Harare Institute of Technology

Sandown Corporate Ltd
Trade and Investment

INNOVATION FOR DEVELOPMENT

UNDP
Empowered lives.
Resilient nations.

If you want to go fast, go alone.
If you want to go far, go together

African Proverb

FOREWORD

Entrepreneurship development has increasingly become a critical solution to addressing rising unemployment. A key factor undermining the growth of entrepreneurship lies in the risks and costs associated with establishing and sustaining business ventures. Young people, in particular lack access to capital and credit markets, while the majority of the technically gifted individuals are not equipped with entrepreneurship skills that are vital for establishing and running viable businesses. As a result empirical evidence shows that only 1 out of 10 start-ups last beyond the initial setup period.

The proposed solution is integrating upcoming and promising entrepreneurs to a business incubation process.

Business incubation is a support process designed to accelerate the growth and success of start-up and entrepreneurial companies through an array of business support resources and services that could include physical space, capital, coaching, common services and networking connections.

In November 2014, the Harare Institute of Technology (HIT), Sandown Corporate Limited and UNDP Zimbabwe jointly launched their

first Business Incubation Programme. This programme was housed at the Harare Institute of Technology and through a 3 month incubation process sought to support young Zimbabweans to transform their technical prototypes into commercially and socially viable ventures. As a result, a total of 10 prototypes were refined and investor ready business plans developed for capital sourcing purposes.

This document provides an overview of the business incubation process while also outlining briefly the profiles of the 10 incubated projects. We hope that this profile document will serve as an inspiration to aspiring entrepreneurs and partners, as well as help inform policy and practice on entrepreneurship development as we seek to address rising unemployment challenges.

HIT, Sandown Corporate Limited and UNDP recognise the commitment of the 10 young Techies whose talent and dedication shone through the 3 month incubation process.

We also extend our appreciation and thanks to the support received from the Danish Government through the UNDP's Global Innovation Facility.

Engineer Quinton Kanhukamwe
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Ngozi N. Ada Maduakoh
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INTRODUCTION

In a rapidly changing world, both economic growth and social development hinge on a country's capacity to address complex challenges with creative solutions, making 'innovation' a key differentiating factor in the competitiveness of countries. Countries that have adopted innovative strategies to development have been well able to increase access to economic opportunities including creation of employment for their citizens.

According to the 2012 Finscope study, the informal sector in Zimbabwe employs close to 3 million people, with the youth accounting for 58% of the 84% employment rate in the informal sector. Many of these youth are educated but have failed to secure employment after leaving formal education. Zimbabwe's youth have a significant role to play in economic growth and development as they have benefited from the country's high literacy levels (highest in Africa, 2014) and are largely tech-savvy in the urban areas. There is thus, a clear opportunity to put the education and skills of this demographic to use in more meaningful economic activity such as in the areas of entrepreneurship, SME development, Innovation, ICT-based activity, and others. Against this background, HIT, Sandown Corporate and UNDP sought to tackle unemployment and poverty by making use of existing skills and knowledge and leveraging

their areas of comparative strength to incubate 10 ICT based projects into viable businesses.

This document provides an overview of the business incubation process while also outlining briefly the profiles of the 10 incubated projects. We hope that this profile document will serve as an inspiration to aspiring entrepreneurs and partners, as well as help inform policy and practice on entrepreneurship development as we seek to address rising unemployment among youth.

THE INCUBATION PROCESS

The 10 Young Graduates underwent the incubation process for a period of three months (December 2014 – February 2015), going through the following phases:

1. IDENTIFY
HIT identifies 10 high performing graduates with technologically-oriented prototypes

2. ASSESS
HIT guides technical & business viability assessments & patenting process

3. REFINE
Sandown provides mentorship & coaching through trainings on business skills

4. ENGAGE
Sandown engages in sourcing for local & international joint venture partners & markets

5. LAUNCH
Business Incubation Pilot Project officially closes with ceremony celebrating the technopreneurs

> Sticks in a bundle are unbreakable
>
> Bondei Proverb

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ENERGY DEMAND PREDICTION SYSTEM

Energy is essential for everyday life as well as for economic development, but remains in short supply in Zimbabwe. This manifests by frequent power cuts and load shedding affecting domestic livelihoods and industry. The Government and other stakeholders are currently involved in identifying strategies for resolving the energy deficiency and transforming Zimbabwe into an energy secure country. The Energy Demand Prediction System seeks to contribute to this overarching goal by providing an innovative solution for effective management of the limited energy supply. If adopted, this system would allow the energy management body to effectively and efficiently allocate the scarce energy based on historical consumption patterns. Since Zimbabwe imports some if its energy from neighbouring countries, the system's prediction ability will limit any wastage as the country will only purchase required amounts.

This is innovative because it provides a system that allows for efficient consumption of scarce energy. As the Country seeks to increase its production, this system helps to limit wastage through a prediction model constructed using artificial neural networks and back propagation as the learning algorithm. For the first time, this will allow energy management body to predict energy consumption based on historical data. In addition, the measurement of the current energy consumption would serve as the primary input to predict future energy demand. This historically analysed consumption patterns can further feed into the existing energy policy in the country. This model is not country specific; it can be adapted across the world.

I want to thank UNDP, Sandown Corporate and HIT for holding my hand during my journey from being a techie to a technopreneur .With their help, I managed to turn a final year project into a product that is market ready. The experience was both challenging and life changing but in the end hard work always pays off.

— Liliosa

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ELECTRONIC SHOPPING CART: CASE OF INSTIFOODS

Increased usage of Internet for commercial purposes is a significant trend in the modern economy, and has been linked to improved customer services. This, however, has also posed specific challenges for many manufacturing companies who are still managing customer services and inventories manually. As a consequence this has resulted in companies registering losses of business due to delayed order processing and poor inventory management. The developed online electronic shopping cart system is designed to address this challenge.

This model is innovative because it's designed to go beyond the traditional user-centric approach of most online shopping stores. This model will benefit both the manufacturers and consumers. Manufacturing companies for example will be able to track customer orders, assess stock levels, view sales and other operational and management reports thereby

achieving improved customer relationship, lower operating costs, adapt automated inventory management processes, reduce paperwork, and improve data collection and reporting. This system also offers consumers the benefits of shopping convenience – on a 24hr basis, providing price comparisons, and reduced transaction costs and payment flexibility.

I have benefited from this Incubation process especially on how to present and market my project to investors. My project has improved very well since I chose a specific target market (manufacturing firms) so as to improve the efficiency of the supply chain that is from the manufacturer to wholesalers and retailers.

— Emmanuel

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AN ANDROID MOBILE BASED PAYMENT SYSTEM USING QUICK RESPONSE (QR) CODES

Mobile payment systems are becoming a common feature in Zimbabwe like in most African Countries. At the moment, the USSD is one among the popular mobile payment system in Zimbabwe. This current system is however plugged with challenges ranging from low levels of reliability, lapses in memory and weak security features. In addition the USSD method does not provide an integrated system that allows for processing credit card payments on a mobile phone without a specialized piece of hardware. A better mobile payment solution is therefore required to support mobile users to conduct secure and reliable payment transactions.

This innovative Android Mobile Payment System, based on QR code, addresses this challenge and provides an integrated, cost

efficient and secure alternative to the USSD system. The QR system is broken up into three parts - a visual QR code, Qpay Android application and a payment server. The user captures the QR code using his / her mobile device camera and is able to confirm payment with feedback to ensure security. A key implication of this service is not only the secure and reliable transaction but also improved and integrated user friendly mobile payment system.

The techie programme transformed me into a technopreneur. This session was life changing and will not stay only in my mind but also in my heart.

— Gresham

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WEB BASED MARKET LINKAGE SYSTEM FOR SMALLHOLDER FARMERS

Smallholder farmers do not fully benefit from the products generated by their activities mainly because existing market structures do not address their specific needs. In fact, the smallholder agricultural marketplace is dominated by missing markets, erratic prices and intermediaries who buy the farmers produce at very low prices and resale them at higher prices to retailers and consumers. As a result smallholder farmers are unable to effectively participate in the agribusiness value chain and continue to languish in poverty. It is therefore important to strengthen the linkages between smallholder farmers and consumers – where access to markets is enhanced and challenges associated with information addressed.

This web based market linkage system seeks to innovatively address this challenge by directly linking smallholder farmers and consumers. The system allows contract-farming clients to access a selected group of potential buyers for their agricultural produce. The farmers are in turn able to upload their produce onto the system in response to orders placed by registered buyers and to deliver the goods. They are also able to facilitate payments an in-built payment system. Consequently, through this system, smallholder farmers will have more direct access to the market while the consumers can also purchase fresh products at much cheaper prices directly from the farmers rather than through market middlemen.

In the four years that I have been studying e-commerce, I never thought that I would come up with an idea that would come closer to reality, and worthy of one's precious time to consider it. The past three months of business mentoring have just opened up a new line of thinking in my mind. I have learnt that I can be a technopreneur, and make a living out of it. It is a phase in my life that has brought an opportunity worth pursuing.

— Chenaimoyo

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PRIMARY AND SECONDARY EDUCATION INFORMATION MANAGEMENT SYSTEM

Timely and effective collection, analysis and dissemination of information and data on enrollment levels and performance of institutions within the education sector is critical for planning and effective service delivery. The Ministry of Primary and Secondary Education currently uses a manual system of collecting information and is engagement in exploring strategies for improved data management. This is because improved data management system is crucial for effective and timely planning and decision making processes in the education sector. This project therefore recommends an electronic information management system as an alternative.

While electronic data collections systems are not new, the proposed management information system is the first in Zimbabwe. The

Primary and Secondary Education Information Management System provides a centralized web based application that collates, integrates, analyzes and disseminates education data and statistics to critical stakeholders, leading to improved planning and decision making within the sector. In addition, this system provides learning institutions with a tool for tracking their own service delivery processes. The system also informs different actors and partners on the state of the education sector, in terms of its performance, shortcomings and needs through consistent and reliable educational reporting.

The incubation process has contributed both personally and professionally. My presentation skills have improved, and I also gained an insight on how to successfully run a business with proper financial management.

— Tendai

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INTEGRATED SYSTEM FOR EFFICIENT PAYMENT OF EDUCATION TUITION FEES IN ZIMBABWE

The student tuition fee account system currently implemented in most universities and institutions of higher learning including HIT is not linked directly to the banking system, leading to delayed reconciliation of payments. Under the current system, every student has to physically go to the university after making a tuition payment in order for it to be processed. However, because the period taken by the learning institutions to process student payments can be time consuming – given staffing constraints in Finance departments and also can cause enrollment delays and such payments are not immediately reflected in the Student account.

The proposed integrated bank and student tuition fee account system allows for real time synchronization of tuition fee payments at

the bank with the student tuition fee account system. This is done by using XML language which enables the transference of data from one system to another. The successful development of the integrated system will lead to an up-to-date and efficient student tuition fee account in learning institutions. This will also ensure efficiency in reconciliation of payments by the institutions; enhance accountability and transparency.

After the graduation, I was just a technical person with technical skills and able to get employed. But after the programme, I realized that I can now create employment and change the world.

— Kudzai

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A WEB BASED ELECTRONIC ARCHIVING SYSTEM FOR LOCAL AUTHORITIES

Keeping records of key decisions by the local authorities is an integral aspect of ensuring accountability and transparency, required to enhance delivery of public services. In addition, a local authority that is well able to track, monitor and act on its decisions will mostly enjoy a trusted relationship with its citizens. At the moment, the challenge facing most local authorities is that key service delivery data is manually collected and stored which delays the retrieval process and in return affects their ability to respond to citizens' requests in an effective and timely manner.

This project is a web-based electronic archiving system targeting local authorities that stores past and current reports, minutes and citizen requests as well as decisions made on council related issues and services. The system allows

for easy retrieval of data via an inbuilt and interactive search engine. This system will facilitate digitalization of data and enhance efficient storage and access of key decisions for timely action. The public could also access available information from the councils. The long term outcome of this is also a more accountable and transparent local governance system with increased citizen participation due to the increased access to public data.

This process equipped me with realist experience of what it entails to be a technopreneur. This experience cannot be obtained from a book. Recognizing the opportunity to scale up service delivery, my project has potential to benefit the country.

— Rumbidzai

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SMART HOME AUTOMATION SYSTEM

In todays' world, automation of essential needs, tasks and services including security is increasingly becoming an important aspect of our lives. It is very common feature to have electric gates, remotely operated entertainment equipment; mobile operated payment systems as well as close circuit television (CCTV) systems among others. There is therefore a growing demand for automated services – not only for convenience but also for enhancing efficiency and guaranteeing safety.

The Smart Home System allows a certain degree of automatic control to specific electrical and electronic systems in the house using android phones. These include lighting, temperature control, security systems, garage doors, etc. A hardware system is installed in the relevant equipment or furniture to monitor

and control the various appliances. The system allows all members of the family to control appliances from a remote location or while on the go over the internet just by using their android phone. For example, one could turn off the air conditioning from the office if he/she has forgotten to do so before leaving home, which not only reduces human efforts but also conserves energy and saves time. Similarly, a desktop PC could be used to run the server software which allows the user to control lights and fans within the home.

After the graduation, I was just a technical person with technical skills and able to get employed. But after the programme, I realized that I can now create employment and change the world.

— Kudakwashe

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A SUPPLY CHAIN MANAGEMENT SYSTEM FOR RETAIL PHARMACIES

The pharmaceutical industry in Zimbabwe has been facing many challenges, which could partly be explained by the low uptake of new technology by the sector. For example, most of the existing retail pharmacies still conduct their day to day transactions manually. A basic inventory management system is used to maintain and monitor the inventory and a manual stock take is done at the end of each month to balance sales and purchases. When inventory reaches a critical level, colour codes are used to alert the administrator who would then have to make the orders manually. This poses an unnecessary burden for the employers as well as challenges for effective service delivery.

A Supply Chain Management System for automatic order processing, e-procurement,

and collaboration in the supply chain is an innovative solution to the above mentioned challenges.

It is expected to improve the quality and accuracy of the procurement supply chain within the pharmaceutical sector. If well adopted, this system could ensure that critical orders for health medication are anticipated and procured by key health delivery institutions – while also ensuring that pharmacies achieve their commercial targets. In this case, the retailer system will be linked to the suppliers who can monitor the movement of the products they supply. The system will also facilitate the synchronization of purchases and sales, as it will be linked to the Point of Sale Terminal and inventory levels which will be updated from the order form sent to reduce time required to enter each item separately.

The incubation process has boosted my confidence; I can achieve anything I set my mind to. It has helped me grow as an individual and most importantly as a Techie. I have realized the importance of systems that improve health care delivery in our economy and this motivated me to broaden the concept and to cater for hospitals and clinics as well as pharmacies.

— Tinovimbaishe

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ENTERPISE APPLICATION INTEGRATION PLATFORM

With modern-day technology constantly changing business practices, organizations that are unable to adapt to rapid changes in internal and external environments are facing several challenges. For example, traditional organizational information systems function as standalone or islands of autonomous systems, with each application or operating system existing without future considerations of information needs, expansion and operational cost. Islands of autonomous systems also have high operational costs, less flexibility for expansion and less support for informed decision. Consequently, these organizations are unable to effectively respond to a rapidly changing environment, often facing the closing of businesses.

By linking data and applications in diverse information systems, the proposed architecture allows organizations to access critical information more quickly, share it broadly at every level, and leverage existing investments to strengthen the internal organizational governance processes. The project aims at integrating multiple data sources to provide a single, consolidated view of the distinct and heterogeneous sources. To achieve this holistic view, there needs to first resolve any inconsistencies between the schemas of the physical data sources. The approach provides a flexible and scalable strategy to enterprise integration, avoiding the shortcomings of traditional approaches while respecting existing organisational structures.

Whilst I was employed, I still had the opportunity to benefit from the incubation sessions and I am convinced that my project has potential to address system harmonization challenges within public and private enterprises.

— Edward

> Unity is strength, division is weakness
>
> **Swahili Proverb**

LESSONS LEARNED

An African Proverb says, "If you want to go fast, go alone. If you want to go far, go together." The truth of this proverb has been demonstrated in the HIT-Sandown-UNDP partnership. A number of valuable lessons have been learnt for the period that the Business Incubation Pilot was running. The Lessons are briefly captured in the following paragraphs.

1. Partnership has transformed the lives of Techies

Consistent with the African proverb quoted above, the lives of the Techies were transformed through this partnership. Each of the partners could have gone very fast on their own but it was only through the coming together of the partners that real transformation of the lives of the Techies was achieved through learning valuable business skills, coaching and mentoring. Hence, partnerships of this nature are not only critical to the Techies but have transformed their lives and given them hope for the future.

2. Each partner has unique critical skills

The reason why a partnership of this nature was able to go far is that each partner has unique skills that they brought to the table. HIT brought space, academic rigour, technical backstopping and business plan fundamentals. Sandown brought mentoring and coaching, business plan refinement, market survey instrument and investor readiness. UNDP brought technical and advisory support, coordination, seed-

funding and the overall direction of the project. The project would not have succeeded without each of the partners' critical skills.

3. There is a chasm between theory and practice

Although the Techies had been trained in writing business plans, they admitted that it was a different proposition when they had to write a business plan for their company. In other words, for the Techies, there was a chasm between theory and practice. Particularly challenging for the Techies, was the financial part of the business plan. The valuable lesson learned is that for selected projects, students must move to the Techies stage through a collaborative project of this nature.

THE PARTNERSHIP

Harare Institute of Technology (HIT)

HIT offers a wide range of technology programmes both at undergraduate and postgraduate level and produces highly qualified technical human capital that can lead Zimbabwe's technology development. As an institution of higher learning that evolved from a technical college, HIT's strength lies in technical backstopping, and it supported this pilot through providing techies the work space, incubation lab, development of business proposals and coordinating the patent registration process.

More about HIT: http://www.hit.ac.zw

Sandown Corporate Limited

Sandown offers highly capable management and business development consultancy with world-wide operational experience. As an international trade and investment consultancy firm, Sandown's strength lies in business mentoring and coaching, and it supported the pilot through providing the techies with entrepreneurship skills and competences, market linkages as well as investment opportunities.

More about Sandown Corporate Limited: http://sandowncorporate.com

United Nations Development Programme (UNDP) Zimbabwe

UNDP works in more than 170 countries and territories to support each country-specific development challenges. The areas of support in Zimbabwe includes, but is not limited to, enhancing citizen participation and good governance, economic management and sustainable development, social sector development and resilient livelihoods. UNDP provided seed funding for this pilot while also serving as a knowledge broker for partnership development.

More about UNDP Zimbabwe: http://www.zw.undp.org/

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> One of the main lessons I have learned ... is that broad partnerships are the key to solving broad challenges. When governments, the United Nations, businesses, philanthropies and civil society work hand-in-hand, we can achieve great things
>
> **Ban Ki-moon**

SOCIAL MEDIA
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dialogue
IDEAS
SKILLS

ICT SKILLS AND FIT-FOR-INDUSTRY COMPET
DIVERSITY INVESTMENT

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