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THE NECESSITY OF PORTFOLIO ENTREPRENEURSHIP AND ITS CHALLENGES: A CASE STUDY OF ONLINE AGRICULTURAL SERVICES IN KENYA

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ABSTRACT

In Africa, entrepreneurs are often forced into starting complementary businesses far from their core expertise to supplement insufficient and underdeveloped infrastructure. Whilst in other parts of the world, starting multiple enterprises, a phenomenon called portfolio entrepreneurship, often occurs as a result of opportunity rather than necessity. Necessity-driven portfolio entrepreneurship (PE) is an emerging phenomenon in African context and increasingly seen in the agricultural sector. Using information communication technology (ICT), agricultural portfolio entrepreneurs are able to manage complex sets of businesses. However, there is often a lack of knowledge of the process through which agriculture based PE develops in the African context. This paper reviews the evidence for the link between agricultural service efficiency in PE and the likely impact of ICTs on the agricultural sector in Kenya, focusing on two case studies. It argues that ICTs play a major role in the enhancement of agricultural services with huge untapped potential for accelerated development in agricultural innovation systems for data collection and sharing through cloud computing, opportunities for public involvement in research and development, and new forms of knowledge brokering. This paper also illustrates how ICTs can contribute immensely to improved communications, can deepen decentralization, and can attract portfolio entrepreneurship in Africa. It concludes with a number of recommendations for government and other development agencies seeking to advance economic growth and unlock the potential of ICT for agribusiness.

Key Words: Necessity, portfolio entrepreneurship, agricultural services in Kenya

Introduction

In Africa, startups are often forced into portfolio entrepreneurship because of underdeveloped infrastructure and insufficient logistics. In developed countries, where infrastructure is generally highly developed, entrepreneurs find it easy to focus on their core business and leave other areas such as logistics to other experts. Compelled by effectuation logic, portfolio entrepreneurs find it necessary to venture into multiple businesses at the same time as a mitigating factor against underdeveloped infrastructure and insufficient logistics. Following this logic, portfolio entrepreneurs often develop a wealth of experience in running several businesses at the same time.

While the reasons for the pursuit of the PE vary across the different countries and business sectors, scholars and practitioners fail to make an explicit distinction between prior independent business ownership experience and other types of experience relating to opportunity identification, managerial and technical experience. In addition, they do not make a clear distinction between types of entrepreneurs.

The uptake of e-commerce has been hindered by lack of infrastructure, which is forcing early adapters into necessity portfolio entrepreneurship. Adoption of electronic commerce offers a great opportunity to entrepreneurs to gain greater market access and reduced transaction costs, provides substantial benefits via improved efficiencies and raised revenues; facilitates access to potential customers and suppliers, productivity improvements, customization of products and services and information exchange and management (UNCTAD, 2002).While the argument stands that ICTs remain an important component of development, their effective applicability is often neglected in the literature.

The role of ICT in agricultural based portfolio entrepreneurship in Africa is a promising area of study. Agriculture is an important sector with more than 70% of the African population depending on the sector. Agriculture is critical to Kenya's economic growth and the sector's development has therefore ultimately remained the largest platform from which growth could be stimulated. The status of the agricultural sector mirrors that of the economy at large and the close relationship between the performance of the agricultural industry and that of the economy at large naturally implies that agriculture is a key ingredient in spurring economic growth. Yet, most of the research on business and innovation focuses on general entrepreneurship.

The agricultural sector in Kenya, as well as in Africa as a whole, faces major challenges in enhancing production in a situation of dwindling natural resources necessary for production. The growing demand for agricultural products, however, also offers opportunities for entrepreneurs to grow their business ventures. Information and communication technologies (ICTs) playan important role in the development of entrepreneurship as they offer opportunities to introduce new activities, new services and applications to support the growth of agricultural portfolio entrepreneurship.

The conceptual framework

The conceptual framework for this study is derived from the wider entrepreneurship literature as well as those specific to habitual entrepreneurs that relates (or can be applied) to portfolio entrepreneurs. The view that entrepreneurial behaviour is shaped largely by personality traits has been questioned in the literature (Sarasvathy, 2004). Cognitive motivation models are often presented to explain both highly complex entrepreneur behaviour and performance.

Further, human capital theorists have explored ‘inputs’ accumulated by entrepreneurs in relation to ‘outputs’, such as the decision to become self-employed and the size of the firm they have an equity stake in (Shane and Venkataraman, 2000). They appreciate that individuals acquire resources in particular contexts and the resources and attitudes acquired over time may affect behaviour. Specifically, human capital theorists suggest that individuals with broader pools of human capital resources consisting of achieved attributes will be associated with increased levels of productivity (Shane, 2000). Although research has suggested there is a positive link between human capital and portfolio entrepreneurship (Alvarez and Barney, 2004; Wiklund and Shepherd, 2008), the deployment of these resources has been insufficiently explored (Carter and Ram, 2003).

Recently, the term human capital has been broadened to include an individual’s cognitive characteristics (Alvarez and Busenitz, 2001), as well as accumulated work and habits that may have a positive or negative effect on productivity (Becker, 1993). Entrepreneurs can also leverage their human capital to gain access to a predictable uninterrupted supply of critical resources such as financial and social capital (Cooper et al., 1994).

Theorists make a distinction between general and specific human capital (Becker 1993). General human capital is generic to all types of economic activity and has traditionally been measured in terms of an individual’s education, age and gender. In contrast, specific human capital is only applicable to a particular domain. Prior business ownership experience maybe viewed as an element of entrepreneurship-specific human capital (Chandler and Hanks, 1998).

Business ownership experience can be leveraged to identify and exploit business opportunities. Also, business ownership experience can be associated with assets such as managerial experience, enhanced reputation, better access to financial institutions, as well as broader social and business networks and liabilities such as entrepreneurs exhibiting dulled motivation, hubris and denial. Assets may enhance the performance of some portfolio entrepreneurs, whilst liabilities may retard their performance. In line with the human capital conceptual framework, it is reasonable to assume that the attitudes and behaviour reported by experienced entrepreneurs will not be the same as those cited by inexperienced novice entrepreneurs. Further, experienced portfolio entrepreneurs may report contrasting attitudes and behaviour.

Portfolio entrepreneurship

In recent years, scholarly interest in portfolio entrepreneurship has increased (Wiklund and Shepherd, 2008; Iacobucci and Rosa, 2010). Portfolio entrepreneurship refers to individuals who simultaneously own and engage in a multitude of entrepreneurial interests (Carter and Ram, 2003). The study of portfolio entrepreneurship has been justified due to its role in value creation (Rosa and Scott, 1999) and its relevance to the broader entrepreneurship field (MacMillan, 1986). Yet, there is little empirical research on portfolio entrepreneurship and its relationship with value addition to the general concept of entrepreneurship.

The concept of portfolio entrepreneurship has a number of definitions: West head and Wright (1998) defined portfolio entrepreneurs as “multiple business starters”, while to Donckels, Dupont and Michel (1987) they are “multiple venture entrepreneurs”, to Star and Bygrave (1991) they are “parallel business founders “and to Alsos and Kolvereid (1998) PEs are “multiple business owners”(Rosa and Scott 1998) they are “serial entrepreneur”. Other definitions include “habitual entrepreneurs” (Carter 1999), “expert entrepreneur” (Sarasvathy 2001) and “serial entrepreneur” (Sarasvathy and Menon 2002). While other studies such as Carter, et al. (2004) used portfolio entrepreneur to refer to business owners who also hold other business interests. Clearly, many different definitions of PE have been proposed, leading to a lack of agreement among researchers on the PE construct (Sarasvathy, 2001) as well as criticism for the amount of resources allocated to efforts of creating a widely accepted definition.

While a definitional dilemma is present, many researchers feel this is a function of the youth of the field and will eventually result in a single agreed upon definition. As one author candidly stated, “the definition itself is evolving as the field comes into the mainstream of scholarly arena” (Kautz, 1999). Others have cited a lack of paradigmatic development (Ireland et al., 2005) and the lack of a specific theory of PE (Phan, 2004) as the true causes for lack of agreement on the definition of entrepreneurship. However, Ireland et al. (2005) emphasizes that a lack of paradigmatic development is not a criticism of the field of portfolio entrepreneurship but rather speaks to the youthfulness of this field of study, despite the growing amount of scholarly inquiry.

Phan(2004) argued that in order to understand entrepreneurship fully, it is necessary to study portfolio entrepreneurs. MacMillan defined habitual entrepreneurs as those individuals with experience in multiple business start-ups, and who are simultaneously involved in at least two businesses. Donckels et al. (1987), focusing on this 'multiplicity' aspect, used the term “multiple business starters”. Opportunity identification plays a key role in the entrepreneurial process of creation of new ventures. So, when the entrepreneur is more skilled at this process, he or she should be more likely to actually create new businesses. Research has shown that experience has an important role in this opportunity recognition (Baron & Ensley, 2006). Therefore experienced entrepreneurs might be more able to identify opportunities, or better quality opportunities, than novice peers. This has been advanced (Ucbasaran, Westhead & Wright, 2009) along with the suggestion that this could be a reason for being optimistic about the potential of PE (Ucbasaran, West head, Wright, & Flores, 2010). In summary, there is theoretical support for the relevance of human capital for entrepreneurship, which suggests higher likelihood of continuation on the entrepreneurial path.

Necessity of portfolio entrepreneurship

Building on the human capital argument, it is generally acknowledged that entrepreneurship is not necessarily a one-off occurrence. Some entrepreneurs can and may engage in repeated entrepreneurial behavior, both within the context of an existing organization or in creating and/or acquiring another. In either case, Ucbasaran, et al. (2001) argue that research focus should go beyond just the founding of new firms by first time entrepreneurs, a significant proportion of which go towards building a portfolio or group of businesses.

Today, unlike before, portfolio entrepreneurship is a ubiquitous feature of the economic landscape (Carter and Ram, 2003), and entrepreneurship scholars agree on its economic and social importance (Rosa, 1998; Wiklund and Shepherd, 2008;Westhead and Wright,, 2010). MacMillan (1986) advocates increased focus on portfolio entrepreneurship due to its high value potential for the entrepreneurship field, as it may allow a clearer view of the entrepreneurial process, generally with fewer if any, first-time mistakes. Reasons for engaging in portfolio entrepreneurship may include growth aspirations, wealth and risk diversification, and value maximization(Rosa, 1998).

The value of portfolio entrepreneurship thus can be seen in its contribution towards a firm's competitiveness. According to the resource based view (RBV), a firm's competitiveness is based on its access to valuable and rare resources that are difficult to replicate (Barney, 1991). The resources available to the firm are critical for both the opportunity exploration and exploitation components of portfolio entrepreneurship (Alvarez and Barney, 2004; Wiklund and Shepherd, 2008).Portfolio entrepreneurs therefore often find it convenient to explore and identify opportunities through complementary businesses besides their core competencies or industry niches.

The emergence of PE is associated with the corridor principle. Based largely on the work of Ronstadt (1988), the corridor principle states that the mere act of starting a business venture enables entrepreneurs to see other venture opportunities they would not otherwise see nor take advantage of until they had started their initial business. Here, Ronstadt argues, multiple venture creation is a more common phenomenon than the linear single venture notion that is often emphasized in the literature. By starting an initial venture, one can then see other opportunities and pursue them, thus leading to multiple ventures, be they sequential or overlapping. In addition, the Ronstadt (1988) study found strong evidence in support of the idea that those who start a second venture quickly after the initial venture had longer entrepreneurial careers than those who did not. The former tended to establish many more ventures while the latter went back to employment thus often only experiencing a short entrepreneurial career.

The effectuation logic, an emerging concept in entrepreneurship, offers an explanation of the necessity of portfolio entrepreneurship. The inverse of causation, effectuation, is a collection of non-predictive strategies that are primarily means driven (Sarasvathy, 2001). Effectual reasoning is a type of human problem solving that takes the future as fundamentally unpredictable, yet controllable through human action; the environment as constructible through choice; and goals as negotiated residuals of stakeholder commitments rather than as pre-existent preference orderings

(Shane, 2000). Since entrepreneurs constantly operate in uncertain environments where it is not always possible to predict the future, they are forced into PE to mitigate against undesirable changes in the environment and take advantage of the unexploited opportunities.

ICT and agricultural services

Information and communications technologies (ICTs) cut across a variety of technologies including: computer, microelectronics and related technologies including microchip and microprocessor-based technologies; multimedia and other information processing technologies and systems; telecommunications technologies, communication network technologies and infrastructure (Dzidomu, 2010). Definitions of ICTs are as varied as they are diverse. Marcelle (2000) defines ICTs as a complex and heterogeneous set of goods, applications and services used for producing, distributing, processing and transforming information. Bartlett (2002) perceives them as technologies that enable the handling of information and facilitate different forms of communication between human beings and electronic systems, and between electronic systems.

Economic development without ICTs is not possible (Ndemo 2015). These technologies serve as key enablers of inclusive development of key sectors of the economy. ICTs are said to be pertinent tools in transforming the social, economic and political life globally such that there is little likelihood that countries would develop without integrating into the information age (Wole, 2008). The promise of ICTs to allow entrepreneurs and enterprises to buy and sell their products over digital networks has been among the development priorities for the international community since the end of 1990s. In 1999, the United Nations Conference on Trade and Development (UNCTAD) emphasized the potential of electronic commerce to be a major engine for trade and development on the global scale (UNCTAD).The gains made in the ICT sector in Kenya have been recognized globally over the past five years. Ndemo (2015) acknowledges that Kenya's pioneering mobile innovation technologies have propelled the country onto the global stage as a classic example of inclusive innovation.

There is an increasing body of literature on the potential benefits accruing to the use of ICTs as a strategic component within the field of information technology for economic development(African Partnership Forum, 2008; Gendall, 2008; Servaes, 2007; Zhao, 2008). There has been a growing consensus globally on the positive role ICTs play in development particularly of developing countries. India is the second fastest growing economy globally and much of its growth is attributed to the rapid expansion of the export oriented ICT sector however, research into ICTs in the agricultural sector in India is at a rudimentary stage (Tiwari &Sharmistha, 2008). Moreover, in the Kenyan context, research on the role of ICT in the development of portfolio entrepreneurship remains a promising area of research.

The context and the phenomenon

Kenya is the largest and most diversified economy in East Africa. In the past ten years, the country heavily invested in ICTs. While mobile penetration is inching closer to 90 percent, internet penetration still stands at 55 percent (Kenya National Bureau of statistics, 2015) yet is among the highest in Africa. The country has become a hot bed of ICT innovation and leads the world on mobile money transfer, which has made it easy for people to transact online (Ndemo, 2015). However, other supportive infrastructure still poses a number of challenges.

The utilization of ICTs for entrepreneurial growth is a new but fast growing phenomenon. Several incubation centers for mobile application (app) developers have mushroomed in Nairobi. App developers are the actors or processes by which application software is developed for handheld devices, such as mobile phones. Most of these apps are used in several sectors to facilitate efficiency. For example, one of the mobile money applications in Kenya, MPESA, has virtually revolutionized the financial sector. There are others in agriculture, education, health and other financial services. The ecosystem for leveraging on ICTs is well developed in Kenya, hence the investment by new entrepreneurs to leverage on the emerging phenomenon. Kalimoni Greens and Kitchen Soko-the case studies for this paper- are among the early investors in online agricultural trade. One of their shared challenges soon became the core focus of this paper: the sentiment that they felt forced to make investments in transport in order to efficiently offer their services.

Kalimoni Greens

At the height of Kenya's post-election violence in January 2008, Lillian Kanari and family partners had enough optimism about the country that they braved the violence to found Kalimoni Greens. Lillian worked as a senior marketer in the hospitality industry and for two years was frustrated with her lack of career progression. She also increasingly doubted the quality of foods in restaurants and felt compelled to act, with her father in support.

When a colleague in her work place asked if she knew where they could get good organic potatoes, Lillian remembered the stockpile of organic potatoes lying at her20-acre family farm in Kinangop and organized for a delivery to the colleague. After some initial research into the organic food market in Kenya, Lillian soon decided to start a boutique supermarket in up-market Karen. Her initial customers were mainly clients from her workplace, relying at this early stage on word-of-mouth and social media marketing.

Within a matter of months, Lillian became a member of the Kenya Institute of Organic Farming as well as the Kenya Organic Agricultural Network, where she began to enlist a network of suppliers to supplement what they produced from their family farms. Six months down the road, after establishing a wide network of out-growers or farmers, she created her online platform, courtesy of Chika Limited, an app development company, to target and appeal to customers from other parts of the city. This led to the introduction of her home delivery service, Kalimoni Greens. Today, more than 70 percent of Kalimoni Greens' revenue comes from online home delivery.

Kalamoni has 70 of its products certified by ENCERT, the organic food certification body. To satisfy a market of more than 200 box deliveries a week, the company maintains a base production from their own farms with the rest coming from their farmer network with similar certifications. For other products like meats and bread, the company created a network of certified suppliers to meet the demand.

Many of her customers are foreign nationals living in Kenya but with growing health concerns and increasing understanding of the link between nutrition and health among the local population, the number of local customers is rising. Charles, Lillian's father is an organic foods evangelist of repute: "Let food not take us to our maker too soon. This is good business. We can produce even better food if we focus on our core values. The biggest problem we have is logistics--we have had to invest in delivery vans, an unknown sector to us, due to the lack of reliable logistics companies."

During the formative stages of the business, Lilian and her father attempted to use a loosely organized motor cycle network but this proved difficult with many customers complaining of poor handling leading to breakage, especially of eggs. They could not instill discipline in this network and in the end had to resort to using their own delivery vans and scheduling of deliveries in a city clogged with traffic jams. Investments in other non-core activities are not the only worry that takes up Lillian's time. New competitors are constantly recruiting farmers into this emerging enterprise. Like any good entrepreneur, Lillianis strategically seeking new innovations before the market becomes saturated. From her extensive travels to present on food shows abroad, she is aware of the Middle East's budding organic produce market and naturally wants to take her company abroad using the same model she started in Kenya.

Above all, Kalamoni and Lillian feel that it is about time that a regulatory framework is in place in Kenya to guard against farmers with poor governance, especially with disclosure of product history that is essential to differentiate the product from any other ordinary produce. This is critical to the success of the industry given the fact that most produce is seasonal. To even out demand, heavy investment is required, which may result in additional complementary enterprises.

Kitchen Soko

Kitchen Soko is the newest entrant into the emerging agribusiness field. The organic food produce company is run by three young entrepreneurs, Winston Wachanga, David Kang'ethe and LoretaWangui and operates from Kiambu road, adjacent to another high-end residential area in Nairobi, Runda. In the past year, they have been hustling ambitiously to penetrate this niche market and are succeeding. Their use of small pieces of land in Sagana, Thika and Ondiri is focused on base production and training for their out-growers.

Winston, the CEO and technical director, spent many years working at an international organization before he quit to found the technology company Sumatran Technologies Solutions Limited before coming up with the Kitchen Soko concept. Growing up in a farm himself, he has a great passion for agribusiness.

Loretta comes from a background in food technology and agriculture and previously worked as an operations manager for a country side farm and bakery. Her duties combine quality assurance, food and logistics. David has worked with a leading private equity, asset and fund management companies within European, Middle Eastern and North American markets. He is also a founder of Mobivendi limited, a leading telecommunication company. His passion, however, is in farming and when he returned to Kenya from abroad he turned his focus to help local farmers and small businesses attain a broader reach. He is in charge of the team that sources and establishes relationships with food producers and farmers, where his finance and investment knowledge helps guide the company on business development and viability.

The entrepreneurs of Kitchen Soto have realized that they are investing beyond their core activities in order to remain competitive. In their short time in business, they have experienced challenges relating to agricultural productivity, especially problems with staff not fulfilling promises made to customers, technical problems with the unreliability of internet service, and the absence of a reliable logistics firm to remove the burden of investing in a complementary enterprise. Some of these requirements unnecessarily push up capital expenditure leading to serious financial problems.

Most farming challenges are felt by food-business enterprises. Issues relating to climate change often leads to erratic rainfall patters affect supply and the majority of farmers they work with use rain fed methods with a tiny percentage using irrigation. Whenever these small enterprises encounter any of these challenges, they have in the past made some investments to help alleviate the challenges but they cannot keep on investing in new opportunities that can effectively be exploited by others. These compulsory or forced enterprises are often not the core business that they want to see success in. Kitchen Soko for example, have not managed to break through to some of the large enterprises that rarely work with these types of small and medium enterprises (SMEs) to leverage forward and backward linkages to grow.

Improving Economic Growth

These two startups are two examples of new enterprises determined to overcome many of the wider farming challenges in Kenya including access-to-market barriers, logistical challenges, as well as buyer power from large supermarkets that take up to one year before paying farm produce suppliers. They are, in essence, agents of productivity that improves overall economic growth.

Both companies are experiencing the typical challenges that come with small scale business in a developing country like Kenya. Instead of focusing on their core business, they find themselves investing in logistics. For example, both startups tried to leverage the growing number of motorbikes to create a seamless food distribution network but a lack of discipline and delicate handling among the bikers created too much inefficiency for the companies.

In developed countries, many entrepreneurs find it easy to focus on their core tasks and leave other areas to other experts because of how well established other sectors such as logistics, transport and water management tend to be. Although Kenya has a number of courier companies including Posta, these types of businesses often do not understand how best to serve and support micro and small enterprises such as Kalamoni Greens and Kitchen Soko.

Both companies how have their own delivery vans but considering the debilitating traffic in Nairobi and the growing demand for their services, they will need to invest more in transportation to meet the delivery requirement or source a dedicated logistics company to affordably deliver within hours in a city troubled with traffic jams. Because the two options are not yet viable, the two startups schedule certain delivery days in several parts of the city. For clients who may need supplies outside the delivery schedule, they are recommended to visit the store. Given this un-ideal service model, the business owners feel that they cannot adequately respond to customer demand and limited by such logistical issues, they mostly end up with excess supplies and to deal with this challenge, they have had to create an organic market day in Karen on Saturday and Gigiri on Thursday. These market days, despite being useful sources of additional revenue, are a further example of the ways Kenyan agribusiness companies must adapt to the insufficient business infrastructure.

The research question

Although many entrepreneurs do not know what complicates their entrepreneurial growth, their capital needs are often stretched when they make investments in complementary enterprises in order to succeed. Unintended enterprises exert pressure on the core competences of entrepreneurs, sometimes leading (unnecessarily) to increased operational expenditure, and sometimes failure due to resource constraints. For example, small produce enterprises invest in delivery vans but often these vans are not optimally used after the deliveries are made. To recover their cost, small produce business owners attempt to pass the cost on to the buyers but these increases the price of their produce and can take them out of the competitive market.

The objective of this study is to establish whether the new online produce startups that have come up on the backdrop of the ICT revolution in Kenya have addressed the problem of having to set up a complementary enterprises in order to succeed in entrepreneurship within the context of Kenyan business environment.

This study comes at a time when online enterprises, such as online stores, are on the rise in Africa. It will therefore help new investors understand the terrain they intend to invest in and policy makers too may find it useful to encourage new policy measures to enhance online business as a strategy for increasing employment opportunities in Kenya.

Methodology

The research utilizes a qualitative case study methodology approach to study this complex phenomenon within the context of two online grocery stores. These types of startups are difficult to study using positivist methods (a philosophical positions that emphasize empirical data and scientific methods) and better explained with a constructivist paradigm, built upon the premise of a social construction of reality (Searl, 1995). Constructivism "recognizes the importance of the subjective human creation of meaning, but doesn't reject outright some notion of objectivity. Pluralism, not relativism, is stressed with focus on the circular dynamic tension of subject and object" (Miller & Crabtree, 1999, p. 10).

The use of case study in this paper is consistent with Yin's (2003) guidelines that a case study design should be considered when: (a) the focus of the study is to answer "how" and "why" questions; (b) you cannot manipulate the behaviour of those involved in the study; (c) you want to cover contextual conditions because you believe they are relevant to the phenomenon under study; or (d) the boundaries are not clear between the phenomenon and context. In the two cases analyzed in this paper, the context under which they operate has a significant impact on their success. The phenomenon of leveraging on ICT is also critical but somewhat different from the issues of context.

The two case studies for this paper-- Kalimoni Greens and Kitchen Soko-- were identified through recommendations from a group of young entrepreneurs at the finals of an agricultural hackathon in Kenya. Several attendees of the final noted the two start ups as particularly influential and innovative so the authors selected them for the case study investigation.

Conclusion and Policy Recommendations

Whilst these two case studies reveal a number of insights that validate much of the literature on portfolio entrepreneurship, they also highlight the many problems facing such enterprises in Kenya. These include the elusive logistics that lead to very high transport costs, small markets, low agricultural productivity, low levels of irrigation, erratic rainfall, and vulnerability to high seasonal and interannual fluctuations, high rates of transpiration and very slow adoption of technology. What is more, these factors are exacerbated by a weak knowledgebase on subsistence agricultural production systems, inadequate agricultural inputs and poor market infrastructure, weak backward and forward linkages between agriculture and other sectors, increased food insecurity, natural resource and environmental degradation, poor management of water resources and low irrigation infrastructure. Other challenges include limited access to animal and mechanical power, reduced availability of labour due to the rural-urban migration, inefficient markets, weak information systems, a poor regulatory framework that does not facilitate investment and specialization in new and high value products, inadequate market information and lack of information.

Overall, the challenges faced by portfolio entrepreneurs can be classified into five categories: financial, technical, regulatory, personnel/cultural and governance-related. Costs associated with the acquisition of ICT related infrastructure require extra funds from the business enterprises. Portfolio entrepreneurs are more likely to be motivated by wealth generation and display higher levels of growth in the businesses they own. Assuming an interventionist stance, to maximize returns from investments, policy-makers and practitioners should encourage portfolio entrepreneurs but also seek to invest in and subsidize new technologies as well as fiscal policies to encourage greater use of technology across the full food supply chain. While private benefits may accrue to assisted entrepreneurs, there are also likely to be positive social externalities in terms of greater direct and indirect job creation, as well as greater tax revenue generation.

A focus on supporting portfolio entrepreneurs may lead to the general economic growth. To maximize general economic growth, policy-makers should also consider introducing schemes that encourage the wider uptake and utilization of ICTs through training, coaching on ICT and its usage. Policy-makers and practitioners need to consider the challenges associated with infrastructure and logistics development in Kenya. Portfolio entrepreneurs spend considerable amounts of time and resources worrying about and investing to mitigate the infrastructure inefficiencies at the expense of their core businesses, such as agricultural extension work. The government must explore deploying the many unemployed agricultural graduates as extension officers to open up the market to more players and generate business. There is a vital need to leverage research to inform policy, especially in agriculture, for greater productivity and food security. Policy dynamics must also evolve to embrace using data to increase our collective ability to predict agricultural trends and future needs.

Limitation and Future Studies

The research draws conclusions from two case studies that may or may not be generalizable beyond the Kenyan context. There is need to conduct a more detailed study preferably use of positivist methods to validate the findings in this research.

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