills, Plats and Bourne (1997) to include: simplicity, clear definition, cost effectiveness, timeliness, accuracy, objectivity, data availability, and applicability/ relevance. The performance indicators chosen for this study satisfy these requirements and involve both financial and non financial parameters. They are product output, price premium, profitability and satisfaction. As established by Ailawadi, Lehmann and Neslin (2002), they are easy to assign and are consistent with the focus of business executives.

## **2. Statement of the Problem**

The performance of commercial farmers is influenced by value addition initiatives such as branding practices (brand identity creation, brand promotion and brand classification) (Kotler & Keller, 2006); environmental factors (weather, political and economic conditions, competitors, consumers) and the farmers' demographic characteristics (age, gender, education, income, experience and farm ownership) (Evenson & Mwabu, 1998).

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 the joint effect of branding practices for fresh fruits and vegetables, farmer characteristics and operating environment impact on the performance of commercial farmers.

Various shortcomings were noted in the reviewed studies which render them inadequate in establishing whether the joint impact of branding practices for fresh fruits and vegetables, farmer characteristics and operating environment had any statistically significant effect on performance of commercial farmers in Kiambu County, Kenya. The study by Homburg, Klarman and Schmitt (2010) conducted among 1850 German firms had focused only on the impact of brand awareness on firm performance. A study in

Netherlands by Bremmer, et al. (2002) focused on the effect of farmers' demographic characteristics on farm performance in regard to farm development and innovativeness.

A study in USA by Park et al. (2013) focused only on the role of brand logos in firm performance and 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. In their study undertaken in Pakistan, Hafeez, Shariff and Lazim (2012) 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.

Verhofstadt and Maertens (2013) in their study covering cooperative members in Rwanda established that membership in a 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. An analysis of secondary data on Kenyan farmers by Evenson and Mwabu (1998) 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) undertook a study on horticultural small holders in Mount Kenya regions and workers in Nairobi 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.

The studies in Germany, Netherlands, USA, Pakistan and Rwanda 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 for fresh fruits and vegetables, farmer characteristics, operating environment and performance of commercial farmers. It addressed the following research question: what is the joint effect of branding practices for fresh fruits and vegetables, commercial farmer characteristics and operating environment on the performance of commercial farmers in Kiambu County?

### **3. Objective of the Study**

This study sought to assess the joint effect of branding practices for fresh fruits and vegetables, farmer characteristics and operating environment on performance of commercial farmers in Kiambu County, Kenya. The hypothesized relationship stated that:

***H1: The joint effect of branding practices for fresh fruits and vegetables, farmer characteristics and operating environment on performance of commercial farmers is statistically significant***

### **4. Review of Related Literature**

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 branding practices (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 include advertising, sales promotions, public relations, direct marketing and personal selling. The choice of any specific element will depend on the target communication objective.

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. Hedging, Knudtzen and Bjerrre (2009) viewed the practices as decisions whether to develop generic, family, individual, transnational, local, fighter, producer or private/retailer brands and whether the brands should adopt descriptive, associative, geographic place of origin, or alpha-numeric brand names.

Within agricultural and horticultural products, branding includes identifying products with various types of labels meant to differentiate the products. Pay, White and Zwart (1996) cites examples of FFV brands to include retailer brands, supplier brands, region of origin brands, and varietal brands. The varieties of brands developed identify the products with either the producer (Perner, 2008; Hayes & Lence, 2002), the geographic place of origin (GPO) (Tregear and Gorton, 2004), ecological values (Halprin, 2006), health and nutritional values of the product (Gonzalez Diaz et al., 2002), and a generic names (Jekanowski, Williams, & Schick, 2001).

According to Sindi (2008), the mature farmers are more experienced and have more access to required resource as compared to the young ones. Young farmers were more accommodative of new ideas; male farmers had easy access to credit, extension services and other farm inputs while female farmers had constraints in acquiring resources including modern technology. 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). Farmers owned the land they farmed either as individuals, family members (Derden-Little, Erin & Feenstr, 2006) or as cooperatives, partnerships or limited liability companies (Verhostadt, 2013).

Fresh fruits and vegetable consumers working in urban and suburban areas had higher purchasing power; increased level of consciousness on personal health (Stanton & Herbst, 2005). They had little knowledge and experience to pick the right products; attached more importance to FFV in their diets and preferred FFV over canned or frozen alternatives (Clarke & Moran, 1996). Competing FFV farmers had different financial abilities which lead to differences in the quality of inputs applied such as seeds, fertilizers and insecticides resulting 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.

## 5. Methodology

In order to establish the joint effect of branding practices for fresh fruits and vegetable, farmer characteristics and operating environment on performance of commercial farmers, a descriptive cross sectional survey design was adopted. This design facilitated in establishing and describing the relationships among branding practices for fresh fruits and vegetable, farmer characteristics, operating environment and performance of commercial farmers (Kothari, 2004). It was cross sectional since it was conducted once to pick the parameters of the joint effect of the independent variables on the dependent variable at the specific time with the aim of accurately capturing the characteristics of the population relating to what, where, how and when of the research topic (Cooper & Schindler, 2003).

The population consisted of 213 commercial farmers of FFV in Kiambu County. The population consisted of individual commercial farmers growing between one and three crops in farms ranging between 5.5 to 0.125 acres. This study adopted stratified random sampling which allowed for making of probability based confidence estimates of various parameters (Cooper & Schindler, 2003). The key respondents were the owners or managers of the commercial FFV farms. The farmers were stratified into seven sub-counties namely Githunguri, Kiambu, Kikuyu, Lari, Limuru, Ruiru and Gatundu which incorporated Juja. A proportionate sample was drawn relative to the population of commercial FFV farmers of each. The sample size was determined using a formula proposed by Israel (2009) 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 data was collected using a semi structured questionnaire through direct interrogation method (Cooper & Schindler, 2003). 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.

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 and 1=Not at all to 4=Great extent. Data was analyzed using both descriptive statistics (frequencies, percentages, mean, and standard deviation) and inferential statistics (chi square, linear regression and correlation analysis). Stepwise regression analyses were used to bring out the individual effects in the form:  $Y_1 = a_0 + b_1X_1 + b_2X_2 + b_3X_3 + e_6$  for the combined effect of branding practices, farmer characteristics and operating environment on performance of commercial farmers

### 5.1 Data Analysis Methods and Interpretation of Results

The Multiple Regression Analytical Models adopted for this study was as follows: The joint effect of branding practices for fresh fruits and vegetables, farmer characteristic and operating environment on performance of commercial farmers = f(branding practices of FFV, farmer characteristics and operating environment):  $Y_1 = a_0 + a_1BP + a_2FC + a_3OE$ ; ie,  $Y_1 = f(BP + FC + OE)$ ; 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 results were interpreted on the basis of the value of  $R^2$ , product moment correlation (R), Regression coefficient and conducting of an F test (analysis of variance (ANOVA)).

## 6. Presentation and Analysis of Empirical Results

The 140 questionnaires were successfully filled and found suitable for further analysis resulting in a response rate of 100%. This compared favorably with a similar study conducted among farmers by Bremmer et al. (2002) which had a response rate of 86.5%.

### 6.1 Reliability and Validity

The reliability of the research instrument was established by computing the Cronbach's Alpha coefficient in regard to the elements in the study variables. The Cronbach's Alpha reliability coefficients indicated reliability level of the instrument at 0.7364. The level was above both the acceptable minimum value of 0.50 (Cronbach, 1951) and the recommended value of 0.7 (Nunnally & Bernstein, 1994). The instrument used had therefore adequately measured the relevant study variables.

### 6.2 Summary of Farmer Characteristics

Table 1 contains a summary of the contribution to performance of individual characteristics of the respondent commercial farmers.

**Table 1: Summary of the Contribution 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
<b>Overall Average Score</b>	-	<b>2.08</b>	<b>0.865</b>	<b>41.49</b>

Source: Primary data.

The average mean scores (mean score=2.08, CV=41.49) implies 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).

### 6.3 Summary of Branding Practices

Table 2 contains a summary of performance indicators of branding practices undertaken by commercial farmers in furtherance of performance.

**Table 2**

<b>: Summary on adoption of Branding Practices</b>				
<b>Branding Practices</b>	<b>N</b>	<b>Mean Score</b>	<b>Standard Deviation</b>	<b>CV (%)</b>
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
<b>Overall Average Score</b>	-	<b>1.99</b>	<b>0.612</b>	<b>30.75</b>

Source: Primary data.

The overall average mean score of branding practices in Table 2 (mean score=1.99, CV=30.75) show that branding as a marketing practice had low adoption and contribution to performance of respondent commercial farmers. Brand name selection strategies (mean score=3.05, CV=15.87) had the highest contribution to performance among the respondent commercial farmers. Making decisions on brand identification (mean score=1.14, CV=42.19) had the lowest contribution among the branding practices.

### 6.4 Summary on Environmental Factors.

The extent to which each individual environmental factor influenced performance of commercial farmers is summarized in Table 3.

**Table 3: Summary on Contribution of Environmental Factors**

<b>Environmental Factors</b>	<b>N</b>	<b>Grand Mean Score</b>	<b>Standard Deviation</b>	<b>CV (%)</b>
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
<b>Overall Average Score</b>	-	<b>2.39</b>	<b>0.927</b>	<b>38.79</b>

Source: Primary data.

The overall average score of effects of environmental factors on performance of commercial farmers indicates that climatic conditions had the greatest influence on performance of commercial farmers (mean score = 3.06, CV = 30.02) followed by 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.

### 6.5 Performance of Commercial Fresh Fruits and Vegetable Farmers

The constructs used to describe performance of commercial farmers were price, volume, profitability and satisfaction achieved by the respondent farmers. Table 4 contains a summary of the individual indicators of the achieved performance.

**Table 4: 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
<b>Overall Average Score</b>	-	<b>1.77</b>	<b>0.780</b>	<b>44.11</b>

Source: Primary data.

The summary results in Table 4 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.

## 7. Summary of Descriptive Statistics

A summary of descriptive statistics covering the four thematic areas of the study is presented in Table 5.

**Table 5: Summary of Individual Variables Contribution to Performance**

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
<b>Overall mean score</b>	-	<b>2.06</b>	<b>0.796</b>	<b>38.64</b>

Source: Primary data.

The summary data in Table 5 presents results of average mean scores for the study variables at an individual level. 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.

### 7.1 Results of Correlation Analysis

The general objective of the study was to establish the joint influence of branding practices of FFV, farmer characteristics and operating environment on performance of commercial farmers in Kiambu County. In order to assess the relationships among the independent and dependent variables, a correlation analysis was conducted. Results of the analysis are presented in Table 6.

**Table 6: Correlation for Branding Practices, Farmer Characteristics, Operating Environment and Performance of Commercial Farmers**

Correlation Coefficients		Performance of Commercial Farmers
Farmer characteristics	Pearson Correlation	.234**
	Sig. (2-tailed)	.005
Branding practices	Pearson Correlation	.397**
	Sig. (2-tailed)	.000
Operating environment	Pearson Correlation	.164
	Sig. (2-tailed)	.052
** Correlation is significant at the 0.01 level (2-tailed). Sample (N) = 140		

Source: Primary data.

The results of the Pearson's product moment correlation analysis as presented in Table 6 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 =  $0.000 < 0.05$ ). Operating environment and performance of commercial farmers had a statistically marginal correlation ( $r = 0.164$ ;  $p < 0.04$ ; sig. 2 tailed =  $0.052$ ).

The strongest relationship was between branding 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 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.

### **8. 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 on performance of commercial farmers is statistically significant; the study had the following hypothesis:

***H1: The Joint effect of branding practices for fresh fruits and vegetables, 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 7.

**Table 7: 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 <sup>a</sup>	.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 <sup>a</sup>
	Residual	63.545	136	.467		
	Total	81.036	139			
a. Predictors: (Constant), Branding practices, Farmer characteristics, Operating environment						
b. Dependent Variable: Performance of commercial farmers						

<b>c) The Composite Score Test</b>						
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

**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 <sup>a</sup>	.409 <sup>a</sup>	.409 <sup>a</sup>	.404 <sup>a</sup>
R <sup>2</sup>	.216	.206	.167	.167	.167
R <sup>2</sup> 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 7(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 7(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 ( $R^2=.167$ ). As evidenced by the results in Table 7(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 for fresh fruits and vegetables, 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 at an individual level, BP of FFV had the largest contribution to performance of commercial farmers (beta=.372,  $t$ -value=5.115,  $p$ -value=.000) followed by farmer characteristics (beta=.220,  $t$ -value=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 for FFV, farmer characteristics and operating environment, the regression model used was stated as follows:

$$Y = -0.341 + 0.372BP + 0.220FC + 0.100OE + 0.216BP*FC*OE$$

Where;

Y= Performance of Commercial Farmers

BP=Branding Practice for fresh fruits and vegetables

FC=Farmer Characteristics

OE=Operating Environment

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

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

## 9. Discussion of the Results

This study sought to establish whether branding practices for FFV, farmer characteristics and operating environment can jointly influence the performance of commercial farmers. 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 such highly populated areas as Kiambu County.

Results of a Pearson's moment correlation analysis conducted among the individual 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 improved by branding practices. The results also indicate a statistically significant correlation between farmer characteristics and performance of commercial farmers. It can therefore be concluded that farmer characteristics will have significant influence on performance of commercial farmers. The results also indicated that operating environment had a statistically marginal relationship on the performance of commercial farmers and it's therefore concluded that operating environment is not a major determinant of performance of commercial farmers.

A stepwise multiple regression analysis to test the joint effect of branding practices for FFV, 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.

## 10. 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 had a statistically marginal influence on performance, 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. The fourth recommendation arise from the fact that the joint influence of branding practices for FFV, 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 marginal influence on performance of commercial farmers, the fifth 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.

Finally, the government should realize that the operating environment jointly with branding practices for fresh fruits and vegetables and farmer characteristics influence performance of commercial farmers. The government should therefore enact the requisite legislation to protect trademarks and other branding initiatives 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.

## 11. Suggestions for Further Research

This study established that branding practices for 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. To expand the scope of the study, future research should cover other fresh agricultural products. The study 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. The unique characteristics of the Kiambu 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 relationship in the current study.

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 statistically marginal 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.

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 and farmer characteristics 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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