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Rwanda, Factor 20: Farm to Market

Rwanda: Improving access to markets through infrastructure development

In every coffee house across America, there is the tapping of keys. The clicking of a thumb on a mouse pad. The hum of a charging laptop. The Internet acts as a resource, an entertainment factor, and a connection to the outside world. Internet access is becoming an essential tool for life, ranked next to water, air, and food. In the United States, 81% of the population has access to Internet, giving us one of the highest rates in the world ("United States"). However, developing countries do not have this opportunity. Developing countries are countries that were often at one time or another a colonial dependency to a larger country; countries that are in the process of moving from an agrarian or pre-industrial/industrial stage to an information-dependent stage, and countries that have a focus on the development and delivery of ubiquitous infrastructure (Shepard, Personal Interview). Twenty years after a devastating genocide, Rwanda is still struggling to keep up with developed countries. Rwanda's economy, agriculture, and population were brutally destroyed by the civil genocide. They had to begin development from the start, placing them years behind other countries. While other countries were going through an Industrial Revolution, Rwanda was beginning to recreate their economy. The recreation is a constant battle. The economy is primarily agrarian, however Rwanda has not experienced a Green Revolution, which is a factor that successful agrarian economies rely on. Rwanda is stuck in a developing agrarian economy due to widespread corruption due to a spotty road system for moving product to market and a lack of a communications infrastructure that could be used to engage African growers with global food markets. While Rwanda is a trading partner to many countries, there are many ways they could increase revenue and productivity. One major way is to improve access to markets through infrastructure development with an emphasis on Internet expansion. The Internet provides a portal to the outside world, which can improve agriculture, infrastructure development, the economy, and the access to market.

Sub-Saharan Africa has been struggling with poverty, overpopulation, poor access to resources, and developing economies for years. These issues prevent the development and advancement of the country's agriculture and businesses. Rwanda has the highest population density rate in Africa with the population currently reaching 12 million people, with 416 people living per square kilometer ("Rwanda" World Food Program). Compared to the lifestyle of an urban developed country, Rwanda has a completely contrasting lifestyle. The majority of the Rwandan population lives in rural Rwanda with 44.9% living below the poverty line. The Rwandan family contains 4.3 members with a Total Fertility Rate of 4.71, well above the world average of 2.1. The typical family contains 5.5 members and lives in rectangular houses with iron or thatched roofs, usually lacking indoor plumbing, electricity, and running water ("Rwanda" UNICEF, "Culture of Rwanda"). However, the rural poverty does not affect the education. Rwanda has a literacy rate of 71% and primary schools have an enrollment of 95.3%, which is immensely high for a Sub-Saharan country. Rwanda won the Commonwealth Education Good Practice Awards 2012 for the innovative fast-tracking strategies of the 9 Year Basic Education Program. This is a recognition of the progress which Rwanda has made in increasing access to nine years basic education and an acknowledgement of the innovative and successful approaches taken to ensure that all children can access and complete quality basic education in Rwanda ("Rwanda" UNICEF). Healthcare is a sector of the economy that Rwanda has improved greatly since the genocide. 90.6% of Rwandan citizens are enrolled in the national health care plan, Mutuelles de Sancte, and the poorest 25% of the country have free healthcare ("Healthcare in Rwanda Improves Dramatically"). While the

Rwandan economy is quickly recovering, there are many programs that need improvement.

After the genocide in Rwanda, agriculture has become the cornerstone to their new economy. The agrarian sector employs 80% of Rwandans where the average farm family owns about one half of a hectare ("Rwanda" Feed the Future, Mwakini). A hectare is only enough land to build a house with a garden. While the majority of Rwanda is farmlands, two-thirds of families practice subsistence farming ("Rural Poverty in Rwanda"). Subsistence farming is to farm enough crops to provide for your family and not be used as revenue. Due to this large amount of subsistence farming and Rwanda's lack of natural resources, food imports are often required. Rwanda thrives off tourism, minerals, coffee, and banana exports but struggles in keeping up with countries that mass-produce single products on plantations. Due to the high rate of rural living and subsistence farming, 44.9% of Rwandans live below the poverty line (Mwakini).

The barriers to any developing country occur through agricultural productivity, employment at a living wage, and adequate nutrition and accessing food markets. Rwanda is no exception. An essential step to developing agriculturally is to undergo the Green Revolution. Rwanda had no political or financial support for a revolution due to the damage the genocide did to the agricultural sector. Rwanda is still trying to recover from erosion and poor soil fertility practices, grass strips and hedgerows, and trying to integrate erosion controls ("Agriculture and Challenges to Development"). Employment at a living wage is a barrier because there is no official minimum wage. There are no unions to regulate a national wage and the only enforcement is a district labor inspector, who has little to no power ("Rwanda Minimum Wage"). The malnutrition rate in Rwanda is 43% and is due to low agricultural productivity, insufficient food intake, reoccurring illnesses, and poor primary childcare ("Rwanda" World Food Program).

The farm to market access is an essential part of the Rwandan economy because 80% of revenue results from agriculture ("Rwanda" World Food Program"). Farm to market access is how the goods from the farm are transported to the market; roads, shipping, trucks, and planes. The infrastructure in Rwanda is in need of major improvement. Barriers to the farm to market access include tariffs, extreme poverty, rough terrain, erosion and climactic hazards. One extremely important barrier is the lack of infrastructure development through Internet and technology. The combination of geographical issues and the lack of modern technology create serious constraints to agricultural development ("Rural Poverty").

The Internet creates a portal so the smallest town can advertise and ship their agricultural goods all around the world, selling more of what they grow to more markets. Internet services will enable the broadest enhancement of information and communication resources for rural people ("The Internet"). In Rwanda 60% of citizens have access to mobile phones but only 8% have access to the Internet (Mpyisi). Access to the Internet is limited to Kigali, the capital city. However, 90% of the population (about 12 million) lives in rural areas (Mwakini). With only 1 million of Rwanda's citizens accessing the Internet, the population is put at a complete disadvantage economically and agriculturally. The benefits of rural Internet access include the use of best agricultural practices (practices that are up to date and increase productivity) and communicate information about successful development approaches. At the same time, rural communities and agricultural organizations can benefit from improved methods of communication that enable rural stakeholders and farmers to communicate about development. The Internet promotes communication with agencies and improves the quality and relevance of information and physical resources available (Shepard, Interview). The Internet is a portal for newer equipment, reliable shipping, and farm to market communication.

Small farmers face low production and insufficient income in comparison to developed nations because they have no access to weather forecasts, digital tools, vehicles and infrastructure, prices, markets, and production techniques while small farmers rely on word of mouth, previous experience or local leadership due to lack of Internet Access. The current Internet access in Rwanda is 8% while the world average is 34.3% ("Rwanda" Interim). Rwanda places 146th of 183 for secure Internet assessors in the world. The lack of Internet access does not affect the environment, however developing countries are disadvantaged because they don't have access to all the programs the Internet contains. The Internet has become almost essential in modern day life in the way of jobs, information, contact, farming, and trade ("Air, Food, Water, and Internet"). With little access to the Internet, these countries cannot compete with developed countries. No countries will form a partnership with an underdeveloped country that has no resources ("Rwanda: Freedom on the Net"). Dave Evans, the chief futurist of Cisco, a company that develops network equipment explains how the Internet is becoming an international tool. "*The lifestyles of 'prosumers' – the blending of professionals and consumers in the workplace — their technology expectations, and their behavior toward information access are changing the nature of communications on a global basis.*" ("Air"). Internet conditions are greatly improving in Rwanda. Internet penetration is low but rising rapidly. In 2010, there were 7.7 Internet users per 100 people in Rwanda, which is greatly increased from a survey taken in 2007, which resulted in 2.2 Internet users per 100 people ("Rwanda" World Factbook). However, the change is not to the point where the Internet can increase productivity, agriculture, and the economy.

Many countries, especially in Africa, are developing and expanding their Internet access. In rural Nigeria, the World Bank instituted a project that tested the increase in agriculture through using the Internet. The population of Nigeria is 169 million and 49% of the population lives in rural areas. Only 18 months after instituting the Internet, farm size increased from 2.2 hectares to 3.4 hectares. The mean income of farmers increased by $2,848. By implanting use of the Internet in one rural Nigerian village, Ago-Are, agricultural productivity skyrocketed. The demography and agrarian economy in Nigeria is similar to Rwanda. The statistics alone show the impact of the Internet on a rural village (Adewale). Internet access will greatly improve productivity, income, and food security. If a study worked in Nigeria, which has a population almost 10 times greater than Rwanda, it will translate well to Rwanda.

Increased Internet access in Rwanda will increase the amount of food and income available to families because it provides a connection to outside world (Shepard, "Technology"). Internet access improves economic development for agricultural producers, community development, research, and education. Rural communities and small-scale agricultural producers are deeply affected by global economic, environmental and political forces: *"Modern communication technologies, when systematically applied and adapted to conditions in rural areas of developing countries, can be used for rural communication to increase participation, disseminate information and share knowledge and skills. The establishment of new institutional frameworks, including all stakeholders, which are autonomous and income-generating, can lead to sustainable and cost-effective efforts, as opposed to working only with government agencies."*- Manuel Calvelo Rios, FAO Communication for Development in Latin America Project ("Air"). Increased communications and knowledge will lead to better outcome and productivity, which increases income and increases amount of food.

The increase of climate temperatures affects more than just the environment. It will greatly affect Internet access, and in countries such as Rwanda, there is little room to spare. Climate change can reduce the range of wireless communications, rainstorms can impact the reliability of the signal, and drier summers and wetter winters may cause greater subsidence, damaging masts and underground cables. "If climate change threatens the quality of your signal, or you can't get it

because of extreme fluctuations in temperature, then you will be disadvantaged, which is why we must address the question," said Caroline Spelman, UK secretary of state (Carrington). In rural Rwanda, Internet connection is already sparse and any small threat will negatively affect the efforts to increase access.

Increasing Internet access is simple: increase the amount and quality of Internet portals and kiosks, and then food security will follow. With an increased number of portals, Internet will be accessible to almost all of the population contributing to the issues of poverty, malnutrition, and population by strengthening the connection to the outside world, especially through farm to market access. The Millennium Development Goal, which addresses the issue of low Internet access in Africa, is in cooperation with the private sector make available the benefits of new technologies, especially information and communications ("Millennium"). Internet providing companies increased to over a dozen (from 1 in 2001). An increase in Internet is essential to transform Rwanda from a struggling country to a developed country.

While Rwanda's government is taking action to improve the Internet access, local projects are taking the lead. The Rural Independent Kiosk Project is a Kenya based operation that manufactures and distributes cost-effective kiosks, which operate with satellite connectivity and solar energy to allow rural communities to access the Internet. These Internet kiosks are being distributed in Kenya, Nigeria, Rwanda, and Zambia, and provide rural communities with access to information on agriculture, health, and the environment. These kiosks are independent and self-sufficient booths that run on solar power and renewable energy. The RIT has helped farmers obtain regular updates on weather patterns and produce prices, thereby expanding their revenue. The goal of the Rural Independent Kiosk Project is to bridge the digital divide by providing Internet access to rural or remote communities. If the RIK was scaled and utilized by the Rwandan government, it could help Africa move towards the Millennium Development Goal of Bridging the Digital Divide by year 2015 ("Rural International"). This organization was formed with the sole purpose of improving Internet in Rwanda and is a viable resource the government should utilize.

The Rwandan National government made Internet and Communications Technology (ITC) development a huge priority, spending more than the average country on development ("ITC Seen"). The World Bank has supported more than 100 developing countries, including Rwanda, with investments and technical assistance in ICT. Since 2003, it has committed over $1.3 billion for investment in ICT projects, including $776 million from the International Development Association ("Rwanda" World Food Bank). The Bank's investments have helped to attract over $30 billion in private sector investments in ICT in low-income countries from 1997-2007 ("ITC in Agriculture"). The Government of Rwanda strongly believes that ICT can enable Rwanda to leapfrog the key stages of industrialization and advance to a developed country. The government of has integrated the Internet and Communications Technology as a key driver for socio-economic development to fast track Rwanda's economic transformation. They consistently strive to align the country's development agenda to global trends in order to be competitive ("National").

Adopted in 2000, the government program Vision 2020 aims to transform Rwanda into a middle-income country and transition her agrarian economy to an information-rich, knowledge-based one by 2020. Since 2000 the Rwandan government has established institutions and mechanisms to create an Internet development under the basis that it is critical world-class infrastructure and is essential in creating a resource base to become a knowledge-based society. The existence of a conducting legal framework, availability of good infrastructure and a growing resource base are creating the necessary environment that would establish the growth of Rwanda's Internet sector.

Vision 2020 aims to accelerate “services development” by running efficient government services and increasing the private sector productivity and in turn Rwanda’s competitiveness with developed nations (“National”).

The Government of Rwanda signed a contract with Tanzania Telecommunications Company Limited to increase the bandwidth capacity of Rwanda. The objective is to reduce the cost of connectivity by expanding the reach of Rwanda’s broadband networks. This will facilitate international Internet connectivity (“ITC Seen”). As Internet access is becoming ubiquitous, it is increasingly essential for ensuring sustainable economic development, and Rwanda is no exception.

While Internet access will improve the farms and economy of Rwanda, the issue goes beyond Internet access. A key factor in access to services is access to education, healthcare, and community centers. Farm families can be involved as key players in increasing Internet access by getting a full education. The demand for education in rural Rwanda is limited by the traditional nature of farm technology and lack of visible benefits of schooling in terms of farmer productivity. Education will increase farm productivity by improving the quality of labor. It is thought to be most important to farm production in a rapidly changing technological environment (Weir). With an education, farmers can play a part in decisions regarding agriculture and Internet. They will also be equipped to handle problems with the Internet kiosks and instituting Internet cites or simple issues such as helping other farmers find access points. “Farming policies should be part of a wider agenda for rural development to create an enabling social environment with services to make sure our rural areas are good to live in,” said Piet Vanthemsche, the president of the Belgian Farmers’ Union (“ITC seen”). Rural Rwandan farmers can indirectly increase Internet access by receiving a complete and well-rounded education so they can further their knowledge of agriculture, global communications, and the problems and solutions of Rwanda.

Rwanda is a country in need of improvement. The country is still recovering from years of genocide and is strides behind other developing countries. The economy is agrarian based in a technological world with many disadvantages. The type, amount, and quality of crops are lower than average. The farming practices are behind the times. With agriculture as its main sector, Rwanda needs many improvements to boost the economy through farming. The Internet can change this. It can increase jobs, increase productivity, enhance the delivery of public and private services, and achieve broad socio-economic objectives in the areas of healthcare, education, climate change, energy, employment and social development.

The Internet greatly improves agrarian life. It gives workers the ability to earn a living wage, and creates a transparent government. Without a good road infrastructure the product cannot move to a larger market. Without a good, well-established communications infrastructure, Rwanda cannot reach out to far-flung markets to make them aware that they are an option for product sourcing. The solution is clear: increase Internet access. Shape the country so the Internet is a basic human right. Go to Rural Rwanda and build Internet portals and kiosks. Teach the locals how to use the Internet. Accomplish the Millennium Goal of increasing Internet access. Every portal counts in rural Rwanda. With two-thirds of Rwanda practicing subsistence farming, Rwanda’s crop output is low. With the Internet, more productive farming techniques could be discovered, giving the economy an extra boost and increasing food security. The more crops Rwanda grows, the better the food security will be. These aspects of the Internet will shape Rwanda into a developed country, surpassing the developing stages. As such, the global ICT industry is fast changing as a result of emerging technologies, economic, social and business

trends, which will greatly influence agriculture. The improvement of access from farm to market through the infrastructure development will increase through the Internet.

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