Does Intellectual Property Protection Bring Advantage to Innovators And Consumers? Perceptions of Kenyan Small Agro-Food Processors

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Abstract

Enriching understanding of the complex relationship between intellectual property protection and local perceptions on how it benefits innovator and consumer in food value chain is an important policy effort towards food security and economic development of an agricultural society. This paper concerns intellectual property of small entrepreneurs as an intangible human capital that would spurs their ingenuity and innovation in processing foods to feed the exponentially growing population. The study sampled opinions of 132 micro and small agro-food processors in Kenya on intellectual property and its effect on developing advantageous products for them and consumers. Patent and trade secret were used as predictors of advantageous products. The two variables were modeled using linear regression techniques to find their effects on food products that would end starvation and generate enough income for the innovators (advantageous products). The study found out that the contribution of trade secrets was positive and patenting inverse to both the innovator and customer at marketplace. In the opinion of agro-food property processors, intellectual protection significantly influence the advantage of food products to the innovator and the end user. This implies that, small scale agrofood processors have not fully appreciated the importance of

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intellectual property rights. Therefore the study suggests the food processors are sensitized and current intellectual property legal framework be enhanced to promote innovation among the micro and small entrepreneurs. Borrowing from United States and China, the administration of intellectual property protection should be a one-stop-shop for policy development and enforce laws and all other intellectual proprietary matters. Interested further studies could be done on trade mark, copyrights and plant patents.

Key words: Food processing; Intellectual Property Protection; formula protection; Patent and Advantageous Products;

1. Introduction

To curb the chronic food shortage and recurrent famines in Kenya, innovative initiatives in food value chains especially those closer to the end consumer have to be enhanced and protected. Food processing is one such innovation. It is a manufacturing function that forms an important node closer to the end user or consumer in the food value chain. It actualizes access to food in right quantities and qualities and for a longer time. By so doing it reduces post-harvest wastages and increases wealth opportunities for farmers and entrepreneurs. Despite food processing being notoriously evident in African villages, food insecurity is acute and chronic (Juma, 2006). The UN organization on food and agriculture estimates that over 95% of staving population is found in the developing countries (FAO, 2005), which are characterized with poor technologies and technology protection regimes. Food insecurity is defined as a function of access to nutritionally enough food in socially acceptable manner. Being a grand plague, persistent food insecurity has attracted sharp focus internationally, regionally and nationally on promoting innovation to ease access of right food to the hungry poor (Muraguri, Boadi, & Wekesa, 2009). Balancing benefits for the innovator and the end user of the innovation is believed to be the two-way door to food insecurity in starving populations. This brings to the fore, therefore, the question of making intellectual property work for the innovator and the society in the context of food security which form the core business for this paper.

Intellectual Property is "a good against the world" enforced in a contract between the state and the entrepreneur or innovator. The contract protects

the innovator's exclusive privileges over his creative labor within confines of time and space. It curves out the proprietary reward of the innovator against freedom of others (the world) at the same time causing access benefits to the consumers or end users. The classical intellectual proprietary protection regimes include patents, trade-secrets, trademark and copyright (Betz, 2003; Ulrich & Eppinger, 2004). Patent comes from Latin word patere meaning to be opened. It is an open letter from the state bestowing exclusive privileges to the innovator to operate a new and ingenious device for some time and space. Patents can cover utilities, designs and plant. The utilities must be nonobvious,????? novel and useful (Betz, 2003). Trade secrets are intended to protect commercially valuable information e.g. manufacturing formulas, confidential marketing strategies, among others against competitors. It is the responsibility of the entrepreneur to keep vigil not to spill proprietary information to the other party. Trade mark covers entrepreneurs" words and symbols that identify their products to consumers against "the world." Copyright often protects authors in literary works such as novels, celebrities in musical compositions and computer program developers against the freedom of the world. It keeps the work in its "original forms of expression."

The critical role intellectual property (IP) plays in stimulating economic growth and social development has caused many governments to give it much attention, of late. IP causes fair trade, availability of genuine, original and affordable products and at the same time addressing global challenge of food insecurity and poverty (Sharma, 2014). It promotes innovation and creativity by curving out exclusive rights of inventor and free flow of energy towards research and development (Mugabe, Kameri-Mbote, & Mutta, 2001). IP has also become a negotiation and trade barrier issue in the global business. Again Chen, 2015 argued that innovative enterprises in areas with good IP protections systems enjoyed greater access to both formal and informal debt financing. It is against this background that most states struggle to foster effective IP protection options as incentive for creativity and innovation and at the same time for economic and social development.

1.1. The Problem Statement

Despite the fact that Intellectual Property protection is the next frontier for business competitiveness, most micro and small enterprises have little knowledge and experience about it and its enforcement by the government is still weak (Chen, 2015; Sikoyo, Nyukuri and Wakhungu, 2006). According to Kameri-Mbote (2005), IP protection is mostly perceived as barrier to knowledge, wealth creation, health and food security. Stepman (2013) accuses small enterprises, the current engine of economic development in Kenya, of focusing on operations at the expense of innovativeness and competitiveness. Kenya small enterprises are not exceptional. Shortcomings in policies that would motivate innovators are vivid and consequent opinion about their contributory to product performance is not clear among entrepreneurs. No evidence exists that IP contributes to food security in Kenya. Counterfeit products have widespread the food market at the face of starving populations. This creates a knowledge gap of how IP protection is perceived as enhancer of food product performance at the market place. This study therefore addresses the gap by measuring the attitude of micro and small agro-food processors in Kenya on their influence on making advantageous products.

1.2. Research Objectives and Hypothesis

1.2.1. Objectives

- a) To assess if patenting significantly befitted micro and small agro-food processors and consumers in Kenya
- b) To find out if formula protection is of significant advantage to Kenyan agro-food processors and the consumers.
- c) To determine if IP protection is of significant advantage to micro and small agro-food processors and consumers in Kenya.

1.2.2. Hypotheses

H₁ Patenting significantly benefit either micro and small agro-food processors or consumers in Kenya

H₂: Formula Protection significantly advantage Kenyan micro and small agro-food processors and consumers

H₃: IP protection has significant advantage micro and small agro-food processors and consumers in Kenya

2. Literature Review

The purpose of literature review is to investigate the problem in depth, likely overlooked issues, seek methodological insights, anchor the study on theory and recommend further research (Gall, Gall, & Borg, 2007). This

section, therefore, discusses the depth and breadth of IP protection issues globally, regionally and locally under empirical review. It also reviews the theoretical justifications on whose innovators' perceptions are measured and underpin the conceptual framework of the study.

2.1. Theoretical Review

Intellectual property protection is anchored strong on ethical and philosophical debates. They include moral desert theory, personality theory, utilitarian theory and social-planning theory. According to moral desert theory, innovators should be allowed to access the fruits of their mental and physical labour. Locke argues that the harvest of a man's sweat belongs to him. "Every man has a property in his own person," Locke said. Personality theory postulates that innovations are likened to one's personality that deserves to be protected, too. In his masterpiece, Grounding for the metaphysics of morals, Kant argues that ethically man in the service of the society ought not to be treated merely as a means but also as an end at the same time (Kiruki, 2015). The innovators creative activity deserves to be appropriated to the owner as it fulfills the humankinds' development. The moral worth of the entrepreneur's actions is not only determined by the process but also by the spirit and mission it purports. Utilitarian theory, however, pushes for the greater good. That protection for innovations should be for the achievement of the greatest good for the greatest number. The social-planning theory believes that intellectual property protection should foster a just and attractive culture. The attractive culture is that, that embodies a vision for a desirable society. According to the theory, intellectual property protection systems should balance between the incentives for the innovator and the consumer welfare.

In the same vein, this study finds intellectual property protection in food value chain a double door strategy. The door that motivates entrepreneurs to design food products that is advantageous to them and to the society. The entrepreneur stands to benefit when he gets fulfilled in his creative work and the work fetches meaningful reward. The society gains when the food products are accessible and affordable so as to address the grand challenge of hunger and malnutrition. How is this argument perceived and understood by the small scale innovators in food industry in Kenya is the concern of this paper.

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2.2. Empirical Review

In food innovation systems around the globe, entrepreneurs' ingenuity, creativity and intellectual labor are safeguarded under four contracts. They include Union for the Protection of new Varieties (UPOV) conventions, International Treaty for Plant Genetic Resources for Food and Agriculture (IT-PGRFA), the Convention on Biological Diversity (CBD) and the Traderelated Intellectual Property Rights (TRIPS) agreement (Wekundah, 2012). UPOV convention protects plant breeders of new varieties against the third parties' abusive activities between the filing and the decision for protection. The convention safeguards the entrepreneur by ensuring that states party to UPOV put in place measures that equitable reward and seek the entrepreneur's authorization. IT-PGRFA contract ensures that partner states promote exploration, preservation, evaluation and access of plant genetic resources for breeding and scientific purposes. The CBD convention is a third international contract for member states conserve and sustainably use the biodiversity. It also ensures that the benefits from genetic resources are fairly and equitably shared. TRIPS are the fourth international agreement that binds members' states to ensure reduced distortion and implementation of international trade. The states are required, under this agreement, to promote entrepreneurs' IP rights without making them barriers to legitimate trade. Institutions like World Trade Organization (WTO) and World Intellectual Property Organization (WIPO) have been on the fore front to help the member states serve the contracts so as to realize the benefits for the innovators without compromising access to food by society.

In response to these many countries have demonstrated efforts to serve the pacts. By the year 2000, USA was leading at 42%, followed by Germany 13.2% and Japan 10.3%, while the whole of Africa was still lagging behind at 0.4% of the filed patents in the world (Kameri-Mbote, 2005). Between 1970s and 2010s China underwent four phases of enhancing formal IP laws and enforcement mechanisms. China has struggled under IP "hot waves" to develop effective protection systems it has today. The mechanisms included building administrative systems, civil and criminal litigation options as well as custom authorities to enforce trademarks and control exports (Chen, 2015).

In Africa, innovations and its promotion for food security is perceived by many states as a luxury, colonial and imperialistic (Juma, 2006). The African Union (AU) and African Regional Industrial Property Organizations (ARIPO), a creature of Lusaka accord, have pushed most of the African states to embrace IP protection conventions for the region's economic development. For example, ARIPO has called for harmonization of member state laws, avoidance of duplication of financial and human resources and continuous informational exchange on IP. Despite all these, food processed products and processing technologies have neither been advantageous to the innovators nor the users/consumers. As a consequence, food access has become very expensive and rear. Sikoyo, Nyukuri and Wakhungu (2006) described these as a consequence of paucity in capabilities to implementing effective IP policies for developing manufacturing sector intended to feed and improve the lives of people in the continent. Of priority to Africa, according to Shashikant (2014), is protecting indigenous knowledge and antiretroviral medicine for HIV/AIDS and TB being made cheaper and accessible.

At the regional level, the East African Community (EAC) has developed multilateral, regional and national systems to IP recognition, protection and enforcement. It has also created Common Market Protocol and Customs Union in accordance with the provisions of Articles 76 and 104 of the Treaty for the Establishment of the East African Community, provides for deepened cooperation, taking care of different levels of development of member states, protection of private and public interests as well as maximizing the benefits derived there from among others, intellectual property rights (Shashikant, 2014). Article 43 binds member states to promote and protect entrepreneur's creativity and innovations for economic, technological, social and cultural development. For that purpose partner states undertook to cooperate in the areas of patents, industrial designs, new plant varieties, traditional knowledge, genetic resources and utility models among others. The states undertook to put in place measures to prevent infringement, misuse and abuse of intellectual property rights, exchange information on matters relating to intellectual property rights, promote public awareness on IP rights issues, enhance capacity building in IP and put in place IP policies that promote creativity, innovations and development. If all the above was applied properly the region would be witnessing some major benefits and impact of IP in food security.

The regional EAC cooperation could be a vehicle taking goods and services created by IP systems beyond national boundaries, tool to fix weak intellectual property infrastructure for LCD members and a network platform to synergize IP protection issues and learning (Odek, 2013).

However a number of challenges still face EAC in the implementation of effective regional IPR recognition and protection mechanisms. They include partner state having different levels of IP protection laws, weak enforcement, ignorance on the effects of counterfeit products (Owuor, 2015). There is need, therefore, to strive to align existing national laws and policies with the regional IP framework. The process has been slow with long term effect on innovation, particularly on food security. It is also important to note that in the EAC region, Kenya is the only developing country. According to Shashikant (2014) Burundi, Tanzania, Rwanda, Uganda and South Sudan there are still the Least Developed Countries (LDC). Tanzania and Uganda have provided a range of IP protection measures under their respective national legislations while Rwanda and Burundi have taken advantage of flexibilities provided to LDCs. This means the region is not moving at the same pace to take advantage of IP in ensuring food security.

Though advanced in the region, the Kenyan intellectual property protection environment is born out of pressure from the international conventions of which it is signatory. It has Industrial Property Act that protects entrepreneurs' industrial property rights, monitors technology transfer, and manages agreements and licenses. It also promotes information sharing on technology for economic development as well as inventiveness in Kenya. The country also prides in the Trade Mark Act Cap 506 of the Laws of Kenya that ensures registration of distinctive and original trade and service marks. The third law that protects IP in Kenya is the Copyright Act that guards literary and artistic creative works against the freedom of other innovators. The Seeds and Plant Varieties Act is the fourth Law that protects the rights of plant breeders. The enforcement of these statutes is a shared responsibility among Kenya Industrial Property (KIPI), Attorney General's Chambers, the Kenya Plant Institute Inspectorate Services (KEPHIS) and National Council for Science and Technology (NACOSTI). In comparison to Swaziland, Mozambique, Malawi, Tanzania, Uganda and Ethiopia, Wekundah (2012) found Kenya leading the park. However he quickly observed the laws serving more global community at the expense of the local communities and lacked coherence with the policies. Consequently, the implementation is weak and benefits of the IP protection are minimal to indigenous innovators. Further, the statistics show IP landscape in Kenya is richer in trademark and patent applications than plant breeding meaning that

innovation is greater as the value chain gets closer to the end user. Inspection of the IP data in Kenya also indicates that foreign innovators dominating the domestic ones implying very low innovativeness capabilities among the natives (Sikovo, Nyukuri, & Wakhungu, 2006). For an intellectual property rights system to cushion investors and benefit the public, Kenya has to formulate and effectively enforce national IP policy, restructure the IP tribunal and increase awareness on IP issues and importance to entrepreneurs, industrialists, policymakers and other key stakeholders (Republic of Kenya, 2017).

2.3. Conceptual Framework

Creswell and Clark (2011) described a conceptual framework as a causal diagram linking theory and major concepts or variables. In this study, the conception of equilibrium between food products being advantageous to both the innovator and the consumers is measured within the confines of patenting and formula protection (trade secrets).

Figure 1: Conceptual Framework of Intellectual Property Protection and Advantageous Products

Independent Variable Dependent variable Patenting Product advantages to innovator and customer Profitability Differentiation Meeting market demand Formula protection

Source: Author's own work (2018)

The innovation product becomes advantageous to the entrepreneur when it is profitable and differentiated (withstanding counterfeits), that is cannot be mimicked. It becomes advantageous to the consumer when it meets the demand which include nutritional. In other words, the food

product is advantageous to Kenyan population when it is available and accessible in right quantities and qualities. The a priori is whether patenting, formula protection and licensing affect the advantages to be enjoyed by both the innovator/manufacturer and the consumers in Kenya.

3. Research Methodology

Between the year 2015 and 2016 this survey was carried on micro and small entrepreneurs manufacturing human foods products as part of the author's doctoral thesis. The target respondents were gotten from a sample frame of licensed micro and small food manufacturers by County Government of Nairobi and Busia in Kenya. On one hand, fisher sampling techniques formula was applied on Nairobi City County sample frame. On the other hand snowballing sampling techniques was used on Busia County licensed firms because of inadequacy in record management of agro-food processors. The study used mixed qualitative and quantitative methods to achieve triangulation, convergence and corroboration of correspondences as well as making up for each other's weaknesses (Creswell & Clark, 2011). Primary data was collected using face-to-face interviews that were done to 132 sampled innovators using a seven-scale liker questionnaire that was tested in Kisumu County. Face-to-face interview was preferred because of its interpersonal capabilities to elicit pertinent answers to the research questions (Frankfort-Nachmais & Nachmias, 1996). Secondary data was equally reviewed by desk to compare and contrast the results on primary data. The data was analyzed, interpreted and reported in prose, pie charts and tables for ease of understanding. Multiple linear regressions were used to determine the extent formula protection and patenting were perceived to cause advantage to the innovators and food customers in Kenya.

4. Research Findings and Discussions

4.1. Determination of Advantageous Products

Advantageous product is the dependant variable, whose change is the interest of the study. It is defined as a highly competitive unique product that serves two key stakeholders at the market place - the innovator and the consumer. On one hand it pays well the innovator for his ingenuity and intellectual labour. On the other hand it brings benefits to the consumers

that are the place utility of access in right quantities and qualities. The variable (advantageous product) was measured by ordinal data on a Likert scale of 7 point. The results showed that n=130 (98.5%) of the respondents agreed that the products paid well the innovator and n=125 (94.7%) of the respondents agreed that the products served well the customers demand. Above all 126 (95.4%) of the respondents accepted that the products were differentiated. The general findings show that micro and small agro-food innovators appraised their products to be advantageous with n=130 (98.5%) of the respondents agreeing. Having established the opinion of the innovators' on the products the study embarked on testing whether the advantages were due to the privileges granted by the state through formula protection (trade secrets), patenting and licensing.

4.2. Advantageous products and Formula Protection

A formula is an expression of an idea or theory on how to get a solution, in this context manufacturing of new food products. Designing a highly performing product is a fruit of rigorous mind's work and research that establishes formula to consistently produce it. In a highly competitive and technology proliferated environment it is useless to develop a highly performing product formula if not protected from competitors. Unprotected formula makes products susceptible to imitations. This study therefore surveyed the firm managers' perception of the same and found that majority n = 63 (74.2%) secured their formula from the competitors. The mean of 5.0846 being above average also confirmed that the formulas were protected. The study also did a 'mean free' measure of variability and found a coefficient of variation of 0.29; that is, standard deviation was about 30% of the mean. The responses were not very varied, meaning that there was considerable consensus among MSE food processors that production formulas were protected. An independent sample t-test was done to compare the means of MSEs who protect the production formula and the MSEs who didn't. The production formulas that were not protected were statistically significantly lower (3.00 ± 1.41) compared to MSE who protected the production formulae (5.12 \pm 1.48), t (128) = 2.004, p = .047, sig ≤ .05, 2 tailed. The study concludes that the difference between the unprotected production formulae and protected production formulae is different from 0. The null hypothesis is rejected therefore and the most preferred hypothesis states that the MSEs protect their production formulae.

The findings imply that most MSE products were as a result of predetermined design of mixing various raw materials and through clear stages of manufacturing developing into a final food. Formula security is the first step towards protecting intellectual property of any firm. It is through the formula that the micro and small agro-food processors in Kenya could apply and enjoy intellectual property rights.

Further on, the study determined if the protection of the formulae significantly brought value to the innovator and the consumer of the foods. Table 1 shows the coefficients of the variable in the equation.

Table 1. Coefficients of Formula Frotection and Faterit										
Coefficients										
Model		Unstandardized Coefficients		Standardized Coefficients		C:				
		В	Std. Error	Beta	t	Sig.				
	(Constant)	.956	.050		19.163	.000				
	How protected is your production formula from your competitors	9.046 E-5	.007	.001	.014	.989				
	Are products patented?	004	.015	023	.237	.813				
	a. Dependent Variable: Advantageous product									

Table 1: Coefficients of Formula Protection and Patent

Advantageous product = 0.956 + 0.001*Formula protection - 0.023*Patent + 0.05

Using linear regression, the results indicated positive contribution of 0.001 for every one unit of formula protection. However this did not significantly be of advantage to either the innovator or the customer (t=0.014, p = 0.989, sig>.05, 2-tailed). Though the results indicate that they have a good start of securing the formulas, trade secrets are not rights granted by the state (Ulrich & Eppinger, 2004).

4.3. Advantageous Products and Patenting

Patenting is a way of granting protection to innovations in the country against competitors. Emergency of the field of intellectual property

protection has necessitated this to protect firms' products against imitation. Respondents were asked whether their products were patented. The findings showed that most products n=81, (61.4%) were not patented as shown in figure 2.

No response, 15.2 Patented, 23.5 No patented, 61.4

Figure 2: Products Patented in percentage (%)

Source: Data from the research survey in Busia and Nairobi, Kenya.

It implied that most products had neither utility nor design proprietary rights granted by the government authorities in Kenya. It means that their products risked losing out on a set of rights granted to outstanding, novel food products. Currently the MSEs intellectual property and innovations were opened to competitors' exploitation and counterfeits are riding on goodwill of the MSE's brands.

On testing the hypothesis whether patenting significantly benefit small agro-food processors and consumers in Kenya, the study found that benefit was of insignificant benefit to the innovators and customers of food products in Kenya (t = -0.237, p = .813, sig>.05, 2-tailed) as shown in Table 1. In fact it is perceived inversely; that for every unit benefit gotten from processed foods, patents contribute -0.23, ceteris paribus. This is contrary to the understanding that patents are powerful monopolistic strategies that enterprises enjoy as competitive advantage as well as shaping their economic development (Piergiovanni & Santarelli, 2006).

4.4. Advantageous Products and Intellectual Property Protection

The study finally determined if the combination of formula protection and patents significantly brought benefits to both the innovators and customers in the food industry. Using analysis of the variance the study got results as in Table 2.

Table 2: ANOVA of Advantageous Product and Intellectual Property Protection

ANOVAa											
	Model	SumNof Squares	df	Mean Square	F	Sig.					
1	Regression	.026	2	.009	.978	.406b					
	Residual	.966	111	.009							
	Total	.991	114								

a. Dependent Variable: Advantageous product

The findings show that IPP is of no significant advantage to micro and small agro-food processors and consumers in Kenya (df=2, F=0.978. p=0.406, sig>.05, 2-tailed) The findings confirm that small entrepreneurs in Narobi and Busia like elsewhere concentrated on production processes and not on incentives that would promote innovations and competitiveness in food industry (Stepman, 2013). This perception of small agro-food processors in Kenya agrees to the argument that in Africa, intellectual property protection is largely perceived as barrier and not enhancers of innovation and development (Kameri-Mbote, 2005; Stepman, 2013; Sikoyo, Nyukuri & Wakhungu, 2006; Chen, 2015). This calls for urgent attention to reverse these negative feelings. If not, the country is likely to lag behind in innovation and innovation systems.

Most of the MSEs suffer liability of smallness and newness that could not enable them foots the cost for research, powerful patent departments and best lawyers to defend them in IP (Griset, 2005). Piergiovanni and Santarelli (2006) suggest that the state has to intervene through strengthening systems of innovation, investing in Research and Development (R&D) and other related activities that would build innovative capabilities of entrepreneurial firms.

b. Predictors: (Constant), Are products patented?, How protected is your production formula from your competitors?

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5. Conclusion

From onset it is evident that innovation and food security should be considered as powerful and interrelated forces to shape the development path of Kenya and sub-Saharan Africa, whose mainstay is agriculture. However, innovations promotion through IPP is still perceived as of no significant value to development of entrepreneurs and the customer satisfaction at food marketplace. The study also found that formula protection among the small innovators is vividly present and was perceived positively. However it did not reap significant benefit to either the innovator or the food customer. Patent was negatively perceived by the innovators in the food industry. These findings, of course, put Kenya on a wrong footing for economic growth whose mainstay is agriculture. Urgent mechanism ought to be put in place to reap from the advantages intellectual property environment provides and protect the small industries against the Malthusian tact large enterprises apply to suffocate small ones at the rush of new activities.

5.1. Suggestions

- 1. Borrowing from United States and China, Kenya needs a one state organ to acts as one-stop-shop in administering IP matters as well as data and records.
- 2. It is the responsibility of the small agro-food processors to see that proprietary rights of their inventions are pursued properly. The entrepreneurs in food industry need to be informed about IP protection and pursue properly their intellectual proprietary rights. Beyond formula protection the entrepreneurs should seek temporal exclusive rights over their products against the world through patenting and trademarks.
- 3. In the spirit of Africanising the economy and global competitiveness, Kenya should transform into an entrepreneurial state by building its human capabilities to innovate through training native small agrofood entrepreneurs on patenting process as it has undertaken to do under the EAC IP laws.
- 4. The state should make laws and policies that suit local environment. The implementation mechanisms of IP policies should tamperproof, efficient and effective in gathering evidence, executing

and halting exports and counterfeits from unfair competition to locally produced foods by small enterprises.

The study suggests further research on trademarks and copyright regimes of intellectual proprietorship among micro and small enterprises in Kenya. In agricultural economics, the supply side of the food value chain is as important as the demand side. This study was based on the intellectual property protection of the food products, further research is proposed for the supply side especially on small holder farmers' perception on plant breeding and biotechnology rights in Kenya.

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