

VALUE CHAIN AND MARKET PERFORMANCE FOR POULTRY IN KENYA: CASE OF GUINEA FOWLS & QUAILS

¹Kwesisi Victor, ²Margaret Oloko, ³Sheila Ommeh

¹Jomo Kenyatta University of Agriculture and Technology, Kenya,

²Dean, School of Business Administration, Jomo Kenyatta University of Agriculture and Technology

³Institute of Biotechnology Research, Jomo Kenyatta University of Agriculture and Technology

Abstract: The Kenyan poultry industry is characterized by dualism, comprised of both smallholder and large-scale poultry producers. The industry is characterized by two main production systems namely; the commercial hybrid poultry production system and the indigenous poultry production system. The general objective of this study was to analyze the value chain and market performance for guinea fowls and Quails in Kenya. The specific objectives were; to determine the extent to which product interrelations adjustment influence market performance of Guinea Fowls and Quails in Kenya; to examine the extent to which adjustment of market interrelationships influence market performance of Guinea Fowls and Quails in Kenya; to identify the extent to which change in technology and disease interrelations influence market performance for Guinea Fowls and Quails in Kenya; to establish the extent to which adjustment of capital interrelations influence market performance of guinea Fowls and quails in Kenya. The survey was conducted in Busia, Bungoma, Transnzoia, West Pokot, Turkana, Kiambu and Nairobi Counties. The research involved interviews on a population of 652 guinea fowls and quails farmers and 5 Kenya Wild Life Service Stations. A total of 197 questionnaires were distributed to the sample population. A pilot study on six guinea fowls and quail farmers was carried out. The survey used questionnaire as a tool of data collection. Data was analyzed using quantitative and qualitative techniques. Results were presented in form of tables. Descriptive statistics was used to analyze data by calculating frequencies and percentages. Microsoft Excel and SPSS software were used to analyze data. The actors in the value chain played a significant role in influencing the market performance of guinea fowls and quails. The study found that product interrelation factors, market interrelation factors, capital interrelation factors and technology and disease interrelation factors, all positively influenced market performance of guinea fowls and quails. The study therefore recommended that the ministry of livestock, agriculture and any other affiliated body should establish mechanisms that will boost this venture.

Keywords: Guinea Fowls, Quails, value chain, market potential, indigenous poultry

1. INTRODUCTION

The Kenyan poultry industry is characterized by dualism, comprising both smallholder and large-scale poultry producers, with the former forming the majority in terms of population of birds. The industry is characterized by two main production systems namely (Nyange, 2000). The commercial hybrid poultry production system and the Indigenous poultry production system

The commercial hybrid production system relies on imported exotic parent and grandparent stock and is exclusively market oriented. The commercial hybrid production system is further divided into layer and broiler subsystems. Commercial poultry production constitutes 23.8% of the total poultry population, with broilers representing 16.2% and layers another 7.8%. Other poultry species such as ducks, guinea fowl, Quails and turkeys comprise about 2.2% of the total poultry population produced by commercial production systems (Animal Production Division, 2006).

The indigenous poultry production is the dominant poultry production system in Kenya. It is mainly concentrated in rural areas and involves 75% of rural households. Approximately 71% of eggs and poultry meat in Kenya are derived from indigenous poultry (Republic of Kenya,2008). The indigenous poultry system is characterized by unconfined birds that scavenge around the homestead and often interact with wild bird species in the process. Table 1.1 Summarizes poultry populations by category for the eight provinces of Kenya.

Table 1.1 Poultry populations in Kenya, by province and category, 2012 (Thousand birds)

Province	Layers	Broilers	Indigenous	Others	TOTAL
Rift valley	283.4	1137.1	5776.4	167.8	7364.6
Coast	79.4	248.0	2153.5	133.6	2614.5
Western	23.6	116.5	5217.6	159.7	2817.4
Nyanza	48.2	203.6	5944.8	46.8	6243.3
Central	440.9	1079.2	1787.0	35.6	3342.7
Eastern	112.6	163.9	3628.8	21.3	3926.7
North Eastern	0.3	0.2	165.0	0.0	166.5
Nairobi	957.8	188.1	141.4	10.0	1297.3
TOTAL	3136.5	1946.2	22114.3	574.9	27771.8

Source: Republic of Kenya, Ministry of Agriculture, 2012.

The role of value chain analysis in this study is to highlight the market performance for Guinea Fowls and Quails the marketing chain. The value chain analysis and market potential was conducted in Busia ,Bungoma, Transzoia, West Pokot, Turkana, and Kiambu county in Kenya which are selected based on their relative importance of indigenous poultry; Guinea Fowls and quails industry. The approach included personal and key informant interviews and focus group discussions (FGD) with various actors in different poultry and poultry product. The poultry farming business worldwide is affected by a number of key factors that must be critically reviewed and considered as they to great extent determine the survival and success rate of any farming business venture and this include:

Politics: The political legal laws of a country determine how favorable or unfavorable a given farming business is. In Kenya (2014) for example with the advent of devolved governments and the bid by some county governments to raise revenue they were proposing measures such as taxation of poultry and poultry products. The Livestock farming business in Zimbabwe has been declining after many white farmers were chased from the country by the current regime (Goodwin, 2011).

Capital: The availability of capital determines the size of farming business that an investor can start. In countries where credit facilities are easy to procure, starting of medium and large scale farming systems becomes possible (Balty, 1995). **Human Factors:** The Human Factor determines the availability of the required skills and expertise. The western countries have higher productivity levels as compared to those in developing countries due to more skilled farming personnel such as veterinary doctors and extension officers (Carlson, 1997).

Proper infrastructure is one of the essential elements required Kenyan livestock transformation. The existence of poor quality or inadequate infrastructure has inevitably impacted negatively on the Competitiveness of African agriculture through increasing internal transport costs, reducing levels of value additions, as well as lowering transaction efficiencies in the marketing chains (Arboleda, 1988). In many African countries the markets are highly un-organized and crucial information about the industry is lacking. Most livestock farmers especially in poultry lack cooperative unions that can assist individual farmers in locating favorable markets. As a result, the gap between the producers (farmers) and consumers is usually filled by the middlemen who exploit the farmers (Ketelaars, 2007).

Like many other African countries, the Kenyan indigenous Poultry business is affected by a number of factors that have in the past few years been hampering the growth of this critical sector. The industry has the potential of employing thousands of Kenyans upstream and downstream and the key factors affecting its performance will need to be properly understood so as to come up with the right strategies that will ensure its growth is continued.

1.1 Statement of the problem and Research Gap:

A number of studies on value chain about various livestock have been done. For example, Kariuki(2011) analyzed the market performance and value chain of fish in some selected outlets in Kenya. The results indicated that longer market value chains resulted not only to high costs and thus high retail prices; but also to lower returns to the fishermen. Further, the study identified that there was no integration amongst fishmarkets in Kisumu and other markets within the country.

Nguyen (2010) also did a study on better poultry value chain development through micro finance in Vietnam. The researcher aimed at analyzing the application of value chain on situational micro financing in poultry products towards the development of poultry value chain. The study found out that microfinance services were good but borrowers wanted actors to integrate in their value chain to understand their situation to create better product. The researcher also found out that group loans were preferable to individual loans because most of the poultry stakeholders are small scaled and still exclude from formal financial markets with high collateral requirements. The researcher recommended that financial actors should employ value chain method to better serve the financial and non financial demand for their customers.

Ouedraogo (2009) did a survey on Beekeeping/honey value chain. The researcher sought to assess the financial needs of current and potential beekeeping entrepreneurs which constituted the demand of financial services for all actors in the beekeeping sub-sector. The Value Chain financing study went further to assess available opportunities for example grants, products and services from financial and other institutions that can assist the entrepreneurs based on their needs and social economic profile and to identify the existing gaps that hinder beekeeping entrepreneurs from accessing the available financial services. To facilitate a comprehensive Value Chain financing study a value chain analysis of the beekeeping sub-sector was carried out to identify and map participating actors, their functions and relations with other actors. The researcher found that financing was easily accessible from commercial banks and financial institutions. The researcher also identified several best practices for adoption towards enhancing the performance of the sub-sector in a sustainable way. They included the recommendation to do away with subsidies to beekeepers and their co-operatives, focus on addressing the root causes of the prevailing problems not the effects, encouraging beekeeping to actively participate in their own development and advocating for the replication of knowledge and skills from common to individual apiaries.

Historically, guinea fowls and quails have been termed as wild birds but as time went by, the society gradually began to domesticate them either for aesthetic values or for personal consumption. These values have not changed so much and only a few farmers have engaged them on commercial basis. The ministry of livestock is in a bid to fully categorize these birds as domestic birds. Guinea fowls and quails are categorized under livestock just like the fish, chicken, bees, cows, pigs etc. The researches so far done have dealt on the value chains of other livestock's than guinea fowls and quails and equally they have not dealt on their market performance. Questions arises that, are guinea fowls and quails economically significant? Do they have any market potential? What is their market performance?

The Research intended to fill the gaps that have not been filled by other past studies. Commercial poultry business is not only the source poultry products in the County. Like many other rural and peri-urban settings, the county has many free ranging birds that contribute a very large percentage of poultry products generated in the county. The contribution and the challenges that these sub-sector faces will need to be investigated. There are also other key farming businesses that are being carried out in the country that face similar challenges as the poultry business such as pig and dairy farming. Research should be done on the same to determine the challenges that they are facing.

2. LITERATURE REVIEW

2.1 Theoretical framework:

Poultry production business is an important income generating activity for many African medium and small scale farmers. In Kenya, it contributes to the lives of 21 million Kenyans and 6.1% of the country's GDP. There are approximately 32 million birds in Kenya out of which 76% are free ranging indigenous chicken, 8% are broilers and 14% commercial layers.(KEPOFA, 2011). Commercial layers are mainly kept at the periphery of major cities such as Nairobi due to the ease of procuring inputs and a ready market for the products as well as access to good infrastructure especially roads and electricity.

It is recognized that the industry has the potential to generate higher incomes to the businessmen and transform living standards of its players if appropriate interventions are developed and relevant strategies put in place. Indeed the Kenya Economic Report (KIPPRA, 2009) identifies poultry as one of the lead livestock enterprises that can contribute the most

towards the attainment of Millennium Development Goals (MDG's). The industry is therefore supposed to play a strategic role in the ongoing socio economic pillar under the vision 2030.

In Kenya, poultry farming has been on the increase in the last ten years. This has been mainly in rural and the peri-urban areas where many medium and large scale poultry business has flourished as a result of the diminishing land size, high population density and the escalating un-employment levels in formal sector. However the industry that had potential for high growth in income has seen slow growth over the past six years. The cost of production was 1.9 billion in the year 2008 compared to 4.3 billion in the year 2011 (KEPOFA, 2011).

2.2 Empirical Literature:

2.2.1 Product Interrelations

The cost of inputs determines the size of business that businessmen are able to set up. When the cost is high, many farming businessmen will either opt to reduce the size of the business or close the business altogether which will result to decreased output. For the poultry business, inputs especially feeds constitute up to 70% of the total costs in many African countries. A big problem in livestock production in Africa is the high cost of feeds ingredients especially grains for intensive production. This high cost has acted as a deterrent to many potential livestock farming businessmen especially those that cannot access credit facilities from banks. It also leads to under-utilization of the available farming lands as farmers only stock small numbers that they can be able to manage (Ngoupayou, 2007).

In Europe, the Poultry industry has been facing some complex and conflicting problems. This includes an increase in the prices of feeds as a result of competition for key raw materials such as corn with other industries such as those manufacturing corn based ethanol. This has been drastically affecting profit margins of many firms and consequently altering their expansion programs (Bradnock, 2012).

In Brazil which is among the highest exporter of poultry products in the world, the costs of inputs is the biggest challenge facing the poultry industry as the demand for grains is such more than what the is able to produce. In this country, feeds account to more than 70% of the total poultry expenses and therefore an increase in their costs has been the potential for slowing down the growth rate of this sector (Sohel, 2011). In Zambia, the year 2009 was very hard year for the farmers as the feeds costs went up by 100% as a result of the economic melt down bringing the framing down by 40%. The Farmers income went down by 30%. The Problem is aggravated by the fact that a few grain monopolies dictate the grain prices (Mukowe, 2011).

In Ghana livestock framing business got into crisis in the year 2011 with feeds prices going up by more than 200%. The maize grain in the country is not enough for both human and animal consumption and thus most of it is usually imported. The private sector has been urging the government to establish a national agricultural body as a matter of urgency which will be entrusted with responsibility of accelerating agricultural modernization (Akate, 2009).

In Uganda, there has been no growth in the livestock industry in the last five years. Many farmers have been complaining of poor quality yet costly animal feeds. To mitigate this, some farmers have been forming cooperative movements to make their own feeds. Many farmers have been closing their farming businesses or reducing the number of livestock in the last ten years. The government has been very slow in making the right interventions so as to save the industry (Sabika, 2010).

In Zimbabwe the cost of feeds has skyrocketed in the last ten years after the government chased away the large scale white farmers in the early 2000. This resulted in to a deficiency of food not just for the livestock but even the citizens. The situation was made worse by the devaluation of the currency combined with very poor government policies. In this country, land, is the most limiting factor with a mean arable farming area of 4.4 hectare per household. As a result, crop based dairying has become a viable option with crop by-products such as sunflower seed cake being used as a source of proteins in the diary rations (Ngongoni,2011).

2.2.2 Markets Interrelationships:

Availability of markets and market information will encourage the farmers to produce goods having confidence that there exist ready customers. Any market that is inconsistent will be less attractive to the investors. Farming businessmen will prefer to invest in areas that will have adequate information about present and potential customers as well as safe markets for their products. The presence of cheap imports in the market will in most cases discourage investors from putting their

money in establishing business that will eventually have to unfairly compete with them. Investors will prefer to invest in businesses that are free from unfair and un-regulated competition (Galeboe, 2009).

The poultry industry also faces the challenge of trade barriers that have been implemented in some countries. Some countries such as China, India and Russia have introduced policies in their respective countries meant to hamper entry of the U.S poultry products (McArdle, 2006). In Kenya, livestock industry suffers from poor organization. There is little if any focus on the government in trying to put up systems that can lead to smooth flow of products from farmers to the consumer.

During dry seasons, the country experiences good rains, there is usually an over production which in some cases has led to the farming businessmen draining their milk down the drains (Kariuki, 2010).

In Botswana poultry marketing is highly disorganized. Usually, the buying price of poultry products is determined by the farmers and is in most cases low, explaining why poultry industry has not experienced growth over time. In this Country, word of mouth is the most relied upon method of marketing in use by 60% of the farming businessmen (Galeboe, 2009). In Uganda, there are serious disparities in the supply of key animal products in different parts of the country due to poor marketing strategies. It is common to find areas that have an over- supply of milk and poultry products while other are experiencing deficiencies. The Government through the ministries of agriculture and trade have not been much focussed in establishing a system that can ensure a smooth flow of products from the source to the end-user thus guaranteeing smooth utilization and higher profit margins for the farming businessmen (Mukasa, 2011).

In Botswana, the western countries have taken advantage of the highly un-organized livestock marketing to flood the country with animal imports. Cattle and poultry farming businessmen have had to contend with a chaotic market where buyers dictate the prices and as a result the industry has not experienced significant growth over the years (Kolare, 2012). In Kenya, poultry products traders have been illegally crossing the border to Uganda to buy cheaper poultry products for reselling in Kenya, earning better returns in the market places, but leaving Kenyan farmers suffering from poor poultry product sales. This is a result of the lower cost of feeds in Uganda which enables the farmers sell their poultry products relatively lower price compared the Kenyan Poultry producers (Kariuki, 2012).

2.2.3 Capital Interrelations:

Availability of capital determines how easy or difficult will it be to start up the business and eventually expand it. Businesses such as poultry farming on large scale are capital intensive. If the farming businessmen do not have access to sources of capital such as loans, the output will be low. In many African countries, farmers lack access to credit facilities. Many banks do not prefer taking the poultry and the farm structures as collateral and thus end up closing out many small and medium farmers as a result of inadequacy in security provided for the loans.

Many farmers also lack the basic skills of drafting business plans that they can use in obtaining loan facilities from banks. In Ethiopia, many small and medium scale livestock farmers lack access to credit facilities as many banks are not willing to take poultry and farming structures as collateral (Farrel, 2008).

The Volatility of the country's exchange rate has been one of Europe's key challenge as the poultry products exports revenues depends on a favourable revenues rates regimes. This has been made worse by the recent economic meltdown in the United States and Europe (Taylor, 2009). The poultry industry in Europe has suffered as a result of competition from other sources of proteins sectors especially beef and pork which in some cases are subsidized. This has in many instances left the businessmen with unsold poultry products which are eventually sold at low prices (Mathewman, 2011). The Industry is also faced by over-regulation by the government as well as strict standards that are set by the other country's animal rights groups. Failure to comply has resulted to exorbitant fines that have demoralized the poultry farmers as a result of the high cost of enforcement (Ford, 2010).

Tanzania has extensive tracks of land that lie idle and un-utilized because many potential farmers cannot access credit facilities to set up the farming businesses. The Government has been slow in putting up policies that can encourage formation of cooperative movements to facilitate acquisition of cheap loans (Neshein, 1999).

2.2.4 Technology and disease Interrelations:

These remain one of the greatest problems facing the poultry businessmen across Africa where many farmers have inadequate technological knowledge on how to improve the productivity of their livestock. They also lack basic trainings on nutrition, knowledge of key animal disease prevalent in their respective countries and knowledge about disease resistant animal breeds. Technology plays a key role in enhancing the dissemination of this information (Portsmouth,

2003). Threat of disease outbreaks will result to farming businessmen avoiding particular farming businesses which they consider risky. Many businessmen and investors are averse to risk and will prefer to invest their money where they feel it will be relatively safe. An outbreak of a given disease will lower the final output due to deaths and low production (Portsmouth, 2003).

Diseases outbreak is one of the biggest challenges affecting the livestock industry in Africa. The fact that most of serious poultry diseases are air-borne and can affect the number of flocks makes this challenge an issue requiring very close monitoring. This problem is compounded by the fact that in many African countries, many insurance firms are yet to develop policies specific to livestock farming especially poultry. Many Kenyan poultry farmers have in the past lost thousands of birds as a result of the outbreak of highly infectious diseases such as New Castle and Gumboro (Kariuki, 2010).

In poultry, New Castle; a common infectious disease which can be prevented through vaccination has been reported to cause very high mortality rates in many business farms; 50% mortality rate in Togo and Sudan, 70% in Nigeria, 80% in Cameroon, 90% in Kenya and Zaire and 100% in Morocco (McCaster, 2009). Many interventions that have been set up in many western countries including introduction of new technologies, improved breeds, new equipment and modern management systems have not been fully implemented in most African countries (Lukoye, 1998). Brazil poultry industry lacks key personnel especially the veterinary doctors and extension officers who can respond to cases of disease outbreaks in the farms as well as train the farmers on the best practices as far as livestock farming is concerned (Hossain, 2011).

In Africa, many livestock diseases are usually based on control rather than on elimination and will thus keep on recurring. Recent Research in Kenya has indicated that many livestock businessmen spend a big portion of their income treating endemic diseases (McCaster, 2009). In Zimbabwe, disease outbreaks have remained to be one of the major setbacks to livestock production. Many small scale farmers cannot afford to buy the necessary vaccines and drugs. The problem has been getting worse as the government does not have enough funds. Also the veterinarians have mobility problems especially when there are disease outbreaks due to poor roads. As a result, the livestock sector has been under-performing in the last twenty years (Farrell, 2008).

In Tanzania, persistent livestock diseases are among the biggest challenges thwarting livestock development in the country. Lack of enough facilities, veterinary services and extension officers are among the factors that have been retarding the livestock industry. Many farmers lack adequate knowledge on disease prevention as well as early detection of common diseases. During diseases outbreaks, the response by the veterinary doctors is also slow due to poor infrastructure in the country. The resultant poor production has seen the industry contributing a meagre 3% to the national economy (Parhurts, 2010).

2.2.5 Market Performance:

Market performance can be judged by many different constituencies, resulting in many different interpretations of successful performance. Each of these perspectives of market performance can be argued to be unique (Robert, 2004). Performance management can take many forms from dealing with issues internal to the organization to catering to stakeholders or handling issues in its environment. Performance management involves the use of both quantitative and qualitative techniques and paying due attention to the human (behavioral) side of the enterprise (Arie, 2005).

Any organization should target the ideal standard of performance namely: consistently competent, ethical, and energetic behavior that always succeeds in producing the best results (Gary, 2003). A developed market system enables managers to develop systematic ways to manage future performance; for example, planning, performance forecasting and target setting (Mohammad et al., 2012). Performance is a contextual concept associated with the phenomenon being studied (Hofer, 1983). In the context of organizational financial performance, performance is a measure of the change of the financial state of an organization, or the financial outcomes that results from management decisions and the execution of those decisions by members of the organization. Since the perception of these outcomes is contextual, the measures used to represent performance are selected based upon the circumstances of the organization(s) being observed. The measures selected represent the outcomes achieved, either good or bad (Robert, 2004).

In general, the concept of market performance is based upon the idea that an organization is the voluntary association of productive assets, including human, physical, and capital resources, for the purpose of achieving a shared purpose (Barney, 2001). Those providing the assets will only commit them to the organization so long as they are satisfied with

the value they receive in exchange, relative to alternative uses of the assets. As a consequence, the essence of performance is the creation of value. So long as the value created by the use of the contributed assets is equal to or greater than the value expected by those contributing the assets, the assets will continue to be made available to the organization and the organization will continue to exist (Robert, 2004).

3. METHODOLOGY

The research adopted a descriptive survey to gather data. Indigenous guinea fowls and quails farmers and the Kenya Wildlife Service Officers formed the target population of 657 respondents. The survey was conducted in Bungoma, Transoia, West Pokot, Turkana, Kiambu and Nairobi Counties. The study used simple random procedures to come up with respective sample sizes for Guinea fowls and quail farmers in the said Counties. A questionnaire with both closed ended and open ended questions was used as a tool for collection of primary data. The questionnaires were hand delivered to respondents at the time of data collection as agreed upon. Data collected from the respondents was processed and analyzed. Descriptive statistics was used to analyze quantitative data by calculating frequencies and percentages. Quantitative data was analyzed using a computer program; Microsoft Excel and SPSS and presented in frequency tables and Charts.

4. RESULTS AND DISCUSSIONS

Table 1: Relationship between product interrelation factors and market performance of guinea fowls and quails products

		Market performance	Product interrelations
Market performance	Pearson Correlation	1	.206**
	Sig. (2-tailed)		.004
	N	194	194
Product interrelations	Pearson Correlation	.206**	1
	Sig. (2-tailed)	.004	
	N	194	194

***. Correlation is significant at the 0.01 level (2-tailed).*

The correlation reported in the table 4.15 is positive and significantly different from 0 because the p-value of 0.206 is greater than 0.10 however this significance level was weak. The positive and significance level thus implies that the various stakeholders, for example the ministry of livestock should to some extent focus its efforts on product interrelations as a factor in the value chain analysis because it has significant effect on market performance of guinea fowls and quails production. These results go hand in hand with the studies of Griffith (2001), who studied about Product market competition, efficiency and agency costs. The findings of the study suggested that the increase in value addition to product interrelation factors lead to an increase in market performance of a given product. This provided a strong empirical support for the idea that increases in product market competition raises productivity by mitigating agency costs.

Table 2: Relationship between market interrelation factors and market performance of guinea fowls and quails products

		Market performance	Market interrelations
Market performance	Pearson Correlation	1	.871**
	Sig. (2-tailed)		.000
	N	194	194
Market interrelations	Pearson Correlation	.871**	1
	Sig. (2-tailed)	.000	
	N	194	194

***. Correlation is significant at the 0.01 level (2-tailed).*

The correlation reported in the table 4.19 is positive and significantly different from 0 because the p-value of 0.871 is greater than 0.10. This showed a very strong correlation between these two variables. This was a clear indication that market interrelation factors positively influence market performance of various products. In this case, any improvement done on market interrelation factors will significantly enhance the market performance of guinea fowls and quails products. These findings conquer with Erdil *et al.* (2005) who did their study on the relationships between market orientation, firm innovativeness and innovation performance. Their study results suggested that firms will increase their innovative capacity by developing and implementing market interrelation factors. The results also suggested that a firm with a market – orientation is likely to improve its innovation capacity and performance. The three dimensions of market orientation, market intelligence generation, development of market oriented strategy and implementation of market oriented strategy are important for market performance.

Table 3: Relationship between capital interrelation factors and market performance of guinea fowls and quails products

		Market Performance	Capital Interrelations
Market Performance	Pearson Correlation	1	.035
	Sig. (2-tailed)		.629
	N	194	194
Capital Interrelations	Pearson Correlation	.035	1
	Sig. (2-tailed)	.629	
	N	194	194

The correlation results reported in the table 4.23 is positive and insignificantly different from 0 because the p-value of 0.035 is less than 0.10. This was a clear indication that capital interrelation factors positively influence market performance of various products but not significant. This equally implies that the impact of capital on the market performance of guinea fowls and quails was weak. However by nature of its positivity it implies then that any improvement done on capital interrelation factors will have a small significant effect to the market performance of guinea fowls and quails products. These results are similar to Chen *et al.* (2005) who did a study on the empirical investigation of the relationship between intellectual capital and firms’ market value and financial performance. Their findings supported the hypothesis that firms’ intellectual capital had a positive impact on market value and performance of various products and may be an indicator for future financial performance.

Table 4: Correlation between Technology and Disease interrelation factors versus market performance

		Technology and disease interrelations	Market performance
Technology and disease interrelations	Pearson Correlation	1	.126
	Sig. (2-tailed)		.079
	N	194	194
Market performance	Pearson Correlation	.126	1
	Sig. (2-tailed)	.079	
	N	194	194

The correlation reported in the table 4.27 is positive and significantly different from 0 because the p-value of 0.126 is greater than 0.10. This was a clear indication that technology and disease interrelation factors positively influence market performance of various guinea fowls and quails products. In this case, any improvement done on technology and disease interrelation factors will significantly enhance the market performance of guinea fowls and quails products. This is an indication that more technological innovations done will greatly improve the performance of the sector as more value adding techniques and disease prevention mechanisms will be adopted. These results were in agreement with the findings of Weill (1992) who indicated that heavy use of and investment in technology was found to be significantly and consistently associated with strong firm performance. Heavy use of technology was found to be neutral in the long term

and associated only with relatively poor performing firms in the short term. This study suggested that early adopters of technology could have spectacular success but once the technology becomes common the competitive advantage is lost.

In a bid to find out which variable highly influenced the market performance of guinea fowls and quails, the researcher did a correlation of all the four independent variables against the dependent variable and the results were indicated in table5.

Table 5: Correlation between independent variables and dependent variable

		Market performance	Product interrelations	Market interrelations	Capital interrelations	Technology and disease interrelations
Market performance	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	194				
Product interrelations	Pearson Correlation	.206**	1			
	Sig. (2-tailed)	.004				
	N	194	194			
Market interrelations	Pearson Correlation	.871**	.065	1		
	Sig. (2-tailed)	.000	.365			
	N	194	194	194		
Capital interrelations	Pearson Correlation	.035	-.145*	.055	1	
	Sig. (2-tailed)	.629	.043	.449		
	N	194	194	194	194	
Technology and disease interrelations	Pearson Correlation	.126	.031	.156*	.632**	1
	Sig. (2-tailed)	.079	.665	.030	.000	
	N	194	194	194	194	194

** *Correlation is significant at the 0.01 level (2-tailed).*

* *Correlation is significant at the 0.05 level (2-tailed).*

The researcher, out of the correlation in table 4.28 found out that all the four independent variables positively influenced the market performance of guinea fowls and quails, however at different levels. It was noted that among the four actors in the value chain, market interrelation factors had a higher positive significance impact to the market performance with a significance level of 0.871 which is significantly different from 0 because it is greater than 0.10. This was followed by product interrelation factors with a significance level of 0.206 which is also significantly different from 0 because it is greater than 0.10. The third one was technology and disease interrelation factors which had a significance level of 0.126 which was equally greater than 0.10. Capital interrelations had the least significance level which was 0.035. Although it had a positive relation to market performance of guinea fowls and quails, it was insignificant.

5. CONCLUSIONS

Using the significance values of all the four variables of correlation, the researcher concluded that there was a statistically significant relation between the actors in the value chain and the market performance of guinea fowls and quails in Kenya. The correlations reported were positive and using the Pearsons correlation value, then the correlations were statistically significant which suggests that the relevant ministries and stakeholders in ministry of livestock should focus more on value addition to the various actors in production lines of the guinea fowls and quails.

6. RECOMMENDATIONS

Based on the research findings, the following recommendations were made: Emphasis should be placed across the board for both the highly educated to the uneducated to engage themselves in this venture because from the study, it was noted that the venture was a preserve of the semi-educated and the uneducated; the study also recommends that there be establishment of accessible breeding stock centres for guinea fowls and quails to avert the spirit of harvesting them from non protected areas and to ensure quality breeding stock; to enhance value addition on the products of guinea fowls and quails, the raw materials for example the feeds should be made easily accessible and affordable by the respective government ministries. This is because most of the farmers opted for scavenging, something that may have been prompted by the sky rocketing prices of raw materials; the ministry of livestock in conjunction with the ministry of tourism should roll out a sensitization program on the legal policies that govern the production of guinea fowls and quails to the public's to discourage the habit of harvesting them from either protected or non protected areas; production licenses should be made affordable and easily accessible to the farmers. In a bid to avert endangering the Kenyan species from extinction as a result of cross breeding for example from the South African species, a clear framework and guideline should be adopted to manage the same; the study also recommends that a sound market structure be developed so that farmers can access direct market and avoid the use of middlemen. This was because they are exposed to unscrupulous middlemen who exploit them hence reducing their profit margin and discouraging them from the venture.

As part of economic stimuli and realization of vision 2030, a master plan should be rolled out that could bring awareness to the publics on the economic viability of this venture and thus the need for them to engage in it. This will not only go a long way in empowering the citizens economically but also raise the gross domestic product and respond to the current unmet market demand. Financial institutions such as banks, SACCOs, and micro-finances should make the funds easily accessible to the farmers at affordable interest rates. The ministry of livestock, agriculture and other relevant authorities should take an initiative to equip the farmers on the necessary production, entrepreneurial and financial skills to the farmers. A more sophisticated and up to date technologies should be adopted in managing, prevention and dissemination of general information regarding diseases and the production of guinea fowls and

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