Food Safety Implementation Along Value Chains in Kenya

Public Policy, Business Opportunity and Entrepreneurship: Catalyst and Accelerator for Socio-Economic Growth

Gordon F. van der Veen

LBS Working Paper No. 22
March 2024

The LBS Working Paper Series "LBS Working Papers" aims at presenting applied research completed by LBS faculty, outstanding graduates and partners. Topics include subjects taught and researched at LBS's degree programs (1) International Business Administration, (2) International Management and Leadership, and (3) Strategic Finance & Business Analytics.

Editor: Christian Reiner, Christian.reiner@lbs.ac.at
Lauder Business School
Hofzeile 18-20, 1190, Vienna, Austria
www.lbs.ac.at

About the Author

Gordon F. van der Veen is lecturer at the Lauder Business School and an international management consultant to major blue chip undertakings and international organizations such as the European Central Bank, the European System of Central Banks, IBM, Tomra Sorting, Electrolux, VDMA – The German Engineering Federation, and the United Nations Industrial Development Organization - UNIDO. He has extensive expertise in international management, new market entry, rescue and reimagining failing projects, agricultural and food value chain analysis and upgrading in developing countries and emerging markets; in strategy, supply chain management, finance and accounting, consultancy and teaching in businesses as diverse as turnkey project management, information technology, auditing, energy conservation, construction, development consultancy, management consultancy, and management education consultancy.

He is the Founder and Managing Partner of Van Der Veen Management Services and a senior Adjunct Professor for Business and Management at Webster University, Vienna. His qualifications include a Master's degree in Management, a Post-Graduate Diploma in Business Administration and a Bachelor of Commerce. He is published on such subjects as Meso-Finance and Industrial Restructuring.

Abstract

The central postulate of this working paper is that Implementing Food Safety Control Systems across agricultural value chains in Kenya can trigger a market-driven reordering of value chains with sustainable competitive advantage in export and domestic markets.

The myriad deficiencies, gaps and strictures that currently define these value chains are usually considered reason to reject this scenario as naively optimistic. The author's countervailing argument, however, maintains that filling gaps, remedying inefficiencies, redesigning and reconfiguring the value chains are precisely where the business opportunity exists.

The paper, based on several years of management consulting fieldwork in Kenya, substantiates the validity of the central postulate. It reexamines the ostensible gaps and obstacles bringing out the underlying business opportunity, which properly formulated and harvested, can be the compelling driver of wide and deep socio-economic development in the country. It proposes a practical and field-tested strategy to make the central postulate a reality.

Introduction

Food safety implementation from farm to end customer can transform agricultural supply chains to exploit and expand existing opportunities, create new ones and build sustainable competitive advantage. The sector, already a major contributor to the economy and lives of Kenyans, can be made a powerhouse for self-sustaining, game-changing socio-economic development, which draws its provenance from underlying business opportunities in export and domestic markets unlocked by food safety implementation.

Given the relatively low level of value addition in Kenya, a viable strategy to accelerate economic growth lies in developing competitive agricultural value chains, where robust supply chains serve high-value export markets particularly of Europe and the Gulf Arab Countries. The growing and aspirational domestic market in Kenya and the East African Community (EAC) is a rich business opportunity too if properly developed: Customers with effective demand increasingly aspire to higher standards in products, services and quality of life. This will mean recasting value chains; upgrading and reconfiguring supply chains that serve domestic markets as well. At issue in Kenya, therefore, are two defining questions:

1. How can export and domestic markets be penetrated and expanded?

2. What must be done to establish competitive supply chains capable of creating and delivering the desired value package to export and domestic markets?

Acknowledgements, Background, Expert Resource and Structure

This working paper is based primarily on the author's fieldwork and management consulting experience in Kenya over a span of 5 years prior to and post Covid-19.
The insights and information presented here have been gleaned from extensive consulting meetings and discussions with officers of the Food Safety Unit - Ministry of Health, and The Ministry of Agriculture and Livestock; with top and mid-level managers, engineers and technicians from farming, the food processing industry, retail, the packaging industry, logistics, the hospitality industry, and development agencies like GIZ, USAID and FAO.
Small, medium and very large enterprise, academia, leaders of the private sector, state and development agencies were brought together in workshops, which examined the issues discussed here, and to validate the thinking, which now permeates this paper.
Very importantly, the founder-entrepreneurs of very successful SMEs, who have worked with the author, kindly consented to being cited in this paper as examples of what works.

An Expert Source informing, confirming and keeping the author abreast of the current status, is Sarah Gikonyo, Expert in Kenya and East Africa for Food Manufacturing, Food Safety, Packaging and Manufacturing Environmental Sustainability; a consultant to blue-chip food processing companies, UN and EU projects with expertise ranging from participation in the setting of food safety standards in Kenya to implementing food safety systems across the value chain from farm level to the shelf.

Structure: The paper first sets out the Context of the Kenyan Economy and Development, which provides the animus for this work. It is then organized around the issues of Food Security and Food Safety; the business opportunity afforded and enabled by Implementation of Food Safety Control Systems; the major hindrances to such implementation; and concludes with a suggested approach to facilitating implementation.

The Context

The agricultural sector's potential to galvanize economic growth is unequivocally recognised in the Kenya Agricultural Sector Transformation and Growth Strategy (ASTGS), where it states that, "The agricultural sector is the backbone of the economy with a great potential for growth and transformation. It contributes about 33% of total Gross Domestic Product (GDP). The sector contributes an additional 27% to GDP through linkages to other sectors such as manufacturing, distribution and services. The sector employs more than 40% of the total population and about 70% of the rural population." (Ministry of Agriculture, Livestock, Fisheries and Irrigation Kenya, 2001)

Export led growth can be a crucial engine of economic development. According to the ASTGS crop production contributes 60% of Kenyan exports. This further emphasizes how pivotal this sector of GDP is to the growth and development of the economy. (Ministry of Agriculture, Livestock, Fisheries and Irrigation Kenya, 2001)

The Agricultural Sector as characterized above clearly holds striking potential to fast track the socio-economic development of this lower middle-income country of 53 million people. In striving to realize the potential of the sector, developing countries have primarily focused on the production side, as has Kenya, to increase agricultural output, yields and capacity. The production driven approach has been the standard for several decades in the developing world. This endeavour has produced some good incremental improvements. It has not, however, proven to be the game changer that the needs and aspirations of these countries demand. This is because incremental change is largely concentrated at the farm level of the supply chain. However, the total added-value of the product or service, delivered and sold to the end customer, is not created entirely at the farm level. It is the product of all the links of the supply chain. At this point it is critical to recognise that there are very considerable capacity inadequacies all along the supply chain in Kenya. It must therefore be obvious that gains achieved at the origin can neither remedy nor compensate for downstream incapacity, inefficiency and destruction of value, that is occasioned by sub-standard handling, processing, storage and transportation all along the intermediate supply chain links in Kenya. The most impressive production and productivity gains at the farm level, won at great cost, are wasted starting on the farm itself with alarming post-harvest losses. The loss, spoilage and waste continue all through the supply chain. This is simply not a model for game-changing, self-sustaining growth and development. Insightful gap analysis of supply chains and value chains is being done by state, private sector

and development agency actors. The same actors do act on the analyses done with initiatives to fill identified gaps. Filling gaps with a series of ad hoc initiatives, does get results, but cannot, however, resolve the underlying weakness of agricultural value chain configurations, which are production-driven.

Government support and development aid programmes are good to kickstart essential initiatives, where there is insufficiency of expertise and resources. If, however, these initiatives are sustained only by development aid and state support, they survive only as long as the funding lasts. Self-sustaining, game-changing socio-economic development models draw their inception and strength from the underlying business opportunities themselves. Simply put, this predicates supply chains that are market driven: contemporary, competitive supply chains begin and end with the customer.

The strategic imperative in Kenya is therefore, supply chains, which consistently generate products and services, that incorporate order qualifiers and order winners competitive in target markets. Food safety assurance is the key prerequisite, the order qualifier, for Kenyan products and services to be permitted to compete in target markets. Food safety assurance is the critical feature of products and services, an order winner, which can seal the buying decision in favour of Kenyan products and services in these same target markets.

Food Safety Implementation: Compelling Imperative of Change

This paper holds that Kenyan produce will be locked out of competition in target markets unless and until accepted as food safe by these markets. This paper maintains that **Implementation of Food Safety Systems** all along the supply chain can be the coherent strategy and incisive force cutting through the apparent Gordian Knots presented in the introduction:

1. How can export and domestic markets be penetrated and expanded?
2. What must be done to establish competitive supply chains capable of creating and delivering the desired value package to export and domestic markets?

Export markets demand that production and distribution processes ensure the consistent supply of products and services, which comply with food safety standards in these countries. This is the function of food safety systems. Food safety hence is an indispensable prerequisite,

a defining order qualifier and order winner to unlock export markets and grow Kenyan market share with these very large, high volume and high value customers. Here lies the realistic prospect of strong, export-led growth.

Domestic market opportunities: The growth of both foreign and domestic retailers in the formal sector, and Kenya's very successful tourism and hospitality sectors represent (among others) a similar opportunity for producers in the agricultural sector. Here too food safety is an indispensable prerequisite, a high-power order qualifier and order winner to unlock opportunity in growth sectors of the domestic market, where suppliers are increasingly required to demonstrate their food safety credentials to qualify as suppliers. Local sourcing is key to the sustained development of domestic markets, and qualified local sources are hence indispensable.

Unifying vector of accelerated economic development: This paper advances the view that Food Safety Implementation all along agricultural supply chains can be a grand unifying vector of accelerated economic development and growth in Kenya. Supply chains would now be market driven and not production driven. This is the transformation that can be the game changer. Satisfying the requirements of food safety systems along the supply chain will entail recasting and upgrading processes and systems, which together make up the entire chain.

Propel and sustain socio-economic development: This paper sets out how and why Food Safety Implementation all along the value chain can be the powerful vector that propels and sustains the market in virtuous cycles of economic and social development. Recasting and upgrading value and supply chains creates bankable investment opportunities, generates new and higher paying non-farm jobs along the entire chain. The opportunity to achieve constantly increasing added-value, incomes, and wealth accumulation can enable self-sustaining virtuous cycles of inclusive economic and social development.

The Game Changer: The long sought-after game-changer now emerges as a coherent, symbiotic nexus of the entire collection of processes and systems of value-addition, driven and sustained by underlying economic and business opportunity.

The sections that follow address:

1. The central and existential issues of Food Security and Food Safety.
2. The Scope of the Opportunity represented by Effective Food Safety Implementation all along the Value Chain.
3. The Scale of Constraints and Obstacles to Implementation of Food Safety Systems.
4. Making Implementation Feasible.

Section 1: The Central and Existential Issues of Food Security and Food Safety

Food safety and therefore food security are central themes of this paper. It is therefore necessary at this point to briefly examine the meaning and scope of these terms, and most importantly, just how the term food safety is used in this paper.

Food Security

Food Security as defined by the Food and Agricultural Organisation (FAO) is a situation that "exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO, 2001).

Over the years, a great deal of attention has been and continues to be paid to satisfying the several dimensions of food security as spelt out in the definition above, most particularly that of **Sufficiency**, i.e., growing more food. Very significant attention and effort has been channelled into expanding acreage under cultivation, raising farm yields, etc. The issue of growing and producing **Nutritious Food** has similarly received increasing attention in recent years. However, the dimension of **Safe Food,** also a keystone of the FAO definition, is one,

which is far from being met in Kenya. Simply put, therefore, you can grow and produce all the food you like, but if it is not safe for consumption you will never have food security. Food safety therefore, is mission critical to achieving food security.

The Scope of Food Safety

The concept of food safety has broad application across multitudinous agricultural value chains and along the length of each of them. At this stage a clear understanding of the terms "Food Safety", "Food" and "Food Safety Control System" becomes essential, and set out below are definitions of these terms.

"**Food safety:** Assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use" (FAO & WHO, 2019).

"**Food:** Means any substance, whether processed, semi-processed or raw, which is intended for human consumption, and includes drink, chewing gum and any substance which has been used in the manufacture, preparation or treatment of "food" but does not include cosmetics or tobacco or substances used only as drugs" (FAO & WHO, 2019).

"Food safety control system: The combination of control measures that, when taken as whole, ensures that food is safe for its intended use" (FAO & WHO, 2019).

The issue of food safety is one which runs through the entire supply chain from growing food on the farms and all the inputs used in farming, through every link in the supply chain; from the origin until delivery to the end consumer. While the "strict" understanding of the scope of the concept of "food safety" might appear to restrict its application to what human beings eat and drink, this is perhaps misleading. The issue has far wider practical and critical impacts, since humans ingest a plethora of products/ things other than food or drink, in several different ways, and not only by swallowing them. For example:

a. Pharmaceutical products, e.g., tablets, capsules, sprays, ointments are not food but are still ingested by people, and therefore, these too must not cause harm to the consumer, as mandated in the food safety definition above.

b. Cosmetic products are also ingested through the skin. They must not harm the user.

c. Packaging for transport as well as marketing must not contaminate the product contained in the packaging, and which product will be ingested by human beings.

d. Pet food, though not usually ingested by humans, must be non-toxic and safe for consumption by the pets.

e. Cleaning materials and even equipment; transport and handling equipment, similarly, must be safe and not contaminate the product or the processing system.

f. Every drop of water in a hotel room has to be safe for users.

g. The paint on toys must not be toxic. Children put toys in their mouths.

Flowing from the immediately foregoing discussion, this paper uses the term "Food Safety" in a broader sense to cover the production all products, which are ingested by humans and animals regardless of how ingested: They must be safe to consume.

Section 2: The Scope of the Opportunity represented by Effective Food Safety Implementation all along the Value Chain

Scope of the Opportunity

Putting **Food Safety Control Systems** in place in all phases of production, storage, and transportation along entire supply chains for the myriad products and services alluded to above might appear beyond herculean. Herculean notwithstanding, the matter is endemic, existential and urgent.

Advanced economies have successfully developed supply chains which do produce and deliver products safe for human consumption. There are well developed and accepted international standards such as ISO 22000:2018, which set out the requirements for Food Safety Management Systems. These are essentially quality assurance systems, which properly implemented, should result in the consistent production and delivery of products, which are safe for consumption. The focus is on process quality. Successful implementation in Kenya will demand upgrading of existing capacity as well as completely new installations of production, storage and logistics

capacity at every link in the multitudinous supply chains; a mammoth undertaking. The first step is any such enterprise is uncovering the underlying business opportunity to make a viable business case for investment.

Building capacity on such a scale goes far beyond simply acquiring new plant, machinery and equipment, since capacity is defined by the deployment of:

a. Human Resources and Management,
b. Technology, Equipment and Machinery,
c. Processes, Systems and Methods.

Such a definition now begins to illuminate the quantum of investment and expertise demanded in an endeavour of such magnitude. The available resources on hand and entrenched attitudes in Kenya might appear to discourage or even dismiss such an enterprise as quixotic. However, it is precisely in the gaps and inadequacies of existing supply chains, where opportunity lies.

Transformational Change: Recasting and energizing entire supply chains can create increasing added-value, expand markets, create high-value, non-farm jobs along the supply chain. Galvanized added-value, job creation, wealth creation, and social upliftment can converge in a self-sustaining cycle of socio-economic development.

Section 3: The Scale of Constraints and Obstacles to Implementation of Food Safety Systems.

There are several structural and infrastructure issues that make food safety implementation more than difficult. These issues are a familiar litany when viewing the agricultural sector in Kenya and across most of Sub-Saharan Africa. They are revisited here only to the extent that they impact food safety. These infrastructure constraints are warehousing, logistics, the cold chain, energy, water. The key structural issue is farm size and demographics.

Farm Size and Demographics

Smallholder farms make up the overwhelming bulk of farms in Kenya. Farms 0.5 to 5 hectares in size constitute 66% of farms, producing 65% of marketed output. Farms larger than 5 hectares only account for the remaining 35%. Since the agricultural sector produces 33% of GDP, the

role played by these smallholder farms in national income is very remarkable. (FAO, European Union, & CIRAD, 2023)

Additional information and other relevant statistics, indicate that these impressive figures however, might actually serve to obscure longer term strategic negatives. The small farm size inhibits the uptake of modern farming technology, equipment and inputs. Kenyan farming is labour intensive. 70% of the rural population and 40% of the total population find employment in the sector, but population is growing at a faster rate than agricultural productivity. By 2030 the Kenyan population is forecast to increase by approximately 30%, an increase of 15 million people. Average agricultural productivity is expected to show moderate gains, but to remain relatively low compared to other lower-middle-income countries. (Institute for Security Studies, 2018)

Smallholder farms and farming thus will be hard-pressed to continue providing employment and incomes for the growing population: Older farmers now remain active longer and their sons move away from the land to find non-agricultural employment. (Farley, Parker, Nkgudi, & Alemi, 2019)

The dynamic just described engenders food safety issues right at the farm level, which are rooted in resource, knowledge and management inadequacy, some of which are exemplified in Table 1. This dynamic thus makes the case, that increasing value addition along the entire value chain is where the great opportunity for socio-economic growth lies; in the creation of non-farm agri-business opportunity and employment. Revealingly, crop production contributes 60% of exports, but only about 16% of agricultural exports are processed. (Ministry of Agriculture, Livestock, Fisheries and Irrigation Kenya, 2001)

The Cold Chain, Energy, Warehousing, Logistics: When dealing with fresh produce in what can often be a hostile environment, one of the most defining elements of success is the cold chain. Temperature control systems are an indispensable prerequisite for prevention of spoilage, maintaining freshness and the attractive appearance of the produce, and extending shelf-life for large volumes of product. It requires temperature-controlled storage, warehouses, and packaging strategically deployed in a coherent supply chain. The farms are spread over vast areas of rural Kenya. Roads are very rough and in the rainy season sometimes impassable. Energy supplied from the grid is not always reliable, making a compelling case for off-grid energy sources. The nascent cold chain is one of the critical bottlenecks in Kenya.

Table 1: Recent Food Safety Lapses in Kenya

Period	Institutions / organisations involved	Nature of incident
Apr-23	Public schools	Suspected case of food poisoning. Death of 2 students confirmed. 2 schools closed temporarily. Poor hygiene and handling practices.
July 2023	Public School	>100 students exhibiting food poisoning symptoms. Schools closed temporarily
Ongoing	Grain storage facilities, millers	Aflatoxin contamination of grains leading to product recall/withdrawals. Death reported in some instances. Poor post-harvest handling practices (moisture) main cause.
2019	Retailers	Aflatoxin contamination of grains leading to product recall/withdrawals.
Ongoing	Horticulture – Producers, retailers	Pesticide misuse. Above allowable limits, banned chemicals. Mix of lack of knowledge/ skills and intentional misuse. Prevalent in produce destined for local market, less in export products, pointing to possible knowledge gap but perhaps also intentional?
Ongoing	Milk producers, processors,	Chemical residues, including antibiotics and cleaning chemicals, pathogens, mycotoxins. Intentional adulteration and cross-contamination. More common in informal supply chains.
Ongoing	Meat producers, processors	Incidence of antimicrobial resistance pathogens, residual drugs, chemical residues
Ongoing	Fruits and vegetable – fresh	Microbial contamination, chemical residues, cross contamination

Source: Sarah Gikonyo (2023) Data compiled from media reports in Kenya and the expert's own field work

The table exemplifies how major lapses in food safety can commence at the farm level itself and be transmitted along the entire supply chain. Contaminants may be introduced at all stages of the supply chain.

Value Destruction

The agricultural sector is definitely impressive with its sheer volume of output, which earns it the well-deserved sobriquet, "backbone of the Kenyan economy". Staggering post-harvest losses, commencing right at farm level however, destroy equally staggering amounts of value-added, wasting resources, dissipating income and compromising socio-economic development.

The following examples of losses illustrate the scale of the problem:

a. Post-harvest food losses of more than 1.9 million tonnes were reported in 2017. (World Bank, 2022 as cited by FAO, European Union, & Cirad, 2023)
b. An estimated 20% of total cereal production is wasted without ever getting to market. (FAO, 2022 as cited by FAO, European Union, & Cirad, 2023)
c. Total post-harvest losses of maize are reported to lie between 12-20%, and loss due to deficient post-harvest storage and handling is estimated to be 12%. (Onyango and Kirimi, 2017 as cited by FAO, European Union, & Cirad, 2023)
d. Wasted mango fruit crop is estimated to be 60% of production. A mere 8% is processed further. (ITC, 2016 as cited by FAO, European Union, & Cirad, 2023)

Acute deficiencies in Warehousing and Storage, Packaging, Logistics, the Cold Chain, Energy, and Water create a vortex of value destruction along agricultural and food value chains. The targeted upgrading of these vital elements of the supply chain can minimise or even eliminate the tragic waste, which is currently the norm and establish in its place a robust foundation for the future.

Key Pressure Point: Warehousing and the Cold Chain

The advances made possible by improving yields and bringing more acreage under cultivation need not be fruitlessly frittered away because of loss and spoilage in storage and transportation. Creating and strengthening the network of storage, warehouses and the cold chain would have an immediate impact, benefiting players in more than one value chain.

Some of the benefits are:

a. Crops may be harvested and stored in a timely and safe manner reducing post-harvest losses.

b. Spoilage, contamination and loss in storage and transportation is further minimised with safe packaging, handling, temperature control and appropriate transportation.

c. Smaller producers could have improved access to inoculants, thus raising productivity.

d. Farmers may exercise greater control over timing of their sales to obtain better selling prices for their produce.

e. The availability of professionally operated and managed storage enables issue of warehouse receipts as collateral for working capital financing.

f. The availability of professional warehousing and storage supports integration of smaller producers into the major value chains.

g. Building and operating a network of storage, warehouses and cold chains generates significant new non-farm employment and jobs in an expanding sector.

The payoff, direct and indirect, arising from building and operating such systems far exceeds the investment required.

Section 4: Making Food Safety Implementation Feasible

This paper addresses the issue of implementation of food safety in Kenya. This section addresses the prevailing model for implementation of food safety in the country and its effectiveness in the Kenyan socio-economic context, essentially asking two questions:

1. "Is food safety implementation in Kenya working?"
2. "Does Kenya need a different model for implementation?"

The Adversarial Model

The prevailing model for food safety in Kenya, may be described as an adversarial model. Its essential elements are:

a. A framework of laws and regulations is established: It ordains what should be done.
b. Regulatory agencies to enforce the laws are similarly established in law.
c. Inspectors from the regulator conduct inspections to establish compliance or non-compliance.
d. Non-compliance attracts different penalties ranging from warnings to fines to shutting down the non-compliant operation or facility.

The experience thus far is that much remains to be done to raise food safety standards in the country: the adversarial model is ineffective in the Kenyan context. The usual explanation advanced for this ineffectiveness is weak enforcement stemming from under resourced regulatory agencies in at least two critical areas: Testing Laboratories and Staff. Testing capacity in the country is very limited. Further, the agencies lack the vast number of inspectors required to police the formal and informal market systems. Enforcement is then often diluted by accommodation. The result is failing implementation.

The resource constraints mentioned above are accurate, but the explanation provided for this ineffectiveness is one-dimensional, simplistic and misdirects. It ignores the capacity of people and operators to do what the law requires. No amount of punishment can compel people or undertakings to do what they have neither ability, nor resources, nor capacity to do. If the benefit is easier to obtain and significant enough, people will find alternate accommodations to continue operations, as they do in Kenya. The operational model for business continuity is often fly below the radar, short circuit the system, and cut costs to turn a greater profit. Achieving the socio-economic development goals of the country appears to call for a different model for food safety implementation.

An effective model for implementation must recognise and mitigate the operational reasons for the slow pace of development of good food safety systems. The many obstacles to food safety implementation, including physical and financial resource insufficiency have been addressed earlier in this paper. The field work which supports this paper, however, identifies the primary road block to implementation of food safety systems as being the acute lack of understanding of the entire issue of safety standards and implementation, summarized in two words, misinformation and misunderstanding. The constituent elements of the problem are:

a. The standards are complex and difficult for non-specialists to understand.

b. The standards only lay out general principles for system and process design to ensure process quality, i.e., that the output of the process will consistently be safe for consumption. Details of the application of the standard to the specific processes and systems of the operation in question have to be developed on a case-by-case basis.

c. Firms, especially SMEs do not have the expertise required.

d. The market perception is that the process is very complicated, expensive and only adds administrative burden and cost to the business; that the price sensitive Kenyan market will not accept higher prices to cover these additional costs.

Dispelling the misunderstanding and neutralizing the misinformation is fundamental to enabling implementation. Accelerated acceptance and implementation of food safety can only become reality in Kenya if implementation is enabled.

The challenge appears overwhelming and insurmountable at first sight, far exceeding the power of any one player in the market. Concerted action by governments, civil society and business can, however, create an enabling environment for entrepreneurship and small business to break this impasse. Forging collaborative business partnership models, where the strengths of participating players serve to neutralize weaknesses of fellow players can synergize and re-dimension the value-chain. Collaborative models can become the competitive enabler.

The Collaborative Enabling Model

A model for food safety implementation was articulated, proposed and examined in a workshop titled the "A Collaborative Enabling Model for Food Safety Implementation in Kenya" on February 19, 2020 in Nairobi, Kenya. It reimagines food safety implementation in Kenya with the private sector, industry, international development organizations and the state as value-adding partners in effective implementation. The model is founded on a three-step process summarized as Collaborate, Enable, Implement. It is powered by mutually beneficial business agreements bringing together:

a. Providers of Technical Assistance, working together with the enterprise to understand, interpret and apply food safety standards to the operation in question and develop a functioning food safety system.
   Training is a major component of technical assistance with special attention paid to staff turnover rates, employee development, knowledge and experience retention.
   This addresses the expertise and knowledge gap.
b. Partners in Finance provide such financial support for the implementation project as might be necessary. Participating partners include the firm itself, international development organizations like FAO, USAID, GIZ, and private sector financing entities.
c. Suppliers of machinery and equipment, who also provide expert technical advice, training, and possibly supplier finance.

Collaboration dispels the paralysis of misinformation and misunderstanding. Technical

assistance enables the firm, building institutional capacity in terms of what is to be done, how it is to be done, and actually implementing food safety together.

However, the most enduring legacy of the collaboration is to galvanize businesses with the most compelling business justification for food safety implementation: Gain Access to much richer markets and opportunities. Build sustainable competitive advantage. Propel earnings and growth. Elevate and re-dimension return on investment.

Idealistic Dreaming or Practical Reality

The reflections of the section "Making Food Safety Implementation Feasible" on the state of implementation in Kenya were presented at the food safety implementation workshop of February 19, 2020 referenced at the head of this section. Contributing to the workshop were nearly 95 participants from big business and SMEs, cross-industry entrepreneurs, managers and engineers from farming, the food processing industry, retail, the packaging industry, logistics, the hospitality industry; top officers of the Food Safety Unit of the Ministry of Health, members of the National Food Safety Coordination Committee, VDMA, GIZ, FAO, UNIDO, USAID.

The Adversarial Model and the Collaborative Model were articulated, discussed and critiqued by the workshop providing positive validation of the ideas presented and the Collaborative Model in particular.

Practical Reality: Real-life Cases

The collaborative model has been applied successfully in reality. It is a model that can be employed by businesses however small. What matters is the scope and scale of the business case as proven by Azuri Health Limited, a food processing company with its production facility in Thika, Kenya. The company was a prime example of how food losses can inspire new business opportunity, where entrepreneurs develop strong, inclusive, symbiotic upstream supply chain relationships with smallholder farmers. Tei Mukunya Oundo founded her cottage industry in her father's back garden in 2010 producing dried snacks and flour from fruits, tubers and vegetables sourced from smallholder farmers. This cottage industry, first penetrated the local market, and then export markets in Japan, UK and the Netherlands. By 2019 there was contract processing for a European business partner. Head count was 8 permanent and 40 semi-permanent staff. Along the growth path were cooperations and partnerships with international development organizations and other international business partners. From the beginning upstream suppliers were trained and developed. From beginning to end there was consistent focus on hygiene, and ensuring food safety in processing: collaborate, enable, implement.

Post-Covid saw the launch of NatureLock Foods, a new startup with new partners, on a far bigger scale and with a different product range: instant nutritious convenience foods. Now there is a team of 28 staff and a modern production facility. The plant is FSSC 22000 certified, the internationally respected food safety certification. While currently serving the domestic market, the company is positioned to penetrate export markets too. From the beginning upstream suppliers were trained and developed. From the beginning there was and remains a strong consistent focus on hygiene, and ensuring food safety in processing: collaborate, enable, implement.

Conclusion

The two cases cited above are powerful examples of supply chains driven by the market. There are others. They exemplify how guaranteed food safety assures access to greater opportunity for all contributors to value-addition in the value chain. They demonstrate the validity of the central themes of this paper:

a. Resources committed to establishing and operating food safety assurance systems are investments in productive capacity for value-addition and market success. Like any investment they are to be evaluated in terms of return on investment and the concomitant risks. Like any investment, funding and access turns on the strength of the business case.

b. Assured food safety is a preeminent order qualifier and order winner in all high-value, domestic and export growth markets; building and boosting sustainable competitive advantage.

c. Competitive food safety assurance systems can be built and operated by small and medium sized enterprises. SMEs, the ‘beating heart of the economy’ are vital to the success of building potent supply chains with an inclusive strategy of food safety implementation.

This paper illustrates how reconfigured, market-driven supply chains can create bankable investment opportunities, generating new, higher paying non-farm jobs, robust income streams and wealth accumulation along the entire chain. Food Safety Implementation along the value chain can thus be the compelling vector, the cohesive force, that propels and sustains markets in consistently expanding cycles of economic and social development.

Bibliography

FAO. (2001). *The state of Food Insecurity in the World 2001*. Rome: FAO. Retrieved from FAO website: chrome extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.fao.org/fileadmin/templates/faoitaly/documents/pdf/pdf_Food_Security_Cocept_Note.pdf

FAO, European Union , & CIRAD. (2023). Food Systems Profile – Kenya. Catalysing the sustainable and inclusive transformation of food systems. *FAO; European Union ; CIRAD; EBooks*. Retrieved from https://doi.org/10.4060/cc6056en

FAO, & WHO. (2019). Food control system assessment tool: Introduction and glossary. Food safety and quality series No. 7/1. Rome. In *https://www.who.int/publications/i/item/9789241515719*.

Farley, I., Parker, A., Nkgudi, K., & Alemi, C. D. (2019). *Food Security: Opportunities & Risks for Agricultural Value Chain Development in Kenya*. Retrieved from chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://imanidevelopment.com/wp-content/uploads/2020/05/Food-Security_Final1.pdf

Institute for Security Studies. (2018). *Food Security Under Threat in Kenya* . Retrieved from https://issafrica.org/iss-today/food-security-under-threat-in-kenya

Ministry of Agriculture, Livestock, Fisheries and Irrigation Kenya. (2001). *AGRICULTURAL SECTOR TRANSFORMATION and GROWTH STRATEGY TOWARDS SUSTAINABLE AGRICULTURAL TRANSFORMATION and FOOD SECURITY IN KENYA 2019 2019-2029*. Ministry of Agriculture, Livestock, Fisheries and Irrigation. Retrieved from Ministry of Agriculture, Livestock, Fisheries and Irrigation website: https://www.agck.or.ke/Downloads/ASTGS-Full-Version-1.pdf

Sarah Gikonyo (2023) Table 1 Recent Food Safety Lapses in Kenya, Nairobi Kenya. Data compiled from media reports in Kenya and the expert's own field work