Uganda: Qualitative study on Innovation in Manufacturing Small and Medium Sized Enterprises (SMEs)

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Qualitative Study on Innovation in Manufacturing Small and Medium- Sized Enterprises (SMEs) in Uganda

Exploration of Policy and Research Issues

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Acknowledgments

This report entitled ‘Qualitative Study on Innovation in Manufacturing Small and Medium- Sized Enterprises (SMEs) in Uganda’ is written within the framework of the DFID-funded research project ‘Enabling Innovation and Productivity Growth in Low Income Countries’ (EIP-LIC) implemented by Tilburg University in collaboration with Dutch, African and Asian academic partners. The core content of the report is based on data collected during a working visit to Uganda from 13 to 23 January 2017, which comprised 13 in-depth interviews with owners and managers of small and medium-sized enterprises (SMEs) in Kampala and around.

I would like to thank the enterprise owners and managers who gave up their time and were willing to talk and share their perceptions of daily realities, their stories and views with us. I also thank our research partners of the Makarere University Business School (MUBS), in particular Prof. Wasswa Balunywa, the Principal of MUBS, Dr. Vincent Bagire and Sarah Kyejjusa for organizing and participating in the interviews, and sharing their valuable observations and thoughts. A special thanks to Mr. Andrew Walusimbi of the Uganda Small-Scale Industries Association (USSIA) for his assistance in identifying SMEs.

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Introduction

The promotion of innovation in Low Income Countries (LICs) has recently appeared on the agenda of policy-makers and international development agencies. Many agree that innovation is crucial in these countries, because it is fundamental for growth in order to catch up with middle and high income economies (Chaminade et al., 2010). Current research, theory development and policy formulation to promote innovation, however, have mainly focused on innovation in the more advanced economies, whilst investigation of these issues in low income countries to date has been limited.

The 5-year research project *'Enabling Productivity and Innovation in Low Income Countries, (EIP-LIC)*' funded by the British Department for International Development (DFID) and commissioned to Tilburg University, aims to fill research gaps on innovation in LICs from an economic perspective. EIP-LIC aims to deliver robust high quality evidence from Africa and Asia on how to increase innovation and raise productivity in manufacturing SMEs, through a coordinated set of thematic and country case studies providing internationally comparable data. The countries of study include Kenya, Tanzania, South Africa, Ghana, Ethiopia, Uganda, Indonesia, India and Bangladesh.

EIP-LIC focuses on manufacturing Small and Medium-sized Enterprises (SMEs) in LICs. Promoting innovation in these enterprises has a particularly positive impact on development (Szirmai et al., 2011); SMEs are usually operating on the edge of the formal and informal sector and have low levels of productivity and competitiveness. Compared to the agriculture and services sectors, manufacturing in LICs is typically characterised by a limited share of the total GDP. Innovation within SMEs in manufacturing enables these enterprises to raise productivity and grow, resulting in a better-balanced economic structure while generating employment opportunities for poorer groups and contributing to poverty reduction. Moreover, promoting innovation in domestic manufacturing is a way towards import substitution and increases the competitive (export) position of firms on the world market.

One part of the project concerns a quantitative analysis of the internal and external factors of the innovation process within firms in all countries of study. Another part concerns a complementary qualitative exploration of the policy and research issues in each country. This involves the development of a series of case studies of manufacturing SMEs. The research output of qualitative reports, working papers and policy briefs are available at the EIP-LIC's website: http://www.tilburguniversity.edu/dfid-innovation-and-growth/)

This report presents the findings of the qualitative exploration in Uganda. It is targeted at the DFID project researchers as well as the broader academic community with similar research interests in providing ideas or supporting them to identify and/or validate research questions and hypotheses. In addition, it may provide useful bottom-up insights to policy makers within governmental agencies, firms and NGOs on innovation involving the entrepreneurs' perspective. It is also targeted at SME owners and SME branch organisations, who will hopefully see their business and socio-economic and institutional context reality accurately reflected in the report.

The structure of the qualitative exploration reports is the same for all countries in EIP-LIC, enabling cross-country comparison of the research and policy issues. Thus chapter 1 is standard for every report, outlining the DFID project research challenges, approach and methodology. Chapter 2, by contrast, focuses on the country of study only and briefly summarises latest trends in the manufacturing sector from secondary sources. Chapter 3 constitutes the main part of the report and provides the original primary qualitative data (cases) and analysis with regard to innovation in manufacturing SMEs in Uganda. Chapter 4 of the report concludes with analysis of the data and the identification of policy and research issues with special reference to the 'Innovation Systems' and 'Finance for Productivity Growth' research themes of the project.

1. DFID research project challenges

1.1 Approach: complementing quantitative with qualitative research

EIP-LIC aims to deliver robust high quality evidence from Africa and Asia on how to increase innovation in manufacturing SMEs so as to raise productivity, through a coordinated set of thematic and country case studies providing internationally comparable data. The project takes an econometric approach within two thematic areas: 'Innovation Systems' and 'Finance for Productivity Growth'. The research teams address internal capabilities and external institutional factors, institutions and policies that support or hinder the diffusion and adoption of innovation and finance raising productivity at SME firm level. Specifically, the project takes an 'economics' perspective on innovation, and involves econometric analysis of a set of variables concerning barriers at firm, regional and national levels and their causalities with the *innovative behaviour/capability of entrepreneurs* and subsequently innovation and productivity. This constitutes a reductionist and deductive approach in defining variables for analysis in which the impact of individual factors on innovation is assessed by applying quantitative econometric methods. The research methods include firm-level surveys in all countries of study (in cooperation with The World Bank), experiments and Randomised Control Trials (RCTs). The quantitative analysis will serve as a basis for identifying relationships between internal capabilities, external institutional factors and finance on the one hand and innovativeness and productivity growth on the other.

Applying quantitative methods in development research brings some limitations and challenges. In EIP-LIC too, conceptual issues emerged, in terms of the definition and measurement of innovation and productivity in LICs. These may seem straightforward variables at first glance, but their measurement can be more complicated in the LIC context. Innovation may be manifested differently, not via high profile technological and radical breakthroughs, usually measured by R&D expenditures or patents (OECD, 2005), but by more incremental adoption and adaptation or new combinations of existing technologies (Szirmai et al., 2011). These forms of innovation are equally important for raising productivity and competitiveness of SMEs in LICs.

Moreover, innovation research and theory development in recent decades has typically involved empirical material from advanced economies, such as the innovation systems literature of Lundvall (1992) and Freeman (1987), where innovation takes place within a relatively stable institutional and Science, Technology and Innovation (STI) policy context and is 'controlled' and supported by established innovation system actors and innovation policies. In LICs, however, the contemporary institutional realities and formal/informal dual economic contexts are different and may involve other less visible or less commonly known factors and policies around SMEs affecting their innovativeness and how innovation manifests itself.

Therefore, the theory and associated policies of how innovation evolves within an innovation system in the institutional contexts in LICs may be different, which is increasingly acknowledged in recent innovation systems literature (Lundvall, 2009; World Bank, 2010). For instance, entrepreneurs are innovating by Doing, Using and Interacting (DUI) in fast-changing contexts, enabled by informal institutions and informal (social) learning. Applying the research variables on innovation and productivity in LICs from existing literature and theory (deduction) based on advanced economies, therefore, might not take all relevant variables into account. A more precise identification of variables might be obtained by complementing the selection with a broader understanding of contemporary realities and context on the ground in LICs.

Another research challenge in EIP-LIC concerns the interpretation of the quantitative survey research outcomes of the project, involving cross sectional analyses amongst others, where attribution and explanatory

issues among independent and dependent variables arise. Although control variables are typically verified, the correlations cannot be easily translated into causalities in complex and dynamic contexts. This is particularly important for the interpretation of research outcomes at the policy level in the realities of the country concerned. A broader insight into how innovation processes and actor interaction mechanisms evolve might help to open the black box and analyse and interpret the quantitative outcomes.

In an effort to manage these challenges, EIP-LIC includes complementary qualitative research, involving an exploration and description of contemporary realities of innovation in manufacturing SMEs in the LICs. This aims at inductively identifying actual and relevant *research and policy issues* as input for the EIP-LIC research themes as well as for additional explanatory evidence supporting research output.

In operational terms, Tilburg University and partners conducted a series of case studies of manufacturing SMEs in each of the 10 target countries of study in the project. The holistic case study approach and method involves interviews capturing original insights, views and perceptions of SME owners and managers. Similar report format and comparable data will be used for all countries of study in EIP-LIC, enabling cross-country comparison to identify overall trends and patterns in innovation and productivity policy and research issues in manufacturing SMEs in LICs.

1.2 Case study methodology

The objective of the qualitative study of EIP-LIC is to identify relevant policy and research issues concerning innovation in manufacturing SMEs within contemporary realities in Uganda. Applying a case study approach is particularly useful in this respect, since this method is an approach for inductively exploring and identifying concepts, noticeable similarities, trends and patterns of socio-economic phenomena (Yin, 2003).

The case study research involves a series of 15 interviews with managers and/or owners of manufacturing SMEs. This may seem a limited number to justify research validity. However, the approach usually involves in-depth rich and detailed descriptions and a multidimensional analysis of the complexities and linkages of a few cases to gain an understanding of the (socio-economic) mechanisms and processes of the case subject. In the case descriptions, innovation as an economic phenomenon is the case 'subject', whereas the unit of analysis is a manufacturing SME. The case description holistically explores the type and basic features of innovation within the SME, and reviews the impact on productivity and competitiveness over the past 2 to 5 years.

The data for the case descriptions are obtained via 'semi-structured' interviews with SME owners and managers. 'Structured' refers to the systematic review and discussion of innovation(s) in the firms, the *innovation process*, *internal capabilities*, and innovation system actors around the firm, including *formal institutions*, the *business system* and *informal institutions* (attached as annex 1). These actors and institutions encompass formal and informal, private, public, and quasi-public institutions or organisations around the SME. 'Semi' refers to the interviewing approach of encouraging owners or managers to tell their story, and express their concerns and perceptions freely, without being confined to the 'questionnaire framing'. Of particular interest is what innovation means in the manufacturing SMEs in their context, and the less known favourable and unfavourable institutional conditions and barriers enabling or preventing it.

All interviews are recorded and transcribed. The data generated are entered and stored using qualitative data analysis software. The writing of the case is a step-by-step process of unravelling, ordering and organising the transcriptions into compact SME case descriptions of 2/3 pages following a similar format. The series of case descriptions are compared and analysed for patterns, differences and similarities in internal capabilities and socio-economic and institutional contexts. The findings are summarised as policy and research issues

that could serve as input for the quantitative research of the 'Innovation Systems' and the 'Finance for Productivity Growth' themes under EIP-LIC.

1.3 Selection of SMEs and fieldwork

The selection criteria for the cases included:

- The company is a formally registered SME. In the DFID project context, an SME is understood as a company with 10-100 employees, whereas turnover, assets and capital formation are not considered.
- The company is involved in manufacturing. The project follows the International Standard Industrial Classification of all Economic Activities (ISIC). In this standard, manufacturing is defined as the physical or chemical transformation of materials of components into new products, whether the work is performed by power- driven machines or by hand, whether it is done in a factory or in the worker's home, and whether the products are sold at wholesale or retail. Included are assembly of component parts of manufactured products and recycling of waste materials. Moreover, given the pace and importance of the new technologies, the project considers software and mobile app development as a form of manufacturing to be Ugandan owned/indigenous company. No foreign or joint ventures.
- The company introduced some form of innovation, preferably process or product, which resulted in increased productivity and competitiveness in terms of export promotion or import substitution. Other types of innovation may also be considered: management, business concept/practice, inputs, functional innovation.
- Value creation within the company, as a result of the innovation, is essential. This may concern a significant productivity increase by reduced costs (pushing the productivity frontier - saving on labour, capital, and input) or more sales and income due to the launch of premium products and competitiveness.
- Innovation process - idea, test, implementation and commercialisation - takes place in the firm and is initiated and owned by the entrepreneur. The SME owner appropriates the additional innovation value.

These selection criteria are defined in such a way that the selected cases represent the EIP-LIC target group: manufacturing SMEs. Moreover, the criteria assure a certain homogeneity within the selected cases, which will enable comparison of cases while supporting a certain validity of the identified trends or patterns. At the same time, allowing some heterogeneity, by including deviant cases, provides more contrast, and thus enables the research team to better construct and highlight divisions in the innovation process, linkages, system or mechanisms.

An essential element of the selection is the notion that types of SME innovation in LICs are not confined to technological (radical) inventions resulting from particular R&D investments and efforts. Innovation in manufacturing SMEs in LICs more often encompasses incremental adoption and adaptation or new combinations of existing technologies, products, marketing, management or business practices. Moreover, innovation often does not concern one type only. More often, an initial innovation enables and/or triggers other types of innovation within a firm; a new technology allows the introduction of new products, for instance.

1.4 Fieldwork

The qualitative data collection through interviews in Uganda took place from 13 – 23 January 2016. The Ugandan research partner, the Makarere University Business School (MUBS) identified SMEs in Kampala and around. SMEs were identified by tapping into informal and personal networks and drawing information

from formal business associations. In total, 13 owners/managers were interviewed (see list attached as annex 2). An average of 2-3 interviews per day were completed. The interviews typically took 1.5 hours.

The research team respected a set of ethical codes in conducting the fieldwork. This involved a transparent explanation of the project and the purpose of collecting the data to the interviewed owners and managers. The research team provided assurance that the firms' data were kept confidential, with SMEs and interviewees anonymised in the descriptions. Before publication, a draft version of the report was first sent to the SME owner/manager to check whether there were any issues mentioned that he or she did not agree with, or felt uncomfortable with.

During the interviews, the SME owners and managers expressed interest in learning more about the project and about innovation in other SMEs. The team sent a copy of the final report to all interviewees, expressing their intention to maintain contact, and to 'give something back' in terms of participation in future policy debates, policy dissemination, contacts or networks. The final reports are to be accessible to the public and downloadable via the project website.

The original recording of the interviews and transcriptions are available for the project researchers - eventually open access - for further analysis and development of scientific papers and journal articles.

2. Introducing manufacturing SMEs in Uganda

Uganda is a landlocked country in East Africa. It gained independence from Britain on 9 October 1962. The first post-independence election was won by Milton Obote who became executive prime minister, with the Buganda Kabaka Edward Muteesa II holding the largely ceremonial position of president. After a military coup on 25 January 1971, Obote was deposed from power and General Idi Amin seized control of the country. Amin ruled Uganda as dictator with the support of the military for the next eight years. Amin's reign was ended after the Uganda-Tanzania War in 1979, in which Tanzanian forces aided by Ugandan exiles invaded Uganda.

2.1 Ugandan economy

Uganda has substantial natural resources, including fertile soils, regular rainfall, small deposits of copper, gold, and other minerals, and recently discovered oil. Agriculture is the most important sector of the economy, employing one third of the work force. Coffee accounts for the bulk of export revenues. Uganda's economy remains predominantly agricultural with a small industrial sector that is dependent on imported inputs like oil and equipment. Overall productivity is hampered by a number of supply-side constraints, including underinvestment in an agricultural sector that continues to rely on rudimentary technology.

Industrial growth is impeded by high-costs due to poor infrastructure, low levels of private investment, and the depreciation of the Ugandan shilling. Since 1986, the government - with the support of foreign countries and international agencies - has acted to rehabilitate and stabilize the economy by undertaking currency reform, raising producer prices on export crops, increasing prices of petroleum products, and improving civil service wages.

The policy changes are especially aimed at dampening inflation while encouraging foreign investment to boost production and export earnings. Since 1990 economic reforms ushered in an era of solid economic growth based on continued investment in infrastructure, improved incentives for production and exports, lower inflation, better domestic security, and the return of exiled Indian-Ugandan entrepreneurs.

The global economic downturn in 2008 hurt Uganda's exports; however, Uganda's GDP growth has largely recovered due to past reforms and a rapidly growing urban consumer population. Oil revenues and taxes are expected to become a larger source of government funding as production starts in the next five to 10 years.

However, lower oil prices since 2014 and protracted negotiations and legal disputes between the Ugandan government and oil companies may prove a stumbling block to further exploration and development. Uganda faces many challenges. Instability in South Sudan has led to a sharp increase in Sudanese refugees and is disrupting Uganda's main export market. High energy costs, inadequate transportation and energy infrastructure, insufficient budgetary discipline, and corruption inhibit economic development and investor confidence.

During 2015 the Uganda shilling depreciated 22% against the dollar, and inflation rose from 3% to 9%, which led to the Bank of Uganda hiking interest rates from 11% to 17%. As a result, inflation remained below double digits; however, trade and capital-intensive industries were negatively impacted. The budget for FY 2015/16 is dominated by energy and road infrastructure spending, while relying on donor support for long-term economic drivers of growth, including agriculture, health, and education. The largest infrastructure projects are externally financed through low-interest concessional loans. As a result, debt servicing for these loans is expected to rise in 2016/2017 by 22% and consume 15% the domestic budget.

Uganda’s economy has grown at a slower pace recently thus reducing its impact on poverty. Average annual growth was 4.5% in the five years to 2016, compared to the 7% achieved during the 1990s and early 2000s. The economy has since faced headwinds, including adverse weather, the civil unrest in South Sudan, global economic uncertainties, and private sector credit constraints. As the economy becomes more resilient, the economy is expected to grow at 4%–5% during 2017 as the impact of the drought recedes, distress from the banking system distress is contained, and the execution of the public projects improves.

Real gross domestic product (GDP) grew at an average of 6.7% annually during the period 1990–2015, whereas real GDP per capita grew at 3.3% per annum during the same period. During this period, the Ugandan economy experienced economic transformation: the share of agriculture value added in GDP declined from 56% in 1990 to 24% in 2015; the share of industry grew from 11% to 20% (with manufacturing increasing at a slower pace, from 6% to 9% of GDP; and the share of services went from 32% to 55%.

2.2 The manufacturing sector

Manufacturing is thus limited in Uganda. The most important sectors are the processing of agricultural products (such as coffee curing), the manufacture of light consumer goods and textiles, and the production of beverages, electricity, and cement. A key block to the development of Uganda's industrial and commercial sector is corruption. Bribes are commonly demanded to acquire even the most basic services such as an electricity supply and telephones.

Due to increased domestic security, market reform, and tax breaks, Uganda's manufacturing sector is growing. Merchandise exports have expanded from US$147 million in 1990 to US$501 million in 1998. However, merchandise imports have also expanded but at an even greater rate, from US$213 million in 1990 to US$1,414 million in 1998. This imbalance indicates a serious problem with Uganda's economy because, in order to continue the present rate of import of manufactured goods, the government is obliged to borrow ever greater amounts of money from foreign donors which makes the country increasingly indebted.

The privatization of industry is a central dynamic in Uganda's contemporary national economy. This is of central importance considering that government subsidies to parastatals were equal to that spent on much needed education between 1994-1998. The Privatization Unit of the Ministry of Finance has plans to open a number of industries to the private sector. For example, the largest dairy processor in the country, the government-owned Dairy Corporation, which has an annual turnover of US$12 million, is undergoing full privatization. Copper mining used to be a mainstay of the economy in the 1960s to mid-1970s with an output of up to 18,000 metric tons per annum. Due to the country's civil unrest and the decline of copper prices on international markets, the 90 percent government-owned Kilembe Mines Ltd. mining activity has been inactive since 1982. The planned privatization of this enterprise should end government subsidies to this company and is hoped to lead to the reinvigoration of Uganda's copper production.

3. Empirical data: Cases of manufacturing SMEs in Uganda

This chapter presents eight cases of SMEs whose owners were interviewed in Uganda in the period 16 – 23 January 2017. The selection of eight out of the fourteen interviews was completed with a view to providing homogeneity in terms of the SMEs in manufacturing as well as to present a broad overview of the issues from the various SME owners' perspectives. The write-up format is similar for each case: a description of the innovation, the internal capability and external environment (formal institutions, business systems and informal institutions). Notable issues outside this framework, which were stressed by the owner and/or manager of the SMEs, are also included.

3.1 Construction materials – stone veneer (28 employees)

The first case concerns a company producing stone veneer. The owner started this business in 2010, cutting stones with a grinder in the front yard of his home. After initial commercial successes, he moved into a larger workshop and bought his first professional machinery – *"now we have several stone cutting machines, as you can see in the workshop."* The company has 28 permanent workers at present.

The company cuts and polishes or carves the stones according to each client's order. The veneer is produced according to international standards in terms of size and thickness – *"the thickness is critical to avoid too much weight. The thinner the better."* The company cuts about 8 different kinds of rocks: granite, marble and limestone, amongst others.

Small trucks deliver the rocks from different locations in Uganda. From the raw material, the owner develops 38 different product types of stone veneer. Apart from the rocks, the main inputs are diamond cutting rings, electricity and water.

The company supplies to various clients including real estate developers, contractors, professional builders, architects and engineers – *"I also have an institutional buyer in Nairobi, who needs 2,000 stones every month."* The owner does not market his products *"because I have sufficient clients and I have limited capacity. I am hidden."* Customers find him via word of mouth.

The exactness of the stone cutting, which determines the quality, has been the strength of the company, according to the owner. Other competitors in the neighbourhood also make stone veneer, but his is produced with great precision. The other competitors only work in sandstone and kaolin, which is softer, and only use hand tools. Over the years, the owner has invested in special machines that can handle hard stone such as granite – *"that is how we distinguish ourselves from other stone producers."*

The owner rents the plot of land where the workshop is located, but plans to move to an industrial area in the near future, because there is no room for expansion at his current location. Moreover, the premises are in a residential area, which poses an environmental challenge in terms of noise – *"children live around here and they have to go to school in the morning. Sometimes the noise is 24 hours a day."*

In 2013, he secured a contract for a large order with a value of 300,000 dollars from a real estate developer who was building a shopping mall in Kigali (Rwanda) – *"we supplied 6,000 m^2 of veneer for the outside walls, shop fronts and floors."* The developer paid partly upfront, which enabled the owner to buy advanced machinery. He is still working with the same stone sawing machines today.

The Kigali contract was hard as well as rewarding work. At that time, the company employed 35 people. He got the contract as a result of a meeting of the Uganda-Rwanda Business Forum, where the chairman of the developer gave an introduction about the building. The owner got in touch with him and showed him some samples. *"The chairman looked at me and said, 'Can I gamble with you?'"*

The owner was based permanently in Kigali for the duration of the project, to ensure that everything went well – *"we were the small guys at the site."* His employees worked in three shifts for 24 hours a day. Whenever there was a small problem, he would solve it on the spot – *"not for only my stones but the rest of the builders."* The owner learned a lot of things and *"the work went very well because the developer was supportive."*

He finished the contract properly because he wanted to show professionalism. As a result of the Kigali contract, he managed to attract new customers.

Internal capabilities

The owner was educated in economics and business administration at university level and also did a course in fine arts. His first job was in logistics and procurement, working in several locations in Kampala, Mombasa and the United Arab Emirates. During his work and travels, he came across companies producing stone veneer, which gave him the idea to start for himself.

The owner has organised the business according to what he learned in business administration. He established an organisational structure and set up several departments including operations, human resources, finance and marketing – *"I had this idea that I should organise things well while I am still small."* There are various explicitly defined positions and job descriptions in the company, such as factory manager, product quality supervisor, floor manager and senior sales managers.

The owner is seeking to recruit a geologist to assess the quality of the stones. One issue is that he wants to penetrate a new higher segment in the market. For this, he has to know the physical qualities and strengths of the stones, but the owner himself has gained only basic practical knowledge – *"I am not a geologist but when I look at the stone I can tell you this is granite."*

The owner takes good care of his staff. Meals are provided, there is health insurance *"and when they fall sick, we bring them to the hospital."* One human resources staff member is responsible for welfare. The employees are provided with gloves, noise and eye protection – *"ever since we started, the only person we have sacked is one individual who never complied with the safety guidance."*

Most of the technology involves a lot of manual work – *"I know there are some better machines but there is no need to introduce them."* New advanced machines are expensive, which he cannot afford within his current limitations on expansion, but *"with new machines, the production volume would increase a lot."*

The company controls for quality as the stones are packed on pallets. Precision cutting of the stone veneer into the desired size is essential – *"the stones should fit well."* One staff member puts the stones into the square metre for this purpose – *"every stone is checked."*

The owner is currently updating his product catalogue. He has engaged experts from the National Environment Management Authority to measure production emissions. For the new catalogue, he wants to include data about carbon emissions, so that clients can see that the products are developed in a responsible way.

External business and institutional context

The owner has few interactions with the government and is unaware of innovation policies or programmes targeted at manufacturing enterprises. Several ministers came to talk with him, but he has little interest in this – *"here, there is something wrong with the intentions of the people in government."* According to the owner, everything starts and ends with the president. He believes that the president himself has good intentions. However, in the end nothing happens and money disappears. People in Uganda do their own thing and few feel a need to contact the government – *"I don't have time to go chasing people who have bad intentions."*

The owner does not have credit from a bank, having had bad experiences in the past when the banks were only looking at collateral, and particularly the machines. He had one bank employee who was sceptical about the value of the company's machines. *"He asked, if you default, who will buy the machine? I was dealing with the wrong guy."* Actually, the clients pay upfront so there are no problems with cash flow and debtors. Only when he has a big contract will he go to the bank and get working capital – *"I haven't gone out to get capital to buy machinery."*

3.2 Wood processing – furniture (70 employees)

This furniture manufacturer is a family business set up by a former teacher. He had a low salary and in 1994 started a side-line selling stationery for offices. When that became profitable, he left teaching and focused on buying and selling office furniture. The business worked out well and soon he was providing employment to 10 people.

In 2010, he enlarged his activities to include the import of office furniture via an intermediary in the United Arab Emirates. The imports come from China and Malaysia, amongst others. The furniture is shipped to Mombasa and then transported from there to Kampala. The switch to importing furniture resulted in even

better profit margins than stationery – *"when I tried the first shipment of chairs, they sold really well. Then I was inspired to bring in more."* Two years later, he started to manufacture furniture by himself and increased his workforce to 15.

The company has grown steadily since then and the owner has expanded the workshop – *"we have over 70 workers today."* The main manufactured products are sofas, conference tables, reception desks, beds, doors and door frames – *"we can do all that."* The company has their own designs and clients also come with designs – *"some customers want certain customised items."* In addition to manufacturing and importing, the manufacturing section produces customised furniture.

80% of his customers are government ministries and agencies and most of the contracts are first advertised as tenders in the newspapers. The other 20% are private offices and individuals. Occasionally he has clients from neighbouring countries – *"last year we got a request for a quotation from Kigali to furnish their convention centre."* The company also sold furniture to the UN offices in Sudan – *"it's a headache but I want to do it."*

A particular challenge is the level of import duties on furniture in Uganda. Of all the taxes paid by the company, import duties are the highest – *"I do not know where it goes, but the import taxation goes up every year and it is getting tough."* His own manufacturing is therefore becoming more important. The company is building a new factory, which is nearly complete – *"we imported some old machines from Italy and some new ones from China."* The owner hopes that in five years from now he will have reduced the import element of the business from 70% to 30% of total sales volume – *"we should be importing only raw materials."*

An opportunity is that the president has announced that all furniture for government institutions should be bought in Uganda – *"we want to benefit from this. However, our skills are not yet up to date – that is our greatest challenge."*

Internal capabilities and innovation

The owner plans to expand further into a large company. Over the years, he has restructured the firm into a professional organisation. He set up a board in 2010 because *"we are trying to embrace corporate governance principles."* The family members are shareholders. The first board was a group of friends, but nowadays the owner gets recommendations from senior industry professionals. There is a management team, headed by the owner and a general manager, and several departments, including operations, finance, human resources, procurement, marketing and sales. There are regular meetings with the management team. The company is now ISO certified with a view to producing according to international standards and competing with imports.

The company has both its old manufacturing site and the new factory some 20 km from Kampala. The showroom and the director's office and support staff are in the city centre of Kampala. The company has acquired some land in the Kampala Industrial Business Park for future possible expansion, but this is not yet ready for occupation. There are no access roads – *"the land is a swamp. You can only get there by helicopter!"*

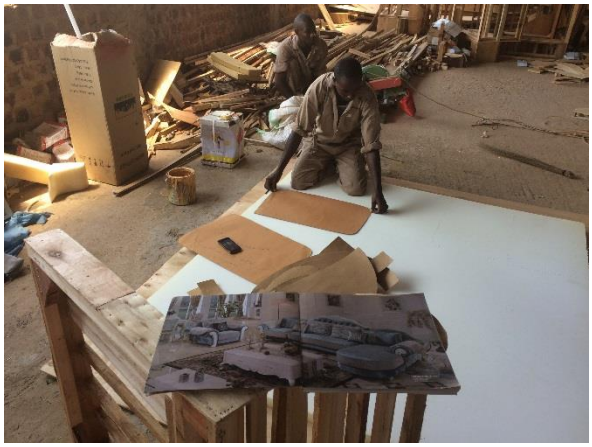
All the employees are Ugandan except for the general manager, who is an Indian expatriate. One of the new challenges is to find skilled labour able to produce sufficiently high quality work – *"our Ugandan people are not yet all that skilled."* Another problem is low productivity – *"when I am in the workshop, the workers do their jobs, but when I am out, they look at their telephones."* The owner is looking for a production manager who can speed up labour productivity. He is thinking of employing an expatriate, but that is expensive. The owner also mentions an attitude problem – *"people here do not value jobs and want to get rich fast. They come here and sometimes take small things in their pockets."* Their work ethic does not meet the owner's standards.

It is difficult to get new employees, since while there are many unemployed people, *"they are not skilled."* The company does a lot of training. To minimise the problem of trained workers leaving, employees sign a contract that they will not leave for three years – *"this is the company's strategy and it works."*

The owner is constantly looking for new machines to improve production capacity. He plans to move away from manual methods and into computer aided production. Last year, he went to China to buy two computer numerical control (CNC) machines. He is now further exploring the new technology, how to use it and how to train the staff – *"because our staff can't operate CNC machines."*

Since 2009, the owner has been engaged in growing trees near the factory. Some have recently been used for furniture production. He plans to include tree growing in his business activities, but acknowledges that it is a long-term project – *"eventually we should be able to support ourselves for 50% of our wood input."*

The owner is reluctant to buy more machines. In the manufacturing of wood products, a lot of skilled hands are needed. Moreover, increasing the production volume is impractical, due to the limited market in Uganda – *"I cannot make 100 tables a day. I will have to stop and look for another market first."* Only if demand grows can the business expand accordingly. The owner sees an important difference in China, where there is a big market for furniture, which means that Chinese producers can afford to buy big machines – *"in Uganda, we first have to continue training people, to learn to use their hands and heads."*



The owner continues to promote other types of innovation in the company – *"our slogan is innovation."* The owner wants to engage all his workers in improving how they work. There are regular meetings and "*we discuss what the workers can do."* He believes that everybody in the company has the capacity for innovation and encourages the workers to advance ideas and take initiative and ownership. He also sees that this will take a lot of time.

External business and institutional context

The current supply of wood is good but it is always wet, so the company has to store it to dry naturally for 6 to 10 months – *"sometimes we have to use it after 4 months because we cannot wait for such a long time."* The owner has ordered a new drying machine and is planning to construct space for drying in the new factory.

The owner travels a lot to arrange and facilitate the imports. He has travelled to China and Malaysia and learned about types of furniture and production processes. He picked up a lot of innovations and new ideas from Italy – *"I get inspiration from travelling to trade fairs."*

Last year, a group of furniture manufacturers formed an association, of which the owner is the current chairperson. One of the objectives of the association is to improve the skills of workers, within a time horizon of 5 years – *"if you come back after 5 years, the furniture industry will be well set up, and we shall have trained some people."*

The particular challenge of the business environment, *"as everybody knows",* is the government in Uganda. One problem is delays in payment when deliveries are completed – *"they will only pay when they want to pay."* The result is that the company often lacks cash flow to run the business. The government never advances money.

The owner is forced to borrow from the bank for short-term operating expenses and tax payments, but not for long-term investment. The owner feels the interest rates are high – *"I think they are the highest in the world."* In 2011, it was 30% per year and now it is 25% – *"when you borrow too much, the interest eats into your profits."* He is trying to do some extra simple business transactions to improve the cash flow. *"I do not want to go and borrow again. I have borrowed enough. So we should improve on how money comes into the company."*

He does not consider himself as the most successful furniture business in Kampala, but he is using different approaches – *"that's how we survive."* There are businesses trying to copy his products – *"because this is an open door business."* He cannot hide his products, people come in and take pictures. Despite the copying, the owner feels that customer satisfaction is more important than particular designs – *"that is where the difference comes in."* For this purpose, the company has an after-sales service. One month after a delivery, a staff member visits to check the furniture – *"it helps a lot and it brings back customers."*

Despite the difficulties, he carries on. He has been in business 12 years, *"so I have to keep going."* He is providing employment to 70 people and *"there are another 5 people behind each employee. I support 350 people."* If something happens to the company, then 350 people will be affected, so he keeps on working and also trying to prepare for the future in terms of succession. He wishes to retire in 3 years and plans to live at his farm and grow trees. By that time, he will be sixty years old – *"I will be an old man. I should be able to leave it to the younger generation to manage."*

3.3 Metal processing – energy saving stoves (30 employees)

The company produces energy saving stoves using firewood, charcoal and briquettes. In 2009, the two founders started the company with an ideal to protect the environment in Uganda from deforestation. Initially, they envisaged registering the initiative as an NGO, but the regulations and requirements were too difficult to fulfil, *"so we registered it as a company."* In 2009, the company had five employees, but today it employs more than 30. The interview is held with the younger brother of one of the owners, who joined the company more recently and currently acts as director of operations.

His brother had prior experience in ceramic fabrication and, over the years, the owners have improved the products considerably, particularly with the introduction of a combined metal-ceramic stove. The stoves now have round, square, rectangular and oval shapes. The productivity of the company also increased –*"we*

started to produce 100 stoves/month. At the moment, we can produce 1,200 stoves in a month." Second hand iron roofing sheets are used as input – *"it is really durable for the weather. These are roof plates produced in Uganda, although the metal is imported."* The ceramic is baked in a kiln in the workshop.

The telephone number of the company is printed on the stove, which is a distinctive purple colour. The company has registered a trade mark including the use of the purple colour – *"you won't get any other purple stoves across the country."* The owner is not afraid of competitors copying the stoves and the colour – *"we tell everybody that the purple colour has been registered as a trade mark for our company."*

The company sells to distributers, retailers and end users. Customers contact the company via e-mail and telephone, and an online sales website is currently under construction.

The company has gained a good reputation in the market – *"people see the purple stove and ask around where it can be bought."* Interested people read the telephone number on the stove and call. Occasionally, the company supplies to NGOs that distribute stoves in their projects. Once the company delivered stoves for refugee camps in Southern Sudan through an international aid organisation, but normally the company does not export, because of the weight of the products.

The founders got the idea for a combined metal-ceramic stove from a colleague who visited Kenya. He bought one sample and they copied the design. They felt that it is was not ideal for Uganda because of its vulnerability, so they adapted the design by putting metal on the cladding to make it stronger for transport, amongst other adjustments. This also makes the stove cook faster. The idea for metal cladding in fact came from a training course run by GIZ, Germany Development.

Other ideas for product improvement came from China and India, where many energy saving cooking stoves are manufactured on a much larger and technologically advanced scale – *"we copy those designs."* However, copying this technology in Uganda does not always work because it implies high costs of machinery and staff training – *"you can't acquire a machine without training the staff in how to operate it. At the end of the day it is very costly."* As much as the owners want to adopt new production methods to get better quality stoves, they are limited by finances.

The owners are still making modifications and exploring different production techniques and models. They are developing a new portable model for charcoal. It is more expensive than the previous models because it uses stainless steel, but it lasts longer, and is also lighter, reducing transportation expenses.

The operations director stresses his efforts to improve quality – *"people will come back for that reason."* Sometimes he receives feedback from customers who tried other stoves *"and they end up coming back to our workshop."* Quality and durability are very important for the owners, which assures their reputation in the market. There are many cheap and low quality stoves on the market, whereas the company provides a warranty of 3 to 4 years, high performance and 80% energy efficiency.

The operations director is very interested in solar energy, which he envisages could become a future line of business – *"with solar energy, people can cook without cutting trees."* He went on a training course in Germany, and the company now buys components and installs solar energy systems. The technology, however, is expensive. The company has already installed one solar plant in Kalangala. The owner sees the technical and economic possibilities of manufacturing solar products in Uganda, but the challenge is the investment capital. There are high quality input materials available in Uganda but producing the cells involves expensive machines. The owner also acknowledges the 'locally produced' image problem – *"people will question the product's durability if it is manufactured in Uganda."*

Internal capabilities

The company has *"expensive"* machinery for cutting and bending metal for the stoves. The company was fortunate to get a grant from the Global Alliance for these machines. All other machines and equipment have been purchased with savings.

The director of operations is an engineer by profession, having graduated in electrical engineering from Makerere University. During his studies, the operations director developed the desire to serve his country by providing employment and promoting sustainable energy.

The 30 employees have fixed contracts. Availability of skilled workers is a problem in Uganda, despite the fact that there are many unemployed people. Most of the people the company recruits are high school and university dropouts – *"we bring them on board and train them."* The training process is lengthy and the owners put in a lot of effort, *"but unfortunately, trained staff often leave and do not come back."* Staff turnover is therefore high, not because of pay levels but *"the hectic and manual process of production."*

Apparently the workers get tired of the heavy processes. The company switched to contracts requiring staff to work at least one year beyond their training period, and the owners plan to use new machinery to address the problem of fatigue – *"at the moment we are looking to see how we can innovate in the technical sense."*
External business and institutional context

The operations director has a positive view of the Ugandan government's industrialisation policies, and does not see corruption as a significant problem. The president recently suggested prioritising local manufacturing in Uganda with a view to lowering the need for imports. However, on the practical level, he sees that the government has not really developed targeted programmes that enable small-scale companies to grow. If that were the case *"we wouldn't have an employment problem in Uganda."* The owner says if he remains small, then he can only provide a limited contribution to society in terms of employment creation. In Uganda it is very difficult to grow from a small to a medium-sized company.

A practical challenge in Uganda is high business taxation. The government does differentiate between small, medium and large firms. This year, the business was fortunate to secure a large order but this meant it was suddenly taxed as a medium-sized enterprise – *"you are no longer a small scale company. If you have the*

profits of a medium enterprise, you have to pay 30% of your revenues." If next year the company has fewer orders, it will be taxed again as a small scale company.

The company has a bank loan but the operations director feels the interest rate, 27% per year, is too high. He is also not happy with the terms of credit. For a credit of 100 million Ugandan Shillings, the bank wants at least 30 million on the company's account first – *"I put 30 first, they add 70 to the account and I pay interest on the 100 million. It is really hectic."*

The operations director is not happy with the competition from abroad facilitated by donors. One example is a World Bank project distributing funds for similar energy saving stoves. Under this project, 50,000 Chinese stoves are imported and available at a low price in Uganda – "*so we are going to have stiff competition this year. The World Bank is not helping us, it is just the opposite."*

According to the operations director, many small-scale industries in Uganda do not register and do not keep financial records, because they fear the tax revenue authority – *"when you get a TIN number, the next day the revenue tax man is at your door."* He understands that the department is only after people who are not paying their taxes. The department does not provide information on why taxes must be paid, nor does it explain the tax system and the best way for firms to fulfil their obligations. Small businesses thus lack knowledge on how they can best pay the revenues. The tax department closes a business if the books and accounts are not kept well.

The operations director feels that the government is not really aware that small-scale industries are in existence. The Ministry of Trade and Industries recently set up a directorate for small-scale industry, *"but the director is not aware that small-scale industries actually exist in Uganda!"* The owner regrets that his work is not acknowledged by the government – *"I am employing 30 people on a daily basis, contributing to industrial development."* He doubts whether the government is developing effective innovation policies and programmes for small scale industries – *"it can't work because there are no stakeholder consultations."* For the operations director, it seems that you pay taxes but do not get anything in return – "*how do you want the cow to provide milk if you do not give it water?"* He sees the underlying problem of ministers being in office for a relatively short time – *"they want to gain as much as possible in a short time. They don't invest in the future."*

The operations director sees a problem with the education sector, which does not focus on the strengths and strong capabilities of Uganda. He feels that the education sector has lost direction. Most of the universities in Uganda are privatised and thus *"they can set their own targets without coordination."* However, he feels the link with universities is very important. The company sometimes involves the Makerere College of Engineering as an independent tester for the stoves – *"they test for durability and emissions and whether it's really efficient. I get a certificate of analysis, showing how the stove really performs."*

The company has been a member of the Uganda Small Scale Industries Association (USSIA) for the last 7 years. There are regular meetings where many common problems are discussed – *"someone producing juice*

has a similar problem to you making the stove." The owner thinks that the USSIA could play a key role as an intermediary to lobby the government for better policies.

He is a member of the Association of Stove Manufacturers in Uganda. They regularly meet and talk about the challenges in stove production, such as copying. You cannot keep the technology secret, but you can protect the typical colour. Within the association, the producers have come to a "gentleman's agreement" in using the colours of the stoves – *"if you have the yellow colour, I don't do yellow."*

The company has links with various international agencies, such as the Global Alliance for Clean Cookstoves, which is an organisation engaged in protecting the environment worldwide. The company also works with the GIVEN International Impact for Energy. Through them, the company gives talks in schools *"because we have seen schools cut down trees for firewood."* The company has a partnership with SNV Netherlands and MASCORP Uganda. Most of these NGO partnerships do not involve giving money but help by facilitating access to markets and end users, the Ugandan households.

3.4 Food processing – soya beverages and cakes (80 employees)

The company is located close to Kampala. The interview is held with the owner, who also acts as managing director. The owner runs the business with his wife. In 1978, he was a young road construction worker *"digging trenches and breaking stones."* Seeing his fellow workers buying roasted soya nuts and peanuts across the road, he identified an opportunity to produce and sell them himself, so he started to sell roasted nuts as a side-line. After initial losses and a learning period, he began to make *"really serious profits."* People started to place orders and requests for packing the nuts in a particular way.

In 1979, shortly after his first successes, Uganda descended into political chaos when Idi Amin was removed from power – *"everything was disorganised in Uganda and everyone went out of business."* The owner went to Kenya and came back four years later – *"I was back to zero, no job, no business."* He picked up the idea of producing and selling food again, and set up a small venture baking and selling cakes. His mother provided him with a simple traditional oven – *"a drum with a compartment of fire on the top, fire at the bottom and chambers for bread in the middle."* His business, informal at first, grew slowly but surely. At one point, while doing different jobs in between, he realised that this food processing had become his destiny in life – *"so I had to concentrate on it."* In 1986, he officially registered his business with the USSIA.

Internal capabilities and innovation

In his formal business, the owner experimented with new products – *"by the time you come up with one successful product, there are a lot of failures behind it."* One day he developed a special formulation for a cake snack. He did it casually: just picking some ingredients, mixing them together and baking it. The result turned out to be good – *"I couldn't believe it was me who did it."* He started to produce the cake snacks on a larger scale and the *"product picked up really well*". He started expanding and had 20 people working for him in 1995.

Then one day, the majority of his staff suddenly resigned. It turned out that they had started in business themselves using the owner's cake formula and selling it to the same customers. The owner was quite frustrated and stopped his business. After a while, realising that his former workers were not able to maintain quality, he started again. He successfully regained his customers and continued to grow. Currently the business employs 80 people, including a sales and marketing team of 25 people. Having learned his lesson to keep the formulas secret, he now concludes written non-disclosure agreements with his staff.

Today, the company produces several key products that the owner developed himself. One of them is the Soya Cup, a drinking product that tastes like coffee – *"the aroma is close but doesn't have caffeine like coffee."* The product is a beverage made from soya beans to be used with plain water or milk – *"the Soya Cup accounts for 50% of all our sales."* People in Uganda are increasingly trying to avoid caffeine.

The company also produces brown butter, a spread for bread or a sauce base that is a combination of soya beans, ground nuts and sesame. Another important product is Soy Millet, a porridge from pre-cooked and roasted maize, soya beans and millet. Other products include muffins and cakes.

The main ingredient of all the products is soya. The owner became *"a soya guy"* because he realised that soya is by far the most nutritious product available in Uganda.

It has a much higher protein content than other cereals and vegetables, but has an unpleasant smell. To address this taste issue, the owner started to develop products which eliminate the soya flavour and came up with a solution to use local spices to neutralise the flavour.

Uganda is one of the top 4 major soya producers in Africa (with Zimbabwe, Nigeria and South Africa). However, the supply of locally produced soya is not always reliable in terms of quality and volume. Soya is seasonal and 50% of the beans are exported. The owner is not happy with the fact that raw beans are exported from Uganda – *"we are not only exporting beans cheaply but also exporting jobs."* He sees the necessity for Uganda to add value to the country and export finished products – *"the industrialisation of this country is the way to go for us to get real value from our agricultural production."*

The company targets the Ugandan domestic market, selling directly to supermarkets, retailers, some schools, a few NGOs, and also individual customers via a small company shop. In terms of marketing, the products are advertised on radio and TV. The company has several company cars for delivery – *"in the morning they go and distribute, then they come back in the afternoon or in the evening."* The company does not have specialised distributors.

The company does not yet export, but the owner has plans to develop this. He knows that there is a market *"out there."* Occasionally, individual customers buy his products and take them overseas – *"if you live in Chicago and you come to Kampala looking for and buying my products, then […] I could have a market in the US."* At the same time, the owner is aware of the export challenges he is facing. He has to meet international food quality standards. He knows that the packaging should be improved, to be more attractive. Another challenge is meeting production volumes if an international buyer places a large order.

The owner sees his business as a family enterprise. His son works with him, taking evening classes in the university so that during the day he can work in the factory. His daughters also work in the company. The owner has a clear succession plan.

The owner mentions that his focus on and persistence in business is a key success factor. Over the years, he became knowledgeable about food processing. Although his formal education is limited to primary school level, he has trained himself by attending short courses and linking up with people with specialised expertise in food – "*I knew I needed to team up with people and organisations who can really help me to develop and redeem the time I lost in school."*

External business and institutional context

The owner is actively establishing linkages on an international scale, such as the World Initiative for Soya for Human Health, the American Soya Association and Soya Southern Africa. He attends international fairs and forums and takes the opportunity to make presentations. He was introduced to academics from the University of Illinois who were doing research into soya beans – *"that was is a golden opportunity."* From that time, they started collaborating. Visiting the US, he met a professor in food science who suggested new ideas for soya products – *"he gave me ideas just walking down the corridor."* He works with research institutes in Uganda but they provide little input. Researchers from Makerere University have tried to make soya milk for a long time but never succeeded, whereas *"mine is on the market."*

The company and products are registered as trade names. The owner did not file patents for his products because the process is quite expensive and complicated. Some competitors have tried to copy them – *"they have put a product on the market calling it soya cup and they don't know that I have registered it as a trademark."* The owner sometimes takes action to prevent this, but it is very expensive.

The financing of his business has been challenging since the beginning. In the past, he had savings from his jobs.

He borrowed from money lenders – *"these guys used to charge 20% per month."* In an effort to get a bank loan, because he did not have a credit rating, he sought help from the Uganda Development Trust. Unfortunately, his financial records were not understandable by outsiders – *"I used to keep records in a way I understood."*

Today, he is able to secure bank credit, although the lack of sufficient guarantees and collateral remains a limitation. Moreover, the interest rate is too high, according to the owner – *"in Uganda, the interest rate is 26% per year while in Kenya it is 16%, so how can you compete in the region?"* The owner sees the high interest rate as the main reason why businesses in Uganda are stagnant – *"we are not working for ourselves but working for banks."* The owner's latest idea is to approach private equity funders –"*if we have good ideas like these ones – there are people who have the money but do not know what to do with it."* The owner tries to find partnerships to avoid having to use banks.

The owner feels the business environment is politically acceptable, although the government lacks the means and capacity to provide direct support to his business. He feels the high taxes are unacceptable – *"the taxes*

are killers." As many businesses are not paying taxes at all, he would recommend that the government widen the tax base so that more people pay tax – *"why narrow it up and make it so complicated for a few?"*

The USSIA offered him several business development services, including courses on how to bring products to market, marketing and financial management –*"the guys from the association did a very good job."* He is looking at examples of *"big businesses of big people."* He also partners with the Uganda Manufacturers' Association (UMA) and the Private Sector Foundation. His operation is small but he has the ambition to expand it.

3.5 Printing and publishing – books, forms, calendars, stationery (15 employees)

The owner started the company in 1990 while he was still working for the Uganda Commercial Bank, in charge of purchasing stationery, forms and printed material. At a certain point, he realised that he could do printing himself. He formally registered his business in 1991 and left the bank to engage full time in the printing business, establishing the company in the centre of Kampala.

At that time, he heard from a friend that the Dutch government was offering full scholarships for short printing courses in The Netherlands. He successfully applied and did a six month course in The Hague. During his stay, he became acquainted with a Dutch family, who helped him to buy second hand machines. He shipped the machines to Uganda. He realised that he had to grow the business, so step by step, the company purchased more machines, mostly from The Netherlands – *"we get them from the networks we make in Holland – we get some of the old machines and we ship them here."*

Today, the products include books, magazines, office stationery, notebooks and calendars, amongst others. There is also the possibility of *"security printing for exams"* for Makerere University Business School (MUBS) by printing the security number. The company has a large client base in Uganda and some clients in South Sudan and D.R. Congo. Products are delivered to universities, industries and the Catholic Church – "*mostly for the church itself as an organisation but also for individual people within the church."*

In the past, the company worked for several other organisations such as the Uganda Management Institute, Pax Insurance, the Uganda Bankers' Association and *"we used to do a lot of work for ministries."*

In 2003, the new machinery and expanding business encouraged him to consider constructing a new building and moving out of the city centre. He got some advice from the Dutch support programme Dutch Senior Experts (PUM) for the development of the building. He borrowed small amounts from the bank *"at a high interest rate"* and used his own savings as much as possible – *"I would go and borrow money to fix the foundations, and then pay back, and then borrow money again to build the walls. Step by step."* Eventually it was officially opened by the Netherlands ambassador.

Over the years, the owner has structured the company and set up 4 departments. His sons joined him and it became a family business. There is a pre-press department in two sections: the origination section (where the designers work on development of new ideas) and the reprographics section (where the plates are made). The press department does the actual printing, then there are the print finishing, folding and binding machines. For high end binding, there is a UV machine to give a professional finish to the product. The company has

several other technologically advanced machines such as the corner cutting machine for business cards with rounded corners –*"we are in the process of acquiring more sophisticated machinery."*

In the past, the company had an average of 25 employees, but this number changes according to the order portfolio. At one time, there were over 100 people working *"day and night"* for an order from the Uganda Bureau of Statistics. Today the company employs 15, *"because it has been a tough time. We found many stones in our road."*

In 2008, the owner ordered and paid 14,000 Euro in advance for new machines. Unfortunately, the Dutch supplier did not fulfil the order and *"refused to pay us back, claiming he was bankrupt."* Then, for a second time, he entered into a bad business deal. In 2014, he ordered new machines from Germany with a value of 100,000 Euros, borrowing money from the bank –*"I transferred the money and the supplier disappeared without delivering."* This second time, the owner involved Interpol and the Ugandan embassy in Germany – *"we have been in court for the past two years."* This explains the tough time and why the business is operating at a low level – *"we have to pay the bank interest, we have to pay the lawyer in Germany and so the business went down."* The bank rate is 28% and the bank is not flexible on this. The government does not have institutions that offer assistance or security programmes –*"you have to save yourself."* The owner expects that the case will come to an end soon – *"we will come to some kind of out of court settlement. I don't want the case to drag on."*

The owner regrets the whole situation because he had a lot of plans. What makes him feel bad is the lost jobs of a number of his 20 employees – *"we couldn't afford to pay them."* It is painful for their families too because it is not easy to find employment. The company cannot accept large orders now because the new machines did not arrive. The orders just come slowly and the cash flow is low.

Internal capabilities

Occasionally, the owner needs to recruit some workers for short periods to fulfil larger orders. It is not difficult to get new employees, but they often lack the necessary skills and technical competences. The owner prefers to have *"home-grown"* staff, who have been through all the technical steps of printing – *"that's why we prefer people we have worked with in the past."* The skilled staff who were made redundant have found new jobs.

It is possible to train new staff, but it requires a long time to acquire the necessary skills, which cannot be done with small orders and short-term staff – *"you have to train them quickly but you can never achieve the quality level."*

The company has a board with 3 'sleeping members': the owner, his wife and another colleague, but they are busy with work commitments and provide only occasional advice. The owner handles the whole operation and takes all strategic decisions.

He has a digital machine which he bought some time previously, but because of the dusty environment, this machine did not operate for long. He has set up an air conditioned and dust free room, so is now thinking of buying another digital machine –*"those are some of the things you take into consideration when you want to go digital."* In the past, the company did acquire advanced technology, using knowledge and expertise gained during the training in The Netherlands and advice from the PUM.

There is, however, no Ugandan technology institute or association that provides technical support, nor are there specialist schools to train printers.

The owner has an idea to include a vocational training centre on the top floor of the building, but financial problems mean he has not yet been able to set this up. Many companies in Uganda have started training facilities and run apprenticeship programmes. Since the formal education system is not very up to date, the company sees the need to have training capacity in-house.

Printing technology is undergoing rapid transformations and digitalisation. The owner is aware that off-set printing is going to co-exist with the new multimedia technology. One idea of the training centre is to keep up with digital technology *"so we can be prepared for those changes and they don't take us by surprise."*

External business and institutional context

There are many competitors in Kampala but *"I have always looked at them as another person whose service I can complement, like a flexible network."* The competition would not be a problem if the company had raised its quality level with the anticipated new equipment, but now they must deliver quality service without it.

One remaining problem in the market is the low confidence in Ugandan products. The owner still encounters the attitude that everything imported is good while locally produced goods are considered bad – *"you can't blame them because it's us who should be able to convince them that we are able to produce a certain quality of work."*

The company needs quality paper as input but this is not available on the domestic market, where the suppliers are satisfied with *"mediocre"* quality and are not interested in supplying higher quality products. However, in order to be competitive *"you need to have high quality paper as input"* so for the future machines the owner will have import it.

Among the many challenges in the printing market, corruption is a significant and growing problem. Getting government contracts involves tendering, whereby the company submits a competitive proposal and, if successful, is then shortlisted. Competitors 'buy' large contracts from government but also business clients – *"corruption has grown bigger in the past 5 years."* When the owner started in business, there were only a few printers – *"we didn't have a lot of those problems."* The owner does not blame the customers, as the initiative for arranging things *"under the table"* is often from the suppliers – *"it's not that the buyers ask for it."* This is a general trend among the younger generation of business people, and is also prevalent in other professions, such as young lawyers and doctors – *"they are all money driven and the ethical codes are gone."*

The government has developed a new 'Buy Ugandan' policy but the owner regrets that it is not well implemented as yet. For instance, over the past 10 years, the Ugandan government has spent about 7 million dollars yearly to procure books from India, without even checking whether books of similar quality can be made in Uganda. This is because of *"money shared along the way"* with middlemen, who ignore the local market. The owner would like the government to stick to the policy of 'Buy Ugandan'.

Another policy issue concerns the need to change the education system in Uganda. Makerere University trains people in graphics design but the level is very low compared to international institutions. Students lack hands-on experience and exposure to the industry. The curricula in Ugandan schools, colleges and universities develops the pupils intellectually and theoretically, but does not prepare them for the job market. It seems that teaching theory is easier than training in practical skills. Students have not been taught to do hard work – *"they want soft work, to get rich quickly."*

The government should craft courses that will provide students with practical skills – *"we need people who can calculate VAT for us – who can generate business forecasts – people who can control the costs in production. Those are the kinds of people we need."* There must be a complete mind-shift and new curricula for students. The owner sees the challenge with technical schools. Maintaining these schools requires a lot of money, which is not forthcoming. Hand-on courses require a lot of expensive inputs and *"the government does not have the means for these inputs."*

The owner is still hopeful about the future. What he has learned is never to do any transactions without a lawyer because previously they were doing things on the basis of mutual trust – *"we never knew Europeans can cheat. We had complete confidence. I saw in The Netherlands how trustworthy people are."* It is an advantage that the company is operating from its own premises – *"it has enabled us to withstand a lot of shocks."* At present, there are 10 people employed, but in the event of a larger order, the owner hires casual employees – *"they come and finish the piece of work and they go."*

The owner has maintained his motivation, despite all the disappointments, due to his passion for the profession, and the desire not to accept failure – *"from the religious point of view, I am always hopeful and I also trust that my God lives and will come to my rescue."* He has the desire to succeed –*"those people that have been with me for a long time, I don't feel like I should disappoint them. I feel responsible."*

3.6 Metal processing – agricultural machinery (10 – 100 employees)

The company was established in 1951 by the grandfather of the present manager. In the late 1980s, his father took over and *"now it's me who is managing the business."* It is a family business involving many brothers and sisters and the main business activity is currently the production of agricultural machinery, *"but we keep changing."* The company also deals in fabrication of telecommunications equipment and car repairs.

The location of the company, the Katwe neighbourhood in Kampala, used to be a dangerous and rough area. His father had a problem with theft by street kids, so he decided to start a technical school within his company and provide free training for young men between 17 and 25, so *"they have something to do and earn a living instead of stealing."*

The company and training facility is now well-known in Kampala. Many technicians in mechanical engineering working all over the city were in one way or another involved in the company's training workshop.

The company is appreciated by clients because it helps young people to acquire technical skills and access job opportunities – *"we give them small tools to start up their life."* Young trainees sometimes find employment with their customers –*"that works well because they can operate and maintain the machinery they know."*

The company has several workshops, a mechanical garage for car repairs and fabrication workshops. The training workshop has only basic tools *"because the young trainees spoil a lot of tools*." There is another workshop for professionals with advanced machinery and equipment.

Most of the agricultural machinery models are copied. The company buys original machines and parts from abroad and then duplicates these with great precision. According to the manager, the only way one can see a difference *"is to see both next to each other."* Steel, as the key input material, is imported from South Africa, China and Turkey – *"there are no raw materials available in Uganda."*

The machines produced by the company are more expensive than the imported ones. The manager explains that the ones manufactured by his company are more durable than the imported machines, which are not designed to operate in a dusty environment such as Uganda – *"that's why all the imported machines break down after a while. We design our local machines with the dust in mind."*

Eighty percent of the firm's clients are government departments, donors and NGO programmes and projects. The remainder are individuals – *"if you don't target government and big institutions, there is no business."* At present, there are many agricultural mechanisation development programmes – *"that's why our main line of business is in agricultural machinery and food processing machines."* The NGOs, donors and government departments provide the machinery to the communities where they have development programmes.

The firm's latest innovation is the production of irrigation systems – *"in the government and the donor organisations, everybody talks about irrigation."* The company bought several irrigation systems and dismantled them *"to find the cheapest way to reproduce it."* Within a month, they expect to have the first system ready. One additional area of interest is using wind or solar power because petrol for the irrigation system water pumps is expensive. However, all the parts have to be imported for the batteries and solar panels, and then assembled, which will be costly – *"I am looking for cheaper solutions."*

Internal capabilities

Since his father died 5 years ago, the current manager has been running the business on behalf of the family. He is one of the youngest but he was recently chosen by his family to manage for another 5 years. There are 13 brothers working in the business, in different positions in the workshops, sales and marketing. They have different mothers – *"we are 13 brothers from one father but we have 8 mums."* Every year, the family meets to evaluate operational matters and revenues.

An older brother was chosen to become the manager, but he has a good job as an engineering designer in South Africa and does not want to come back to Uganda. The current manager is running the business on his behalf –*"I consult him on many decisions and he approves. I cannot do anything without his approval."* The brother working in South Africa contributes significant technical knowledge. The manager sends model drawings to his brother in South Africa, who checks the designs. Another brother is working in a company in China and also provides technical advice. He is in contact with Chinese equipment suppliers supporting the development of cheap technology – *"China's technology is cheaper than European technology."*

All the family members are paid the same as the workers – *"that is the culture in our family."* The manager considers the family members as workers, which is easier – *"if you come in as a worker it is okay, but if you come in as a family member you are going to give me headache."*

Apart from the flexible number of trainees, there are 10 fixed employees (non-family) on the payroll. In the production workshops, 100 casual workers are currently working on a piece basis – *"this is a seasonal business: you can't pay over 100 people every month."* The casual workers do not get a formal contract – *"we don't do contracts. People don't even know how to write their names. People believe in cash."* The manager has a network of workers whom he calls in the event of a large contract – *"we work based on trust."*

The owner acknowledges that working with trainees is beneficial too. Professional and skilled technicians are quite expensive – *"it's supposed to be like one million a month Ugandan shillings."* When he uses young trainees from the neighbourhood he pays them only 200,000 a month – *"young trainees are cheap labour in the end."*

External business and institutional environment

The manager is aware of the competition and that eventually competitors will copy their machines – *"you can design a machine, put it on the market. You can sell it for like 2 years and then everyone starts fabricating, so you lose business."* There are several smaller machinery producers but the manager considers the quality of his products to be much better. His direct competitors selling high quality agricultural machinery are basically two Chinese companies in Kampala. Their prices are cheaper, but they do not have a workshop – *"so the technical support in case of problems comes from me."* The Chinese companies import the machines and they pay little tax, *"but they spend a lot of money on air freight."* The company does not export its products because the transportation costs are too expensive.

The owner says that the problem with formal education in Uganda is that although a graduate may have a degree, more often than not he or she will not get a job. Working in his company provides them with practical skills – *"they know what they are doing and they will get money."*

Family life in Uganda has changed a lot compared to the past. He explains that his father had time for him – *"I grew up in this town where there were a lot of thieves and gangsters, but nothing happened to me because my father was around."*

He regrets that today parents no longer have time for the family and children. He manages the business and his wife also has a job. They come home when the children are sleeping – *"we take them to boarding schools and we have little time for them."* His father also invested money to allow all the brothers to study in South Africa and elsewhere – *"he invested a lot of money in our education."*

The manager is sceptical about the government, which *"doesn't help business people."* A good connection with the leaders of the country is essential. The manager is trying to develop a connection but another issue bothers him – *"they don't support Ugandans but instead they support foreign companies and white businessmen."* The government procurement requirements are strict. A local supplirt has to show a track record over the past three years. The government, on the other hand, is not very correct in its payment terms. It can take 6 months before a payment is made – *"government contracts do not favour us."* At present, he no

longer accepts direct contracts with government departments, favouring instead projects for donors or international organisations that run through the government, such as the African Development Bank, USAID, European Union, UNICEF and WFP.

3.7 Textiles – gowns and clinical coats (25 employees)

This company produces a variety of textile products. The interview is held with the founder and director. Since the start of the business in 1987, the core products have been PhD and ceremonial gowns. The tailoring of these gowns is complicated and a certain quality is required – *"we've been here for a long time, so many institutions prefer to give us orders for the ceremonial and PhD gowns."* The company has recently enlarged the range of products to include fashionable bags and cushions. To stay in business, the company also has another line of products: clinical professional clothes for hospitals.

Tailoring was the owner's hobby when she was a little girl – *"I started sewing at the age of about 8."* In high school, she studied tailoring subjects. She made dresses for her friends at no cost – *"looking at somebody with a dress I made was very encouraging."* In university, she kept up the hobby but studied science, graduating with a BSc in chemistry. After graduating, she taught chemistry in a secondary school for some years.

In 1985, while accompanying her husband during his PhD studies in the UK, she attended a diploma course of a few months at a fashion design school in London. She started working for several textile factories, but had a rough start, with complicated sewing machines and strict supervisors. Nonetheless, she feels that the experience in London was critical for her – *"because the textile industry works very fast and efficiently, which is something we need in Uganda*." She came back to Uganda in 1986 and opened her company. She saved money in the UK, which allowed her to bring back 3 industrial machines.

Some time later, she met an American lady who gave US$5,000 for her to develop the business, which meant she did not need bank credit to set up her tailoring workshop.

Initially, she started in a shop in the centre of Kampala, tailoring to order. People came in and ordered what they wanted – *"we became very popular and we got many customers."* However, the location proved problematic in terms of safety, with high burglary rates, so she and her husband decided to move to the outskirts of Kampala.

The new location was not as easy to find for her customers, so she changed from 'clothes to order' to making her own designs – *"people can come, see and just buy from the stock we have on display."* However, this new approach did not work well. After a while, people would ask in the display room full of clothes – *"don't you have anything new?"* Then the idea came to make graduation gowns, because the design does not change and can be made in large quantities.

In the early nineties, Makerere University in Kampala used to import these gowns from the UK. She contacted the university but *"it wasn't easy to let us sell to them because they considered the imported products better than ours."* She told the university representatives that the imported gowns are very expensive and not even produced in the UK (she found out that the imported gowns from the UK were actually made in developing

countries such as India). With this argument, she secured her first order of 200 gowns. The PhD gown is a special and complicated design. The university gave the 'secret' design to the company. Shortly thereafter, Makerere University started buying more gowns. Individual graduates also placed orders – *"we became popular because of our proximity to Makerere University."*

In the early '90s, she gained an MBA from Makerere to help develop her management skills – *"during that period, we made a lot of improvements in our workshop."* The cost of the MBA was affordable because the business revenue meant she could easily pay the tuition fees. The MBA helped her to organise her business, to develop mass production, and to improve staff management.

She involved the staff in solving internal problems and sought their ideas in new product development – *"I used much of what they advised to improve."* She also regulated the working day – *"we used to come in at any time."* She set the rule that work starts at 8 o'clock and begins with a prayer – *"each of them can lead the prayer and this improves their communication skills and their confidence and they really work together, starting from God."*

Occasionally, she sells gowns to a university in Malawi. She sends the final products by DHL, but this is too expensive, in her view.

In future, she would like to export more, but she considers export to be difficult, in terms of identifying customers and working across borders – *"you are not so sure whether the other person will pay."*

Internal capability and innovation

At present, 25 people are now working in the company, mostly women. In the past, the company hired more casual workers in the event of a big order. There are 5 staff involved management and administration, an accountant three days a week and one member of staff manning the front reception. The owner was trained in customer care. She and her husband are the managing directors. Her husband used to work with Makerere University in a technical physics field, but has now retired from the university and is engaged in consultancy. He is has little involvement in the daily operation of the business.

The company trains the production staff extensively. The owner explains that her experience in the UK helped her to train her employees to work faster. The company gets interns – *"they come in for an internship and we mentor them and we show them how to run a textile business."* The owner is not afraid that they might go away and start up their own businesses. She believes that her years of experience give her a competitive advantage.

She sees that staff training results in higher productivity. In the past, the staff made 5 clinical coats a day, whereas nowadays they can make 20 – *"production capacity is growing because of the people getting this experience."* The contracts for clinical coats are not very large. The company needs more orders, as *"our capacity is bigger than we use."* She is actively trying to secure more contracts and has developed new marketing models – *"we have Facebook, Instagram and a website."*

External business and institutional context

There are many challenges in business and *"Uganda is a very difficult environment."* One problem is the frequency of the power cuts – *"you cannot rely on it when you are under pressure."* The company has a small generator. It does not have a large capacity but can run some of the machines. Electricity is also too expensive, according to the owner.

Most of the time, the company uses local suppliers who have imported fabrics and materials available. The fabrics come from China and India via Dubai. The quality is not reliable, however, as the suppliers do not buy the quality that the owner desires – *"it seems that they are buying for themselves."* Another problem is the high cost of borrowing, so the company does not have credit from a bank.

The owner feels that there are too many taxes. As a business develops, it must register for VAT, which is required to work with large institutions such as Makerere University. VAT is 18%. There is also the requirement to pay a 10% contribution to the national social security fund (NSSF) for each of the workers' salaries. There is income tax and a city council tax – *"you really find it challenging to grow."* The tax regulations are very strict. VAT is due on the 15th of every month and late payment incurs a fine of 200,000 shillings – *"it pinches, so you make sure you are on time."*

There are now many firms making graduation gowns, offering products are lower prices, but the owner is quite confident that her quality is better than many of these competitors. The market is growing because there are more new universities. When she started, there were only 3: Makerere, Nkumba and Kyambogo. The company now also produces PhD gowns for Mbarara University – *"I don't know whether they have PhDs at other universities yet."*

The owner sees that the manufacturing sector is still very small in Uganda. There are a lot of agricultural products but these are exported and manufactured overseas, then imported as manufactured goods. It is difficult for a manufacturing business to grow because of the problems in the business environment.

Management and entrepreneurship education is also new, with Ugandan students only recently learning business administration and management, which are really useful for starting a business. Moreover, manufacturing as a business is relatively new for Ugandans – *"before the 1970s, only Indians were doing it"* but they were all expelled in the '70s by Idi Amin. After Idi Amin was sent out of the country, the Ugandan business community took off. The new generation of entrepreneurs is still young – *"I remember I was in the second cohort of MBAs at Makerere – which meant really that was the start."*

The company is a member of the Uganda Manufacturers' Association (UMA), USSIA and Uganda Women Entrepreneurs' Association (UWEA). She goes to regular meetings and gains good advice and contacts. Other helpful networks, according to the owner, include the Private Sector Foundation Uganda (PSFU). There is also the Uganda Investment Authority, which supports help foreign investors –*"foreigners enjoy better investment conditions than we do."* Foreigners also enjoy tax holidays –"*there is no fair competition."*

3.8 Handicraft – home decoration, rugs and handbags (12 employees)

The last case is not a company but an incubator NGO located in the countryside outside Kampala. It was set up to support local artisans in producing crafts, such as home decoration, rugs and bags from organic waste material, in particular banana leaves. Each local artisan gets a working space and the NGO assists in providing input and marketing the products. It was previously supported by a development project but this external support stopped in 2015. Today, there are 12 artisans working on a permanent basis. For the time being, the NGO only works with banana waste, although there have been some trials with snake grass and bamboo.

Although it is registered as an NGO, it operates as a business in terms of generating income – *"we operate independently."* There could be some new support because several development organisations have shown interest, *"though we haven't yet signed anything."*

The NGO will not become a company because it started as a project that is supposed to be helping artisans and *"we are trying to let it remain that way."* The initiative was set up to help individuals in the community who work informally. The interview is held with the female CEO.

She has been contacting international NGOs for funding, writing proposals and concept notes and has figured out a budget for expansion. The most important thing she wants to do is to leave her current location because it is currently a rental property.

The CEO explains that there is a lot of biomass waste available in Uganda. The NGO aims to promote environmentally friendly businesses and waste reduction. The NGO acts as an umbrella organisation. The artisan initially works on their products without dealing with the entrepreneurial and management side of the business. The NGO assists in generating ideas for artisans, product testing, business plan development, technical advice and helping with marketing and sales. The NGO sells via various channels: online, exhibition, craft and an interior design shop. It retains some of the money to buy input materials. *"Some of the new artisans have no idea what they are going to do to start their own business."* In the first month the NGO teaches them and *"then they realise what they can actually do."* The NGO also organises vocational training in textiles: fabric decoration, crafts and jewellery making, tailoring, fashion and design and weaving.

The organisation provides the artisans with market information and client feedback. The NGO also plays an important role in technology transfer, working with research institutions and technical universities. Eventually, the plan is that the artisan leaves the incubator and establishes their own business.

Over the long term, the CEO would like to set up offshoots of the incubator NGO in different places in rural areas. It would be best to stay near farmers who cultivate bananas. Instead of throwing away the tree leaves, the fibres could be extracted and used for crafts. The farmers could earn a small additional income – *"I am sure it can make a change."*

Internal capabilities and innovation

The CEO studied procurement, which helps her in the management and marketing. Moreover, she has an affinity with art and craft – *"I think art is in my blood."* She works on small innovations to develop different products not available on the Ugandan market. The CEO believes that the reason for their success is that more and more innovative products are being developed. More artisans are interested in joining –*"we see more young people coming who want to learn and they want to be here."* The market continues to grow.

Acquiring entrepreneurship skills is difficult for the artisans – *"that is actually one of the biggest challenges we face."* The CEO thinks that the current artisans *"feel too comfortable here."* Apparently, there is no drive to move out of the incubator and establish their own companies – *"it really is a bit of a challenge."*

The NGO also works with interns from Europe, who come with new ideas, usually from the universities where they have been taught a lot of different things –*"we had an intern from Norway who made some beautiful purses from banana fibres."* The CEO checks all the products visually and applies her own quality

standard – *"it is easy to see that some products are good and others are not good."* She can see whether the product has been made by an experienced person or not.

In the near future, the CEO wants to buy property, expand and support more people. The NGO has a mechanical banana leaf extractor, although this is not entirely efficient. Banana leaves are pushed inside and the fibres come out, separated from the water. The banana waste itself comes from the local neighbourhood. There is sufficient supply – *"we used to get them free of charge, but when people realised we were doing something with them, they started selling them to us at a small price."*

External business and institutional context

The organisation works with universities and research institutions to develop innovations using sustainable resources available in Uganda. The idea is to commercialise ideas and inventions from these institutions. The NGO also gets requests from the university as to whether an artisan can develop a certain product from banana fibres. The communication with research institutions is sometimes a challenge. In particular, when the researchers want to write an academic paper about it, *"it becomes difficult to get practical advice."* She regrets that the researchers from university often do not consider the work as innovation – *"they think that innovation is high technology."*

The CEO is not aware of innovation policies or programmes in Uganda – *"I don't know if they are there yet but we have not seen them."* The owner sees that the idea of incubation in Uganda is new and most people are not really familiar with it. The CEO knows that there are no incubation programmes in Uganda. As a formal institution, USSIA provides some assistance in the form of training. For instance, there is an accountant – *"he shows the artisans how to keep records if you are running your own company or a business."*

People are not yet trying to copy the idea of the NGO, as far as the CEO knows. It is hard to process the banana leave fibres – *"if you have not gone through the process, it will be hard for you to copy."* There was one person who tried. In the end, he came to the NGO for advice, which was not a problem for the CEO – *"we are trying to share this with as many people as possible."* She wants to show people that they can do more with biomass waste – *"we want to help as many people as possible to get out of poverty."* The CEO sees that it is all about innovation and coming up with new products and ways of processing all the time – *"by the time others copy this, we will already be ahead."* She feels it is important not to be static, focusing only on one thing.

Most of the products are sold on the local market, some are bought by traders visiting the East African region. There are occasional international orders – *"we have a gentleman from Germany who usually takes the table mats, he usually takes like 200 pieces."* There is an initiative with a Canadian organisation that took some of the craft products to exhibitions in Canada –*"they wanted to see how the Canadian buyers would react."* Several other people from Finland, Canada, Germany and the USA have purchased in small quantities.

4. Analysis and conclusions

The aim of the qualitative study on innovation in manufacturing SMES in Uganda is to support the quantitative research part of EIP-LIC, as well as share insights to similar research projects by other academic institutions. This could help researchers to validate, compare and complement existing theory in literature and research design and hypothesis development with contemporary bottom-up realities on the ground in Uganda, as perceived by manufacturing SME owners and managers. Earlier qualitative studies in the framework of EIP-LIC applying the same qualitative approach and report format, and enabling comparison across the countries of study in the DFID project.

This growing collection of insights of the various countries present how innovation processes and mechanisms are manifested within manufacturing SMEs, and review the internal capabilities and external environment, including formal institutions, the business system and the informal institutional context. The research framework is reflected in the list of semi-structured interviews (see Annex 1). In addition, the owners and managers shared their stories outside this framework and advanced issues that are relevant and interesting for current scientific work. The qualitative reports of all 10 African and Asian countries of study will be available for researchers and a wider audience downloadable from the project website[1].

It is important to note for the analysis and conclusions below that the validity of qualitative research should not be considered in terms of sample size and representativeness of the cases for the total manufacturing SME sector in Uganda. Qualitative research in general does not claim to collect and analyse data from a representative sample. Instead, on a case-by-case basis, qualitative analysis provides exploratory (deductive) insights into issues, processes and systems in a bottom-up way that helps to suggest theoretical concepts for the local context. It may suggest original or overlooked and policy-relevant factors (variables) and conditions to follow up in the quantitative analysis. Against this background, the selection of cases involved 'information-oriented' sampling, as opposed to ad-random sampling, aiming at developing a diverse yet comparable dataset with regard to subsector, enterprise size and innovative activities.

In the paragraphs below, several key trends and notable patterns across the Ugandan SME cases are analysed. It is important to note that this concerns a first analysis of the qualitative empirical material from Uganda within the DFID project context, which is to be followed up in more depth with a view to developing or complement academic articles. The chapter concludes with initial policy ideas and implications and several observations with regard to the set of forward research questions considerations within or beyond EIP-LIC.

General observations

A first overall observation from the preparation and implementation of the fieldwork was the difficulty in identifying formally registered SMEs (10 - 100 employees) in the manufacturing sector in Kampala. The identification of smaller informal enterprises was much less of a challenge. The research team came across many micro and household businesses with fewer than 10 employees. Some of the owners had plans to expand and grow, but the difficult realities in Ugana prevented them from doing so. The phenomenon of the relative absence of SMEs in the economic structure refers to the 'missing middle' issue noted in the literature. This phrase has been used relatively loosely in economic development discussions, meaning a lack of SMEs particularly in the developing world[2]. This picture was confirmed during the fieldwork in Uganda and

[1] www.tilburguniversity.edu/dfid-innovation-and-growth/
[2] http://www.africa.com/blog/investing_in_africa_defining_themissing_middle_/

underlines the importance of the EIP-LIC project in terms of promoting manufacturing SMEs in LICs to balance the economic structure of a given country.

Innovation definition

Most interviewed owners and managers in the Ugandan companies described in chapter 3, in different ways, introduced new products, processes and technology in order to improve and expand their business operations. Some would clearly qualify as innovation, while others would not pending how innovation is defined and assessed. In advanced economies, innovation is typically measured by R&D expenditures and number of patents of new products or processes as proposed in the Olso Manual[3] (OECD, 2005). From a radical technology perspective, many of the 'newness' introduced in the Ugandan cases would not qualify as innovation. Such an assessment would in any case have been impossible because the owners do not systematically record R&D expenditures and have not registered patents.

Taking a broader and economic perspective on innovation, viewing it in terms of incremental adoption and adaptation or of new combinations of existing technologies creating value (Szirmai et al., 2011), it is evident that the new elements introduced in the interviewed companies resulted in improved and expanded business operations. As described in emerging innovation theories on LICs, much innovation depends *on an aggregation of small insights and advances through 'learning by doing' rather than on major technological inventions* (Carayannis et al., 2003).

Despite increasing interest in the literature, the exact definition of innovation in LICs remains an issue in theory (Çapoğlu, 2009) and for its application by the researchers in EIP-LIC. The broadest possible definition of innovation, from an economic perspective, referred to in the qualitative research section, is everything new that the company does to raise productivity and/or to stay ahead of its competitors. Or as Fagerberg et al. (2010) put it: *"Innovation is often seen as carried out by highly educated labour in R&D intensive companies with strong ties to leading centers of excellence in the scientific world. Seen from this angle innovation is a typical "first world" activity. There is, however, another way to look at innovation that goes significantly beyond this high-tech picture. In this, broader perspective, innovation – the attempt to try out new or improved products, processes or ways to do things – is an aspect of most if not all economic activities. In this sense, innovation may be as relevant in the developing part of the world as elsewhere."*

Assuming the broader perspective on innovation in EIP-LIC, in box 1 several definition elements are proposed to assess innovation in an LIC context for the analysis of the cases in this report.

Box 1: Innovation newness, process and value creation

A cross analysis of definitions in innovation theory from recent decades (Voeten et al., 2011) shows that innovation is repeatedly typified by three key elements: newness, process and value creation.

Addressing the first element, Kotabe and Swan (1995) argue that innovation can be investigated in terms of both **newness** to the company and newness to the market or world.

Regarding the second element, the innovation **process,** all owners and managers themselves initiated, managed and owned the innovation process within the unit of analysis, their company. They developed the idea, sometimes inspired by others, started to run small experiments and trials and eventually implemented the new product or production technique on a commercial scale. As is often the case in incremental innovation in developing countries, this was not a planned and formalised process involving a pre-defined innovation strategy and an R&D department.

The third element, **value creation** of innovation, is evidenced either through lower input costs or higher sales revenues (Porter, 1985). Higher profit through new premium products of better quality, or appealing to a certain fashion, increases competitiveness.

[3] https://www.oecd.org/sti/inno/2367580.pdf

Regarding the dimensions of innovation, Kaplinsky and Morris (2001) identify five types of innovation: (i) process innovation, aiming at improving the efficiency of transforming inputs into outputs; (ii) product innovation, leading to better quality, lower price and/or more differentiated products; (iii) business practice innovation, implying new ways to organise the business and attract new clients; (iv) functional innovations, assuming responsibility for new activities in the value chain, such as design, marketing and logistics; and (v) inter-chain innovations, moving to new and profitable chains. These types of innovation are taken into account in the analysis in this report.

In many innovation definition and measurement documents, such as the OECD Oslo Manual (OECD, 2005), an explicit distinction between product, process and other types of innovation is made. However, distinguishing the types of innovation in the manufacturing SME cases interviewed so far in Kenya, Ghana, Tanzania and Uganda was not such a clear and simple matter. It is more common to see an integrated combination of several types of innovation, where one type of innovation triggers or enables another, such as the introduction of a new process (technology) that results in the launch of new products requiring the reorganization of the workshop and staffing. Analysing the Ugandan cases for newness, process and value creation, as suggested in box 1, is one possible way to assess whether the observed new phenomena within the companies qualify for innovation or not.

1. The veneer stone company case did innovate in terms of new products of process technology. However, more importantly was that the company introduced a management, business administration and marketing techniques and principles to organize his business. The neighbouring stone veneer businesses are household and informally organized. This makes the business more advanced in terms of competitiveness. This could be qualified as a management innovation, which would classify in Kaplinsky as business practice innovation.

2. The owners of the wood processing company changed from previously importing furniture into manufacturing it, which would qualify as functional innovation. This resulted in the production of new products, which enabled the company to survive and actually grow. The innovative activities in terms of new technology and new own products within the company are limited at present. The company uses standard technology available in the market.

3. The energy saving stoves company developed an own design of stoves, a new product which is more durable and efficient. Moreover, the company it trying to develop the solar energy commercial activities, which could be qualified as product innovation.

4. The food processing company has introduced several new products on the Ugandan markets. These products were developed by the owner, who gain a lot of experience over the years. He discover a way to reduce the smell of soya in his products which is an example of process innovation. For the production, the company has quite advanced machinery.

5. The printing company is facing difficulties in purchase of new machines. The owner has a clear vision of the technology that could serve a untapped market in Uganda. The new machines would allow him to produce a high end range of paper and printed products. However, the implementation did not materialize yet.

6. The company that produces agricultural products processing machines use existing designs and models. These models were adapted to the Ugandan context with regard to durability. The new products sell well among the development assistance community.

7. The textile company introduced some new technology for the company and new products (gowns) for the new market. Another notable innovation was, after a MBA study, the introduction of new management systems and way of organizing the business which enabled her to raise productivity of the company a lot.

8. The incubator NGO is not registered as a business but operates as an innovative business. A notable innovation concerns the use of new raw materials - banana leaves - for the production of existing craft products. The underlying idea is to support the development of profitable business while taking environmental concerns into account.

4.1 Trends and patterns in the cases

Compared to the earlier qualitative explorations in other African countries and Asia, the companies in Uganda introduce small changes to raise productivity and competitiveness. Although the new products and processes in the innovative companies are not radical and not 'new to the world', they are new for the companies, as units of analysis. The ideas for new products are mainly acquired from the market. Customers come with requests and suggestions, or the owners talk with clients, which is understood as demand-driven innovation.

In terms of these innovation manifestations, Uganda fits best in the classification of a factor-driven economy competing on factor endowments, unskilled labour and natural resources. As a country becomes more competitive, productivity will increase and wages will rise with the advancing development. Countries will then move into the *efficiency-driven* stage (Porter et al., 2002). In the efficiency-driven stage, companies begin to develop more efficient production processes and increase product quality even more because wages have risen and they cannot increase prices. This is not yet the case in Uganda. The cases do not reveal innovation aimed at increasing productivity by saving on input or labour costs.

Imported products remain cheaper, while some owners mention that these have inferior quality. Interestingly, in such a context, innovation would be one way to make more efficient use of resources and processes and compete with imports on the local market. An innovation focus on quality would be a logical way forward.

Internal capabilities

In all cases, it is the owner who initiates, coordinates and manages the new ideas, including preparations for the innovation, technical details, and the product launch. Several companies have a design or R&D department or a specialist employee with this function.

The Ugandan workforce mostly comprises unskilled labourers. Most owners pay their employees based on output, not a fixed salary within fixed contracts. Several owners face difficulties of the unskilled workforce and the high turn-over rate of the unskilled production workers. The recruitment of workers is therefore an ongoing concern for the owners and managers. Sometimes the employees provide innovative ideas, to a greater or lesser extent. Several owners, however, stress the limited creativity of their workers and refer to a passive attitude. Most owners and managers do train the employees on-the-job, but this does not involve the development of creativity. Getting higher educated staff is a problem since the graduate employees have primarily theoretical knowledge and few practical skills.

The owners mention that the skills and knowledge gained through formal education do not match the company's requirements. Moreover, it is difficult to find skilled craftsmen to do the manual manufacturing work in Uganda today. Despite these shortcomings, few interviewed company provides additional formal training for the workers, opting instead for on-the-job training. Some owners are reluctant to provide formal training because they are afraid that workers will move to other jobs. Some owners acknowledge the potential innovation capacity within the workforce, but this is not applied in practice.

Typically, the Ugandan companies possess technology and machinery that they have had for a long time. The technology is still able to deliver a certain minimum quality of the products. Occasionally, new machinery is bought from profits and savings. The interviewed owners and managers are well-informed about technological possibilities though the internet or informal contacts. They actually have ideas and plans for upgrading and expanding their companies. However, new (technological frontier) machines are relatively too expensive and advanced compared to the expected returns on investment on the short run. With regard to the long run, the macro-economic and institutional context does not provide sufficient confidence to do such extensive investments. They are only confident about the stability of the short-term.

External business environment and formal and informal institutions

All SME owners have more or less the same negative perception of government policies, legal regulations and systems. There is no clear regulatory or policy framework for manufacturing SMEs. Many ministries and governmental agencies have different regulations that are not predictable. All the entrepreneurs complain about the high costs of production, such as electricity costs.

Several of them hold a negative perception about the ever-changing government policies and regulations. There is no clarity about the changes and SME owners have to sort out themselves, which turns out to be very time-consuming. Many ministries and governmental agencies have different and unpredictable regulations. They also indicate that the business and institutional environment prevents them from innovating and growing their business. All mention the issue of competition with imports. The costs of production in Tanzania are high.

Most business were member of the Uganda Small-Scale Industry Association (USSIA) and had regular interactions, which help in solving technical issues or networking for clientele. No interviewed company received support from the government, and the owners and managers concerned regret that. They feel that they have to survive on their own. While most of them think that is reasonable, some support in terms of credit or technical support would have been welcome.

The banking system is not an attractive source of finance for SMEs. The high interest rates and complex paperwork is an critical issue. Instead, most SME entrepreneurs find investment money from savings and via informal loans from family members. They usually invest incrementally just before or after receiving large orders.

Branch associations are an important source of information and business contacts and contracts for the owners and managers of the cases. Most of them are member of an association. Interaction with formal technology institutions, as suggested in innovation systems literature (Lundvall, 1997), does not happen. Many SMEs owners and managers indicate that they would like to cooperate with universities to undertake research at their premises, for sharing the research insights for instance. There is very little spill-over of technology as a result of cooperation between firms, subcontracting or other forms of collaboration within value chains, business clusters or networks.

4.2 Policy issues – insights for policy makers to consider

One question that remains is the extent to what government will be able to do to reach SMEs. Various ministries within the Ugandan government have defined and implemented innovation policy. However, it seems not to reach the SME owners interviewed. Some SME owners and managers are aware of R&D centres and the programmes to aiming at technology development for SMEs. Maybe because one reason is that the technology is done in a technocratic top-down way. The companies are seldom consulted, in fact they prefer to stay at a distance from the formal institutions.

They are aware of the state of the art technology but they cannot afford the machines because of the high costs. Moreover the one that have the money available do not invest because of the uncertain future, both in macroeconomics terms. Also the government does not provide assurance on the stability of the 'rules of the game'. Most SMEs do what they do and do not further expand because of challenging business conditions.

As argued in the introduction of this report, it is desirable to develop innovation within manufacturing SMEs. Some believe that technological innovation is critical for SME development and catch-up in LICs. Technological innovation has, however, been traditionally concentrated in developed countries, given the costs and risks involved in stimulating technological innovation. Foreign sources of technology account for a large part of productivity growth in most countries. Therefore, the development process in Uganda could be supported by tapping existing technical and product knowledge.

Moreover, the stories and experiences of the owners and managers raise the issue of whether an innovation-driven and new-to-the-world innovation approach would be the way forward. Most of the required technology is already available, but elsewhere in the world. In fact, all owners in the cases are well informed about the technological possibilities of their business. Without too much difficulty, the owners and managers find the technology themselves by drawing on various sources of information (the internet, informal business contacts and trade fairs). Moreover, the companies themselves refine and adapt the existing technology once acquired. So, although setting up technology development projects and programmes may help SMEs, the availability of technology is not perceived as a barrier to innovation by the owners and managers.

It seems that the notion of growth as 'manna from heaven' as reflected in convergence theory, see the earlier rejected exogenous growth model of Solow and Swan (Fagerberg et al. 2010), might work after all because of the free and widespread access to knowledge and technologies via the internet. The knowledge itself is available for local companies in Uganda. The institutional context, providing trust, predictability, stability and access to finance is more of a problem in preventing investment in technology and innovation and thus 'convergence' from happening. At the same time, maybe the 'manna from heaven', thus technology developed elsewhere, does not address the local needs or issues.

Innovation climate

How then can the innovative capacity of SMEs in developing countries be increased? According to the World Bank, an efficient innovation policy by governments will address the overall innovation climate, which goes beyond traditional science and technology policy. At the same time, government action can usefully focus on a few generic functions to help SMEs to grow. It can facilitate the articulation and implementation of innovative initiatives, since innovators need basic technical, financial and other support.

The government can reduce obstacles to innovation in competition and in regulatory and legal frameworks. Government-sponsored research and development structures can respond to the needs and demands of surrounding communities. Finally, the education system can help form a receptive and creative population. Regarding actual innovation policy development, there has been a considerable amount of work in developing countries, such as the World Bank (2010) report 'Innovation Policy: A Guide for Developing Countries'.

The lack of relevant education is a problem for the companies interviewed, who feel there are insufficient skilled workers and operators to work with modern machines. SME owners and managers complain that university and college graduates do not have the required technical and craftsman's skills, exposure to modern technologies, or an entrepreneurial and creative attitude.

As mentioned earlier, several ministries and agencies are engaged in efforts to develop and promote innovation policy, usually labelled as Science, Technology and Innovation (STI) policy. Despite considerable effort in developing strategies and plans, actual implementation is challenging, due to the limited availability of public budgets and knowledgeable staff.

Nearly all SME owners and managers suggest that creating a stable and predictable institutional context would be an efficient and effective way to promote innovation in Uganda. All kinds of innovation policies and programmes could be developed, but the results of such policies will be undermined by the weak and unreliable wider formal institutional context.

Another policy idea emerging from the DFID project is that several owners and managers suggest not to focus on governmental policy makers only, but on direct advice to SMEs on how to improve their business. One idea is to develop non-governmental business information exchange networks and platforms, establishing contact between entrepreneurs in Africa and beyond, to facilitate discussion and deals within the various sectors. SME owners suggest that the DFID project could establish a network of all SME owners and managers contacted during the implementation of EIP-LIC and create a website for them to stay in touch with each other.

Research issues - insights to address the research questions

The qualitative analysis of Uganda, and also the earlier studies on Kenya, Ghana and Tanzania show the many internal and external factors supporting or hindering innovative behaviour of owners and managers of manufacturing SMEs. The econometric analyses and the mathematical models approach within EIP-LIC implicitly seeks correlations and causal relationships between independent variables such as internal capabilities, a favourable policy context, the availability of finance and technology, and the occurrence of innovation and innovativeness as dependent variables. The associated economic theories explain and predict economic outcomes as a basis for further policy development.

However, a limitation is that the claims of econometric analyses are true only ceteris paribus — that is, they are true only if there are no interferences or disturbing causes. Critics say that the most important methodological issue is the simplification, idealisation, and abstraction that characterises econometric research. However, the qualitative research element of this project shows the numerous disturbing causes in reality. This is problematic once research outcomes are translated into policy, from which true impact is expected, and constitutes an emerging methodological challenge in terms of developing meaningful and effective policy recommendations in the EIP-LIC research project.

Theme 1 'Innovation Systems'

In reviewing the innovations in the cases against innovation systems theory, one would expect that the SMEs would be surrounded by a network of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies (Freeman, 1987). However, it appears that the small scale and incremental SME innovations in Uganda are mostly in-house activities. The same phenomenon has been observed in Kenya, Ghana and Tanzania. However in these mostly factor-driven economies in Africa, innovation concerns more advanced process techniques that could process primary products into competitive ones at the world market. However, there are government S&T institution but it seems that these developed technologies that are not required by SME, while for the technology they require, there are no technology institutions.

The cases suggest several firm-level factors playing a critical role in the engagement of incremental innovative activities, more than supporting institutions. The innovation process is initiated, managed and owned by the company without any external involvement or support from other businesses. Informal contacts, even within formal institutions, play a key role in some cases. It is the owners who develop ideas for innovation, with employees playing only a limited part by suggesting improvements at the operational level.

By contrast, the motivation, contacts and international exposure of the owner are key factors in engagement in innovative activities. Moreover, the availability of funds as a result of profits is essential. Regarding the risk-taking of their innovation projects, most owners and managers are confident about the market opportunities in Uganda. There are no cases of collaborative innovative activities. Although the companies are open to sharing information about their needs, most of the owners/managers avoid cooperation with other companies.

Regarding external networks, none of the cases has been involved in collaborative innovative activities or joint technology acquisition with other businesses or with technology institutions. There are no spill-overs as a result of subcontracts or clustering of firms. Likewise, no company enjoys the spill-over of technology from larger, foreign or other technologically more advanced firms. There are no examples of large foreign enterprises subcontracting and making technology available to SMEs or exchanging information. The companies in Kampala are very scattered and seem to have no relationship with each other.

There are virtually no links between the interviewed SMEs and public sector actors, such as universities, governments, or NGOs, as presented in the 'Innovation Systems' analytical model. The so-called innovation system, as a co-evolutionary network of actors does not exist. Instead, the business system actors and informal institutions play a key role in providing information, technology, credit and overall stability and predictability. The role of these actors could be further explored in EIP-LIC research, with particular regard to the doing, using and interacting (DUI) approach in learning and innovation processes, as suggested by Lundvall et al. (2009).

The outcomes of the qualitative inquiry suggest that technology and underlying knowledge may not be the problem. Regarding the diffusion of technology, most of the entrepreneurs are well-informed about technological possibilities and are able to import the technology by themselves with little difficulty, provided funds are available. For most of the technical problems faced by the SMEs, there is already a technical solution developed somewhere in the world, so there is little need to develop local 'new to the world' technologies. There is therefore little need for intermediaries to bring producers and users of innovation/knowledge together. There are few 'breakthrough' technologies that could be disseminated on a wider scale, and the owners and managers seek to meet their specific needs with available technology. They can identify where to source the technology and have suppliers. In some cases, a local technician can make a copy of the machine. There is little local innovation for local problems.

Theme 2 'Finance for Productivity Growth'

Finance is considered a critical constraint by most interviewed companies in Uganda. In all companies, the owners aim to introduce new products and raise productivity because they see business opportunities in doing so. Learning and acquiring the technology is not a such problem; the finance is, in particular for expensive state-of-the-art technology to be able to face international competition. Today the SME owners develop their business with small, incremental investment. They do not take a leap and make a large scale investment. Although there are well developed ideas for innovation and confidence in the market, investments are cannot be made because of the uncertainty of the long term economic and political outlook. Instead, SME owners invest by using the profit of larger orders they have, or by using the contract upfront to secure supplier credit.

The Ugandan cases provide some insights into the formal and informal financial institutions. One key issue is that banks charge high interest rates for loans to manufacturing SMEs, which prevents several companies

from investing in technology that could enable them to increase the speed of production and broaden the range of products. Although they are 'proven' entrepreneurs of registered businesses, able to assess risk and handle a difficult business environment, they are not considered creditworthy. Most of the interviewed companies were given informal loans and gifts by family and friends.

With regard to managerial practices and innovation decisions, many entrepreneurs do little in terms of in-depth calculations and forecasts. Most owners are self-made entrepreneurs, due to a combination of their limited knowledge of financial management and the uncertain and fast-changing economic and institutional context. It is very difficult to make a financial forecast in the Ugandan context and with an eye on possible exports, as the regulations are unclear and change continually.

Unlike M-Pesa in Kenya, SMEs in Uganda do not use mobile banking for business transactions, although most company owners do enjoy the recently introduced internet-based services of banking.

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Annexes

Annex 1: List of questions for semi-structured interviews

A. BASIC INFORMATION

1. Name of business and owner, location, legal status, years of operation, types of products, manufacturing subsector, productive activities, number of employees, management structure, some indication of turnover and profit and average investment size.

2. Short history and background of business model. How is the company generating value? Position in a value chain if applicable, suppliers, major clients/markets.

3. Did the company grow/expand in recent years? To what extent (why) does the owner consider his/her company as an innovative company as compared to other manufacturing SMEs in Uganda?

4. Did the company itself introduce a new product, process or technology to raise productivity or to face competition? Provide examples of product/process/technology innovations that enabled survival/growth/ expansion in the past 3 years.

B. INNOVATION

<u>New</u>

1. Description of the type of innovation (process, product, incremental, radical). What is new? Did some innovations enable/trigger other types of innovation within the company? Management innovation in terms of goal setting?
2. Is the innovation 'new to the world' involving inventions by internal R&D, or is it a copy, adaptation or adoption of an existing product or technology?
3. How does the owner, employees, clients and others actors perceive the newness? (just a small improvement or as a 'breakthrough')?

<u>Process</u>

4. Idea: Where did the idea and motivation for the innovation come from? What were the first steps in the idea formulation and who initiated these? What was difficult and what was easy?
5. Testing: What were the subsequent steps in testing? At what point in time did it become clear that the new product or process would become a success? On what basis did the owners decide to further implement/commercialise it? Did the owner try new things that failed?
6. Commercialisation: what were the steps towards the implementation? What confidence/trust provided back-up? What was difficult and what was helpful?

<u>Value</u>

7. How do product/process/technology innovations create value for the company?
8. Did the innovation increase productivity, if so how? (lowering production costs per unit, labour/capital input)?
9. Did the competitive position change as a result of the innovation, if so how? (via premium products, better, newer fashionable products and new export markets)?

C. INTERNAL CAPABILITIES (FIRM LEVEL CONDITIONS)

What are the internal strengths and weaknesses with regard to the innovativeness of the company?

Dynamic capabilities

Sensing and shaping opportunities for product/process/technology innovations

1. To what extent do you (and the employees) see the need/urgency to be innovative?
2. How do you or your employees identify new business/innovation opportunities?
3. Who is actively involved in identifying these opportunities?
4. How is raising productivity and competitiveness linked to identifying opportunities for innovation?
5. How do you target a new market segment? How do you consider the competitiveness of your company?
6. How is your company adjusting to customer needs?
7. How does the company select the ideas that it is willing to invest/innovate in?
8. Who is involved in this process?

Reconfiguration of the company

9. How do you adjust by being innovative to the surrounding business environment?
10. How do you share knowledge within your company?
11. How are employees informed about new developments?
12. How does your company train employees to adjust to new developments?

Goal setting

13. Do you have an implicit or explicit goal setting system to improve performance?
14. How do you pay employees for performance? (more salary, rewards)
15. How to you increase motivation? Is there intrinsic motivation (ambition, ownership) and external (money) motivation?

Slack time

16. Do you give employees time to develop or try out a new approach or develop new ideas about products or services, or business processes?
    If yes:
    - What exactly was expected from employees during this time? What kind of activities should employees undertake during this time?
    - Did all the employees get some time or was it restricted to a specific group; and if so, which group?
    - Why did this establishment give employees this time? What was the goal/idea behind it?

    If no:
    Have you ever considered giving employees some time to develop new ideas? If yes, what was the reason for implementing it? If not, why not?

D. FORMAL INSTITUTIONS

How does the owner perceive the opportunities and threats for product/process/technology innovations of the surrounding business, policy and regulatory context in Uganda?

1. Is the owner aware of governmental policies/programmes in Uganda that specifically aim to stimulate product/process/technology innovations in manufacturing SMEs? What is the owner's idea and perception of these governmental policies (programmes/projects)?

2. Does the company actively participate in, or benefit from, such governmental policies/programmes/regulations? (specify in what ways these stimulate the company's innovativeness)

3. What role do intellectual property rights and patent laws play in your innovation activities? Does the owner aim to patent innovations? If so, which patent office is used? Does the owner find intellectual property rights and patent laws helpful for innovation activities? Does the owner respect the intellectual property rights of others when innovating? If not, why not?

4. Are other generic governmental policies/programmes (not explicitly aimed at promoting innovation, stimulating education or providing access to finance) supporting the company's innovativeness in an effective way?

5. Do certain governmental policies or regulations prevent the owner from introducing and investing in innovation? What threats in terms of policy and government regulations emerged in the innovation process?

6. Does the company participate in, or benefit from, programmes or projects stimulating innovativeness run by NGOs and/or international development agencies? (kind of programmes/projects and impact)

7. How does the owner acquire knowledge and technology for product/process/technology innovations? When conducting innovative activities, does the company collaborate with formal bodies, such as universities, R&D centres, research institutes and so on? Why (not)? Which kind of organisation? Does the owner encounter any difficulties in collaborating with such organisations? If so, of what kind? Are these collaborations ultimately beneficial for innovativeness? If not, why not?

E. BUSINESS SYSTEM, SPILLOVERS, EXPORTS

To what extent (and how) are contacts and interactions with other businesses - local, national and international - important for stimulating product/process/technology innovations within the company? Examples?

Business systems interaction

1. Has the company ever introduced a new product/process/technology to suit the needs of a local client/buyer? If yes, did the client/buyer help in any way to make these changes?

2. Has the company ever followed the advice of a supplier in introducing a new product/process/technology?

3. Does the company have active business cooperation (subcontracts)? What is the nature of the cooperation and what is the benefit? Did that involve a new product/process/technology?

4. Does the company buy from or sell to any multinational firms located in Uganda? If yes, has the company ever benefitted in any way from cooperation with these firms to develop a product or improve production techniques?

5. Where does the company typically recruit employees? Has the company ever recruited employees from a client, supplier or competitor? Were these employees particularly helpful in improving products or production techniques? Has the company recruited employees with the explicit aim of improving products or production techniques? Where did they work before?

Location

6. How long has the company been located at the present address? Did the company move to this address or was it created at this address? What were the main reasons why the company was moved to/founded at the present address?

7. How does the presence in the location/region affect the company's performance, innovation, growth? What is the owners' perception of the dynamics of the present location/region with regard to the businesses around (micro, SMEs, large, multinational)? What is the size of the region to which the owner refers?

8. Are the other businesses in the region similar or different in terms of size, production, sector and type? To what extent do firms produce comparable goods in the region?

9. Alternatively, to what extent are these other business hindering and competing? Does the owner see them mostly as competitors? Does that imply a need for innovation?

10. Does the company buy inputs (what, quantity) from firms located in the region? What is the quality of local inputs? Did the owners ever ask a local supplier to change a product to suit certain needs? If yes, did the company help the supplier make these changes in any way?

Export

11. Has the company ever exported some of its products to foreign countries? If yes, when was the first export? Has the company exported some of its output abroad in the last year? To which countries?

12. What was the main driver of the company's decision to export? Did the company actively look for foreign clients? Did foreign clients or a wholesaler contact the company (if yes how: website, fair, etc.)? How did the company hear about export opportunities or has the company ever been recommended to foreign clients? If the company was contacted or recommended, why was this the case?

13. Has the company ever improved an existing product or created a new product with the explicit aim of exporting it? If yes, was it at the direct request of foreign clients or to find new foreign clients? Did the company make improvements to comply with standards and regulations?

F. INFORMAL INSTITUTIONS

1. Family and friends (overseas)
2. Cultural perception of innovation. Is innovation something good? Or should we strive for stability and harmony in society?
3. Informal think tanks, informal knowledge through contacts with university experts
4. Rent seeking individuals, corruption
5. Hindering culture, traditions or customs
6. Social learning, collective learning
7. Community solidarity, craft traditions

Annex 2: List of companies interviewed

Manufacturing SMEs interviewed in Kampala in chronological order (13 – 23 January 2016)

Subsector	Products	# of employees
1. Metal processing	Fast cooking stove.	10
2. Machinery	Agro-processing equipment	6
3. Metal processing	Metals doors and containers	12
4. Handcraft	Banada waste textiles rugs, crafts	10
5. Equipment	Metal stoves	30
6. Machinery and equipment	Agricultural processing machines	10 (100)
7. Food processing	Soya, cakes, soya cookies, yoghurt	80
8. Textile	Gown making	25
9. Printing and publishing	Official forms, school books, Calendars	19
10. Wood processing	Home furniture	15
11. Wood processing	Office and home furniture	70
12. Construction materials	Stone veneer	35
13. Food processing	Fruit juice	25

Annex 3: DFID research questions

The DFID research project takes an 'economics' perspective on innovation, and involves econometric analysis of a set of variables concerning barriers at firm, regional and national levels and their causalities with the *innovative behaviour/capability of entrepreneurs* and subsequently innovation and productivity. This constitutes a reductionist and deductive approach in defining variables for analysis in which the impact of individual factors on innovation is assessed by applying quantitative econometric methods (ceteris paribus). The DFID project key research questions are grouped under two themes:

Theme 1 'Innovation Systems':

- What firm-level and regional-level factors hinder or foster the engagement of firms in innovative activities?
- What is the impact of in-house innovation activities versus collaborative innovative activities or technology acquisition activities on the innovative performance of firms in developing countries?
- What is the role of economic spillovers within clusters of firms in fostering economic growth and innovation?
- What are the most critical barriers to the process of innovation and the diffusion of technology in low income country settings?
- What types of links between the public/private sectors, universities, governments, NGOs and the private sector are more conducive to innovation activity?
- What is the role of intermediaries to bring producers and users of innovation/knowledge together?

Theme 2 'Finance for Productivity Growth':

- How does the design of formal and informal financial institutions affect firm productivity dispersion across SMEs?
- What are the firm level margins that make finance matter for productivity?
- What role do observable managerial decisions (e.g. managerial practices, innovation, product market competition, product quality, technology adoption, location of the plant and the trade status) and managerial characteristics (e.g. gender, age, education, behavioural aspects) play in explaining the nexus between financial development and firm productivity?
- How does firms' productivity respond to exogenous developments in the financial environment?
- What are the macroeconomic implications of such development experiences?