

**INFLUENCE OF INNOVATION ON COMPETITIVENESS OF SMALL AND MEDIUM
AGRO PROCESSING FIRMS IN MURANG'A COUNTY, KENYA**

Muranga Bedan Kinyanjui, Dr. Karanja Kabare and Prof. Anthony Waititu
Jomo Kenyatta University of Agriculture and Technology

bedanmk@gmail.com kabarekaranja@gmail.com agwaititu@gmail.com

ABSTRACT

The aim of this study was to analyze the influence of innovation on competitiveness of small and medium agro-processing firms in Murang'a County, Kenya. Timely introduction of innovative products and processes enable firms to be competitive. To attain this competitiveness, agro-processors must invest more resources in innovative activities that will position them ahead of competition. The choice of the rural county of Murang'a in Kenya was informed by the assumption that the findings of the study can be generalized to suit all the other rural counties of Kenya. Porter's diamond theory of competitiveness guided the study but other relevant theories were also considered. The study adopted correlational research design to guide the collection, analysis and presentation of data. Questionnaires were the main instruments of collecting data from respondents sampled from 180 agro-processing firms in Murang'a County. Quantitative data was analyzed using SPSS while the qualitative data was subjected to content analysis. The study concluded that innovation significantly influences the competitiveness of small and medium agro-processing firms in Murang'a County, Kenya.

Key words: Brand Value, Competitiveness, Innovation, Productivity, Profitability

INTRODUCTION

Competitiveness of a firm can be defined as its ability to do better than comparable firms in sales, market shares, or profitability (Lall, 2000). It is created at the firm-level and emerges from complex patterns of interactions between the government, enterprises and other actors (Lalinsky, 2013). Competitiveness is synonymous with a firm's long-run profit performance, its ability to compensate its employees and provide superior returns to its owners (Garelli, 2014) and it is therefore at the core of the success or failure of the firm (De Wit & Meyer, 2004). It is usually measured using such indicators as a firm's productivity, profitability, export performance, brand value and/or market share (Lalinsky, 2013). Managers must engage in innovative activities to create and maintain competitive advantage. Effective entrepreneurs know that establishing and maintaining a competitive advantage is a great challenge and that without careful attention, competitive advantage can be easily lost (Bateman & Zeithaml, 1990).

Innovative production, processing and logistics can create cost efficiencies and improve services that translate into higher profit margins (Porter, 1985). In a globally-competitive landscape, competitiveness is also sustained through rising productivity originating from innovation, invention, R&D and service provision (OECD, 2000). In competitive markets, innovation helps to maintain or grow the profits of firms and can be a route to competitiveness. It creates cost efficiencies and improves services that translate into higher profit margins (Porter, 1985). It should further be noted that businesses that invest in R & D, and do what is distinctive and difficult to replicate are likely to be more profitable than their rivals (Pearce & Robinson, 2011; Raduan, Jegak, Haslinda & Alimin, 2009).

Despite the importance that firms attach to innovation in enhancing competitiveness, studies in Kenya have shown that small and medium manufacturers are finding it difficult to access the export market due to poor production techniques (Pokhariyal & Yalla, 2011; RoK, 2007). According to Kenya Vision 2030, agro processing is an important sub sector in the industrialization process in Kenya (RoK, 2007) but the sector may not achieve the desired level of competitiveness due to shortage of appropriate skills to carry out innovative activities (FAO, 2013; Pokhariyal & Yalla, 2011; RoK, 2013; World Bank, 2008). It was therefore important to carry out this study to analyze the influence of innovation on the competitiveness of small and medium agro processing firms in Murang'a County, Kenya.

RELATED LITERATURE

Theoretical Review

Porter's Five Forces Theory

According to Porter (1980), there are five major forces that determine a firm's ability to compete namely: rivalry within the industry; threat of new entrants; threat of substitutes; bargaining power of suppliers; and bargaining power of buyers. The five forces can be analyzed by firms in the assessment of their competitors and decide how to compete against them (Porter, 1980). The number and concentration of firms in an industry will determine the intensity of competition among the existing firms. Firms entering an industry, will bring with them new capacity and a desire to gain market share and profits. Entering firms may face entry barriers and competition from existing firms which may opt to launch vigorous defense of their market share. The bargaining power of the suppliers and buyers must also be taken into consideration when formulating competitive strategies. Availability of substitutes places a ceiling on prices that a firm can charge and the buyers' prospects of buying substitutes when the company increases its prices must also be taken into account when formulating competitive strategies. Porter's (1980) five forces theory supports the objective of this study because by appreciating the five forces, a firm that will invest in innovative activities will stay ahead of the competition in an industry.

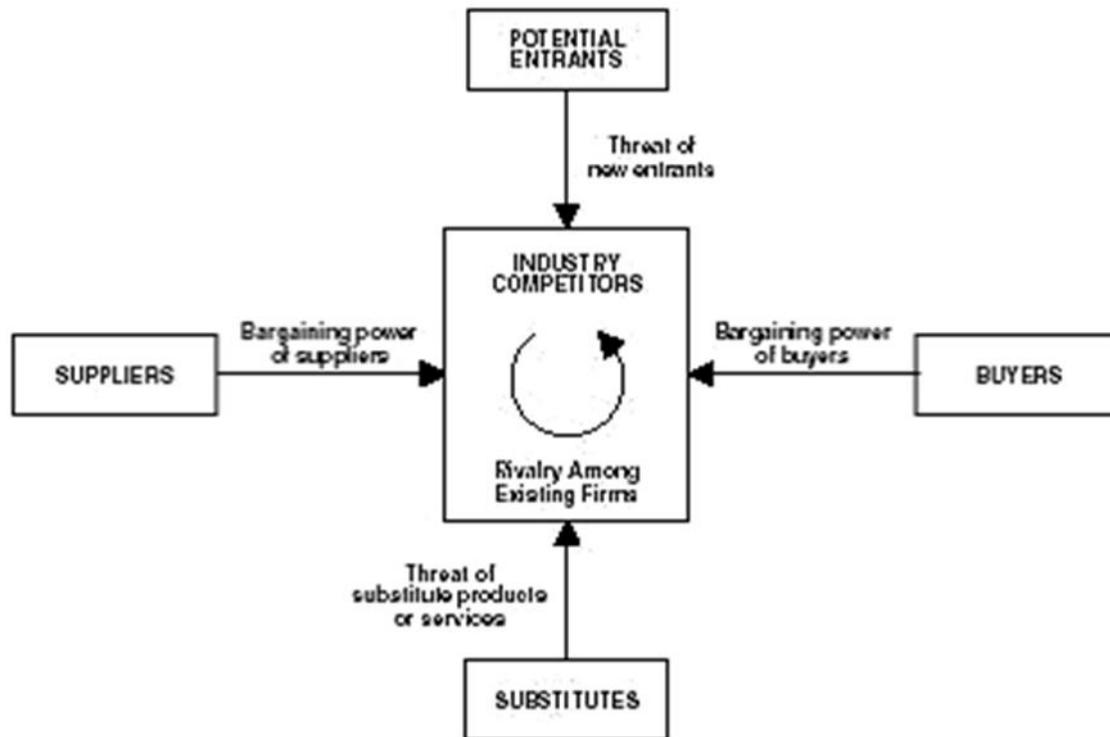


Fig 1: Porter's Five Forces Theory

Source: Porter (1980).

Porter's Diamond Theory of National Competitiveness

In this model, Porter (1990) starts at the interaction of four factors that represent a diamond which are: (i) strategy, structure and firm rivalry; (ii) conditions of input factors; (iii) demand conditions; and (iv) related and supporting industries. Porter (1990) argues that competitiveness of an entity lies in the four broad categories or attributes with two intervening attributes (Government and Chance) that shape the environment in which firms or industries compete.

Factor conditions are the advantageous factors of production that give some firms competitive edge over their competitors. They include human resources, physical resources, knowledge resources, capital resources and infrastructure (Porter, 1990). Created factors such as skilled labor, infrastructure, technology and production costs are necessary to compete in a given industry (Sinngu & Antwii, 2014). Demand size and internationalization of the domestic products contribute to a firm's competitiveness. Customers in the home market can help companies create a competitive advantage, when sophisticated home market buyers pressure firms to innovate faster and to create more advanced products than those of competitors (Porter, 1990). Related and supporting industries involve the presence or absence of domestic suppliers

and related industries that are internationally competitive. Porter (1990) argues that a set of strong related and supporting industries is important to the competitiveness of firms or industries. When the local supporting industries are competitive, local companies are also likely to be competitive as well

Firm strategy, structure and rivalry involves culture, structure, management skills, pricing strategy, buyers' and suppliers' market power, threats of new entrants and substitutes. A more developed and intensive interaction between these factors will generate better productivity, innovativeness and the sector's export growth making the entity more competitive (Porter, 1990). Governments play an important role in international competitive success of their firms since they can influence each of the above determinants either positively or negatively through policies. Government interventions can occur at local, regional, national or supranational level (Porter, 1990). Chance conditions include factors such as wars, political decisions of foreign states and discontinuity of technologies. They can either hurt or benefit the industry's competitive position.

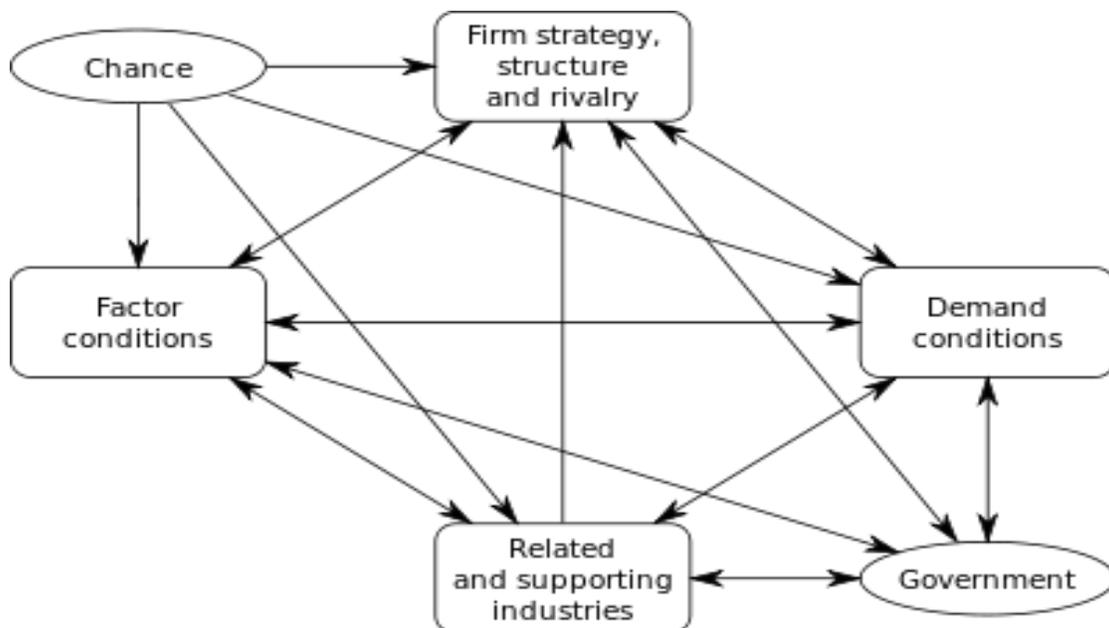


Fig. 2: Porter's Diamond of National Competitiveness

Source: Porter (1990).

Conceptual Framework

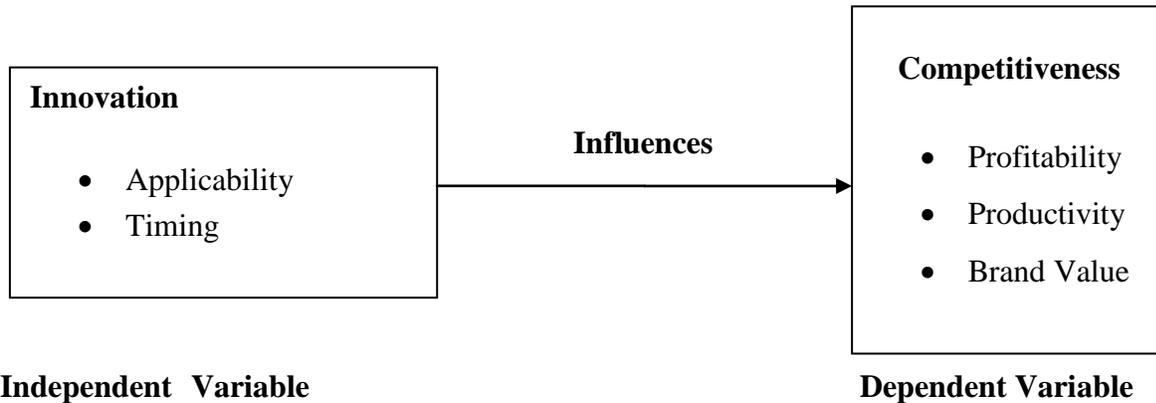


Fig. 3: Conceptual Framework

Review of Variables

Competitiveness

Competitiveness of a firm can be defined as its ability to do better than comparable firms in sales, market shares, or profitability (Lall, 2000). It is about being different and seeking to establish a profitable and sustained superior position against the forces that determine an industry's competition. It involves deliberately choosing to perform activities differently or to perform different activities from rivals in order to deliver a unique mix of value to the customers (De Wit & Meyer, 2004; Porter, 2003). Competitiveness can be conceptualized and measured at country, industry, firm or product levels. The measurement technique of competitiveness varies with the unit of analysis, for example, firm, industry or country and also indicators of competitiveness (Garelli, 2014).

From literature it has been found out that there exists a wide range of determinants of competitiveness but a paucity of all-encompassing conceptualizations (Sancharan, 2011). Researchers have widely selected profitability, productivity, product quality, balance of trade, market share and rate of growth as the broad measures of competitiveness (Rugman, Oh & Lim, 2012; Sancharan, 2011). Competitiveness at a firm level involves productivity, efficiency and profitability elements (Sancharan, 2011). It is usually measured using such indicators as a firm's productivity, profitability, export performance, brand value and/or market share (Lalinsky, 2013). Firms must adopt different strategies in their bid to sustain their long run profitability which may include innovation, information technology, niche market, network, cluster and foreign direct investment strategies among others. The ability of firms to create, access and

commercialize new knowledge in domestic, regional or global markets is also fundamental for their sustained competitiveness.

Brand strength can lead to competitive success of an organization since customers who value brand name are more likely to purchase due to the familiarity of the products (MacDonald & Sharp, 2000). An organization achieves this when it sees its customers' objectives as its own objectives and enables its customers to easily add more value or, in the case of final consumers, feel they are gaining true value for money. A firm is said to be competitive if it can produce products and services of superior quality at lower costs than its domestic and international competitors (Garelli, 2014). Chikan (2008) posits that a firm's competitiveness is the capability of that firm to sustainably fulfill its double purpose of meeting customer requirements but at a profit. This capability can be realized by offering goods and services which customers value higher than those offered by competitors.

Innovation

Miller, Rankin & Neathey (2001) refer to innovation as the design and production of complex and rapidly changing products or services that differ from those of competitors. It reflects the firm's tendency to engage in and support new ideas and novelty (Lumpkin & Dess, 1996). It also involves the introduction of a new commodity, technology, new source of supply or new type of organization that not only strikes at the margins of the profits and the outputs of the existing firms but at their foundations and their very lives (Schumpeter, 1943). Innovators should be characterized by the ability to sense the needs; anticipate change and a positive attitude to them, determination (careful planning of activities and tenacity in action); the ability to combine the overall vision with attention to every detail; participative leadership style; and stubbornness combined with persuasion skills and tact (Woszczyna & Pikiewicz, 2014).

Innovations can be incremental, radical or disruptive to the extent to which they disturb or change how a practice is performed and involve the generation of novel and useful ideas (Pearce & Robinson, 2011; Raduan et al, 2009). Firms' innovation, including the development of new products or services, as well as new administrative systems, is considered an important source of sustainable competitive advantage (Covin & Miles, 1999). Thus, recognition should be accorded to the positive influence that innovation has on a firm's productivity and profitability and hence its survival (Covin & Miles, 1999). In this sense, innovation is identified as a key capability for a firm that is critical for its financial performance (Zaheer & Bell, 2005).

In a globally-competitive landscape, competitiveness can be sustained through increasing productivity originating from innovation; invention; Research and Development (R&D); and service provision (OECD, 2010). In order to survive in today's complex and ever changing business environment, organizations must be strategically aware. They must seek timely information and act quickly in response to opportunities and threats. Innovation entails timely

application of knowledge to the production of goods and services. Access to information is in itself a source of competitive advantage and product upgrading approaches should therefore emphasize on knowledge creation, transfer and appropriation (Acs & Audretsch, 1990). One way of attaining the information is through leveraging the powerful tool of information technology. ICT is important in facilitating innovation which in turn presents vast opportunities for businesses to infuse efficiencies in their operations and processes in order to serve their customers more efficiently or enter new markets (Ochola, 2013).

Innovation is embodied in a strong organizational commitment to engage in experimentation and other creative processes that may result in new products, services or technological processes (Kreiser, Marino & Weaver, 2002; Lumpkin & Dess, 1996; Wickland & Shepherd, 2005). To be successful, firms must figure out how to bring new goods and services that appeal to identifiable markets to fruition (Ward, 2004). To compete sustainably and outperform their rivals, small and medium agro processing firms in Kenya must find suitable ways of creating value for their customers through R&D. A business that invests in R&D, and does something that is distinctive and difficult to replicate is more likely to be more profitable than its rivals (Pearce & Robinson, 2011; Raduan et al., 2009). Innovative production, processing and logistics can create cost efficiencies and improved services that translate into higher profit margins (Porter, 1996). Innovation is the key to competitiveness of an enterprise since it involves the initial commercialization of invention by producing and selling a new product, service, or process (Metcalf, Ramlogan & Uyarra, 2003). Dynamic environments serve to encourage the development of radically new products and technologies by innovative firms which are poised to capture premium market segments or pre-empt new entries (Zahra & Bogner, 2000). Therefore, a firm gains sustainable competitive advantage by invariably upgrading its processes and activities through innovation (Porter, 1996) which in turn improves its profitability.

Innovation is a grand human resource strategy that seeks to reap the premium margins associated with creation and customer acceptance of a new product or service (Waiganjo, 2013). Accumulation of employees' observations and experiences leads to acquisition of tacit knowledge that is hard to emulate and hence can be a source of competitive advantage (Metcalf et al., 2003). Employees must be encouraged to suggest areas that they feel need improvement. The successful acquisition, development and deployment of innovative activities require competent and skilled researchers and practitioners in key sectors of importance to the economy.

Regulatory and institutional environment conducive for innovation should be cultivated and should promote: stable property rights; independence of the judiciary; transparent and simple rules; low costs governing the registration and operation of enterprises; and use of information and communication technologies. These factors when taken into consideration influence the business climate in which the innovation-based enterprises operate, and thus determine the demand for innovation (UNECE, 2012).

In Kenya, most researchers at universities and PRIs complain regularly of lack of funds and initiative on part of the government to support and direct relevant research (Banji & Sampath, 2007). Reliance on external donor funding for research, which is at best sporadic and not dependable means that innovative activities in academic institutions in the country continue at a rate that hardly reflects its true potential (Banji & Sampath, 2007). Several basic and technological research laboratories exist in government departments, universities and research institutions (RoK, 2012). The research equipment and financial support to these laboratories is however inadequate and cannot meet and sustain the needs of rapidly changing technology (RoK, 2012). Moreover some of the machines and equipment required for physical sciences research are too expensive and beyond the budgetary allocation of the small laboratories. Kenya must make a deliberate effort to institute basic science research at the highest level. The government should assist in the acquisition of high precision instruments and hence the setting up of a centralized national physical science laboratory (RoK, 2012). Proper training and capacity building, as well as investment in relevant physical and scientific infrastructure is necessary to ensure that the country has the requisite absorptive capacity to benefit from the numerous technology initiatives and efforts going on within and outside its frontiers (Banji & Sampath, 2007).

METHODOLOGY

This study adopted correlational research design which seeks to establish the relationship between two or more variables that do not readily lend themselves to experimental manipulation (McLeod, 2008). It is a technique of gathering information by questioning those individuals who are the object of the research and who belong to a representative sample, through a standardized questioning procedure with the aim of studying relationships between variables (Corbetta, 2003; McLeod, 2008; Orodho, 2003; Zikmund, 2003). The correlational research design was appropriate for this study since it enabled the researcher to analyze the influence of the independent variable (innovation) on the dependent variable (competitiveness). The design was also suitable because it produced statistical information which could be displayed in graphical forms and whose results had predictive implications to decision making and therefore would be relevant to policy-makers and businessmen (Berg 2001).

The study obtained a sample of top level and middle level managers from the 180 agro processing firms in Murang'a County. Sampling was done using stratified sampling where each of the sub counties of Murang'a County was treated as a stratum. From each stratum a simple random sample was obtained using computerized random numbers. The researcher used self administered questionnaires to collect primary data from top and middle level managers of agro-processing firms in Murang'a County. The questionnaires were designed to contain both open ended and closed questions.

Table 1: Sample Size by Strata (Sub County)

| Sub Sector | Coffee | | Dairy | | Fruits | | Nuts | | Animal Feeds | | Cottage | |
|-------------------------|------------|------------|------------|------------|------------|------------|------------|------------|--------------|------------|------------|------------|
| Strata (Sub- County) | Top Mgt | Mid Mgt | Top Mgt | Mid Mgt | Top Mgt | Mid Mgt | Top Mgt | Mid Mgt | Top Mgt | Mid Mgt | Top Mgt | Mid Mgt |
| Kangema | 9 | 9 | 2 | 4 | | | | | | | | |
| Mathioya | 10 | 10 | | | | | | | | | | |
| Murang'a East | 4 | 4 | | | | | 1 | 2 | | | | |
| Murang'a South | 5 | 5 | 1 | 2 | 2 | 4 | 1 | 3 | 3 | 6 | 3 | 7 |
| Gatanga | 12 | 12 | | | 3 | 6 | 2 | 3 | | | 1 | 3 |
| Kandara | 19 | 19 | 2 | 2 | | | | | | | | |
| Kigumo | 20 | 20 | | | | | | | | | | |
| Kahuro | 14 | 14 | | | | | | | | | | |
| Sub Total | 93 | 93 | 5 | 8 | 5 | 10 | 4 | 8 | 3 | 6 | 4 | 10 |
| Overall Total | | | | | | | | | | | | 249 |

Source: County Development Planning Office, Murang'a (2013)

DESCRIPTIVE STATISTICS

Innovation

As shown in tables 4.4 and 4.5, agro-processing firms in Murang'a County encouraged innovation and appreciated the contribution of innovation to competitiveness of their firms. A majority of respondents (60.3%) agreed to the statement that their firms followed new developments in their industry and slightly over a half of the respondents (53.4%) agreed that their firms introduced innovative products ahead of the competition. In response to the statement about whether their firms rewarded staff members who suggested innovative ideas, over half (53.5%) agreed while 31.8% were neutral. The respondents also agreed with the following statements as indicated by the percentages after the statements: trade fairs/ science exhibitions were sources of innovation (67.0%); firms collaborated with research institutions (64.2%); and firms had innovation strategies (64.8%).

A majority of the respondents (with a mean of 3 and median of 4) responded that applicable innovation had contributed to the productivity of their agro processing firms either moderately (35.2%), to a great extent (40.3%) or to a very great extent (5.1%). A majority of respondents (with a mean of 4 and mode of 4) agreed with the statement that timely introduction of innovative processes and products had improved the productivity of their firms while (mean of 4 and mode of 4) of the respondents agreed that innovation they can easily apply had helped in improving their productivity. The mode of 4 and mean of 3 indicated that most of the respondents were of the view that easy to apply innovative processes had contributed to the productivity of their firms. With a mean of 4 and median of 4, most of the respondents were of the view that innovations that they could easily apply helped them to improve their productivity to a great extent.

In response to a question about the extent to which timely introduction of innovation had contributed to profitability of their firms, 38.6% of the respondents responded that it had contributed to a great extent and very great extent, 37.5% were of view that it had contributed moderately while only 23.9% said it had little or no contribution at all. A majority of the respondents (mean of 4 and mode of 4) were of the opinion that innovative processing had improved their brand value in the market. Responding to a question about how timely introduction of innovation had contributed to the attractiveness of their brands in the market, 48.9% of respondents responded that it was to a moderate extent, 21.0% to a great extent and 6.8 % to a very great extent. Only 23.3% of the respondents were of the view that the contribution was to a little or no extent at all. The finding, with a mean and median of 3, indicated that timely introduction of innovation moderately contributed to attractiveness of brands in the market.

The findings indicated that timely introduction of applicable innovation determined competitiveness of small and medium agro processing firms in Murang'a County. A majority of the respondents were of the view that timely introduction of innovation had helped to improve their brands value, productivity and profitability to a great extent. Applicable innovation was found to contribute to productivity and value of brands to a great extent but had a moderate contribution towards profitability. The findings concurred with the findings of other scholars. Zaheer & Bell (2005) identified innovation as a key capability of a firm that was important for its financial performance while Covin & Miles (1999) found out that innovation had a positive influence on a firm's profitability. The finding also echoed that of Ochola (2013) who concluded that innovation presented vast opportunities for businesses to infuse efficiencies in their operations and processes in order to serve their customers more efficiently or enter new markets. It also concurred with Atikiya (2015) who found out that innovative activities helped to develop strong brand identification for the SMES' products and services in Kenya.

Table 2: Extent to Which Innovation Contributed to Competitiveness of Firms

| | No Extent at All | Little Extent | Moderate | Great Extent | Very Great Extent | Mean | Median | Mode | Standard Deviation |
|---|---------------------|------------------|----------|-----------------|-------------------------|------|--------|------|-----------------------|
| To what extent has applicable innovation contributed to the productivity of your firm in the last three years? | 8.0% | 11.4% | 35.2% | 40.3% | 5.1% | 3 | 3 | 4 | 1 |
| To what extent has timely introduction of innovation contributed to the profitability of your firm in the last three years? | 9.1% | 14.8% | 37.5% | 31.8% | 6.8% | 3 | 3 | 3 | 1 |
| To what extent has timely introduction of innovation contributed to the attractiveness of your firm's brands in the market? | 9.7% | 13.6% | 48.9% | 21.0% | 6.8% | 3 | 3 | 3 | 1 |

Table 3: Innovation and Competitiveness of Agro-processing Firms

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | Mean | Median | Mode | Standard Deviation |
|---|-------------------|----------|---------|--------|----------------|------|--------|------|--------------------|
| Timely introduction of innovative processes has improved our productivity | 0.6% | 11.3% | 14.8% | 44.9% | 28.4% | 4 | 4 | 4 | 1 |
| Innovative processing improves our brand value in the market | 0.6% | 10.7% | 13.1% | 50.6% | 25.0% | 4 | 4 | 4 | 1 |
| We introduce innovative products ahead of competition | 1.1% | 13.1% | 32.4% | 43.7 % | 9.7% | 3 | 4 | 4 | 1 |
| We continually follow new developments in our industry | 1.7% | 10.2% | 27.8% | 43.8% | 16.5% | 4 | 4 | 4 | 1 |
| We reward staff members who suggest innovative ideas | 2.8% | 11.9% | 31.8% | 34.7% | 18.8% | 4 | 4 | 4 | 1 |
| We collaborate with research institutions | 2.9% | 13.6% | 16.5% | 55.1% | 11.9% | 4 | 4 | 4 | 1 |
| We have an innovation strategy | 1.1% | 10.8% | 23.9% | 55.7% | 8.5% | 4 | 4 | 4 | 1 |
| Trade fairs/ science exhibitions are sources of innovations | 1.7% | 10.8% | 22.7% | 39.2% | 25.6% | 4 | 4 | 4 | 1 |
| Innovations we can easily apply help to improve productivity | 1.7% | 9.1% | 14.2% | 53.4% | 21.6% | 4 | 4 | 4 | 1 |

INFERENCE STATISTICS

The specific objective of the study was to analyze the influence of innovation on competitiveness of small and medium agro processing firms in Murang’a, Kenya. The study hypothesized that:

H₀: Innovation does not significantly influence the competitiveness of small and medium agro-processing firms in Murang’a County, Kenya

Versus

H_A: Innovation significantly influences the competitiveness of small and medium agro-processing firms in Murang’a County, Kenya

Correlation analysis

The scatter diagram presented in Fig. 4 shows a positive linear relationship between innovation and competitiveness which indicate that an increase in one variable led to a corresponding increase in the other variable.

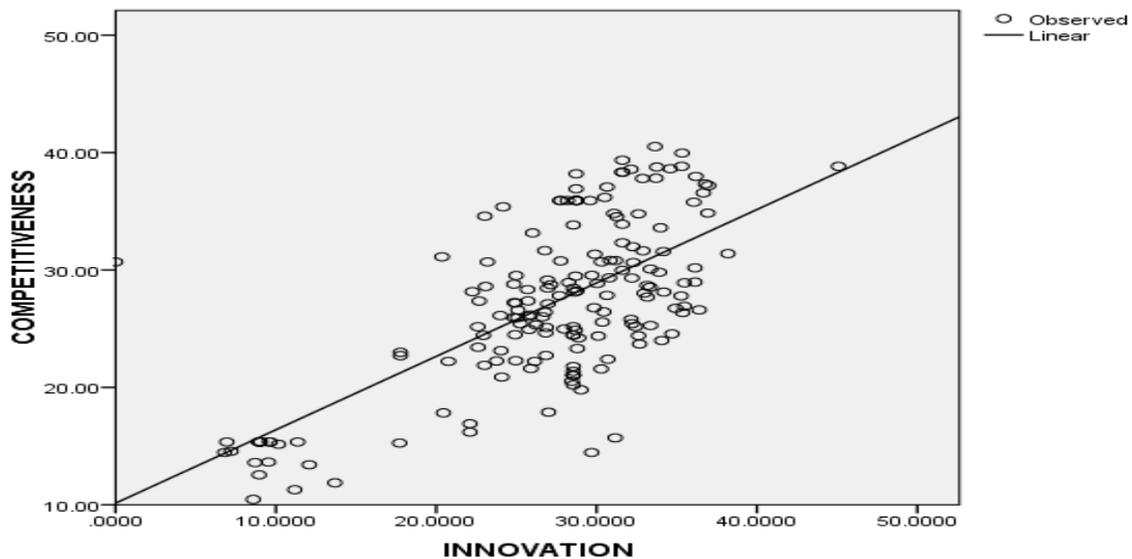


Fig. 4: Scatter Plot for Competitiveness against Innovation

As shown in table 4 the correlation between innovation and competitiveness was fairly positive at 0.678 and the relationship was also found to be significant since the P- value = 0.000 was less than the significant level $\alpha = 0.01$ (2-tailed).

Table 4.: Correlation Coefficients for Innovation and Competitiveness

| | | COMPETITIVENESS | INNOVATION |
|-----------------|---------------------|-----------------|------------|
| COMPETITIVENESS | Pearson Correlation | 1 | .678 |
| | Sig. (2-tailed) | | .000 |
| | N | 176 | 176 |
| INNOVATION | Pearson Correlation | .678 | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 176 | 176 |

Regression Analysis

Simple linear analysis was performed to empirically determine whether innovation significantly influenced competitiveness of agro processing firms in Murang’a County. From table 4.5 a model for competitiveness as influenced by innovation was generated as:

$Y = 10.136 + 0.625 X_1$, where Y is the dependent variable, competitiveness and X_1 is an independent variable, innovation.

From the analysis, it can be inferred that for every unit change in innovation, competitiveness changed by 0.625 when all the other factors were held constant. The influence of innovation towards competitiveness was significant since the P value of 0.000 was less than the level of significance $\alpha = 0.01$ (2 tailed).

Table 4.5: Regression Analysis for Innovation and Competitiveness

| | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|------------|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| (Constant) | 10.136 | 1.446 | | 7.011 | .000 |
| INNOVATION | .625 | .051 | .678 | 12.161 | .000 |

Dependent Variable: competitiveness

Table 4.6 shows that the adjusted constant of determination, $R^2 = 0.456$, meaning that when all other factors were held constant, innovation explained 45.6% of the variations in competitiveness of small and medium agro-processing firms in Murang’a County while 54.4% could be attributed to other factors.

Table 4.6: Model Summary for Innovation and Competitiveness

| R | R^2 | Adjusted R^2 | Std. Error of the Estimate |
|------|-------|----------------|----------------------------|
| .678 | .459 | .456 | 5.21675 |

Predictor (constant): Innovation

Table 4.7 shows the result of analysis of Variance (ANOVA) for regression coefficients which revealed a P-value of 0.000. Since the P value is less than 0.01 then the model of good fit is significant which indicate that innovation significantly influenced competitiveness of agro processing firms at 1% level of significance.

Table 4.7: ANOVA for Innovation and Competitiveness

| | Sum of Squares | Df | Mean Square | F | Sig. |
|------------|----------------|-----|-------------|---------|------|
| Regression | 4024.603 | 1 | 4024.603 | 147.885 | .000 |
| Residual | 4735.315 | 174 | 27.214 | | |
| Total | 8759.918 | 175 | | | |

a. Dependent Variable: COMPETITIVENESS b. Predictors: (Constant), INNOVATION

To test the hypothesis, the decision rule was to reject the null hypothesis $H_0: \beta_1=0$ if the regression coefficient β_1 was significantly different from zero at 1% level of significance and subsequently fail to reject the alternate hypothesis $H_A: \beta_1 \neq 0$. The results of regression analysis and ANOVA revealed that the influence of innovation on competitiveness was statistically significant at 1% level of significance (P-value = 0.000) and the regression coefficient β_1 was different from zero ($\beta_1 = 0.625$). From the foregoing, the null hypothesis H_0 which hypothesized that innovation does not significantly influence the competitiveness of small and medium agro-processing firms in Murang'a County was rejected and the alternate hypothesis H_A : Innovation significantly influences the competitiveness of small and medium agro-processing firms in Murang'a County, Kenya was accepted.

The finding was consistent with the findings of various other scholars. Wiklund & Shepherd (2005) posit that innovation keeps firms ahead of their competitors, thereby gaining a competitive advantage that leads to improved financial results. Hassan, et al. (2013) concluded that higher financial performance can be achieved better from increased innovativeness in manufacturing firms. They also established that market performance in the form of customer satisfaction, sales and profitability can be enhanced through innovative performance.

CONCLUSIONS

The results of linear analysis showed that innovation explained 45.6 % of all variations in competitiveness when all the other factors were held constant. The study found out that timely introduction of innovative products and processes improves brands value, productivity and profitability of firms. Applicable innovation helps the agro processing firms to produce strong brands that strengthen market presence; improve profitability; and stimulate productivity to a great extent. The findings of the study led to the conclusion that innovation positively and significantly influences the competitiveness of small and medium agro-processing firms in Murang'a County, Kenya.

RECOMMENDATIONS

The managers of small and medium agro processing firms should encourage and reward entrepreneurial spirit among the staff. Meetings to discuss suggestions for product and process development should be mainstreamed in the management and reasonable budgets allocated for experimentation. The top managers should invest more resources in R & D with a view of coming up with innovative products and processes in order to survive in increasingly competitive environment. The study also recommends that both the national and county governments in Kenya should offer subsidies that will encourage small and medium agro processing firms to invest more in R & D.

In order to achieve the 10% economic growth envisioned in Kenya Vision 2030, it is critical to transform smallholder agriculture from subsistence to an innovative, commercially oriented and modern agricultural sector. Due to the importance attached to the SMEs in job creation and poverty alleviation in the Kenya vision 2030 blue print, the government should intervene to assist the local firms to set up innovation and incubation centers.

AREAS FOR FURTHER STUDIES

This study analyzed the influence of innovation on competitiveness of small and medium agro processing firms in Murang'a County, Kenya. The study revealed that innovation explained 45.6 % of the variations in competitiveness while 54.4% could be attributed to other factors outside the model. Therefore, similar studies may be carried out to establish other determinants of competitiveness that will strategically position the agro processing firms to be more competitive.

The study adopted correlational research design. A similar study but using longitudinal research design will enrich the strategic management body of knowledge. Such a study will establish the influence of innovation on competitiveness of agro processing firms but over a longer period of time. A longitudinal study will also be of interest to the county governments in Kenya since they are relatively young and may benefit from the findings of the longitudinal study of small and medium agro processing firms as they formulate policies for SMEs in the counties.

REFERENCES

- Acs, Z. & Audretsch, D.B. (1990). *Innovation and Small Firms*. Cambridge, MA; MIT Press.
- Atikiya, R. (2015). Effect of Competitive Strategies on the Performance of Manufacturing Firms in Kenya. Juja. JKUAT Library. Unpublished.
- Banji, O.O. & Sampath, P.G. (2007). *Innovation in African Development. Case Studies of Uganda, Tanzania and Kenya*. A World Bank Study. New York. The World Bank.

- Bateman T.S. and Zeithaml C.P. (1990). *Management*. Boston. Irwin,
- Berg, B. (2001). *Qualitative Research Methods for the Social Sciences*. Boston: Allyn and Bacon.
- Chemengich, M.K. (2014). Determinants of Competitiveness of Electrical and Electronics Manufacturing Enterprises in Kenya. Juja. JKUAT Library. Unpublished.
- Chikan, A. (2008). National and firm competitiveness: A general research model. *Competitiveness Review*, 18(1), 20–28.
- Corbetta, P. (2003). *The Qualitative Interview: Social Research: Theory, Methods and Techniques*. California: Sage Publications.
- Covin, J. G. and Miles, M. P. (1999). Corporate Entrepreneurship and the Pursuit of Competitive Advantage. *Entrepreneurship Theory and Practice Journal*, 23:47–63.
- De Wit, R. & Meyer, R. (2004). Strategy: Process, Content and Context. An International Perspective. (3rd Ed). London. Thompson Learning. High Holborn House.
- FAO. (2013). Agribusiness Public-Private Partnership: A Country Report of Kenya. Country Case Studies- Africa. Rome. Retrieved from www.fao.int
- Garelli, S. (2014). The Fundamentals and History of Competitiveness. In *IMD World Competitiveness Yearbook* (pp. 488-503). Lausanne: IMD World Competitiveness Center.
- Hassan, M.U., Shaukat ,S.,Nawaz ,M.S. and Naz, S. (2013). Effects of Innovation Types on Firm Performance: An Empirical Study on Pakistan’s Manufacturing Sector. *Pakistan Journal of Commerce and Social Sciences* Vol. 7(2). 243-262.
- Kreiser, P., Marino, L., & Weaver, K.M. (2002). *Assessing the Relationship Between Entrepreneurial Orientation, External Environment and Firm Performance*. Retrieved from <http://www.babson.edu/entrep/fer/BABSON2002/X/X/-p3/>
- Lalinsky, T. (2013). Competitiveness Determinants: Results of a Panel Analysis Working Paper 4(2013), National Bank of Slovakia. Bratislava, Slovakia. Retrieved from <http://www.nbs.sk/en/publications-issued-by-the-nbs/workingpapers>
- Lall, S. (2000). The Technological Structure and Performance of Developing Country Manufactured Exports. *Oxford Development Studies*, 28(3), 337-369. doi: 10.1080/713688318.

- Lumpkin, M. H., & Dess, G.G. (1996). Clarifying the Entrepreneurial Orientation Construct and Linking it to Performance. *Academy of Management Review*, 21, 135-172.
- MacDonald, E. & Sharp, B.K. (2000). Brand Awareness Effects on Consumer Decision Making for a Common, Repeat Purchase Product: A replication. *Journal of Business Research*. 48(1). 5–15.
- McLeod, S.A. (2008). *Correlation*. Retrieved from www.Simplypsychology.org/
- Metcalf, S., Ramlogan, R., & Uyarra, E. (2003). Competition, Innovation and Development. *The Instituted Connection, Institutions and Economic Development*. Vol.1(1) 21-62.
- Miller, L., Rankin, N., & Neathey, F. (2001). *Competency Framework in UK Organizations*. London: Thompson Learning.
- Ochola, P.B.O. (2013). E-Commerce Adoption Among Micro, Small and Medium Sector in Nairobi County, Kenya. Juja. JKUAT Library.
- OECD. (2000). *Enhancing the Competitiveness of SMEs Through Innovation in the Global Economy*. Bologna Conference for SMEs and Industry Ministers. Paris, France: OECD.
- Orodho, A. J. (2003). *Essentials of Educational and Social Science Research Methods*. Nairobi: Mazola Publishers.
- Otieno, S. (2012). Influence of Entrepreneurship Orientation and Strategy on Performance of Kenya's Manufacturing Firms Operating under the East African Community Regional Integration. JKUAT Library. 90320.
- Pearce 11, J.A and Robinson, R.B. (2011).(12TH Ed). *Strategic Management: Formulation, Implementation and Control*. New York. Irwin McGraw International.
- Pokhariyal, G.P & Yalla, O. (2011). Effect of National Strategy Implementation on Competitiveness: A case of Kenya's trade, international marketing and investment strategies. *International Journal of Business and Public Management*.Vol. 1(1): 22-25
- Porter M.E. (1996). What is Strategy? *Harvard Business Review*. Vol.74 Pp 61-78.
- Porter, M. E. (1985). *Competitive Advantage. Creating and Sustaining Superior Performance*. New York. The Free Press.
- Porter, M.E. (1980). *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. New York. The Free Press.

- Porter, M.E. (1990). *The Competitive Advantage of Nations*. New York: Free Press.
- Porter, M.E. (2003). Building the Microeconomic Foundation of Prosperity. Findings from the Business Competitive Index. In M.E. Porter, X. Sala-i-Martin & E.V. Artadi (Eds.), *Global Competitiveness Report 2003-2004*. World Economic Forum.
- Raduan, C.R., Jegak, U., Haslinda, A., & Alimin, I.I. (2009). A Conceptual Framework of the Relationship between Organisational Resources, Capabilities, Systems, Competitive Advantage and Performance. *Research Journal of International Studies*, 12, 45-58.
- RoK. (2007). *Kenya Vision 2030: A Globally Competitive and Prosperous Kenya*. Nairobi. Government Printer.
- RoK. (2012). *Sector Plan for Science, Technology and Innovation 2013-2017. Revitalizing and Harnessing Science, Technology and Innovation for Kenya's Prosperity and Global Competitiveness*. Nairobi. Government Printer.
- RoK. (2013). *Murang'a County First Integrated Development Plan 2013-2017*. Nairobi: Government Printer.
- Rugman, A. M., Oh, C. H. & Lim, D. S. K. (2012). The Regional and Global Competitiveness of Multinational Firms. *Journal of the Academy of Marketing Science*, Volume 40, p. 218–235.
- Sancharan R. (2011). Competitiveness in Service Sector: A Case of Hotel Industry in India. *Global Business Review*. 12(1) 51–69
- Sinnu, T. & Antwii, M. (2014). Determinants of Competitiveness in South African Citrus Fruit Industry. *Journal of Agricultural Science*. Vol. 6 (12). doi: 10.5539/jas.v6n12pxx.
- UNECE (2012). *Fostering Innovative Enterprises: Challenges and Policy Options*. NY. United Nations Economic Commission for Europe.
- Waijanjo, E.W. (2013). Effect of Competitive Strategies on the Relationship Between Strategic Human Resource Management and Firm Performance of Kenya's Corporate Organizations. Juja. JKUAT Library.
- Ward, T.B. (2004). Cognition, Creativity and Entrepreneurship. *Journal of Business Venturing*, 19(2), 173–188.

WEF. (2014). *Global Competitiveness Report 2014-2015*. Geneva. World Economic Forum.

Wickland, J.& Shepherd, D. (2005). Entrepreneurial orientation and small business performance: A configuration approach. *Journal of Business Venturing*, 20(1), 71–91.

World Bank, (2008). Kenya Investment Climate Assessment: Regional Program for Enterprise Development (RPED). Africa Finance and Private Sector. New York. The World Bank.

Woszczyna K.S. and Pikiewicz, Z.D. (2014). Managerial Competencies and Innovations in the Company: The Case of Enterprises in Poland. *Business, Management and Education Journal*, 12(2): 266–282 doi:10.3846/bme.2014.240

Zaheer, A. and Bell, G. (2005). Benefiting from Network Position: Firm Capabilities, Structural Holes and Performance. *Strategic Management Journal* 26:809-25.

Zahra, S.A. and Bogner, W.C. (2000). Technology strategy and software new venture performance: Exploring the moderating effect of the competitive environment. *Journal of Business Venturing*, 15(2), 135–173.

Zikmund, W. G. (2003). *Business Research Methods*. Ohio: South-Western cengage.