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BANANA VALUE CREATION THROUGH ENTREPRENEURSHIP:
IMPLICATIONS FOR INDUSTRIAL GROWTH IN AFRICA

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Abstract:
The Banana is a widely grown edible and perennial crop cultivated all over Africa. This is a theoretical paper based on the facets of theories of production and enterprise development. Banana value creation through entrepreneurship for industrial growth in Africa is aimed at job creation, wealth creation, enterprise development, crowd funding, industrial clusters and sustainable development in Africa. The Banana, when well-nurtured, has a capacity to sustain production over a long period of time, suckering and multiplying successively, even on low-nutrient soils of African countries. In Nigeria, production appears best in the South-West, South-East and South-South geopolitical zones of the country. The North-Central zone can also competitively produce comparable scales. African entrepreneurs engaging in banana production or processing would obtain sustained economic satisfaction in terms of food security and income for small-scale farmers; international trade; domestic consumption; flour, chips and fried banana processing; and alcoholic/non-alcoholic beverages. This paper finds that banana value creation and entrepreneurship can enhance consistent wealth creation and industrialization in Africa.

Key words: Banana, value creation, entrepreneurship, industrialization, Africa.

Introduction:
The agricultural value chain concept has been used since the beginning of the millennium, primarily by those working on agricultural development in developing countries. Although there is no universally accepted definition of the term, it normally refers to the whole range of goods and services necessary for an agricultural product to move from the farm to the final customer or consumer.

The term, ‘value chain’, was first popularized in a book published in 1985 by Michael Porter, who used it to illustrate how companies could achieve what he called “competitive advantage” by adding value within their organizations. Subsequently, the term was adopted for agricultural development purposes and has now become very much in vogue among those working in this field, with an increasing number of bilateral and multilateral aid organizations using it to guide their development interventions.

At the heart of the agricultural value chain concept is the idea of actors connected along a chain producing and delivering goods to consumers through a sequence of activities. However, this “vertical” chain cannot function in isolation and an important aspect of the value chain approach is that it also considers “horizontal” impacts on the chain, such as input and finance provision, extension support and the general enabling environment. The approach has been found useful, particularly by donors, in that it has resulted in a consideration of all those factors impacting on the ability of farmers to access markets profitably, leading to a broader range of chain interventions. It is used both for upgrading existing chains and for donors to identify market opportunities for small farmers. There is no commonly agreed definition of what is actually meant by agricultural value chains. Indeed, some agencies are using the term without having a workable definition or definitions and simply redefine ongoing activities as “value chain” work when the term came in vogue. Published definitions include the World Bank’s: “the term “value chain” describes the full range of value adding activities required to bring a
product or service through the different phases of production, including procurement of raw materials and other inputs”; UNIDO’s “actors connected along a chain producing, transforming and bringing goods and services to end-consumers through a sequenced set of activities”, and CIAT’s “a strategic network among a number of business organizations”:

Without a universal definition, the term “value chain” is now being used to refer to a range of types of chain, including:

- An international or regional commodity market. Examples could include “the global cotton value chain”, “the southern African maize value chain” or “the Brazilian coffee value chain”;
- A national or local commodity market or marketing system such as “the Ghanaian tomato value chain” or “the Accra tomato value chain”;
- A supply chain, which can cover both of the above.
- An extended supply chain or marketing channel, which embraces all activities needed to produce the product, including information/extension, planning, input supply and finance. It is probably the most common usage of the value chain term;
- A dedicated chain designed to meet the needs of one or a limited number of buyers. This usage, which is arguably most faithful to Porter’s concept, stresses that a value chain is designed to capture value for all actors by carrying out activities to meet the demands of consumers or of a particular retailer, processor or food service company supplying those consumers. Emphasis is firmly placed on demand as the source of the value.

**Linking Farmers to Markets:**
A major subset of value creation is concerned with ways of linking producers to companies, and hence into the value chains. While there are examples of fully integrated value chains that do not involve smallholders (e.g. Unilever operates tea estates and tea processing facilities in Kenya and then blends and packs the tea in Europe before selling it as Lipton, Brooke Bond or PG Tips brands), the great bulk of agricultural value chains involve sales to companies from independent farmers. Such arrangements frequently involve contract farming in which the farmer undertakes to supply agreed quantities of a crop or livestock product, based on the quality standards and delivery requirements of the purchaser, often at a price that is established in advance. Companies also, often agree to support the farmer through input supply, land preparation, extension advice and transporting produce to their premises.

**Agricultural Value Creation and Finance:**
Agricultural value chain finance is concerned with the flows of funds to and within a value chain to meet the needs of chain actors for finance, to secure sales, to buy inputs or produce, or to improve efficiency. Examining the potential for value chain finance involves a holistic approach to analyze the chain, those working in it, and their inter-linkages. These linkages allow financing to flow through the chain. For example, inputs can be provided to farmers and the cost can be repaid directly when the product is delivered, without the need for the farmers taking a loan from a bank or similar institution. This is common under contract farming arrangements. Types of value chain finance include product financing through trader and input supplier credit or credit supplied by a marketing company or a lead firm. Other trade finance instruments include receivables financing where the bank advances funds against a consignment of future receivables from the buyer, and factoring in by which a business sells its accounts receivable at a discount. Also falling under value chain finance are assets
collateralization, such as on the basis of warehouse receipts, and risk mitigation, such as forward contracting, futures and insurance.

The Use of ICTs in Value Creations:
Information and Communication Technologies or ICTs, have become an important tool in promoting agricultural value chain efficiency. There has been a rapid expansion in the use of mobile technologies, in particular. The price of ICT services is falling and the technologies are becoming more affordable to many in developing countries. Applications can support farmers directly through SMS messages. Examples include iCow, developed in Kenya, which provides information on the gestation period, on the artificial insemination of the cows, and on how to look after them. Applications such as M-Pesa can support access to mobile payment services for a large percentage of those without banks, thereby facilitating transactions in the value chain. Other applications have been developed to promote the provision of crop insurance through input dealers, for example.

ICTs are also being used to strengthen the capacity of extension officers and NGO field staff to reach farmers with timely and accurate information and, at the same time, help capture data from the field. The Grameen Foundation’s Community Knowledge Worker (CKW) Programme is an example. Farmers’ representatives are trained to use ICT applications on a smartphone to provide agricultural information and extension support. Most market price information is now delivered to farmers via SMS. Further along the chain, technologies offer considerable possibilities to enhance traceability, which is particularly relevant as certification grows in importance. Where necessary, many exporters can now trace consignments back to individual farmers and take necessary measures to address problems. Finally, systems such as FARA’s eRails are also supporting agricultural researchers through data collection and analysis and access to up-to-date research publications.

Enabling Environments:
As with all agricultural growth, two things appear essential for successful value chain development: creating the right environment for agriculture and investing in rural public goods/services. An enabling environment implies peace and public order, macro-economic stability, inflation under control, exchange rates based on market fundamentals rather than government allocation of foreign currency, predictable taxation that is reinvested in public services and property rights. There is a positive correlation of agricultural growth with investments in irrigation, transport infrastructure and other technologies. Governments have a responsibility to provide essential goods and services, infrastructure such as rural roads, and agricultural research and extension. Value chain development is often constrained by corruption, both at a high level and at the ubiquitous road blocks found in many countries, particularly in Africa. Many measures to improve value chains require collaboration between a wide range of different ministries, and this can be difficult to achieve.

Banana Value Creation and Enterprise:
The banana is an edible fruit – botanically a berry – produced by several kinds of large herbaceous flowering plants of the genus Musa. In some countries, bananas used for cooking may be called plantains, in contrast to dessert bananas. The fruit is variable in size, color, and firmness, but is usually elongated and curved, with soft flesh rich in starch covered with a rind, which may be green, yellow, red, purple, or brown when ripe. The fruits grow in clusters hanging from the top of the plant. Almost all modern edible parthenocarpic (seedless) bananas come from two wild species – Musa acuminata and Musa balbisiana. The scientific names of
most cultivated bananas are Musa acuminata, Musa balbisiana, and Musa × paradisiaca for the hybrid Musa acuminata × M. balbisiana, depending on their genomic constitution. The old scientific name Musa sapientum is no longer used.

Bananas and plantains (*Musa*) have played interesting and important roles in the history of human civilizations. These seedless fruits are eaten and joked about by Westerners, but they also constitute a crucial part of human diets in all tropical regions. In the same plot of land where one could harvest 98 pounds of white potatoes or 33 pounds of wheat, a person could also harvest 4400 pounds of bananas with very little labor.

Bananas and plantains are perennial crops that take the appearance of trees as they mature. Diverse cultivars are grown. The word “banana” is believed to have originated in coastal West Africa, presumably in Guinea or Sierra Leone, and was adopted in the New World for the sweet forms with yellow skin (peel). The word plantain is now widely used to refer to the starchy cooking bananas, which often have green or red skins. Plantain presumably originated from the Spanish word “plantano”.

The sweet banana is easily digested, but plantains must be boiled, steamed, roasted, or deep fried to make it soft and palatable.

Throughout history the fruit *Musa* has provided humans with food, medicine, clothing, tools, shelter, furniture, paper, and handicrafts. It could be termed the “first fruit crop” as its cultivation originated during a time when hunting and gathering were still the principal means of acquiring food.

The *Musa* is rich in vitamin C, B6, minerals and dietary fibre. It is also a rich energy source, with carbohydrates accounting for 22% and 32% of fruit weight for bananas and plantains respectively.

Around the world, there are more than 100 common names used for the fruits of banana. Bananas are cultivated in nearly all tropical regions of the world. Of particular importance to Africa is the East African Highland Banana (EAHB) which is a staple starchy food for 80 million people and an important source of income. There are 120 EAHB varieties in Uganda alone that are not found anywhere else in the world. The Banana is a monoecious plant. Its inflorescence has male flowers at the tip, several sterile flowers, and female flowers behind.

For wild bananas, birds usually pollinate the female flowers, but pollination is unnecessary for fruit sets of the cultivated forms, which form sterile fruits automatically without the presence of pollen. This type of fruit development is called parthenocarpy.

The ovules that were present in the ovary abort their development, and the pulp subsequently is produced by the enlargement of the internal tissues of the ovary, particularly from the inner face of the skin and the enlargement of the septa and central axis. These cell divisions are stimulated by the presence of high levels of axon in those tissues which are not present if the ovules are fertilized. Wild bananas have fairly dry fruits with large seeds and no pulp.
Importance of the Banana:
Bananas and plantains are important staple foods in many developing countries, especially in Africa. Of the numerous edible varieties, the EAHB accounts for 17% of the types of Musa grown worldwide, and plantains account for another 19%.

They provide food security and income for small-scale farmers who represent the majority of producers. Only about 15% of the global banana and plantain production is involved in international trade; most production is consumed domestically. Banana starch, flour, and chips are processed banana products whose markets are yet to be fully developed.
A FLOW DIAGRAM OF VALUE ADDED CHAINS IN THE PROCESSING OF BANANAS INTO DIFFERENT PRODUCTS FOR INDUSTRIAL DEVELOPMENT

Source: Chilokwu, Akubuilo and Lawal conceptualization, 2018.
Banana Cultivation:
The Banana is cultivated mostly in tropical and subtropical regions of the world. Areas of cultivation include Indonesia, Malaysia, India, and the Philippines in Asia, Brazil in South America, Costa Rica in North America, Nigeria and Cameroun in West Africa, the highlands of East Africa, the Caribbean, and Australia (Aurore and others).

Post-harvest Utilization of Banana Fruits:
A major constraint that is related to post-harvest handling and preservation of harvested bananas is their short shelf life of 6 to 10 under tropical conditions. The Banana, at its unripe stage, is easy to transport and has a longer shelf life (Meneze, et al., 2011). Bananas are highly perishable, with a significant portion of the harvested crop being lost from the farm to the consumers owing to poor handling, storage, and transportation of the fruit (Robinson 1996; Nakasone and Paul 1998; Tock and others 2010). Furthermore, with most of the cultivated bananas exported or consumed, the fruit is rarely processed, converted into food products, or processed for industrial use. Globally, large quantities of bananas are lost with about one-fifth of all harvested bananas being wasted as a result of little or no processing and poor postharvest handling (Rodriguez-Ambriz, et al, 2009). A recent study revealed 50% post-harvest losses in the banana fruit sold at a fruit market in Limpopo province of South Africa (Mashau and others 2012).

Storage quality and the activities of sucrose-metabolizing enzymes of fruits stored under ambient conditions are mostly associated to stage of fruit maturity during harvest. Results of studies conducted by Li and others (2011) on the effects of harvest maturity on storage quality and sucrose-metabolizing enzymes during banana ripening showed that banana fruit harvested at 60% stage of maturity had a longer storage life than fruit harvested at 80% stage of maturity. Thus, it could be said that fruits harvested at a lower stage of maturity have a longer life keeping than fruit harvested when fully matured or at a higher stage of maturity.

Value Addition and Reduction in Waste:
The Banana undergoes less industrial processing compared to fruits such as potatoes, apples, oranges, and tomatoes (Aurore et al., 2009). This is primarily due to the fact that investigations into its use, especially at its unripe stage and suitability for various types of processing, are still lacking. The suitability for use and innovation will only be possible on the foundations of enhanced knowledge of cultivars, characterization of their nutrients, climatic conditions for growth, and effects of post-harvest treatment, as well as applications of value addition. Most of the local cultivars in Africa lack this information. The dessert banana can serve as raw material for industrial processing and its potentials include the production of fruit juice, purees, starch, fermented and fruit drinks, marmalade, jam, ice creams, pastry ingredients, confectioneries, and sorbets.

Functional Foods:
Functional foods, a boundary between foods and drugs (Schieber and others 2001; Kaur and Das 2011), are traditional or processed foods that contain or add a valuable food component with beneficial health effects. They were first introduced in Japan in the 1980s, which is the only country with a specific regulatory approval process for functional foods (Kaur and Das 2011). Foods for Specific Health Use, a term coined for functional foods in Japan (Berry 2002; Bailey 2009), have been found to contain ingredients such as DFs and oligosaccharides with their corresponding health benefits (Arshad 2003). RS, believed to be present in bananas, has a wide application as a functional ingredient, particularly in foods with significant DF levels.
This, therefore, makes the banana a readily available raw material in the processing and development of functional foods due to the high RS content. Banana starch has been shown to be as functional as maize starch with a high acceptability potential due to its lack of flavor and has been evaluated for its ability to generate health-beneficial RS3 (Lehmann and others 2002; Aurore and others 2009). Food products such as yogurts and breads fortified with prebiotics and probiotics that provide health benefits are classified as functional foods (Menrad, 2003; Kotilainen and others 2006; Kaur and Das 2011).

**Investment Opportunities in value Creation through Entreprenureship for Industrial Growth:**
Many small holders have difficulties accessing local and regional agricultural markets. This issue must be addressed in order to tackle price volatility, reduce poverty and enable smallholders to help meet the growing demand for food. The EU supports the development of inclusive value chains – an effective way of linking small holders with markets – and promotes regional integration. It also helps farmers to get organized as this can increase their linkages with other actors in the value chain.

The need for this linkage seeks to improve the competitiveness of commodity chains by improving support services at producer level to link them up with competitive markets, by strengthening partner countries’ capabilities to implement commodity chain strategies and by developing regional support services. It also strives to increase governments’ capability to support diversification through informed policy choices, strengthened linkages between rural growth, rural business development services, and dynamic local, national and regional food markets.

Farmers’ organizations play a key role in reducing poverty and enhancing food and nutrition security. They should be involved at all levels, from the local to the international, allowing farmers to be heard and involved in the decision-making process. Farmers’ organizations also help to empower women and youth in agricultural production. EU cooperation aims to promote equitable distribution of investment returns and to enable small farmers to overcome their systemic weaknesses.

**Addressing weak points along the agricultural food chain:**
Returns on investments in developing countries’ agriculture can have a strong multiplier effect on development, especially if channelled through productive investments that focus on addressing weak points along the agricultural food chain. Value chains involve a complex interaction between actors, and the nature of these linkages defines value creation along the chain.

The objective of interventions in this context is to achieve a fair distribution balancing wealth and power. Farmers and their organizations, agricultural laborers, commodity suppliers as well as small and medium-sized enterprises (SMEs) need support in this effort to improve value chain governance. Assistance can, for example, help to foster dialogue and trust, develop long-lasting agreements offering better guarantees, and strengthen beneficiaries’ skills to negotiate fair conditions.
Local SMEs and Cooperatives can add value and create wealth by handling parts of the processing - By acceding to innovative financing schemes, by accessing markets directly and by moving up in the value chain. Value chain financing should take farmer’s needs into consideration and propose adaptive financial products such as insurance schemes, microcredit, and capital risk and start-up funds. The objective is to link contractual relations between producers and buyers with financial products, facilitate contractual arrangements based on a secure supply of inputs (including out growers’ schemes), work with clients with a more attractive risk profile and encourage quasi-equity financial mechanisms that are suited to the medium and long-term needs of farmers and other small and micro enterprises.

The provision of quality farm inputs, up-scaled post-harvest infrastructure and improved storage and distribution systems can all help smallholders to add value, meet quality standards and reduce post-harvest losses, thus encouraging distribution.

The development of value chains for agricultural products creates value added on agricultural commodities through local micro, small and medium-sized enterprises (MSMEs) and can be both a job generator and a major factor in a more equitable income distribution of growth. This is potentially relevant for small urban farmers but arguably, even more so in rural areas.

The EU believes that efforts on the public side to overcome systemic challenges faced by these MSMEs need to go hand in hand with sustainable agricultural productivity gains and with an entrepreneurial drive to help farmers move up in the value chain. Setting up farmers’ organizations creates an opportunity to have the interests of smallholders in policy dialogue represented and to provide services to the members. Cooperatives can help increase linkages between smallholders and other actors in the value chain.

Setting up cooperatives and other forms of producer organizations is also important to give small-holder farmers access to the benefits of increased investment - This type of organization improves farmers’ access to markets, increases smallholders’ bargaining power and gives investors security of supply. The EU supports such organizations at national, regional and global levels.

Strengthening agricultural markets:
Agricultural producers in developing countries face significant risks in their production processes. They are exposed to price instability, natural disasters, diseases, conflicts, and uncertainty about access to resources and markets, often without recourse to adequate means to manage these risks.

As a result, they often take suboptimal production decisions from an income maximization perspective. Market-oriented producers, as in the case of traded commodities, are currently faced with price volatility, which creates uncertainty and reduces the farmers’ willingness and capacity to invest, while potential financiers become less willing to lend. Following liberalization of agricultural markets in many countries, farmers have become more exposed to such market risks.

Facilitating and enhancing trade:
Building on current regional integration agenda to facilitate cross-border trade and develop regional infrastructure is important for the construction of a sustainable agri-food sector that is responsive to food demands. This is particularly the case for Africa, where the level of
formalized intra-regional trade is estimated at only 10%. Regional trade can substantially contribute to food security by increasing the amount and broadening the variety of food on the market. Food availability can also be enhanced by regional integration of agricultural and food markets, facilitating trade flows from surplus to deficit areas.

The EU promotes the development and implementation of agricultural policies and strategies – including food safety – aimed at stepping up the integration of regional food and agricultural markets. It also supports partner countries’ efforts to develop their sanitary and phytosanitary measures and to protect the health of their population, fauna and flora. In addition, the EU provides a wide range of assistance to partner country initiatives aimed at improving production and access to international markets.

Lastly, the EU supports initiatives facilitating access to the markets (market information systems, warehouse receipt systems) and innovative ways to secure the activities of small producers financially.

References

Andreas, S. & vonDrachenfels, C. (2017). "Value Chain Development: Approaches and activities by seven UN agencies and opportunities for interagency cooperation" ILO

"Community knowledge worker". Grameen Foundation. Retrieved 11 March 2014.

DFID (2017). "The operational guide for the making markets work for the poor (M4P)". DFID.

Eaton, C. & Shepherd, A. (2014). "Contract farming: Partnerships for Growth" (PDF). FAO. Retrieved 25 February 2014.

FAO. (2014). "Value chain finance". Retrieved 25 February 2014.

Haggblade, S.; Theriault, V.; Staatz, J.; Dembele, N. & Diallo, B. (2014). "A conceptual framework for promoting inclusive agricultural value chains" (PDF). Michigan State University and IFAD. Retrieved 25 February 2014.

Henriksen, L.; Riisgaard; S. Ponte; F. Hartwich; P. Kormawa. (2014). "Agro-Food Value Chain Interventions in Asia: A review and analysis of case studies. Working Paper" (PDF). UNIDO. Retrieved 24 February 2014. Editorial: Adding Value, by Michael Hailu, "Spore" No 157

Herr, M. L.; T. J. Muzira."Value chain development for decent work". ILO. Retrieved 25 February 2014.

"Innovative insurance by mobile". New Internationalist. Retrieved 11 March 2014.

J. Donovan; M. Cunha; S. Franzel; A. Gyau & D. Mithöfer. (2014). "Guides for value chain development: A comparative review" (PDF). CTA and ICRAF. Retrieved 24 February, 2014.

Kaplinsky, R. & Morris, M. (2014). "A Handbook for Value Chain Analysis" (PDF).IDRC. Retrieved 24 February 2014.
Lundy, M., Gottret, M. V., Ostertag, C., Best, R. & Ferris, S. (2009). "Participatory market chain analysis for smallholder producers". CIAT. Archived from the original on 2009-12-25.

Miller, C.; Jones, L. (2014). "Agricultural Value Chain Finance: Tools and Lessons" (PDF). FAO and Practical Action. Retrieved 25 February 2014

Moyer-Lee, J. & Prowse, M. (2015). ‘How Traceability is Restructuring Malawi’s Tobacco Industry’ Development Policy Review 33:2 http://web.uninr.it/files/download/34693/moyer-leeandprowse2012iobworkingpapertextabilityandtobaccoinmalawi.pdf

M-PESA (2014). "Kenya's Mobile Wallet Revolution". BBC. Retrieved 11 March 2014.

Porter, M. E. (1998). Competitive advantage: creating and sustaining superior performance; with a new introduction (1st Free Press ed.). New York: Free Press.

Prowse, M. & Moyer-Lee, J. (2014) ‘A Comparative Value Chain Analysis of Smallholder Burley Tobacco Production in Malawi, 2003/4 and 2009/10’ Journal of Agrarian Change 14:3 https://lucris.lub.lu.se/ws/files/2140085/5218863.pdf

Pye-Smith, C. (2017). Policy Pointer: Value Chains for transforming smallholder agriculture. Wageningen, Netherlands: CTA. 3(4): 15–19.

Riisgaard, L. & Ponte, S. (2014). "Pro-poor value chain development: 25 guiding questions for designing and implementing agroindustry projects" (PDF). UNIDO. Retrieved 25 February 2014.

Shepherd, A. (2014). "Approaches to linking producers to markets" (PDF). FAO. Retrieved 25 February 2014.

Shepherd, A. (2017). "Including small-scale farmers in profitable value chains" (PDF). Wageningen, The Netherlands: CTA Publishing. ISBN 978-92-9081-607-2. Retrieved 18 April 2017.

Springer-Heinze, A. (2014). "Valuelinks: The methodology of value chain promotion". GIZ. Archived from the original on 1 March 2014. Retrieved 24 February 2014.

"The African Portal on Agriculture". Retrieved 11 March 2014.

Vermeulen, S., Woodhill, J., Proctor, F. & Delnoye, R. (2014). "Chain-wide learning for inclusive agrifood market development". IIED. Archived from the original on 6 October 2008. Retrieved 25 February 2014.

Webber, C. M. & Labaste, P. (2014). "Building competitiveness in Africa's agriculture: A guide to value chain concepts and applications" (PDF). World Bank. Retrieved 25 February 2014.

Wiggins, S. (2014). "African agriculture in a changing global context: lessons learned" (PDF). CTA. Retrieved 16 March 2014.