Enabling Socio-Economic Activities: Opening Global Markets for the Marginalized Through Secure ICT Use

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Abstract This paper identifies and describes five economic activities through which ICT could effectively be used to open global markets for rural and marginalized communities. The activities are identified in contexts where there are no industries, there is limited or no access to markets, no access to capital, effectively leveraging and optimizing what already exists in communities. The paper borrows from the smart community centre model of Siyabuswa Educational Improvement and Development Trust (SEIDET) in South Africa and the Botswana Virtual Marketplace Trading Portal to illustrate and to argue that ICT could give marginalized individuals in rural villages in Africa, access to global markets and the technical means for packaging, marketing and selling their own products and thereby creating jobs and alleviating poverty

Keywords rural communities • ICTs • poverty

1 Introduction

This paper identifies and describes five economic activities through which ICT could effectively be used to open global markets for rural and marginalized communities. The activities are identified in contexts where there are no industries, there is limited or no access to markets, no access to capital, effectively leveraging and optimizing what already exists in communities. Building on a platform that has already been tested in Botswana called Products Botswana and leveraging the Smart Community Centre Model of SEIDET in South Africa [4, 5], the paper argues and demonstrates that ICT could be used to open global markets for marginalised communities; and in so doing, become an effective tool for job creation and poverty reduction in these communities. The paper addresses the following research question:

How could ICT be used as a tool for poverty reduction and job creation in rural and marginalized communities?

The paper is organised as follows: 2. Identification of the four socio-economic activities and the rationale thereof; 3. Description of the four unique contexts; 4. Description of the actual portal platform with examples; 5. The smart community centre model of SEIDET; 6. Embedding the portal into the community centre model to produce a secure ICT trading platform; 7. Argument for effective and secure ICT use as the solution; 8. Concluding discussion

2 The Socio-Economic Activities Identified and the Rationale Thereof

2.1 Arts and Crafts

Arts and craft refers to a wide spectrum of products, which include but are not limited to basketry, leather works, metal works, pottery, textiles/clothing, wood works, painting, sculpturing, design, fashion, photography, musical instruments, toys, decorations, jewellery, furniture etc, which are mostly handmade from a wide range of materials.

According to the International Labour Organisation (ILO) SEED working paper no 51 "Small enterprise development and job creation in the culture sector in the Southern African Development Community (SADC) region", the arts and craft sector in Southern Africa and indeed Africa has not been seen as a major economic driver and creator of jobs, however in more developed countries such as India, Brazil and the first world countries; they contribute a significant portion to GDP and job creation This is primarily because the vast majority of Arts and Crafts producers are small and micro enterprises.

The rationale for identifying the sector and arguing for its mainstreaming is that it is not on its own only a contributor to development and growth but also permeates many other sectors and is a major contributor to innovation and growth. The contribution of the sector to development is in three critical areas:

- *human development*: artistic and creative self-expression, self-esteem enhancement, emotional and intellectual stimulation, confidence building, catharsis, creative thinking and innovation, the exploration of the human condition
- *social development*: community participation, youth and gender involvement, contribution to democracy, social inclusion, social cohesion, the building of social capital
- *economic development*: income generation, poverty alleviation, employment, small business development, foreign exchange earnings, investment, city development and city regeneration.

2.2 **Cultural Tourism**

Cultural tourism (or culture tourism) is the subset of tourism concerned with a country or a region's culture, specifically the lifestyle of the people in those geographical areas, the history of those people, their art, architecture, religion(s), and other elements that helped shape their way of life according to the UN definition. It encompasses travel concerned with experiencing cultural environments, including landscapes, the visual and performing arts, and special (local) lifestyles, values, traditions, events as well as other ways of creative and inter-cultural exchange processes. Some of the key aspects which form part of cultural tourism include:

- Heritage tourism;
- Art tourism;
- Creative tourism;
- Urban cultural tourism;
- Rural cultural tourism;
- Local cultural tourism;
- Contemporary cultural tourism.
- Cultural events tourism

Culture is widely perceived as highly influencing visitors' initial decision to travel to destinations in different parts of the world. Therefore in most regions of the world, particularly in Europe and North America, cultural attractions have become important in the development of tourism according to the UN website on cultural tourism. The diverse indigenous African cultures can be perceived as having a latent comparative advantage in the development of cultural tourism because they possess unique cultural and nature based. These are the tourist attractions which people from major tourist generating countries are looking for.

2.3 **Mobile Money**

The advancement of technology is no longer the preserve of the developed economies. Globalisation forces and geopolitical shifts have made it possible that developing countries also gain remarkable access and use of technology, which has become ubiquitous. One successful branch of technology that has permeated developing economies, especially the African continent, is mobile money technology. Mobile money is a technological revolution across Africa and while the internet is not yet widely spread, the cell phone is widely accessible. The use of mobile phones for various payment and banking transactions gave impetus to Africa's socio-economic development particularly to villages and rural areas that are remotely located from the cities. The lack of infrastructure and adequacy thereof, in other instances, limits mobility and leads to difficulties for people living outside the cities to access services with potential to enable better living conditions and attain decent livelihoods.

The advent of mobile money technology has necessitated these communities to access services that contribute towards better living and improvement of daily lives. With poverty and unemployment still remaining the biggest challenge in most parts of

Africa amid improved and promising economic growth patterns, the use of mobile money becomes a socio-economic imperative. Mobile money, used alongside synonyms such as mobile payment or digital wallet, has become central to the economies of Africa with specific reference to communities in countries that lack social and economic infrastructure such as roads, transport logistics and inclusive banking systems among others [1]

The invention of mobile money rooted in Kenya, the East African economy, through the mobile money application called M-PESA[1]. M-PESA, a service that allows money to be sent and received using mobile phones ("M" stands for mobile while "PESA" is Swahili for money) is a small-value electronic payment service developed by Safaricom, a Kenyan mobile phone operator, in 2007. By December 2011, the service had more than 17 million Kenyan subscribers and around 5 million in Tanzania as of May 2013. And similar programmes were developed, thereafter, in Afghanistan, India and South Africa. To date Kenya has been the success of this mobile money technology since its invention in 2007. By the end of 2013, M-PESA, was adopted by 70% of the adult population and is a conduit for 25% of Kenya's GNP[2] [11]. Since the adoption of this mobile banking technology in Kenya, many countries have launched such services for the betterment of their socio-economic development especially on providing banking services to the un-banked communities.

So what exactly is mobile money? Mobile money is used to loosely refer to money stored using the Subscriber Identity Module (SIM) as an identifier as opposed to an account number in the conventional banking business. It can also be defined based on its functionality by observing that it includes all the various initiatives (long distance remittance, micro-payments, and informal air-time) aimed at bringing financial services to the unbanked, as well as convenience for the banked, using mobile telephony technology[3].

In Kenya, for example, mobile money transfers and banking has had a remarkable socio-economic impact on the lives of women in the fishing industry on Lake Victoria [7]. Low levels of financial inclusion are recognized as a barrier to socio-economic development, yet globally, more than 2.5 billion adults do not have formal bank accounts, in developing countries only around 41 per cent of adults have one (ITU, 2013) and in Africa, just 20 per cent of families have bank accounts[4]. Three main reasons explain these figures: banks are just too expensive or too far away, especially in rural areas; people feel they do not have enough money; and there is a general lack of trust in banks. Therefore mobile money technology, however, has

[1] http://blog.private-sector-and-development.com/archive/2015/03/10/development-in-africa-through-mobile-money-democratization.html

[2] http://www.economist.com/blogs/schumpeter/2013/01/mobile-money

[3] http://transhumanity.net/the-impact-of-mobile-money-in-africa/

[4] http://blog.private-sector-and-development.com/archive/2015/03/10/development-in-africa-through-mobile-money-democratization.html

allowed millions of people to carry out financial transactions relatively cheaply, securely, and reliably.

The impact of social and economic development of mobile money is well documented. One such success story was the remarkable uptake and adoption of "digital wallet", another term for mobile money/ payment, in 2011 by Haitians, citizens of Haiti that was destroyed by a devastating 7.0 magnitude earthquake death left over 250 000 people dead[5], a year prior [3]. Domestic money transfers, payroll, and basic banking services were first to go live. It immediately became apparent that giving Haitians the ability to instantly transfer money from one mobile phone to another — anywhere in the country without a banking intermediary — was a killer app. Amid the devastating tragedy, Many observers, including the Washington-based U.S. Agency for International Development (USAID), viewed the mobile wallet in Haiti, as a game-changer that dramatically accelerating economic development and helped transform a country that desperately needed some good news. In an analysis conducted by the World Bank in 2009, to test the impact of telecommunications penetration on economic growth rates at country-level. According to this analysis of 120 countries, for every 10 percentage point increase in the penetration of mobile phones, there is an increase in economic growth of 0.81 percentage points in developing countries, versus 0.60 percentage points in developed countries.

In addition to mobile money being used as a payment tool and banking, it has evolved to become a technological solution for various financial transactions and other social services. Mobile money is also having some surprising social impacts, reducing vulnerability particularly of the poor. For example, people are more likely to seek immediate treatment for illnesses as they are able to call on their social networks to provide immediate funds for transport and medical bills[6]. Women are also empowered. Whereas before mobile money, household finances were likely to be controlled by men, women can now easily manage their own private accounts to receive and spend money directly. Research in East Africa has shown that 85% per cent of women in the study received income in this way and, it accounted, on average, for 33% of their income. Mobile money also facilitates trade, making it easier for people to pay and receive payment for goods and services [8]. The FITS Tanzania study showed nearly 20% of mobile money users were using it for business, mainly for transactions between the supplier and the retailer. In Kenya, formal businesses are more likely to use M-PESA to get paid by end-user customers than to pay their suppliers and employees.

The facilitation of trade through mobile payment services forms the theme of this paper. In the backdrop of the socio-economic impact that mobile money service has shown in the socio-economic development of the African economies, the writers of this paper sought to demonstrate the likelihood of success of facilitating trade transactions between the producers of arts and crafts in Africa and potential global customers through a global online platform as defined in preceding sections. There is no doubt

[5] http://fortune.com/2013/08/15/haitis-mobile-redemption/

[6] http://blog.private-sector-and-development.com/archive/2015/03/10/development-in-africa-through-mobile-money-democratization.html

that drawing from the successes of documented achievements of mobile money services elsewhere in Africa, there is also going to be recorded future successes of facilitating trade and mobile financial transactions of arts and crafts producers in rural areas in Africa and customers throughout the world. To this date, trade facilitation between arts and crafts producers and global customers using an online platform linked to mobile phones has proven an effective business concept, judging by the success of the initial project in Botswana.

2.4 E-books on undocumented African stories

The African stories, legends and folklore have been very popular among the different cultures. These have been passed down from generation to generation and have been told around fire places. These stories served various purposes which included:

- Educational stories
- Folklore
- Stories to highlight certain taboos
- Stories to pass down history from generation to generation
- Entertainment stories
- Stories of heroism and bravery
- Poems

These formed and still form an integral part of African culture and heritage and can form a strong component of cultural tourism. Sadly this piece of the African culture is rapidly disappearing, largely due to urbanization and lack of documentation. A lot of these stories we believe are undocumented and not available in electronic format, yet some of these make for fascinating reading . They also could form powerful promotional tools. There are many young people who are trained in ICT and multimedia most of whom are unemployed. This will also assist in bridging the generation gap by allowing young and old to interact on a regular basis. Therefore the necessary key ingredients are there to start publishing e-Books of African stories. These can be sold through the e-commerce platform. The products to be produced could include:

- e-Books
- Multimedia animations of stories
- Video/films

2.5 Made in Africa Cybersecurity solutions, products and services

Cybersecurity could be considered a key enabler for digitally driven innovations. With Africa being arguably the least developed continent, we expect that most innovations in response to the cybersecurity challenges will come from Africa. These innovative solutions, products or services could then be delivered online to the rest of the world. A youngster in a remote and an unknown rural village in Africa could be an inventor of a very unique cyber solution, product or service and then have these delivered to global markets. Several studies conducted by the Council for Scientific

and Industrial Research (CSIR) in South Africa point in this direction [2]. The Cybersecurity Awareness Programme and the Cyber Games are good examples. A variety of cyber solutions, goods, products and services are also expected from further development and implementation of CyberSAT [5].

The rationale of our thought is that more rural communities are becoming integrated into the global village due to increased hardware and software corporate donations, the proliferation of mobile Internet devices and government programmes aimed at bridging the digital divide through major broadband expansion projects.

3 Description of The Four Unique Contexts

The activities are identified in contexts where there are no industries, there is limited or no access to markets, no access to capital, and effectively leveraging and optimizing what already exists in communities. These contexts are largely applicable to rural areas and to underprivileged individuals and communities. The contexts also look at existing socio economic activities already being carried out in these communities with the exception of e-Books.

Our emphasis is the rural and the marginalized. We think and argue that people located in these rural and marginal areas, but working in the five areas we have described above could be enabled to sell their produce/services/solutions globally.

4 Argument for Effective ICT Use as the Solution

The fundamental argument we present here is that ICTs are a means to an end and not an end by themselves. What is critical therefore is the innovative use of ICT to provide solutions for the above. The critical elements which ICTs could offer encompass:

- The ability to innovatively package and document content in digital format
- The sale and distribution of the various products and services to a wide market
- Removal of geographic boundaries and provision of easier access to markets for the products
- Putting buyers directly in touch with sellers on an internal scale
- Easy and secure payment solutions connecting the banked to the unbanked or underbanked

We therefore believe if innovatively and well used ICT could give Southern African countries, which are developing markets, the technical means for packaging, marketing and selling their own products especially through the internet (e-commerce and m-commerce). Below is an illustration of how ICTs provide a solution of opening global markets for local products from marginalized and rural communities:

5 The Portal Platform and its features

The web portal is based on a robust technology platform and application suite with specialist modules such as customer management and product management, which interact with each other to create a comprehensive integrated platform. The integrated browser and mobile based applications will enable producers/artists and other parties to contribute and manage their products online based on established business rules inbuilt into the system. Some of the key integrated applications in the system comprise of:

- Content management system
- Product management
- Producers registration and management
- Customer management
- Tracking management
- Sales management
- Transaction processing and management system
- E-commerce payment gateway
- Producer/artists payments management
- Mobile apps that link into the portal
- Messaging system

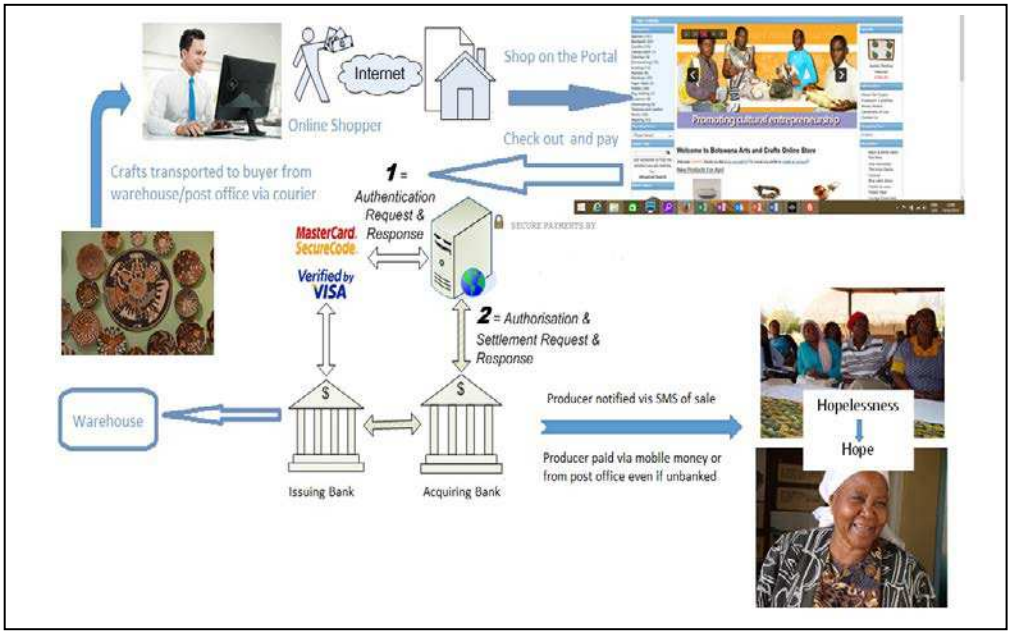

Fig. 1. Botswana Virtual Marketplace Trading Portal, (Source: Kepaletswe [4])

The portal acts as a virtual marketplace and has the following features:

- Able to accommodate both physical and digital products e.g. crafts, e-books, music, videos
- Pictures and descriptions of the different products with the ability of ease to update information from anywhere around the country.
- Profiles of the producers and creation of mini-stores
- Online shopping carts, which will enable people from anywhere to order the goods online and pay online
- Online auctioning and bidding of artistic works
- Mobile apps that will be downloadable via google store and apple i-store and others
- Booking and reservations along with online payments for cultural tourism products
- Social media integration (facebook, twitter, Instagram, You tube etc)
- The owners of the products to be alerted by email and/or SMS whenever their products are bought or when it time to collect payment for products bought
- Clients can place orders on the website for the artist to manufacture with the ability to take deposits
- The ability for people who have placed orders to track their goods online
- Ability for the artists/producers to receive payments even if they do not have a bank accounts through mobile money
- Range of reporting and business intelligence tools

5.2 Architectural Goals

The overall goal of the platform architecture is to provide a highly available and scalable portal(s), which engages users and ultimately becomes one of their most valuable resource. The portal(s) will not only provide information but will be used by traders and buyers to contact each other and conduct business, it will therefore incorporate calls-to-action. The portal(s) will be accessible by various devices including mobile devices therefore another goal is to ensure it is designed to cater for this accessibility. Another key Architectural goal is to leverage industry best practices for designing and developing a scalable platform.

5.3 Guiding Principles

Guiding principles provide a foundation upon which to develop the target architecture for the portal, in part by setting the standards and measures that the portal must satisfy. These in turn drive design principles that can be used to validate the design and ensure that it is aligned with the overall Architecture, Design Principles and Standards.

Some of the guiding principles that were followed during the design and development are outlined below.

Scalable. The platform must be able to scale both up and down to support varying numbers of users or transaction volumes. The application should be able to scale hori-

zontally (by adding more servers) or vertically (by increasing hardware capacity or software efficiency).

Flexible. The portal platform must be able to adapt and evolve to accommodate new requirements without affecting the existing operations. This relies on a modular architecture, which isolates the complexity of integration, presentation, and business logic from each other in order to allow for the easy integration of new technologies and processes within the application.

Standards-Based. Portal services will comply with established industry standards. The standards-compliance will not only apply to application development but also to design, platform/infrastructure and other parts of the application.

5.4 Design Principles

Best practice and design principles dictate that there is separation of layers in the design of the portal. The three layers, presentation, business logic/rules, and data access will enable:

- scalability
- flexibility
- Uniform and common look across devices
- Running multiple portals from a single database thus enabling central management of data and product information while enabling for there to be different themed sites to accommodate the diversity of the products and different business rules
- Easier linking to other websites through APIs and widgets, which will allow for increased distribution of products thus higher sales

6 The Smart Community Centre Model of SEIDET

The smart community centre model of SEIDET is based on a service oriented approach. From the definition of smart city, it was identified that the value is provided by the services that are delivered by the components (people, technology and governance); hence, the service oriented approach. It focuses on services required to achieve the goal of the smart community centre.

These services are; *smart users, smart infrastructure and ICT, smart applications and smart governance*. The services are shown in Fig2 and are discussed in detail below.

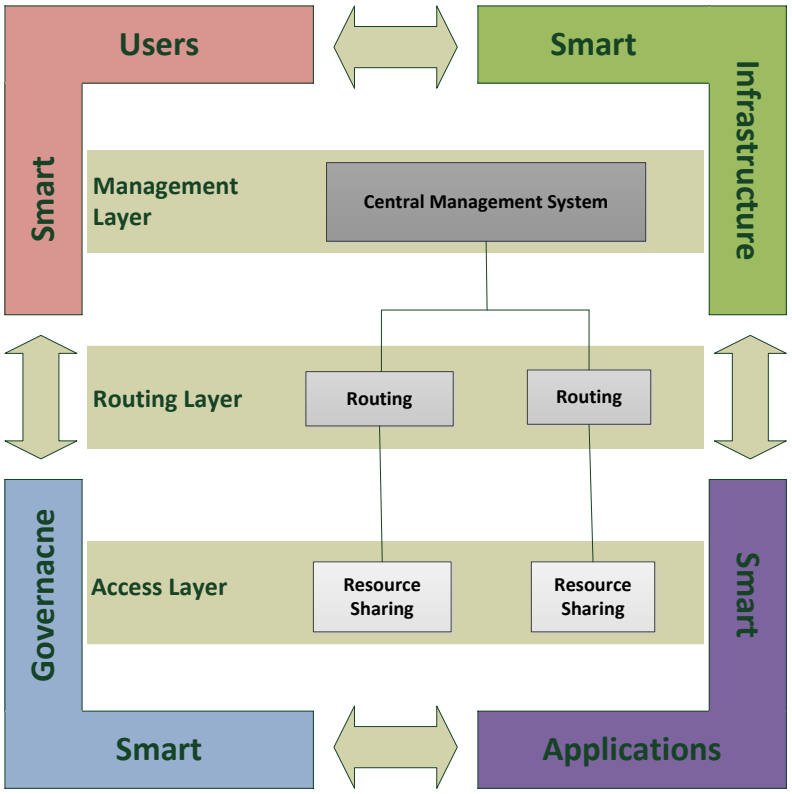

Fig. 2. Smart Community Centre Model, source [2]

- **Smart Users**: These services are skills and knowledge based provided by the smart community centre such as education and training. These services empower the users with the skills to participate, and share resources. Examples of smart users within a smart community centre context include: training of users to able to efficiently utilize both smart applications and smart infrastructure to their benefits and the benefits of their businesses. This further improves quality of life and improved the economy, which can be summed as "smart living and smart economy". This will develop further participation in public life, flexibility, creativity/ innovativeness, social and cultural plurality and affinity to lifelong learning.
- **Smart Infrastructure and ICT**: These services are network and ICT based and provide *two* functions. The first function is to create an information flow path. For an example, implementation of networks, such as the *mesh* (BB4All), allow information to flow. The second function is to provide access to the network through smart devices. For an example using *tablets*, *servers*, etc. Other examples of these services include; information systems (applications and data architecture), technological infrastructure, business architecture and communication protocol.

- **Smart Applications**: These are services that are provided by interactive software packages. These includes web portal in the remote servers, applications in the users' devices. For an example, in resource management, they enable visualisation of the resources and registration.
- **Smart Governance**: These are services that are provided by the stakeholders; public, private sector in a form of policies, rules and regulations for participation. These services aim to promote a system with predictable behaviour as participants are obliged to follow them. These rules, regulations, policies are formulated through active reviews, and inputs from all stakeholders. The main role for the smart governance is to promote participation and decision making in the smart community centre.

6.1 Smart Community Centre Implementation Layers

There are three layers in the smart community centre model and are shown in Figure 2. These layers are components which provide different services at different levels in a resource management process. These layers are described in detail below:

- **Access Layer:** This is the user layer responsible for access to the system. It consists of the users and devices (as data resources providers and consumers) of the traditional community centre. The main role of this layer is to enhance sharing amongst the user and also supply information about resources and available services between the users and the routing layer.
- **Routing Layer**: This layer is responsible for the routing of requests between the entities (users and CMS) in the system. All data shared by users is interconnected, structured, sorted, processed and routed to and from both the access and management layer.
- **Management Layer:** This layer is responsible for central managing of the resources. It is the layer where all the data (shared services, application, software, etc.) is stored and managed for efficient utilization intelligent decision making, better service monitoring and easy access of services.

7 Embedded Portal Into The Smart Community Centre Model of SEIDET

It is possible and practical to embed the portal into the smart community center model of SEIDET to produce a secure ICT trading platform that could connect the marginalized to global markets. Our argument is premised on the following:

- ICTs are a means to an end and not an end in themselves

- ICTs will only be adopted in communities especially rural communities if they clearly add measurable value and enhance existing socio-economic activities in these communities

To provide a simple illustration, elderly people in villages always complain that their livestock is always disappearing as it is difficult to find good help e.g. herd boys, as they are not as active any more and their children all stay in urban areas. Livestock is the most important socio-economic assert and source of livelihoods in rural communities. The children of an elderly woman bought her a computer and smart phone to keep in touch with her. She used to clean around the computer and was afraid to touch it and never switched it on. One day she attended a community ICT awareness workshop/class where she learned to take pictures using her phone and download them onto the computer. The elderly woman took photos of her livestock and kept them on her computer and every time she visited the cattle post, she could see if any were missing. When her livestock fell sick she took pictures and sent them to her son via email so that when he came over he would know what medicines to bring. This clearly demonstrates how ICT was used as a means to an end and how it added value to her socio economic livelihood. Had this not been the case, it is unlikely that the elderly woman would have used or embraced the use of the computer and the smartphone.

It is our argument therefore that the portal does fit into the SEIDET smart community center model based on the following:

- An important social-economic activity in the Siyabusa community is the production and sale of arts and crafts especially Ndebele arts and crafts. Therefore the portal will help market and sell these crafts to a regional and international audience/buyers versus just the ones who visit there. This will increase production, sales and income and livelihoods as well as creating more jobs directly and for supporting industries/activities e.g. transport, packaging etc.
- There is a cultural village, cultural events and other cultural products so the portal will greatly assist in marketing these products as well as enabling easy booking, reservation and payment online
- Cultural stories packaged as e-books, poems and songs will be sold through the portal as digital downloadable products
- Community/SMEs in the community to be given training on uploading content onto the portal as well as marketing and selling through the portal and other related tools e.g. social media using the community centres
- The SEIDET infrastructure e.g. web server to host the portal
- Producers/artists to receive their money easily through mobile money

It is clear from the above arguments that the portal will not only fit in the SEIDET model, but will also greatly enhance it as well as become pivotal in opening up market access to the community and SMEs.

Our further argument is that the marginalized falling within the four contexts we have described (viz, no industries, there is limited or no access to markets, no access to capital, effectively leveraging and optimizing what already exists in communities),

could be enabled, through secure ICT use to sell the products (arts and crafts, e-books on African stories, mobile money, cultural tourism) to the global market and thus create jobs and better their livelihoods and reduce poverty.

A powerful illustration of how ICTs can can really open up markets and improve livelihoods stems from the Botswana case of the Products Botswana(www.productsbotswana.co.bw) online arts and crafts store. An elderly producer based in Kasane a tourist hub in Botswana who produces pottery and ceramic products, had never used a computer or smartphone. Through the intervention of the Local Enterprise Authority had her products and her profile listed on the Products Botswana portal and had a webpage developed linked to the portal. An investor in Europe who was building an exclusive lodge in Kasane was able to see her products and ordered ceramic basins for all the bathrooms and lamp covers. When we visited her a few months later she had bought a tablet and asked for training in order to check and fulfil her orders and check her emails. This clearly demonstrates how ICTs can open up market access for producers in the rural areas.

To ensure that the SEIDET embedded portal for traders is safe and secure and cannot be compromised, we would need to implement or create an environment that includes multiple steps such as the design of a clear secured network infrastructure that can be protected. This would ensure that the trading platform could be relied upon from cybersecurity, trust and privacy perspectives.

To carry out trusted transactions such as e-commerce and m-commerce we need to determine first the possible threats that come with the involvement of using web applications. In such transfers, details of a sender or even a user's payment information/card as well as personal information such as the names of the buyers or sellers may be used to carry out in order to make any kind of purchases/transaction from the system. In this case the threat could be what is called an eavesdropper. This is a person with knowledge of the Internet Protocol and could readily intercept the information that is entered on the order form and therefore use that information to make purchases of their own. Another threat could be in financial applications (e-banking), a buyer or even a seller may masquerade as another person and the final threat may be with a website/portal where the purchase is being made but in actual fact or reality may not have anything for sale.

In order to counter each of these possible threats for maximum security of the systems transactions , a widely used tool, the secure socket layer (SSL)

protocol which will operate at the socket interface of the smart community access layer would be used. The SSL is between the transport layers (TCP) as well as the application layer in the TCP/IP protocol room. What the SSL does is that it carries out the authentication of our server when necessary by using a recognized certification authority plus the initiation of a consistent encryption algorithm and key for the session. It then uses the key, called the session key to encrypt or decrypt all of the messages that are transferred as part of the transaction.

When a user clicks on a link to an SSL-enabled server or the socket connection, the protocol part of the URL is https: rather than http: The HTML interpreter calls on the SSL protocol code which continues to carry out a secure transaction initiation/transfer.

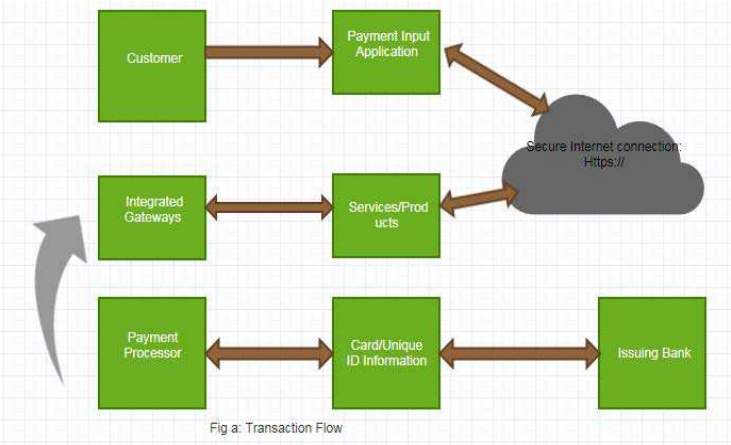

Fig. 3. An example of a possible transaction flow

8 Concluding Discussion

We identified and described in this paper five economic activities through which ICT could effectively be used to open global markets for rural and marginalized communities. These activities were identified in contexts where there are no industries, there is limited or no access to markets, no access to capital, and effectively leveraging and optimizing what already exists in communities. Building on a platform that has already been tested in Botswana called Products Botswana, and leveraging the proposed Smart Community Centre Model of SEIDET in South Africa [2, 3], we argued and demonstrates that ICT could be used to open global markets for marginalized communities; and in so doing, become an effective tool for job creation and poverty reduction in these communities.

The Products Botswana web portal we borrowed from is based on a robust technology platform and application suite with specialist modules such as customer management and product management, which interact with each other to create a comprehensive integrated platform. We also argued and demonstrated that it is possible and practical to embed the portal into the smart community center model of SEIDET to produce a secure ICT trading platform that could connect the marginalized to global markets.

The services architecture in the Smart Community Centre model of SEIDET provides several possible anchor points for the trading portal. The obvious anchor points being the Smart Infrastructure and Smart Applications as the portal could be seen as the infrastructure platform or as a specialised application or both. The physical infrastructure at the SEIDET Community Centre around which the Smart Community Centre model is based complements the virtual nature of the trading portal. A complementary physical infrastructure such as a school or a community centre would be important if the embedded portal model was to be scaled up to deep rural areas

We believe that our arguments and views are supported by a number of studies among them the GOOGLE study titled '*The internet economy, the quiet engine of the South African economy*' which has shown that e-commerce has grown by over 25% year on year for the last 5 years. The same study has also shown that only 9% of SMEs with web presence failed versus 39% without an internet presence. Another study conducted by Boston University predicts that the value of e-commerce in Africa will grow from 18 billion us dollars to 75 billion dollars by 2025.

Current initiatives at a regional level by the Southern African Development Community (SADC) also support our arguments and have potential to enhance the viability of initiatives such as the one we propose in this paper. One particular initiative is the development of a regional trade portal by SADC secretariat which is meant to promote trade, especially by SMEs. The portal(s) will also be marketed through latest techniques such as SEO, Google adwords, social media, email as well as by trade promotion agencies, and tourism promotion agencies; thereby further improving its success and therefore the livelihoods of the producers, as they will have a successful channel to sell their goods.

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