



**DRIVERS OF PRODUCT INNOVATION AMONGST SMALL AND MEDIUM ENTERPRISES IN THE AGRO-BASED
MANUFACTURING SECTOR IN KIAMBU COUNTY, KENYA**

Wainuku, S. M., & Karanja, N.

**DRIVERS OF PRODUCT INNOVATION AMONGST SMALL AND MEDIUM ENTERPRISES IN THE AGRO-BASED
MANUFACTURING SECTOR IN KIAMBU COUNTY, KENYA**

Wainuku, S. M.,^{1*} & Karanja, N.²

^{1*}Msc. Scholar, Jomo Kenyatta University of Agriculture & Technology [JKUAT], Kenya

²Ph.D, Lecturer, Jomo Kenyatta University of Agriculture & Technology [JKUAT], Kenya

Accepted: April 16, 2019

ABSTRACT

SMEs are one of the major drivers in the socio-economic innovations of any country. The aim of this study was to determine the drivers influencing product innovation amongst Small and Medium Enterprises (SMEs) in Kiambu County. This study was to explore the major factors such as Entrepreneur Characteristics, Firm Characteristics, Level of Resource Mobilization among SME's and how Customer Relationship Management influence product innovation. The research design was descriptive research design and the target population was two hundred and fifty SMEs based in Kiambu County. Sampling technique for this study was stratified random sampling to select respondents of target population. This study used primary data which was collected by use of questionnaires. Data analysis was done using quantitative methods. The study found that entrepreneurial characteristics had impact on the product innovation of the firm. Effectiveness of enterprise characteristics in contributing towards the ability to improve the available products based on their capability to be transformed into new products. From the study, level of resources mobilization affects the product innovation of the firm. The study found that customer relationship management elements have an impact in motivation of the customers that may result to effective planning of ideas in developing new products in the firm. The study recommended that Small and medium agro based Manufacturing should practice long-term relationship with customers and develop good customer relationship strategies to help SMEs, so that they can be able to deliver the innovative products that required by customers.

Key Words: *Entrepreneur Characteristics, Firm's Characteristics, Resource Mobilization, Customer Relationship Management and Product Innovation*

CITATION: Wainuku, S. M., & Karanja, N. (2019). Drivers of product innovation amongst small and medium enterprises in the agro-based manufacturing sector in Kiambu County, Kenya. *The Strategic Journal of Business & Change Management*, 6 (2), 333 – 347.

INTRODUCTION

KNBS (2017) states that there are approximately 17 million registered SMEs in Kenya. These account for about half of Kenya GDP and have employed about 58% of Kenya workforce which is 45% of Kenya GDP. SMEs are major drivers in the socio-economic innovations of any country. However, they are stimulants for the achievement of the macroeconomic objective in terms of employment creation at low investment cost and enhancement of apprenticeship training.

Salemi (2011) stated that innovation can take the following five ways; entry in a new market in which the specific product has not been previously marketed in the market, introduction of new product, installation of a new technology method, new source of raw materials discovery by the entrepreneur and new form organisation of any sector thus creating a monopoly position otherwise disrupting of an existing product. Thus, it is crucial for the SMEs to be innovative in order to have a competitive advantage over their competitors.

The principle of product innovation requires that the enterprises continuously seek real product and marketing improvements. The enterprises that overlook new and better ways to do things will eventually lose customers to other enterprises that have innovative products (Kotler & Armstrong, 2016). Economic survey (2017) indicates that SMEs in Kenya spent about 1 billion Kenya Shillings in all forms of innovation.

Kenya National Bureau of Statistics (2016) defines small enterprises according to employment size of ten to forty nine employees while medium-sized enterprises have between fifty and ninety nine employees. It should be noted that casual workers are part of the fully paid employees while partially paid family members are also part of the group of unpaid workers who are family members.

SMEs are considered as one of the main driving forces in the economy due to their various contributions in terms of technological innovations, employment generation and export promotion (Saleemi, 2011). This view is stated by Gutierrez, Molina and Kaynak (2018) who said that the

capability of an economy to adapt to change and to continue economic progress would seem to be weakened if there is no continuous infusion into the total economic system, at a numerically high level, of new products developed, new markets and new jobs generated by Small and Medium enterprises.

Agro-based manufacturing sector in the country produces up to 10% of GDP and has recorded 6.9% growth in value addition (KIPPRA, 2010). This sector plays a crucial role in increasing growth in agricultural sector by catalysing agro-processing. This is in line with Vision 2030 and in support of the Kenya development agenda through employment creation, foreign exchange revenue and attracting foreign direct investments (GOK, 2012).

SMEs form more than ninety nine percent of all enterprises in the world (Nassr & Wehinger, 2016). These business enterprises allow the marginalized and vulnerable groups to diversify their incomes, create new sources of economic growth and generate employment, especially in rural areas. It is clear that the global economy depends on the success of the SME sector. In OECD area over 95% of enterprises are SMEs, which account for 60%-70% of employment in most countries.

In Kenya, SMEs play an important role in the social-economic innovations of the country and provide one of the most prolific sources of employment, income generation, poverty reduction and innovations of an industrial base. KNBS(2014) indicated that SMEs sector produced over 84.3% of new employment created opportunities in the year 2013. Despite role played by the sector, it continues to face many challenges that have hindered the realization of its potential and which inhibit their potential growth and high profitability and hence, diminish their capability to contribute effectively to sustainable product innovation.

Official policy framework of small enterprises in Kenya is in the Session Paper No two of 2012 on the Innovations of Small and Medium Enterprises for Wealth and Employment Creation for Poverty Reduction. The policy paper was intended by the Kenya government to form the basis for enacting the SME Act to institutionalize SME Policy in the

country. The SME Act (2012) gives direction to the following key issues such as the legal and regulatory environment, markets and marketing, business linkages, tax regime, skills and technology and financial services.

Kotler and Amstrong (2014) stated that innovation constitutes of new firms and new equipment's, the introduction of new improved products and arise of new leadership of men. Further, the scholars define product innovation as introduction of new improved goods; one which the consumers are not yet familiar with. New products and services introductions can be classified according to newness to the market and customer value that have been created resulting in the following categories of unique products to the market: (a) original products that are radically new and the value created is substantial, (b) New products or additions to existing product lines occur when a company offers a product from a new category that has not been previously offered and (c) Improvements or revisions to the existing products provide improved performance or greater perceived value or lower cost(Saleemi, 2011).

Problem Statement

The principle of innovation is for enterprises to improve the market share of their products. The entrepreneur that overlooks new and better ways to do things was eventually lose customers to the competitors that have found better and innovative products (Kotler & Armstrong, 2014). GDP composition by sector was as follows; agricultural products 35%, industry17.6% and service47.7%. However, agro-based contracted but still generated over a third (33.4%) of the total manufacturing production and provides 89,319 jobs. Studies on SMEs show that both highly qualified specialists and highly educated managerial staff are rarely found in these enterprises.

Small firms are also less likely to engage in innovative activities, such as adding new product lines and incorporating new technologies (WB, 2013). Bowen (2014) stated that 60% of SMEs fail within few months since their inception.

STI Act(2012) states that majority of SMEs in Kenya are not innovative, and this slow down their growth. The business system has not fully integrated innovation to enhance competitiveness. As a result, key sectors such as manufacturing have not been able to become competitive. The contribution of manufacturing has stagnated at 11% over the past 15 years. Little is documented on product innovation and effect on the growth of SMEs in Kenya (STI Act, 2012). Kenya's industrial structure continues to display insufficient linkages between the various categories of firms especially SMEs where low innovation takes place. The aim of this study was to determine the drivers of product innovation among SMEs that in agro-based manufacturing sector in Kiambu County, Kenya.

Objective of the Study

The general objective of this study is to determine the drivers of product innovation among SMEs in Kiambu County, Kenya. Specific Objectives were;

- To evaluate influence of entrepreneur characteristics on product innovation among SMEs in Kiambu County
- To determine the role of firm's characteristics on product innovation among SMEs in Kiambu County
- To analyze how the level of resource mobilization influences product innovation among SMEs in Kiambu County
- To establish how customer relationship management influences product innovation among SMEs in Kiambu County

LITERATURE REVIEW

Theoretical Framework

Entrepreneurship innovation Theory

This theory is propounded by Ebner (2011) who viewed entrepreneurship as the forth factor for production, a catalyst of economic growth and revitalization. He also indicated that an entrepreneur is the one who is innovative, creative and has a foresight. Innovation and enterprise are concerned mainly with producing new

combinations (Ebner, 2011). It is the entrepreneur who breaks the cycle of routine, swimming against the stream to produce new products and services, new techniques of production. Discover new markets, explore new sources of raw materials and rearrange markets (Davidson, Delmar & Wiklund, 2012).

Technological innovations are most visible form of innovations (Ajimati, 2012). Innovations are materialized in innovative firms and jobs are highly personalized. Creative accumulation is associated with institutionalized innovation by large firms (Kotler & Armstrong, 2014). When entrepreneurs under creative destruction draw from the public domain only to place their own innovation within the reach of imitators, large firms under creative accumulation appropriate and protect a major part of their intellectual property, and build on their proprietary knowledge and stock through R&D departments.

Schumpeterian theory of Entrepreneurship

Schumpeterian theory, states that a motivated entrepreneur is an individual who innovate and come up with new products in the market (Schumpeter, 1939). Innovation is defined as a disruption in the existing production systems that have been brought up by an entrepreneur owner with the aim to make profits and reduce costs. Consequently, innovation is closely related to Schumpeter idea of development. Development is defined as a impulsive and sporadic transformation in channels of flow, disturbance of equilibrium which forever changes and affects the equilibrium status as previously exist. (Schumpeter, 1939). When disruption in market take place in the economy of a country, circular flow changes, and the development process kick off.

Schumpeter states that disruptions are the basic elements of vibrant process, and that disruption come-up in the form of innovations. Every innovation compromises of: introduction of new goods and services, introduction of new ways of

production, opening up of new market, opportunity of new source of raw materials and carrying out of the new firms of any industry for example monopoly. The unique combinations of these factors are crucial for the development process inception. It is to be enhanced by the development agents who innovators.

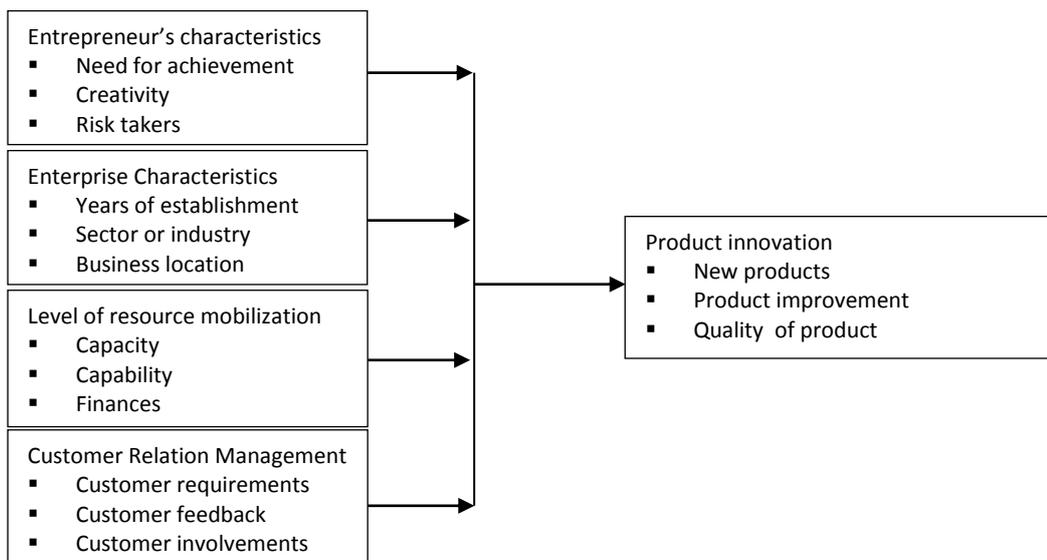
Entrepreneurs are seen as hero by the Schumpeter development theory. When the innovation is successful and profit is realized, other entrepreneurs follow it in. Innovations in one field may encourage other innovations in various related sector or industry. Innovation is one of the major dimensions of entrepreneurial aspect in any given country.

Enterprise Growth Theory

The theory was proposed by Greiner in the year 2012. According to the theory; an entrepreneurial venture is successful if it is growing. Growth has various connotations. It can be defined in terms of revenue generation, value addition and expansion in terms of volume of business. It can also be measured in terms of qualitative features like market position, quality of product and good will of the customers (Kruger & Kumar, 2011).

There are many factors like characteristics of the entrepreneur, access to resources like finances and manpower which affect the growth of the enterprise and differentiate it from a non-growing enterprise. Gilbert et al. (2011) suggested how and where questions are important in the context of the growth of the enterprise. It has been highlighted that growth is a function of the decisions an entrepreneur makes, like how to grow internally or externally and where to grow in domestic market or international market. The theory is relevant to the study as it explains that various factors such as characteristics of the entrepreneur, access to resources like finance, and manpower affect the performance of the enterprise and differentiate it from a non-growing enterprise.

Conceptual Framework



Independent Variables

Dependent Variable

Figure 1: Conceptual Framework

Source (Author, 2019)

Empirical Review

The principle of product innovation requires that the enterprises continuously seek real product and marketing improvements. The enterprises that overlook new and better ways to do things will eventually lose customers to other enterprises that have innovative products (Kotler & Armstrong, 2014).

Ajimati (2012) asserts that one would conclude that the bond between 'product' and 'innovation' are inseparable. Because of these facts, innovation when taking into considerations was enable a product to be perceived as new in the market and hence demands patronage by the potential customers thus increase market share for the firm. It must bear in mind that an innovation can either be big or small, brand new or just having little difference for example new packaging or product improvement, complex or simple. The pattern of innovation was largely rely on its terms of technical achievement, as connected to the firm's feasibility based on the line or field of business operations.

Product innovation, the dependent variable, constitutes a very important part of organizational innovativeness while at the same time referring to an experience as demonstrated by companies with

innovative activities in the products. In this circumstance, it is measured solely on three distinct dimensions that reveal the degree in which an innovative product is new; (i) to the firm, (ii) to the consumers, and (iii) unique in terms of its features in relation to competitive products.

There is a positive relationship between entrepreneur's characteristics such as need for achievement, innovativeness or creativity and risk takers in relation to product innovation. Today most entrepreneurs have low levels of creativity (Saleemi, 2011). This acts as a constraint to their ability to get the appropriate information and understand the regulation in their business context. These factors have been chosen because many researchers have found significant relationship between this factor and growth of SMEs(Saleemi, 2011). Saleemi (2011) states that creativity is the ability to bring something new into existence where imaginative people bring them into existence, nurture them and develop them successfully; while innovativeness of a entrepreneur helps him or her in view of the changing taste of and innovative activities to produce goods to satisfy the customer's changing demands for the products (Kotler & Armstrong, 2014)

Business features encompass a number of various elements that influence product innovation. The elements include years of existence, legal status, the industry that the business operates and locality. The firm's age and size of business performance have been widely studied with varied results. Ideally concerns have been raised in theoretical and empirical research in the economics, management and sociology disciplines on whether larger firms are superior in performance to smaller firms; or whether smaller firms are superior in performance to larger firms; and whether older firms are superior in performance to younger firms, or younger firms are superior in performance to older firms (Tsui and Bian (2014). The legal status also affects the entrepreneurs' incentives for investment and growth. Persons with unincorporated businesses are fully liable for their entire personal assets, while owners of incorporated businesses are only liable up to the amount of their share in the business.

Firm's levels of resources allow firms to distinguish themselves from their competitors and develop competitive advantage in regards to resource based focus of the organization to be profitable hence able grow in a competitive environment; this is mostly possible when resources are valuable, scarce and non-substitutable (Barney, 2011). In developing countries, firms require resources competencies, and skills which can be build up through R & D or training, to become innovative and competitive (Goedhuys *et al.*, 2014) however weak financial firms often lead to low product innovation firms with finances can be more innovative. Managerial ability to manage more resources portfolio into bundles of unique capabilities that can be leveraged within a certain competitive environment is important to get value from firm level of resources (Ireland *et al.*, 2013).

There is usually a cut-throat competition for customers among enterprises. This shows that firms must work towards surpassing the consumer's hopes; through a definite relationship between the product features and customer prospects, customer requirements and product quality (Kumar and

Reinhard, 2018). Quality is the extent of excellence of a good or a service and to a large degree, it is the customer who ultimately judges that quality (Ross, 2017). Therefore, customer feedback is very critical throughout the innovations phase of a product, hence the need to ensure that the product is right and also to speed innovations towards a perfectly defined firm's goal.

METHODOLOGY

Research design

This study used Descriptive research design. Research design was quantitative with the aim of determining the drivers (independent variables) that influence product innovation (dependent variables). Brannen (2017) asserts that research design is a map for guiding a study. Target population consisted of 250 registered SMEs in agro-based manufacturing who were in the food sub-sector in County of Kiambu. Sampling technique employed by this study was stratified random sampling. Sample size of study was determined using the following formula provided in Kothari (2010).

$$n = \frac{Z^2pq}{e^2} \dots \dots \dots \text{Equation 1}$$

$$n_{adjusted} = \frac{nN}{n+N} \dots \dots \dots \text{Equation 2}$$

n=sample size without considering the finite population.

Z=normal reduced variable at 0.05 level of significance which is 1.96.

P=population reliability; where p is 0.5 which is taken for all developing countries population

q= (1-p) = 0.5

e=margin of error considered which is 5% for this study.

In Equation 3.2:

n adjusted = The sample size of the finite population

N: size of population

$$\text{Using the formula } n = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2} = 384.16$$

Therefore, the sample size is

$$n_{adjusted} = \frac{384.16 \times 250}{384.16 + 250} = 151.44$$

The sample was allocated to small and medium enterprises using the following formula as provided by Kothari (2012)

$$n (\text{Subsector}) = \frac{N(\text{subsector}) * n(\text{all subsector})}{N (\text{all subsectors})}$$

Where: n (subsector) is the sample size at subsector level.

N (subsector): is the population of a subsector.

n (all sectors): is the sample size of the two (SMEs) sub sectors combined.

N(all sectors): is the population of the subsectors.

Using the formula, the size for each subsector was as follows;

$$(\text{Small Enterprises}) = \frac{160 * 151}{250} = 97$$

$$(\text{Medium Enterprises}) = \frac{90 * 151}{250} = 54$$

Sample size consisted of 151 (97 Small enterprises and 54 Medium enterprises).

Questionnaire was used to collect data from the owner and the manager of the firm. Quantitative data collected was processed by editing in eliminating errors, coding and then entering the data into the computer program. Data processing was done through descriptive statistics using regression analysis and presented through percentages, means and standard deviation and frequencies. The quantitative analysis was done by the use of computer software specifically statistical package for social sciences (SPSS).

RESEARCH FINDINGS AND DISCUSSIONS

Entrepreneur's characteristics

The research sought to determine from the respondents the extent to which they agree the

effect of entrepreneur characteristic on product innovation in small and medium enterprises in agro based manufacturing sector in Kiambu County. From the research findings, majority of the respondents indicated that they neither agreed nor disagreed that the firms focus on Need for achievement to enhance product innovation based on the average mean of 2.792. Majority of the respondents neither agree nor disagree that the creativity of the entrepreneurs guarantees product innovation as shown by a mean of 2.85; the respondents also had moderate stand that the firm risk taking is guaranteed as shown by a mean of 2.55; respondents also were in moderate agreement on the firm keen in risk taking to facilitate the establishment of new products as shown by a mean of 2.55. Majority of the respondents were in moderate agreement that Entrepreneurial characteristics affects product innovation as shown by mean of 2.02. Concisely, majority of the respondents agreed that Need for achievement facilitates new products in the firms as shown by a mean of 3.99. This implied that majority of the firms had started recognizing the role of entrepreneurial characteristics on enhancing product innovation with other firms in the small and medium agro based manufacturing firms. The findings of this study were in tandem with literature review by singer, (2017) who observed that entrepreneur's skills are effective and that they enhance issues such as using effective need for achievement, potential risk taking, and creativity.

Table 1: Descriptive analysis of Entrepreneurs characteristics

Statements	Mean	Std. Deviation
Do the firms focus on Need for achievement to enhance product innovation?	2.85	1.54
Is the creativity of the entrepreneurs guarantors product innovation?	2.55	1.43
Is the firm keen in risk taking to facilitate the establishment of new products?	2.55	1.32
Entrepreneurial characteristics affects product innovation	2.02	1.23
Need for achievement facilitates new products in the firms	3.99	1.39
Average	2.792	1.382

Enterprise Characteristics

The research sought to determine from the respondents the extent to which they agree the enterprise characteristics affects product innovation. From the research findings, majority of the respondents indicated that they neither agreed nor disagreed that the firms have effective enterprise characteristics that enhances product innovation based on the average mean of 3.31. Majority of the respondents agreed that the years of establishment of business affects the product innovation as shown by a mean of 3.12; the respondents also had moderate agreement stand that the Sector or industry is paramount in launching new products as shown by a mean of

2.94; respondents also were in agreement that Business location enhances product innovation as shown by a mean of 3.53. Majority of the respondents agreed that enterprise characteristics enhance product improvement as shown by mean of 3.81 and the respondents agreed that business locality facilitates the production of new products shown by mean of 4.17.

This implies that majority of the firms had started recognizing the role of enterprise characteristics on product innovation. The findings of this study are in tandem with literature review by Tozay, (2012) who observed that enterprise characteristics is key in that are enhancing product improvement in the organization.

Table 2: Descriptive analysis of enterprise characteristics

Statements	Mean	Std. Deviation
Years of establishment of business affects the product innovation	3.12	1.32
Sector or industry is paramount in launching new products	2.94	1.3
Business location enhances product innovation	3.53	1.45
Do enterprise characteristics enhance product improvement	3.81	1.4
Do business locality facilitates the production of new products	4.17	1.12
Average	3.314	1.318

Level of resource mobilization

The research sought to determine from the respondents the extent to which they agree the level of resource mobilization boost the extent of product innovation. From the research findings in majority of the respondents neither nor disagreed agreed that the Capacity of the business is crucial in launching new products as shown by average mean 3.77. Respondents agreed that the capacity focus on the key business decision enhances product improvement as shown by average 3.70. The respondents agreed that Is resource availability

enhances product improvement as shown a mean of 3.58. The respondents agreed that Finances availability affects product innovation as shown by mean of 3.18. The respondents agreed that Effective capacity development approach enhances product innovation as shown by a mean of 3.64. This implies that majority of the firms have started recognizing the role of resources in enhancing product innovation. The findings of the study are in agreement with literature review by Waithaka (2012), who indicated that level of resources availability is crucial in any process of a firm.

Table 3: Descriptive analysis of level of resource mobilization

Statements	Mean	Std. Deviation
Capacity of the business is crucial in launching new products	3.77	0.181
The capacity focus on the key business decision enhances product improvement	3.70	0.139
Is resource availability enhances product improvement	3.58	0.189
Finances availability affects product innovation.	3.18	0.175
Effective capacity development approach enhances product innovation	3.64	0.162
Average	3.57	0.138

Customer Relation Management

The research requested the respondents to indicate the extent to which they agree the firms has implemented the customer relationship management in an effort to enhance their product innovation. From the results, majority indicated that they nether neither agree nor disagree that the customer requirements enhances product innovation as shown by a mean of 3.30. The respondents agreed customer feedbacks paramount in enhancing product as shown by a

mean of 3.62. Frequent customer involvement enhances product innovation as shown by a mean of 4.07. Customer relationship management enhances product innovation as shown by a mean of 3.50. The respondents agreed that the Customer feedback enhances product improvement as shown by 3.53. The above findings corroborates with literature review by Sandeep (2011) who indicated that customer relationship is achievable through; proper handling of customer requirements, customer feedback and customer involvement.

Table 4: Descriptive analysis of customer relationship management

Statements	Mean	Std. Deviation
Do the customer requirements enhances product innovation	3.30	1.28
Are customer feedbacks paramount in enhancing product improvement?	3.62	1.27
Frequent customer involvement enhances product innovation.	4.07	0.95
Customer relationship management enhances product innovation.	3.50	1.54
Customer feedback enhances product improvement	3.53	1.45
Average	3.622	1.26

Product innovation

The research requested the respondents to indicate the extent to which they agree firms implemented the drivers of product innovation in their firms. From the research findings, majority of the respondents neither agree that; the firm's

implementation of drivers affected to product innovation, as such all the variables have effects on the product innovation. The firms incorporated product innovation also has positive impact on the new products, product improvement and quality of products as shown in the figure 2.

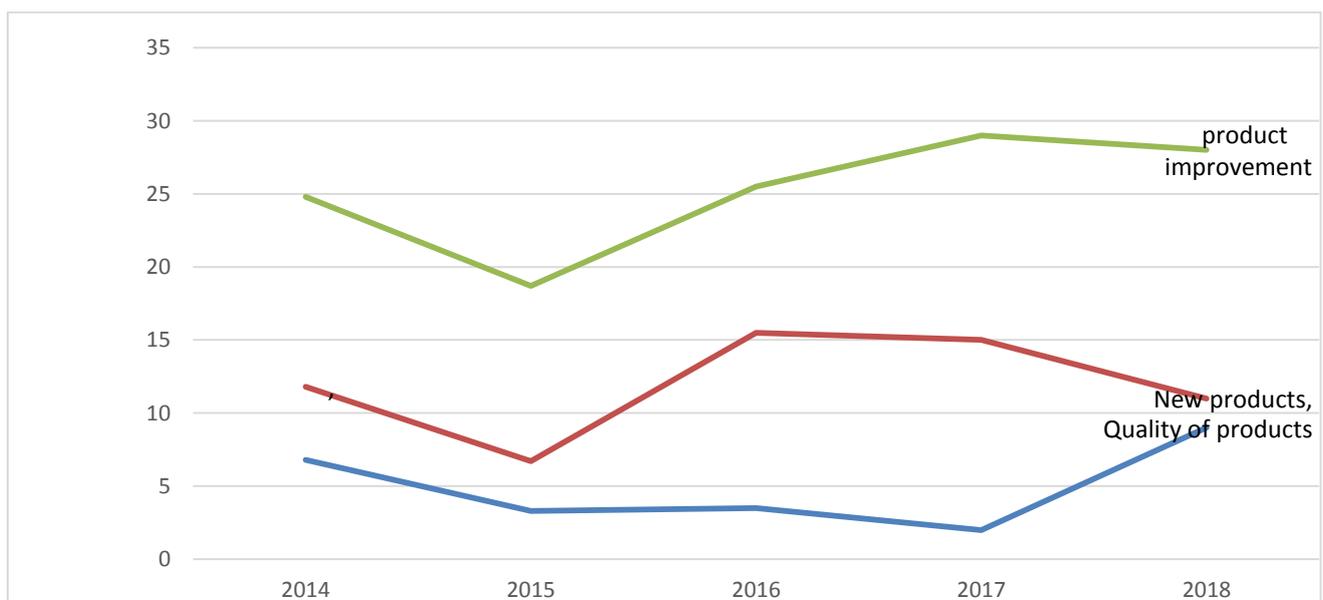


Figure 2: product innovation indicators

Inferential Analysis

Correlation Analysis

Table 5: Correlation Matrix

		Entrepreneur's characteristics	Enterprise Characteristics	Level of resource mobilization	of Customer Relation Management
Entrepreneur's characteristics	Pearson correlation	1			
Enterprise Characteristics	Sig Pearson correlation	.538** 0.000	1		
Level of resource mobilization	Sig Pearson correlation	.535** 0.003	.613** 0.000		
Customer Relation Management	Sig Pearson correlation	.154** 0.014	.373** 0.000	.477** 0.001	
Product innovation	Sig Pearson correlation	.493** 0.000	.575** 0.000	.679** 0.000	.576** 0.000

The study used Pearson correlation analysis to establish the association among the variables used in the study. Correlation findings above indicated that the correlation between Entrepreneur's characteristics and product innovation was 0.493 with a corresponding p value of 0.000. The correlation coefficient was therefore significant and positive implying that if Entrepreneur's characteristic increases the product innovation also increases. The findings concurred with Karimi (2014) findings who also revealed that technical capability of the entrepreneur is significant in gauging the performance of its enterprise.

The results further revealed that the correlation between enterprise characteristics and product innovation at 0.575 with a corresponding p value of 0.000. The correlation coefficient was also crucial and positive which implied that if increase in enterprise characteristics increases the product innovation of the agro based manufacturing firm. This finding conforms to those of Palmer (2013) who found out that there is a strong relationship between enterprise characteristics and the innovation of the firm.

The findings also indicate that the correlation between level of resource mobilization and product innovation by agro based manufacturing firm was 0.679 with a corresponding p value of 0.000. The correlation coefficient revealed a significant and positive association implying that if level of resource mobilization increase the product innovation also increases. Singer (2017) also emphasizes that the scope of resources attainment is determine whether the operational approach, structural approach and labored approach.

The finding results indicated that the correlation between customer relationship management and product innovation of agro based manufacturing firms was 0.576 with a corresponding p value of 0.000. The correlation coefficient revealed a significant and positive association implying that increase in customer relationship management increases the product innovation. According to Preuss (2011) customer involvement is very important in enhancing the product innovation in the enterprise.

Regression Model Analysis

Table 6: Summary of Regression model Analysis

Model	R	R2	Adjusted R2	Std. error of the estimate
1	0.640	0.41	0.401	0.54908

Table 7: Analyze of various (ANOVA) results (overall model significance)

Model	Sum of squares	Df	Mean square	F	Sig
Regression	52.583	4	13.146	43.602	.000b
Residual	75.674	130	0.301		
Total	128.257	134			

Table 8: Regression coefficient Results

	B	Std error	T	Sig.
(constant)	2.331	0.173	13.473	0.000
Entrepreneurial characteristics	0.196	0.042	4.666	0.000
Enterprise characteristics	0.260	0.065	4.000	0.000
Level of resource mobilization	0.217	0.052	4.173	0.000
Customer relationship management	0.198	0.061	3.245	0.000

Dependent Variable: product innovation function

Predictors: (constant), Entrepreneurial characteristics, enterprise characteristics, level of resource mobilization, customer relationship management.

$$Y = 2.331 + 0.260X_1 + 0.217X_2 + 0.198X_3 + 0.196X_4 + \epsilon$$

Y= performance

B0= Constant

X1= Entrepreneurial characteristics

X2= Enterprise characteristics

X3= level of resource mobilization

X4= customer relationship management

ϵ = Error term

In order to establish the statistical significance of the hypothesized relationships, multiple linear regression was conducted at 95 percent confidence ($\alpha=0.05$). The results were presented in table 6. The findings revealed a relationship $R=0.640$, indicating a strong positive association between entrepreneurial characteristics, enterprise characteristics, level of resource mobilization, customer relationship management and product innovation. $R^2 = 0.41$ indicated that 41.7% of variation in the product innovation was explained by the four variables.

The result of ANOVA test showed that the F value is 43.602 with a significance of p value =0.000 which was less than 0.05, meaning that there is a significant relationship between Entrepreneurial characteristics, enterprise characteristics, level of

resource mobilization, customer relationship management and product innovation. The ANOVA statistics at 5% level of significance shows that the value of F calculates (F computed) is 43.602 and the value of F critical (F tabulated) at 4 degrees of freedom and 83 degrees of freedom at 5% level of significance is 2.44. F calculated (F computed) is greater than the critical (F tabulated) ($43.602 > 2.44$), this showed that the overall model was statistically significant at 5% significance level.

The coefficient of Entrepreneurial characteristics was ($\beta=0.196$, $p=0.000$, <0.05) showed a statistically significant relationship between Entrepreneurial characteristics and product innovation. The results implied that a unit increase in Entrepreneurial characteristics would result to an increase of 0.196 units in product innovation. Similarly, Vorster (2013) study concluded that Entrepreneurial characteristics affected product innovation of an organization. It was therefore recommended that the implementation of Entrepreneurial characteristics indicators have impact on the product innovation of a firm.

The coefficient of Enterprise characteristics was ($\beta=0.260$, $p=0.000$, <0.05) showed a statistically

significant relationship between Enterprise characteristics and product innovation. The results implied that unit increase in Enterprise characteristics would result to an increase of 0.260 units in product innovation. This finding conforms to those of Weele (2010) who found out that there is a strong relationship between Enterprise characteristics and product innovation of a firm, therefore the study concludes that the presence of a Enterprise characteristics positively affects product innovation in organization.

The coefficient value of level of resource mobilization was ($\beta=0.217$, $p=0.000$, <0.05) this shows statistically significant relationship between level of resource mobilization and product innovation of a firm. The results are tandem with the research done by Schmalensee (2013) who found out that level of resource mobilization is effective in utilization of operational activities in the organization increases the product innovation of the firms.

The coefficient of customer relationship management was ($\beta=0.198$, $p=0.000$, <0.05) showed a statistically significant relationship between customer relationship management and product innovation of the agro based manufacturing firms. The results implied that a unit increase in customer relationship management would result to an increase of 0.198 units in product innovation of the firm. Tozay (2012) also emphasized that the scope of customer relationship management is to determine whether the enterprise awards rewards to their customers and also involve them in matters regarding the product innovation.

CONCLUSIONS

The study found that entrepreneurial characteristics had impact on the product innovation of the firm. The extent of need achievement is essential in enhancing product innovation. Sector or industry is paramount in launching new products. Therefore enhancing suitability and competitiveness of the agro based manufacturing firms.

The study found that effectiveness of enterprise characteristics in contributing towards the ability to improve the available products based on their capability to be transformed into new products. From the study, level of resources mobilization affects the product innovation of the firm. The capacity focus is effective in the product improvement of the firm. Finance availability is cognizant in enhancing the suitability of the small and medium firms through the critical assessment of the ability to perform the task in a more effective and efficient manner.

The study found that customer relationship management elements have an impact in motivation of the customers that may result to effective planning of ideas in developing new products in the firm. Many respondents agreed that customer requirements, customer feedback and customer involvements are critical in enhancing product innovation and improvement.

RECOMMENDATIONS

Small and medium agro based Manufacturing firms should embrace expertise in assessing the entrepreneurial capabilities to enhance product innovation. The firms should also focus in ascertaining the creativity and competence level for the entrepreneurs. This was for improving the product innovation of the firms.

Small and medium agro based manufacturing firms should focus on adopting enterprise characteristics elements. These should be done by focusing on the sector or the industry and the business location. This will aid in improving the subsequent innovation since resources were not previously being used to correct the defects caused by the poor enterprise characteristics.

The resources of the firm should be effectively and efficiently controlled through capacity focus and efficiency. Finance should be utilized properly to meet the intended obligation of product innovation. Effective finance capability approach and operational approach should be embraced for effective delivery of new products in the firm.

Small and medium agro based Manufacturing should practice long-term relationship with customers and develop good customer strategies to develop them so that they can be able to deliver the quality required without errors and defects. Use of the incentives, awards and frequent customer involvement of their work is paramount in ascertaining the loyal customers and rewarding them as per their loyalty. These activities improve the product innovation of the firm as they assist in improving the customer feedback and consequently the entire firm.

Areas for Further Research

The objective of the study was to assess the drivers of product innovation amongst small and medium enterprises in the agro based manufacturing sector in Kiambu County. It recommended that a similar research should be conducted with an aim of establishing the effects of drivers of product innovation with other variables or of other firms in other sectors, including the service industry in the Kenyan market. Future research may be designed to compare the findings in this study that relate to firms in other regions in Kenya and other countries.

REFERENCES

- Adams, R., Denyer, D., Jeanrenaud, S., Overy, P. & Bessant, J., (2016). The sustainability oriented innovation: The systematic review. *The International Journal of Management Review*, 18(2), 180-205.
- Adomako, S., Danso, A. & Ofori D. J. (2016). Moderating influence of financial literacy on relationship between access to finance and firm growth in Ghana. *Venture Capital*, 18 (1), 43-61.
- Ajimati, M. O. (2012). *Significance of integrating product innovations by increasing business competition (Unpublished thesis)*. University of Savonia in Applied Sciences Department.
- Baldwin, J. R. (2010). *Innovation, training and success. Research Paper, no. 137*. Analytical Studies Branch. Ottawa: Statistics Canada.
- Barney, J., Clark, D. (2011). *The Resourcebased theory: Create and sustain the competitive advantage*. New York: Oxford University Press.
- Bwisa & Ngirigacha (2013). The importance of entrepreneurial innovations on SMEs' market competitiveness: A case study of Thika town Proceedings of 1st JKUAT-SHRD Research Conference 12th and 13th September
- CAFOD (2011). Thinking small: Why poor producers and small business owners may hold the key to a sustainable recovery, *A CAFOD policy Discussion Paper*
- Dahlstrand, A. L. (2017). Large firm acquisitions, spin-offs and links to the development of regional clusters of technology intensive SMEs. *High-technology clusters, networking and collective learning in Europe*. Routledge, 156-181.
- Dale, R (2014) *Evaluating Development Programmes and Projects 2nd ed*, New Delhi: Sage
- Detzer, D., Dodig, N., Evans, T., Hein, E., Herr, H. & Prante, F. J. (2017). Source of funds for business investments: Non-financial corporate sector SMEs. *The German Financial System and Financial Economic Crisis*. Springer, Cham: 155-173.
- Elahi, M., & Dehdashti, M. (2011). Classification of researches and evolving a consolidating typology of management studies. In *Annual Conference on Innovations in Business & Management London, UK*.
- Goedhuys, N. M. & Janz, P. (2014) Knowledge – based productivity in low – tech industries. Evidence from firms in developing countries *Ind. Corporate Change*, 23(1), 1-23

- Gutierrez Gutierrez, L. J., Barrales-Molina, V. & Kaynak, H. (2018). Role of human resource related quality practice in new products development: Dynamic capability perspectives. *The International Journal for Operations and Products Management*, 38(1), 46-66.
- Ireland, R.D., Hitt, M. A. & Sirmon D. G. (2013). A model of strategic entrepreneurship: The constructs and its dimensions, *Journal of Management*, 29(6) 963-989
- Kenya National Bureau of Statistics (2014). *Economic Survey 2014*. Nairobi: The Government Printer
- KNBS (2017). *Economic Survey 2017*. Nairobi: The Government Printer
- KIPPRA, (2010). *Kenya Economic Report. Transforming institutions for effective delivery of Vision 2030*, Nairobi: KIPPRA.
- Kotler, P., & Armstrong, G. (2014). *Principles of marketing*. Pearson education.
- Krueger, N. (1993). *Growing up entrepreneurial*. Atlanta: Academic Management Pro.
- Kumar, V. & Reinartz, W. (2018). *Customer relation management 3rd ed*. Atlanta: Springer.
- Margaretha, F. & Supartika, N. (2016). Factors that affect profitability of SMEs firm listed in Indonesia Stock Exchange (ISE). *Journal of Economic Business and Management*, 4(2), 132-137.
- Marshall, C. and Rossman, G. B. (2014). *Designing qualitative research*. Sage Publication.
- Maxwell, J. (2013). *Qualitative research design: An interactive approach*. London: Sage Publication.
- Mdasha, Z., Irungu, D. & Wachira, M. (2018). Effect of Financial Inclusion Strategy for the Performances of the SMEs: A case of selected SMEs in Dar es Salam. *Journal of Strategic Management*, 2 (1), 51–70.
- Nassr, I. K. & Wehinger, G. (2016). Opportunity and limitation of public equity markets of the SMEs. *The OECD Journal: Financial Markets Trends*, 2015 (1), 49-84.
- Ross, J. E. (2017). *Total Quality Management: Text, cases and readings*. Routledge.
- Saleemi, N. A. (2011). *How to become an Entrepreneur*. Nairobi: Saleemi publication ltd.
- Schumpeter, J. A. (2012). *Business Cycles. A theoretical, historical and statistical analysis of the capitalist process*. Vol. 1. New York: McGraw-Hill Book Company Inc.
- STI Act (2012). *Sessional Paper Number 14 of 2012, Science, Technology and Innovation*, Republic of Kenya.
- Silverman, D. (6). *Interpreting qualitative data: Methods for analyzing talk, text and interaction*. Sage.
- Strese, S., Keller, M., Flatten, T. C. and Brettel, M. (2018). CEO's passion for inventing and radical innovations in SMEs: The moderating effect of shared vision. *Journal of Small Business Management*, 56 (3), 435-452.
- Teece, D. J. (2018). Dynamic capability as workable management systems theory. *Journal of Organization and Management*, 24 (3).
- Tsui, A. S. & Bian, Y. (2014). *China domestic private firms: The Multidisciplinaries perspective for management and performances*: Routledge.
- Ulrich, K.T. & Eppinger, S.D. (2011). *Product design and innovations*. McGraw-Hill.
- World Bank (2013): *Doing Business. Understanding Regulations for SMEs*.

Zainol, F. A., & Ayadurai, S. (2011). Entrepreneur orientation and firm performance: Role of personalities traits in the Malay family enterprises in the Malaysia. *International Business Journal & Social Sciences*,2(1).