VAN HALL LARENSTEIN
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Opportunity for Value Chain Development by Improving Beef Processing Practices in Rural Tanzania

A Research Project Submitted to

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the Degree of Master Agricultural Production Chain Management,
Specialization:Livestock

By

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Dedication

This thesis is dedicated to my husband, Imuetinyan IGBINNOSA and to my children (Osahenrhumwe, Nosamudiana-Ehide and Osaretin).

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Abbreviations

DLDO	District Livestock Development Officer
DVO	District Veterinary Officer
FAO	Food and Agriculture Organization of the United Nations
MIFUGO	Ministry of Livestock and Fisheries Development
SIDO	Small Industries Development Organization (Tanzania)
TMB	Tanzanian Meat Board
UNIDO	United Nations Industrial Development Organization
VHL	van Hall Larestein University of Applied Sciences
WB	World Bank
WNO	World Health Organization

Glossary

"Backyard" slaughtering: in the context of this research, backyard slaughtering is not informal, but it tries to explain the fact that slaughtering takes place even at the backyard including under the trees where slaughtering facilities do not exist.

Backyard butcher: any person involved in slaughtering animal for commercial purpose and is base in the rural areas. In the slaughtering activity is not for commercial purpose, it is not covered under current study.

Chain integration (horizontal)when producers take up management activities in the chain such as negotiating contract

Chain integration (vertical): when a producer takes up more activities in the chain such as adding packaging to the producing activities.

General environment:Here the general environment is composed of those factors that affect the activities of the backyard butcher only indirectly such as tax increase.

Rural slaughtering: Within the context of this research work, rural slaughtering is equivalent to backyard slaughtering where emphasis is been laid on the environment under which backyard slaughtering takes place.

Tanzanian Shilling (Tsh): the currency used in Tanzania (1euro equals 2100Tsh)

Task environment: Task environment in this study refers to those factors that affect backyard slaughtering directly such as availability of cattle for slaughtering.

Village butcher: In this context, village butcher is the butcher in the rural areas as opposed to the one in the town or city

Abstract

Beef processing in Tanzania, is generally underdeveloped characterized by poor handling, waste of by-products, minimal value addition and food safety and quality is not guaranteed. The objective of this research was to find out the causes of this underdevelopment in rural Tanzania. The research has been conducted in the frame of the African Agribusiness Agro-industries Development Initiative (3ADI) which in a diagnostic study of the red meat/leather value chain has revealed the lack of baseline information on backyard slaughtering (underdeveloped slaughtering activities).

The study draws from secondary and empirical data. Secondary data was collected through literature search and empirical data was collected through interviews of meat processors, butchers, traders and animal producers at slaughtering cites in 12 villages in three regions (Manyara, Dodoma and Morogoro) in central Tanzania. A visual problem appraisal was carried out on the supply chain of backyard butchers' using the value chain concept. The concept of successful slaughtering business was also used to examine influencing factors on backyard slaughtering. Estimate cost and profit margins (gross margins and profit margins) of backyard butchers were also calculated to gauge profitability of backyard slaughtering.

Among the salient conclusions of the research are the facts that;

1 Underdeveloped backyard slaughtering due to inadequate basic factors that support successful slaughtering business was confirmed in all the villages studied.
2 Value addition in the meat chain is marginal because consumers cannot afford to pay higher prices for quality products.
3 Other value chain attributes such as chain efficiency, chain sustainability and chain integration are also inadequate.

Therefore, within the context of a programme rather than a single project, the following recommendations are suggested;

1 Most butchers find themselves in markets where reduced purchasing power of consumers is prevalent limiting any efforts to produce higher quality products. Therefore, butchers can improve their profit margin by reducing their costs rather than selling products at higher prices.
2 Supply of good quality cattle to the slaughter needs to be sustained through fattening and feedlotting activities.
3 Slaughtering facilities need to be built and upgraded starting by assessing current slaughtering facilities in Tanzania followed by strategic citing of slaughtering facilities based on sound business plans.
4 Market linkages and market development project activities should be handled by professionals initially from NGOs/development partners and later on by employment of marketing officers in each slaughtering house.
5 There should be project activities targeting sustained awareness campaign on issues of meat quality and safety among meat consumers
6 There should be project activities on value chain funding possibilities such as donations from development partners and NGOs, factoring, and sale of cattle to reduce herd size.
7 There should be project activities targeting in meat handling, hygiene, meat processing and business managerial training of backyard butchers by institutions such as VETA and NGOs.
8 There should be project activities targeting industrial development of the leather industry, processing of blood into blood meal and edible blood products.
9 There should be project activities aimed at classification of meat by muscle type, meat product diversification and design such as sausages and indigenous dry meat products.

10 The various rules and regulations for animal handling and slaughtering are often poorly applied and lead to additional costs for small butchers rather then improving the quality of meat.

In order to make any positive impact, above recommended project activities need to be implemented simultaneously. Further, as the project progresses, there may be need to add minor activities in supporting areas.

Further studies are recommended in the following areas;

1. How can livestock farmers engaged in profitable feedlot activities to improve cattle weight and quality of meat?
2. What indigenous meat products and indigenous technologies on meat handling exist?
3. What are the critical volumes and cash flows in the local meat chain to ascertain capital needs for successful chain development?
4. What is the impact of current government policies on backyard butchering and informal slaughtering

Chapter 1 INTRODUCTION

1.1 Background

Cattle produce most of the meat eaten in Tanzania contributing 53% of total meat production (MLFD, 2010). Tanzania is the third largest producer of cattle in Africa. Despite this, the country still imports meat (FAO, 2005 and MIFUGO, 2010), especially for the niche markets like hotels, because of inadequate meat processing methods. Most butchers operating in the country are sub standard and lack basic meat processing equipment. The business environment is not enabling (Hartwich, 2011). Meat is also sold warm directly from the slaughtering slab without chilling or further processing (MIFUGO and UNIDO, 2010, *unpublished*). This leads to challenges in the areas of meat quality, and safety (MIFUGO, 2010). At rural or village level, slaughtering is often carried out either under a tree or in poorly maintained and outdated slaughter units without any waste treatment facilities. Health hazards through contamination of the meat during slaughter operations (Ntenga *et al.* 2000) and of the surrounding land and water through uncontrolled release of waste and effluents often occur as a result (FAO, 2011).

Insufficient knowledge, technology and the slow pace of agro-industries development have hampered the production, handling, processing and use of livestock by-products. The use of livestock by-products such as bones, hooves, horns and blood is generally minimal in Tanzania. According to MIFUGO (2010), the economic value of these by-products is high and revenue from these by-products is enormous if sufficiently tapped through agro industries development.

Prior to 1974, there was at least a government owned and operated facility (Tanganyika Packers Ltd) that produced high quality meat in Tanzania. However, in 1974, meat processing stopped. (The Tanganyika Packers Acquisition of Shares Act, 1974). The vacuum was filled by small scale processors. Recently, some new modern abattoirs have been established in Tanzania some of which have also closed down. Those still operating tend to target export markets and large cities only. The major beef processing task in rural areas is still carried out mainly at slaughtering slabs built and own by councils (government). At these slabs government doubles both as owner and regulator of slaughter facilities. These slabs were supposed to provide slaughtering services to butchers who in turn were encouraged to use these slaughtering services for a fee. These slaughtering slabs too are poorly maintained. But slaughtering slabs do not exist in every village. Where these slabs do not exist, cattle are slaughtered in any available space including under trees. With increasing demand for beef especially in emerging and growing rural townships, there are growing concerns on beef safety, hygiene and quality. Apart from safety issues are concerns of postharvest losses and nutritional level of meats from such slaughtering facilities.

The importation of beef into Tanzania indicates that there is an unmet demand and, an increasing demand for beef in Tanzania is anticipated. The increase demand could be attributed to higher incomes, urbanization and improving technology (World Bank, 2008; WHO and FAO, 2003). But more importantly, the development of the retail sector has lead to consumers to demand for convenience, high-value primary and processed products. Beef is not an exception. Most of the demand is in the cities and growing townships often far removed from where cattle are produced. To bring the beef from cattle in the rural areas to markets will need an effective model like the value chain business approach.

Given the potential importance of a developed meat sector in the economy, Tanzania by act of parliament created the Tanzanian Meat Board (TMB) to oversee the restructuring of the meat sector in 2006 (The Meat Industry Act, 2006). In 2010, Tanzania also selected the red meat chain for development under the African Agribusiness Agro-industries Development

Initiative (3ADI). A value chain diagnostic has already been carried out on the red meat/leather chain in Tanzania (UNIDO, 2011, *unpublished*). However, there are few information gaps yet to be filled. One of such gaps is baseline information on slaughtering practices on ground in rural areas. The completion of the value chain diagnoses by filling these information gaps is a prerequisite for the development of the red meat value chain in Tanzania through innovative project interventions.

1.2 Research Problem

Beef processing in the rural areas in Tanzania, is very underdeveloped. It is characterized by poor handling, minimal value addition and little further processing. Beef is sold warm causing quality, safety and nutritional concerns and speculation of their possible health implications on the consumers. Butchers depend on spot markets to buy cattle for slaughter. After slaughtering, butchers do not have any agreement with costumers. Therefore, meat is just exposed for whoever comes to buy and in the process incur much postharvest losses.

1.3 Research objective

The objective of this research is, to find out why the beef processing practices in rural Tanzania remain very underdeveloped and with no value chain approach. This research will provide baseline information needed to complete the ongoing red meat chain diagnostic study which is a prerequisite for value chain development in the red meat/leather sector.

1.4 Research question

The main research questions for the study are;

1. Why do slaughtering practices in rural Tanzania remain underdeveloped and
2. Why is there no value chain approach in backyard slaughtering business?

Sub-questions:

To answer main question 1:

- What measures are taken to ensure safe, quality and nutritious beef in rural slaughtering?
- What are the constraints to establishing good slaughtering facilities and butchering units?
- What are the main costs involved in rural slaughtering?
- What uses are made of by-products from rural slaughtering?

To answer main question 2:

- What are the profit margins in slaughtering and butchering?
- What are the constraints to the development of value chain?
- What has been the effect of the lack of a value chain on butchers?
- Why do butchers depend on spot markets for cattle to slaughter?
- Who are the target consumers/costumers of rural slaughtering?

1.5 Definition of concepts

***Backyard slaughtering*:** This describes the activities of commercial butchers that operates in the rural villages at a very small scale and who pay little attention to quality and do not add value to the meat sold. Sometimes, animal slaughtering takes place on bare ground in designated or non-designated areas.

Rural Butchers: these are butchers who operate in the rural areas and are the same as backyard butchers and the same as village butchers.

Profitability: This is the return to investment given by profit divided by cost price expressed as a percentage.

Profit shares: This is profit of butcher divided by sum of profits by chain actors expressed as a percentage.

Pro-poor value chain analysis: The development of a value chain with the main aim of including the resource poor actor and empowering them to be able to participate effectively and profitably.

Slaughtering business: This is when the slaughtering of animals is done as a commercial activity. This exclude slaughtering animal for home consumption.

Stakeholders: people who are directly involved in local beef value chain in Central Tanzania. These include actors, chain supporters (technical and financial) and chain influencers.

Value chain development: Value chain development is the strategies used to improve efficiency in the local meat chain by linking the backyard butchers profitably to other actors in the same chain.

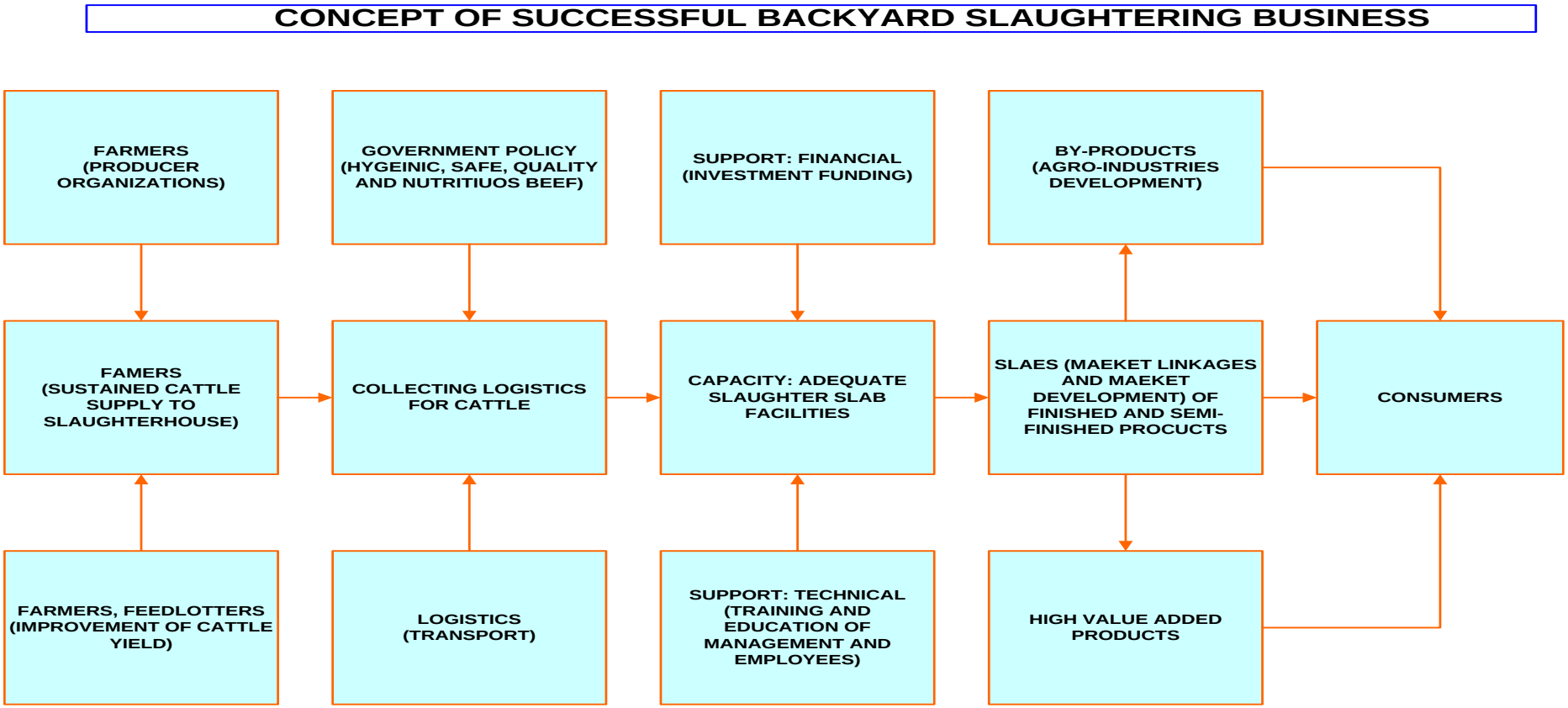
Most of the above definitions of concepts have been based on definitions from GTZ (2007).

Chapter 2 LITERATURE REVIEW

2.1 Essential factors necessary for successful slaughtering

In Tanzania meat processing is very underdeveloped and hardly goes beyond just slaughtering the animal and selling it warm without distinguishing between parts. Meat is sold as "*nyama kawida"* meaning the common meat. Different parts of the carcass including the offal and bones are mixed with muscle when weighing out meat to the customer. There is little value addition to meat, and the whole process cannot guarantee beef quality and hygiene (MIFUGO, 2010). Although recovery rates (carcass weight/live weight) of about 70% are possible (MIFUGO, 2006), reported recovery rate of only 50% is common in practice among rural butchers (SIDO, 2009). Also recorded are high post-harvest losses which could be avoided through processing (Heinz, 1995; Heinz and Hautzinger, 2007). According to N-A MTP (2010), there are at least 13 factors considered very essential to guarantee a developed slaughtering business. To assess the reasons why slaughtering business in villages in central Tanzania remains underdeveloped, the concept adapted from N-A MTP (2011) will be used. This will include the assessment of the supply of cattle for slaughtering, collecting logistics and transportation, government policy, slaughtering facilities, technical support (training), funding, value addition, use of by-products, Market development and consumers' readiness to pay for value addition (fig 2.1 below).

Figure 2.1: Concept of successful backyard slaughtering business

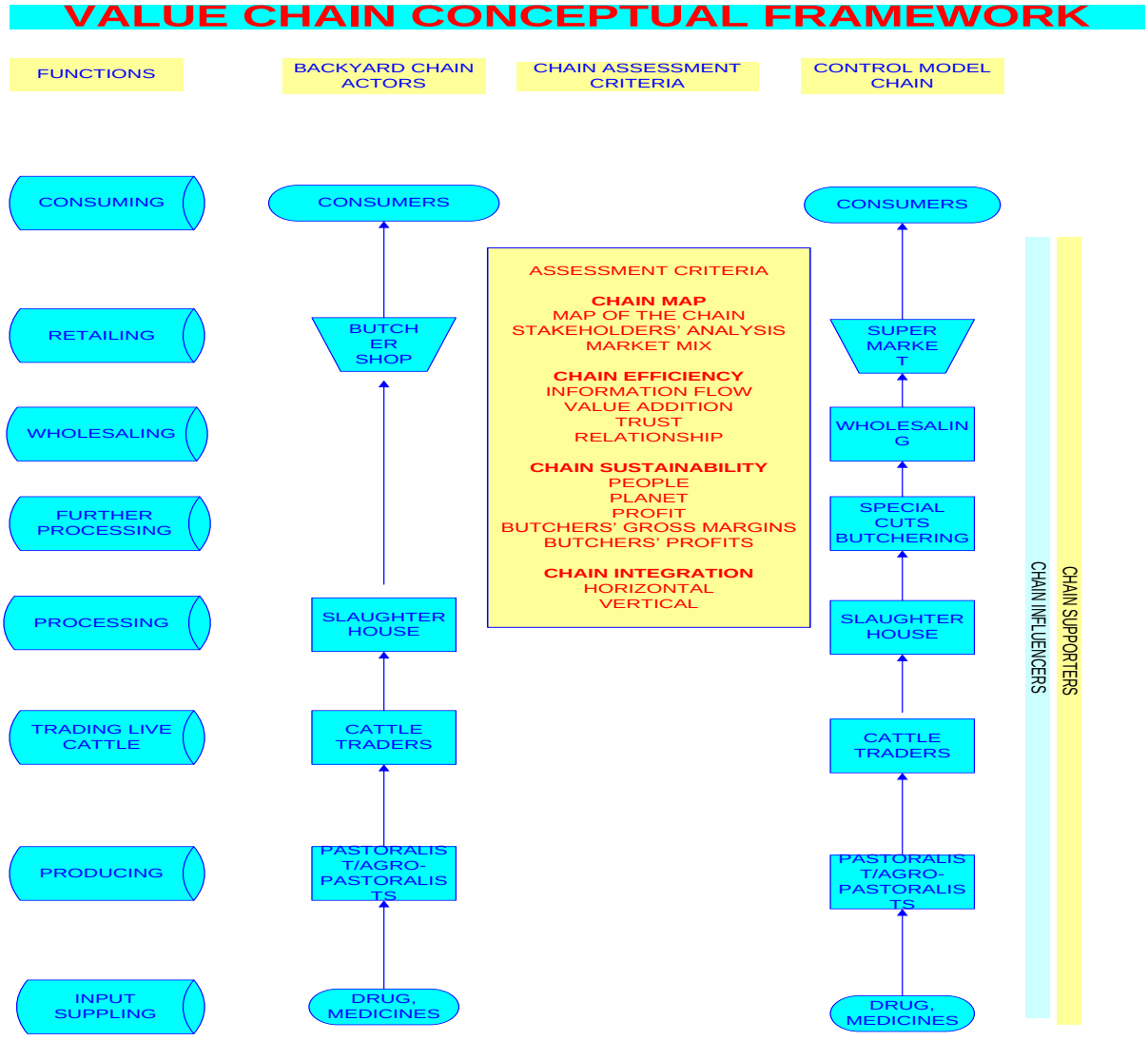


Adapted from: N-A MTP (2011)

2.2 Concept of value chain

Cattle production usually takes place in the rural areas far removed from most beef consumers. Bringing beef to consumers sustainably needs value chain development. Therefore, the value chain concept will be used in current study. According to Roduner (2007), value chain model takes up the fact that a product is rarely directly consumed at the place of its production. It is transformed, combined with other products, transported, packaged and displayed until it reaches the final consumer. A value chain is made up of chain actors, chain supporter (financial and technical) and chain influencers. The value chain concept will be used to investigate business approach employed by the rural butchers. A schematic representation of the concept and assessment criteria is given in fig. 2.2 below).

Figure 2.2: Value chain conceptual framework



As mentioned before, value chain concept in agriculture is very important as increasingly agricultural products are hardly consumed in the place where they are produced but are transformed, combined with other products, and transported from one actor (owner) to the other with value addition to the product, packaged and displayed until it gets to the final consumer (Roduner, 2007). The final consumer in turn, must be able and, willing to pay for the value addition and services involved in the transformation of the product (Fearne *et* al. 2009). Other authors describe value chain as a sequence of related business activities

(functions) from input supply to final sale or; a set of enterprises (operators) performing these functions of producers, processors, traders, and distributors of a particular product or; enterprises that are linked by serious business transactions. Value chains consist of a series of chain links (GTZ, 2007).

Three main concepts of value chain have been articulated by van den Berg *et al.* (2008). These include the filière concept, the Porter concept and the global concept of value chain analysis. Within the filière concept of value chain analysis, emphasis is placed on the physical flow of goods from producers to consumers represented in flow charts (Essang, Woin and Badeboga, 2003). The Porter concept of value chain emphasises competitive advantage of businesses which may not be tired to any actual physical transformation of product (Porter, 1985). The global concept of value chain centres on analysing the way in which firms and countries are integrated with the advance of globalisation (Keane 2008). From the foregoing, it can be said that value chain analysis may have very diverse application (Miehlbradt, 2007). The different approaches in value chain analysis are useful depending on the goal of the analysis.

Some applications of value chain analysis include, making programme design, planning for global competition, steering implementation of programmes, assessing sustainability of interventions, measuring impact of projects and catalysing change (Miehlbradt, 2007). Value chain analysis can even be used to make markets assessable to the poor and to facilitate the participation of the poor in high value chains (Binh, Huan and Taye, 2006; Loc, 2006; Son, Binh and Moustier, 2006; Tam and Loan, 2006) although some authors hold the view that value chain development has not help the rural producers (Fawcett and Magnan, 2002). Of particular interest is the use of value chain analysis as catalyst for change. In this case, value chain analysis forms the bases for the formulation of projects and programmes for provision of innovative interventions in order to achieve desired development goals (van den Berg *et al.*, 2008). In Tanzania, a case in point is the OMASI initiative. In the Simanjiro plains of Manyara region, value chain development in the red meat chain through the development of slaughtering facility is targeted at reducing poverty by improving income for cattle farmers (OMAIS, 2010). Whichever the application, value chain development must consider chain sustainability; being measured using the 3 “Ps” namely, people, planet and profit.

Value chain interventions often have to do with improving the position of chain actors, linkages in the chain and the environment of the chain. According to Kit, Faida and IIRR (2006), there are two basic strategies that can be used to improve the position of producers in the chain; vertical and horizontal integration. Vertical integration means taking on additional activities in the value chain such as processing or grading produce, for example. Horizontal integration means becoming more involved in managing the value chain itself such as producers’ improving their access to, and management of information, their knowledge of the market, their control over contracts, or their cooperation with other actors in the chain. But the rural poor are unable to integrate without support (Vermeulen *et al.* 2008).

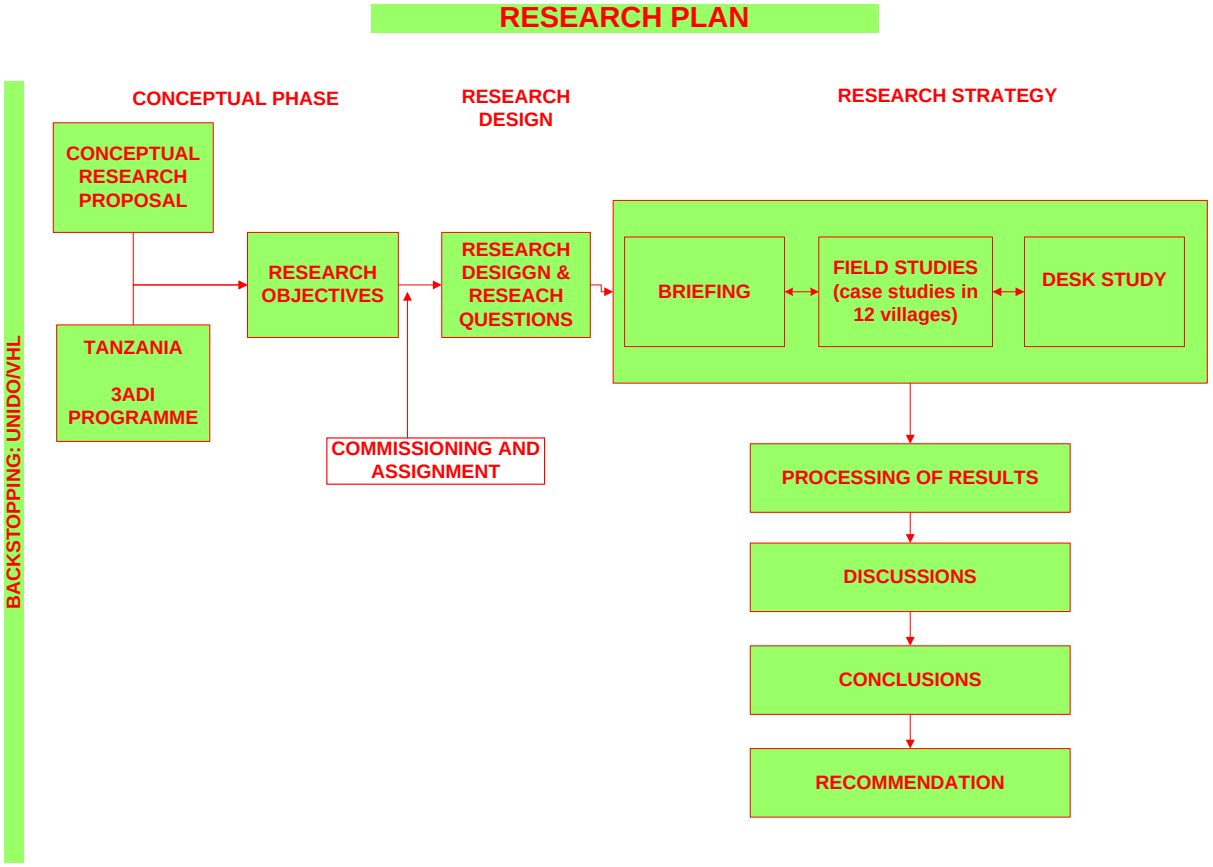
In many rural areas, although there is abundant agriculture produce, actors in the sector are ignorant of the potential uses or possible niche markets for their products. And too often, the enabling policy and environment, supporting services are equally insufficient. Interventions such as linkage to market could be a starting point for value chain development where the local producers and processors become actors in the chain. As simple chain actors, although their skills can be enhanced to improve quality of their products, they may not have influence on the chain. At a higher level, given that some basic chain elements are already in place, actors can take up more activities along the chain such as packaging. By so doing they add more value to their produce and consequently earn more for the product than when it is sold without any value addition. These actors now become chain integrators. Another direction could be improvement of collaboration of actors at the same level in the form of associations

or cooperative. These associations can greatly improve the bargaining power of these local producers as they are taking charge of more management functions of the chain. These actors now become chain partners. In a much desirable scenario, chain actors can improve in the two directions simultaneously. While they take up more activities along the chain, they also form associations to become more involved in the management activities of the chain such as securing contracts. In this case, the actors have become chain co-owners (Kit, Faida and IIRR, 2006). Current research will be limited to the opportunity for value chain development through improvement of beef processing practices in rural areas in Tanzania. Big slaughter houses and abattoirs will not be considered in this research.

Chapter 3 METHODOLOGY

The research comprises of both secondary data and empirical data. Secondary data was gathered through review of the 3ADI project documents coupled with personal communications with the Tanzanian Meat Board and UNIDO 3ADI team. Further, secondary data was obtained through desk study of literature from the WUR library, internet and the Ministry of Livestock and Fisheries Development, Tanzania. The research plan is presented in fig. 3.1 below.

Figure 3.1: Research plan



Given that the assignment had to do with baseline studies (to determine pre-intervention conditions of village butchers), empirical data was qualitative in nature and collected through case studies carried out in 12 villages in three different regions in central Tanzania namely, Dodoma (five villages), Manyara (three villages + the ORPUL Ltd, Naberela) and Morogoro (four villages). The villages under study were initially categorised as on table 3.1 below (table 3.1).

Table 3.1: categorisation of villages under study

Village Type &	Characteristics	Village &Region
I	- Number of cows/day = 3-5 - Slaughter slab with a roof - Good water source - Butchers reasonably organised eg coop	1. Chalinze (Dodoma) 2. Mbande (Dodoma)

	- Significant roasting of meat - Daily activities - Adequate transport - Adequate hygiene - Butcher shop	
II	- slaughter slab with no roof - with near by good water source - no visible roasting activities - usually one cow per day - daily activities - butchers organised - butcher shop	1. Chinangali (Dodoma) 2. Pandambili (Dodoma) 3. Mzumbe (Morogoro) 4. Wami Dakawa (Morogoro) 5. Old Mvomero (Morogoro) 6. Mererani (Manyara) 7. Orkesumet (Manyara)
III	- weekly/two-weekly/monthly markets - no slaughter slab or just some cement - 3-5 cows slaughtered per market day - A lot of roasting of meat - Not daily activities - Good water source	1. Chamiono cattle market (Dodoma) 2. Mkongeni cattle market (Morogoro) 3. Sukuro cattle market (Manyara)

Villages were chosen at random because there was no information that could guide decision on which village to visit. The questionnaire was very short because of no information on possible respondents. The questionnaire was also translated into Swahili (using Google translator) to enable respondents participate effectively. The check list (English and Swahili versions) was more elaborate with open-ended questions that allowed respondents to expand on their initial answers and lead the discussion towards issues that they find important. But before moving into the villages, there was briefing and a series of interviews at MIFUGO. .Data was also collected through brainstorming sessions at an expert workshop organised by Tanzanian Meat Board (TMB) and United Nations Industrial Development Organization (UNIDO) in Dar Es Salaam titled, “Expert Meeting: Fostering the Development of Agro industries in the Tanzanian Red Meat/Leather Value Chain: A Diagnostic”

Figure 3.2: Map of Tanzania showing the regions in which the study took place.

The study made use of structured checklist for interviews and collected data from stakeholders in the red meat chain in 12 villages in central Tanzania (fig. 3.2 above). The research methods used include keen observations, one-on-one discussions and indirect investigation on butchers. For indirect collection of data, meat and meat products were sometimes bought and carried until a scale was found where it was weighed to estimate cost per kilogram. In the market place, playing the role of buyer gave estimate price of cattle and products. Sitting by a butcher to “rest” also gave opportunities to see interactions. The data collected and information from interviews was analysed by comparison using the concepts mentioned in figures 2.1 and 2.2 above. For the economic facts, estimate gross margins and profit of rural butchers were calculated.

3.1 Research context

Box 3.1

The African Agribusiness Agro-industries Development Initiative (3ADI) Programme.

To have a better understanding of current study, a brief description of the 3ADI was reviewed. The 3ADI was launched by African heads of states in Abuja in March 2010 during a conference on the development of agribusiness and agro-industries in Africa (UNIDO, 2010). The main goal of the 3ADI is,

"to have an agriculture sector in Africa which by the year 2020 is made up of highly productive and profitable agriculture value chains that effectively link small and medium size agriculture producers to markets, supply higher-valued food, fibre, feed and fuel products, contributing to increasing farmers' incomes, utilise natural resources in a sustainable manner and generate increased and high quality employment", UNIDO, 2010.

One of the areas of interest of the 3ADI programme is to achieve agriculture chains that supply higher value foods to consumers. In line with above goals, African countries are identifying agricultural chains of interest. One of the two agriculture chains identified by the United Republic of Tanzanian to develop under the 3ADI is the red meat/leather chain.

Before the 3ADI declaration, in 2006, the United Republic of Tanzania had established the "Tanzanian Meat Board" (TMB) by Act of Parliament. "An Act to make provisions for the restructuring of the Meat Industry, to establish a proper basis for its efficient management, to ensure provision of high quality meat products and matters related therewith" (The Meat Industry Act, 2006).

In the Ministry of Livestock and Fisheries Development (MIFUGO), the 3ADI is anchored by the TMB. The Tanzanian Meat Board together with development partners including the United Nations Industrial Development Organization (UNIDO) has already conducted a diagnostic of the red meat/leather (currently under validation) but some information gaps are still pending in the diagnostic. One of such information gaps is the lack of baseline information on the slaughtering activities and associated challenges at the level of rural butchers. The purpose of current research study is to contribute to filling the information gap on rural slaughtering activities at the village level by studying butchering activities in 12 villages in central Tanzania.

Chapter 4 RESEARCH FINDINGS

Initial classification of villages into three groups became irrelevant as villages were similar. Therefore, all results will not be reported following village types but as one type.

Table 4.1: Tanzanian live cattle grades used by rural butchers

Cattle grade	category	live weight (kg)	Age (months)	Body condition score (conformity)
Tanzanian Special (prime)	-	-		
Tanzanian 1 (choice)	-	-		
Tanzanian 2 (commercial)	Cow	250 – 350	B,C	8-9
	Bull	350 - 500	B,C	8-9
	bullock	350 - 500	B,C	8-9
Tanzanian 3 (standard)	Cow	180 – 350	B,C	3.5-4
	Bull	200 - 500	B,C	3.5-4
	bullock	350 - 500	B,C	3.5-4
Tanzania 4 (utility)	Steer	Less than 100	A, AB	2-3
	Heifer	Less than 80	A, AB	2-3
	Cow	Less than 180	A, AB, B, C	2-3
	Young bull	Less than 200	A, AB, C	2-3
	Bull	Less than 300	C	2-3
	bullock	Less than 350	C	2-3

Description of grades

Grade	*No of incisors*	*Age*
Class "calf"	-	less than 15 months of age
Class A	no permanent incisor	15 – 18 months of age
Class B	1 to 2 permanent incisors	18 - 24 months of age
Class AB	1 to 6 permanent incisors	24 - 30 months of age
Class C	more than 6 permanent incisor	more than 30 months of age

Description of body condition

Score	*condition*	*Features*
2	L	Transverse processes project prominently, neutral spine appear sharply
3	L+	Individual dorsal spines are pointed to the touch, hips, spines, tail-head and ribs are prominent. Transverse processes visible, usually individually
4	M-	Rids, hips and spine clearly visible. Muscle mass between hooks and pins slightly concave. Slightly more flesh above the transverse processes than in L+
8	F	Fat cover in critical areas can be easily seen and felt; transverse processes cannot be see or felt
9	F+	Heavy deposits of fat clearly visible on tail-head, brisket and cod; dorsal spine, ribs, hooks and spin fully covered and cannot be felt even firm pressure.

Using criteria from: The meat Industry (Livestock and carcass grading) Regulations, (2010, page 25).

Plate 4.1: A holding pen with live cattle of grades, A, AB, B, and C.

Arrow pointing to the slaughter slab (surface) behind the holding house

Table 4.2: Classification of beef produced in rural Tanzania

Beef grade	Type of cattle	age	Life weight (kg)	Carcass characteristics			
				Weight (kg)	Composition (%)		
					lean	bone	fat
Standard	TSZ steers	3-4 years	250-350	130-182	68.01	25	6.99
Fair	TSZ steers	2-3 years	220-280	120-150	69.64	19.05	10.71

Using criteria from: MIFUGO, (2006, page 19).

Table 4.3 Assessment of slaughtering facilities

		Minimum slaughtering facilities requirements									
Region	**Village ****	**Location (isolated)**	**Fencing**	**Pre-mortem inspection**	**Water supply (quality and quantity)**	**Toilets**	**Roof cover**	**Incineration pit**	**Effluent (drainage)**	**Building**	**Appropriate Meat carriers**
Dodoma	Chalinze	No	No	No	No	Yes	Yes	Yes	Yes	Yes	No
	Chinangali	No	Yes	No	No	No	No	No	No	No	No
	Chamiono*	Yes	No	No	No	No	No	No	No	No	No
	Mbande	Yes	Yes	No	Yes (tap)	Yes	Yes	Yes	Yes	Yes	No
	Pendambili	Yes	No	No	No	Yes	No	No	No	No	No
Morogoro	Mzumbe	Yes	No	No	Yes (tap)	No	No	No	No	No	No
	Wami Dakawa	No	No	No	No	No	No	No	Yes (open)	No	No
	Old Mvomero	Yes	No	No	No	No	No	No	No	No	No
	Mkongeni*	Yes	No	No	No	No	No	No	no	No	No
Manyara	Orkesumet	Yes	No	No	Yes (tank)	No	Yes	No	Yes	Yes	No
	Mererani	Yes	No	No	No	No	Yes	No	Yes (full)	Yes	No
	sukuro*	Yes	No	No	No	No	No	No	No	No	No
	Total	**10/13 Yes (75%)**	**2/12 yes (18%)**	**12/12 No (100%)**	**3/12 Yes (25%)**	**3/12 Yes (25%)**	**4/12Yes (33%)**	**2/12 yes (18%)**	**4/12 Yes (33%)**	**4/12Yes (33%)**	**12/12 No (100%)**
	Naberela (ORPUL Ltd)	Yes	Yes	Yes	Yes (borehole)	Yes	Yes	Yes	Yes	Yes	Yes (cold vans)

Using criteria by: Omolo J. 2011 (ppt).

*These are village markets usually monthly primary livestock markets where both professional and occasional butchers operate. It becomes difficult to identify who is a professional butcher to interview. Also, butchers may come from different villages.

**when responses are similar from all the butchers in a given village, the results are treated per village rather than per butcher.

Figure 4.1 Summary of Table 4.3 Assessment of slaughtering facilities

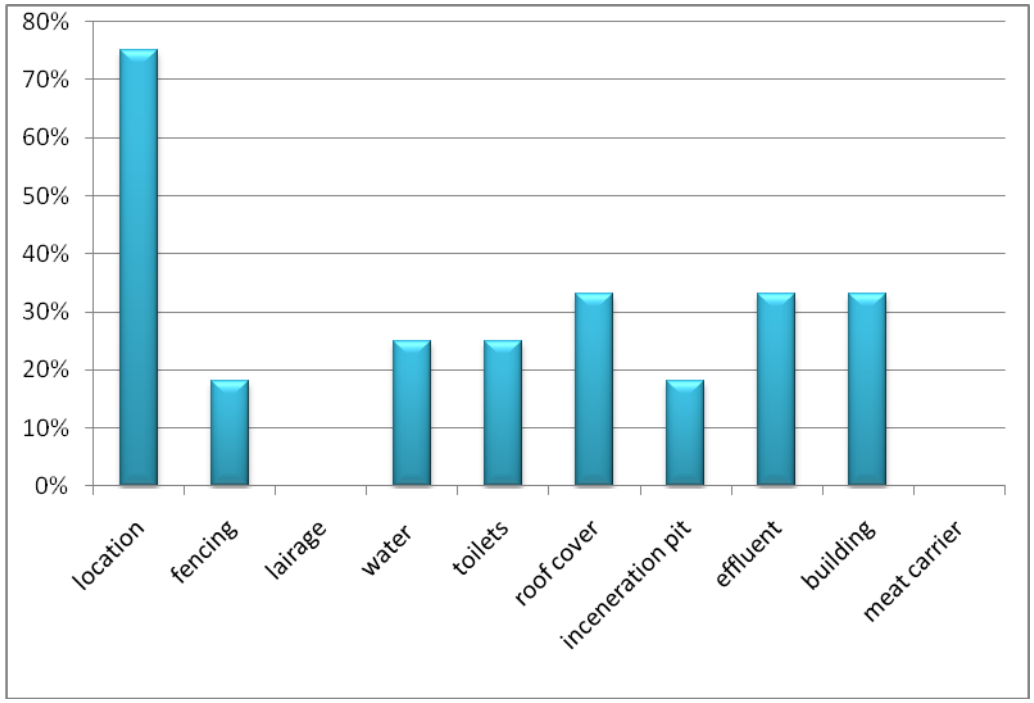


Plate 4.2 sample slaughter facilities

Table 4.4 Assessment of value addition and use of by-products (5th quarter)

Region		Use of by-products (5th quarter)					Value addition	
	Village	**Bone**	**Blood (food)**	**Blood (feed)**	**Skin****	**horns**	**Roasting (nyama choma)*****	**classification**
Dodoma	Chalinze	No	No	No	Yes	No	Yes	No
	Chinangali	No	No	No	No	No	No	No
	Chamiono*	No	No	No	No	No	Yes	No
	Mbande	No	No	No	No	No	Yes	No
	Pendambili	No	No	No	No	No	No	No
Morogoro	Mzumbe	No	No	No	Yes	No	No	No
	Wami Dakawa	Yes	No	No	No	No	No	Yes
	Old Mvomero	No	No	No	No	No	No	No
	Mkongeni*	No	No	No	No	No	Yes	No
Manyara	Orkesumet	No	Yes	No	No	No	No	No
	Mererani	No	No	Yes	Yes	No	No	No
	sukuro*	No	No	No	No	No	Yes	No
	Total Yes	**8%**	**8%**	**8%**	**25%**	**0%**	**42%**	**8%**
	Naberela (ORPUL Ltd)	Yes	yes	yes	Yes	-	No	Yes

*These are village markets usually monthly primary livestock markets where both professional and occasional butchers operate. It becomes difficult to identify who is a professional butcher to interview. Also, butchers may come from different villages to this market.

**Skin is not eaten in Tanzania. So the "NO" stands for the fact that the skin is not processed by the butchers but sold out immediately usually as flaying fee.

***Roasting of meat was done only in market areas or near the highway (where there are ready costumers)

Figure 4.2: Summary of Table 4.4 Assessment of value addition and use of by-products

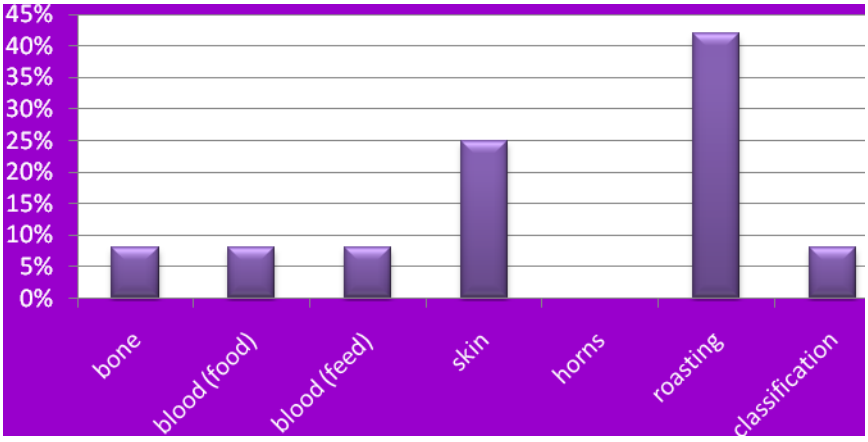


Table 4.5: Assessment of supporting factors for rural butcher's activities

Region	Village	Access to funding	Use of cattle from feedlots	Transportation (trekkers)	Contracts with cattle farmers	Contracts with beef buyers	Butchers association	Complete observance of hygiene roles	Links to farmers' groups(PO)
Dodoma	Chalinze	No	No	Yes	No	No	Yes	No	No
	Chinangali	No	No	Yes	No	No	No	No	No
	Chamiono*	No	No	Yes	No	No	No	No	No
	Mbande	No	No	Yes	No	No	No	No	No
	Pendambili	No	No	Yes	No	No	No	No	No
Morogoro	Mzumbe	No	No	Yes	No	No	No	No	No
	Wami Dakawa	No	No	Yes	No	No	No	No	No
	Old Mvomero	No	No	Yes	No	No	No	No	No
	Mkongeni*	No	No	Yes	No	No	No	No	No
Manyara	Orkesumet	No	No	Yes	No	No	No	No	No
	Mererani	No	No	Yes	No	No	No	No	No
	sukuro*	No	No	Yes	No	No	No	No	No
	Total	**0%**	**0%**	**100%**	**0%**	**0%**	**8%**	**0%**	**0%**
	Naberela (ORPUL Ltd)	Yes	Yes	Yes (also by truck)	Yes	Yes	Cooperative owned Company	Yes	Yes

*These are village markets usually monthly primary livestock markets where both professional and occasional butchers operate. It becomes difficult to identify who is a professional butcher to interview. Also, butchers may come from different villages.

Figure 4.3: Summary of Table 4.5: Assessment of supporting factors for rural butchers activities

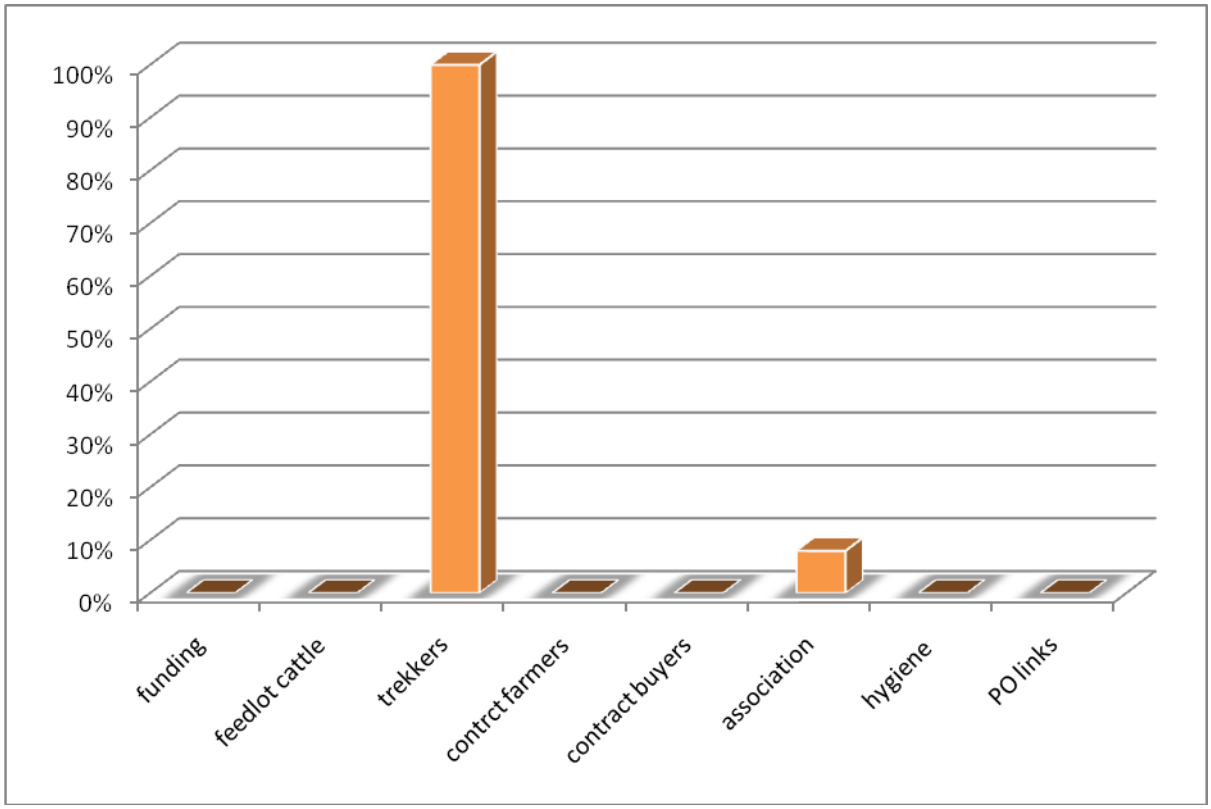


Plate 4.3 unhygienic handling of meat

Table 4.6 Summary of responses from questionnaires

Region	Village	Total number of butchers	Butcher No interviewed	sex	Training		Know about hygiene	Source of cattle	Reason for source of cow	
					Technical	Business			1st	2nd
Dodoma	Chalinze	48	1	M	YES	NO	YES	Auction	Availability	
			2	M	YES	NO	YES	Auction	Availability	
			3	M	YES	NO	YES	Auction	Availability	
	Chinangali	8	1	M	NO	NO	YES	Auction	Availability	
	Chamiono*	Occasional	-	M	NO	NO	NO (generally)	Auction	Availability	
	Mbande	>10	1	M	NO	NO	YES	Auction	Availability	
			2	M	NO	NO	YES	Auction	Availability	
	Pendambili	1	1	M	NO	NO	YES	Auction	Availability	
Morogoro	Mzumbe	1	1	M	NO	NO	YES	Auction	Availability	
	Wami Dakawa	2	1	M	NO	NO	YES	Auction	Availability	
			2	M	NO	NO	YES	Auction	Availability	
	Old Mvomero	1	1	M	NO	NO	YES	Auction	Availability	
	Mkongeni*	Occasional	-	M	NO	NO	NO (generally)	Auction	Availability	
Manyara	Orkesumet	3	1	M	NO	NO	YES	Auction		Cheaper
			2	M	NO	NO	YES	Auction	Availability	
			3	M	NO	NO	YES	Auction	Availability	
	Mererani	10	1	M	NO	NO	YES	Auction	Availability	
	sukuro	Occasional	-	M	NO	NO	NO (generally)	Auction	Availability	
	Total	**84**	**15**	**100%**	**20%**	**0%**	**80%**	**100%**	**93%**	**7%**
	Naberela (ORPUL Ltd)	slaughterhouse	Director (1)	M	YES	YES	YES	Auction/contracts	According to business plan	
TOTAL	**12 + 1**									

*These are village markets usually monthly primary livestock markets where both professional and occasional butchers operate. It becomes difficult to identify who is a professional butcher to interview. Also, butchers may come from different villages.

Figure 4.4: Summary of table 4.6: responses from questionnaires

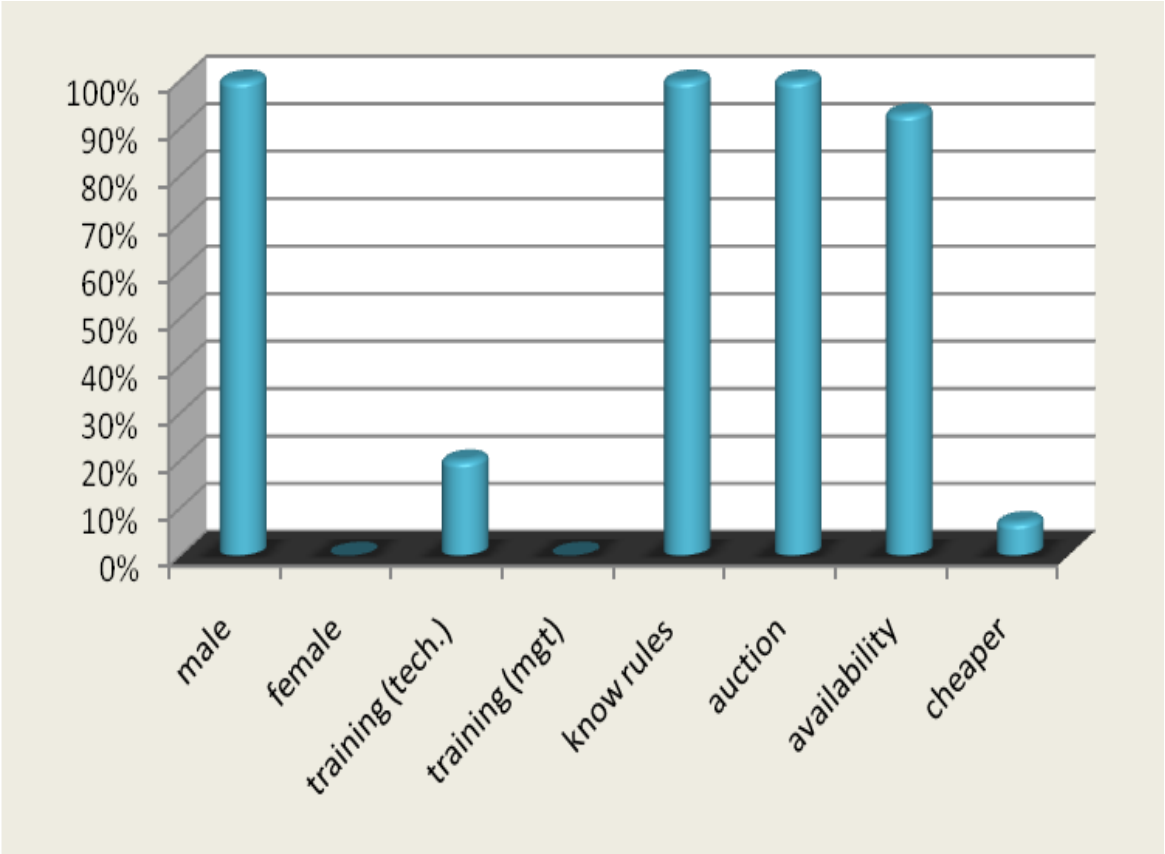
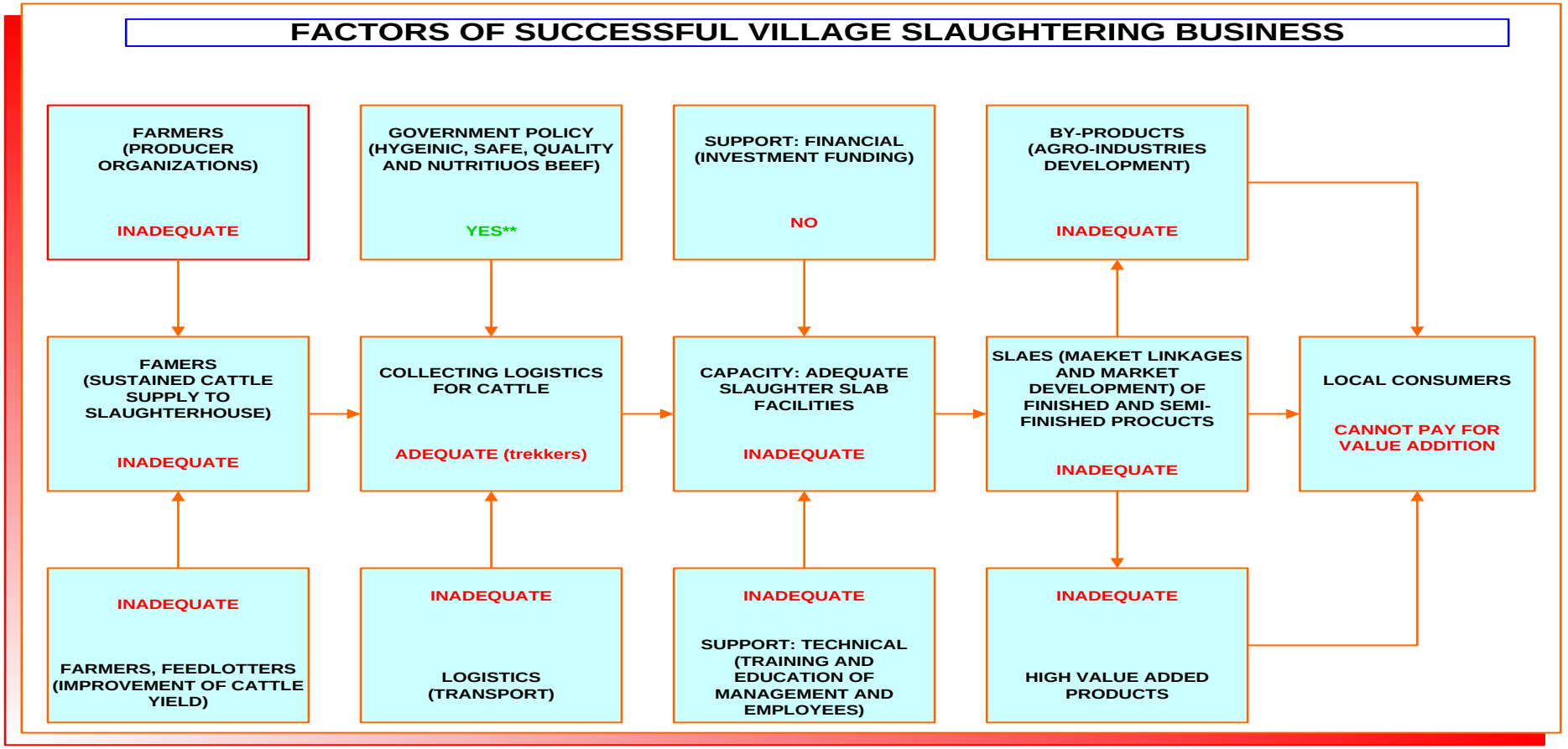


Plate 4.4: A typical auction (primary cattle market)

Figure 4.5: Summary of critical* factors on successful village slaughtering business



Critical factors*: these are indispensible for success of a slaughtering business (the very basic factors)
Yes**: Many rules but there are problems such as 1) enforcement, 2) overregulation and conflict of interest as government has both regulatory and ownership role in slabs
Yes: when a factor is 100% (except trekking because it should not be the preferred transport especially because cows hardly rest before slaughter)
No: when a factor is 0%
Adequate is above 50%

Figure 4.6 Chain map of slaughtering businesses in rural Tanzania

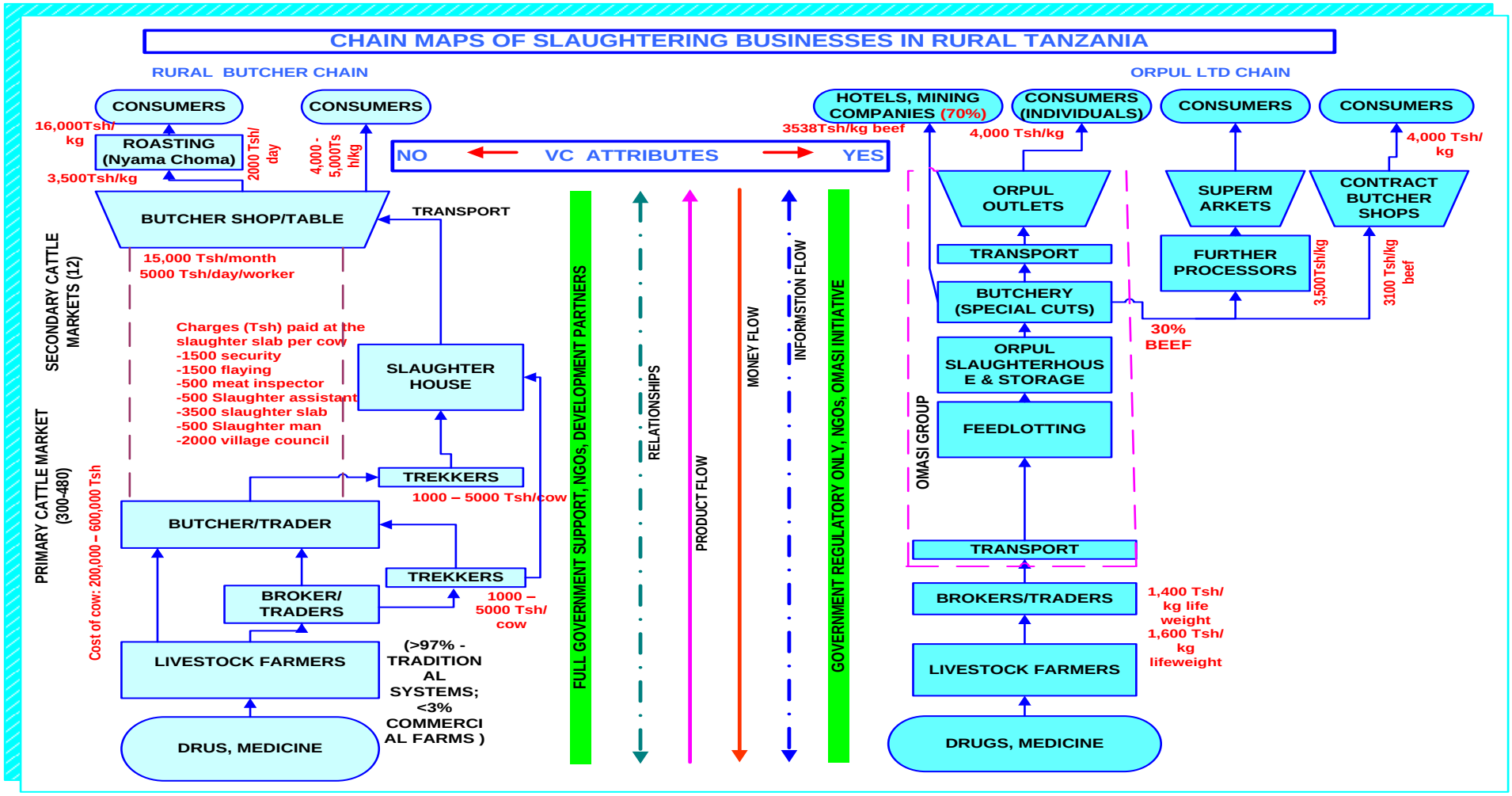


Figure 4.7: Chain stakeholders' analysis

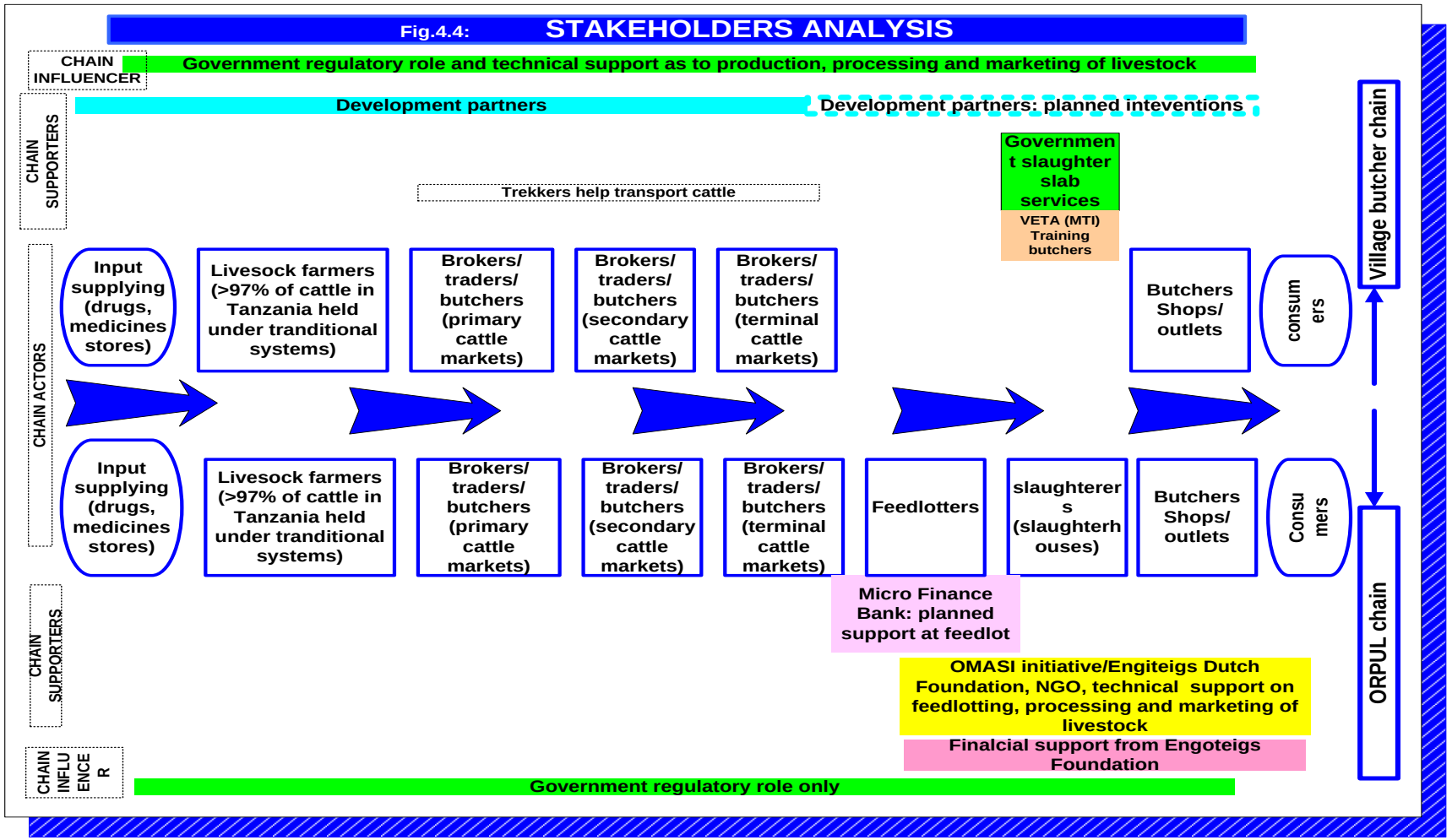


Table 4.7: Economic facts of slaughtering business in rural Tanzania

Factor	Village butcher	ORPUL contract butcher
Gross margins (GM)	6.1%	22.5%
Profit	4.8%	22.469%
Yearly income	2,108,000 Tsh	108,662,000* Tsh
Wages per day	6,000 Tsh	297,704 Tsh

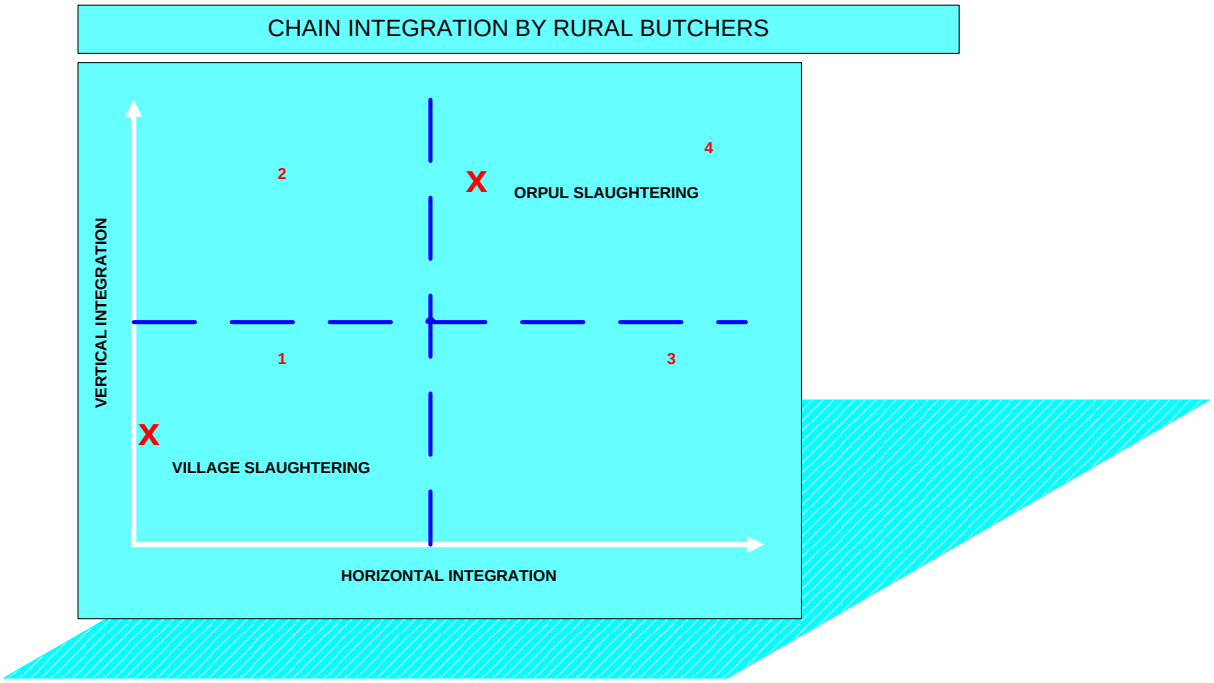
* It was not possible to know how many butchers operate under contract with ORPUL so, the yearly income given in table 4.7 (above) must be divided among all ORPUL contract butchers and may not necessarily belong to one butcher but the whole butchering section of the outfit.

Table 4.8: Chain Sustainability

	Sustainability parameter	Village slaughtering	ORPUL slaughtering
Equity (people)	Social Justice / Cultural Respected	yes	yes
	Gender Equity / No child labour	no	yes
	Butchers' co-operation for bargaining power	no	yes
	Long term relationship	no	yes
Environment (planet)	Environmental safe	no	yes
	Low (energy) input / No pollution	no	yes
	Conservation Soil, Water, Nature & Wildlife	no	yes
Economic (profit)	Economical viable	no	yes
	Fair Small labourer share / fair wages	no	yes
	Fair Trade / no trade barriers	yes	yes

Plate 4.5: Environmental pollution (horns) around a slaughter facility

Figure 4.8: Chain integration



Chapter 5 DISCUSSIONS

According to N-A MTP (2011), factors such as supply of cattle for slaughtering, collecting logistics and transportation, government policy, slaughtering facilities, technical support (training), financial support, value addition, use of by-products, market development, and consumers' readiness to pay for value addition, are imperative for success in slaughtering business. A visual (by pictures) presentation of slaughtering practices is presented in Appendix 1 below. From table 4.1 above, when cattle is slaughtered, lean makes up less than 70% of the cattle. The rest of more than 30% of the cow constitute the fifth quarter (by-products). Considering the fact that in rural areas, butchers often use lower cattle grades (Table 4.2 and plate 4.1) it is important to rescue the firth quarter of the cattle which is than 30% (by-products) to improve income.

Table 4.4 and fig.4.2 reveals the insufficient utilisation of by-products in the villages studied. The use of by-products is not sufficiently developed (MIFUGO, 2010) to bring out their full economic potential. Research findings from tables 4.3, and 4.5; figures 4.1, and 4.3; and plates 4.2 and 4.3, summarised in fig. 4.5, show that concerning slaughtering activities in rural Tanzania, most of the factors that can guarantee a successful slaughtering business were inadequate as it is the case in most countries in Africa (FAO, 2011). Only the very critical (indispensable) factors were considered in fig. 4.5. Table 4.5 and fig. 4.3 also reveal that within the rural setting, transportation of live animals may not be a problem given the abundant labour available for trekking animals. All the butchers interviewed use the services of trekkers to displace animals from market to the slaughter slab.

As can be seen from table 4.6 and fig. 4.4, all the butchers interviewed sourced cattle from auctions for slaughtering. The main reason given was availability and that could point to allegations that farmers have other reasons to keep cattle such as accumulation of wealth and savings (MIFUGO, 2010) and do not readily sell cattle for slaughtering. Cattle farmers often sell cattle only to meet a pressing need. Table 4.6 and fig. 4.4 also revealed the fact that most butchers know about government regulations on hygiene although they do not practice them (Table 4.5). This serves to reveal the disconnection between having regulations on one hand and enforcement of rules on the other. It could also point to the effects of overregulation of the sector being inhibitory to adherence. The check list and questionnaire used for collecting these entries is found in Appendix 2.

If it must be value chain, then value addition must have a reward which serves like the incentive and motivation. The consumers must pay for value addition on beef and beef products (Fearne, 2011). But the rural consumers in this case may not be able to pay for value addition on beef. ORPUL Ltd works in the same environment as the backyard butchers but they sell high value beef to the public at 4000Tsh/kg (fig. 4.6) which is similar or even lower than the price of beef in the local chain which is between 4000 - 5000Tsh/kg. But value chain is about transformation of the product coupled with displacement of product until it reaches the consumer far removed from production site (Roduner, 2007). ORPUL Ltd has customers as far as Dar es Salaam but these village butchers are limited only to their villages although these local butchers and the best case scenario (ORPUL Ltd) all have similar stakeholders and environment (fig. 4.7).

Although value chain can be used as a catalyst for change (Miehlbradt, 2007), pro-poor value chain development has never compromised quality (Binh, Huan and Taye, 2006; Loc, 2006; Son, Binh and Moustier, 2006; Tam and Loan, 2006). According to KIT, Faida and IIRR (2006) not everyone can be integrated into a value chain but only those that can catch

up with the standards. During the case studies, there were quite a good proportion of butchers who were, within the limits of their environment, trying to improve either by organising themselves (Table 4.5), undergo training (Table 4.6) or roasting meat (Table 4.4). The three weeks training course on meat handling was given by VETA. A little push would go a long way to further improve integration either vertically or horizontally with attendant improvement in chain efficiency. But these rural butchers may not be able to do this own their own (Vermeulen *et al.* 2008). Within the 3ADI, the rural poor are also targeted for innovative interventions to enable production of high value meat products in the red meat chain (The Meat Industry Act, 2006, UNIDO, 2010).

If it must be a value chain, it must also be sustainable. Chain sustainability being assessed using the three "Ps" of profit, people and planet. The economic analysis of the value chain is an important input into the decision on development objectives and the upgrading strategy (GTZ, 2007). From the chain map (fig. 4.6) and economic facts (table 4.7), the rural butcher is operating with very low margins compared to the butcher in the best case scenario (ORPUL Ltd) which is operating under similar environment in rural Tanzania. Estimate calculations of gross margins and profit revealed a great deal. While the rural butcher has a gross margin of 6.1%, the ORPUL Ltd butchers has gross margin of 22.5%. Meanwhile, SIDO (2009) reported a gross margin of up to 23.8% for butchers in Manyara region. It is true that it may not be easy for butchers to give the details of their businesses in terms of expenditures and incomes. But the enforcement of which charges are paid seems to vary even between villages. The number of fees charged the butchers in current studies were more than those reported by SIDO (2009). Although SIDO used the recovery rate of 50% as in current studies, the differences were in the variable costs including the current price for cattle and charges associated with slaughtering and handling. Although SIDO reported much higher margins for butchers in Manyara in 2009, this may have been as a result of omission of some of the charges (costs) butchers forgot to mention. What is more, from the just released publication from MIFUGO, cattle charges are being revised upward. If all assumptions used so far are within reasonable limits, then profitability of the rural butcher is going to reduce further. In fact, watching the butchers at work in the villages, it was noticed that their skill in trying to make profit was more in the ability to include as much bone, intestine and other parts of the cow of low demand into each kilogram of meat sold. Another way observed that they tried to improve their profit was to evade some charges that were paid for slaughtering at the government ground. This could push the butchers to slaughter in unknown places without inspection by a qualified meat inspector. Such cost saving measures will compromise quality and safety of the product. The detail calculations and assumptions made in the calculation of margins is found in Appendix 3 below.

Still from the chain map (fig 4.6), daily wages for hired butchers in all villages visited were 5000Tsh/day. (Cocked food in the local "chop bar" costs 2000Tsh/plate, a kilogramme of dry beans coasts 1600Tsh, a kilogramme of dry sardine fish costs 3000Tsh and a kilogramme of meat costs between 4000 – 5000Tsh.). That means, the daily wages for hired butchers (usually, those that do not have own capital to buy animal to slaughter) is just the cost of one kilogramme of meat.

From Table 4.8 and plate 4.5 it is revealed the very negative impact on the environment from the activities of the rural butchers. Since the use of by-products is very minimal, disposal of the "useless" parts of the animal such as horns is a major challenge.

With regards to chain integration, there was very little chain integration along the village butcher chain (Fig. 4.8). Vertical integration was observed with some roasting, especially on market days or if there is a high way passing in the village. In all the villages studied, only Chalinze village (Dodoma) had a cooperative of butchers. Their organization was reasonably established. But taking it as a whole, integration was very little and the village butchers are

still located in quadrant 1 of the chain integration matrix (fig.4.8 above) compared to the model that can be conveniently located in quadrant 4. In the model case, the OMASI group is taking charge of chain management and the slaughterhouse has integrated vertically (both forward and backward) and horizontally to have more control of management of the chain. Therefore the model case can conveniently be located in the fourth quadrant of the matrix (fig, 4.8).

The discussion on chain efficiency of butchers in rural Tanzania is given in Table 5.1 below.

Table 5.1: value chain efficiency

	Village slaughtering	ORPUL Ltd Slaughtering
Information flow	There is almost no information flow between actors. In fact, in spot market scenario, information is concealed rather than shared. According to butchers, it is difficult to know which farmer want to sell cattle. That is why they prefer to go to the auctions because they are sure all the animals brought to market are for sale.	The information flow in the model case presented is the bases for any slaughtering activity. There is a level of "forecast" in ORPUL Ltd, but this is based on three reasons namely; 1) beef needs to mature in the cold rooms before distribution, 2) they need time for butchering into special cuts for own outlets and 3) they have open contracts with contract butcher shops. Although quantity requested differed per week, those contract butcher shops may not take beef from another slaughterhouse.
Value addition	Very little value is added to beef along the chain. Only roasting the beef on the market day or near the highways.	Significant value addition was done starting from special cuts, then other products depending on customer specifications.
Trust	The level of trust is so low and consequently all transactions are cash down a characteristic of supply chain rather than a value chain.	There is a good level of trust especially with consumers and retailing butchers. However, with the cattle farmers, conscious efforts were being made to build trust through dialogues and transparency.
Relationship (contracts)	None existent. There was no butcher interviewed that had a relationship with any other actor in the chain.	Most deals are done by contracts already. Some farmers have signed up to supply cattle but when they participate in auctions, contracts are not used.

Chapter 6 CONCLUSIONS

Due recognition is made here of the limitations of the study by area namely, just 12 villages in three regions (out of 23 regions) in Tanzania. There was also a limitation by time of studies being only 44 days in the field. Most of the conversations in the villages were interpreted between Swahili and English. However, data collection was done personally and in the most practical ways possible. Therefore, within the limits of the assumptions made, reliability of findings is reasonable but limited only to the areas studied.

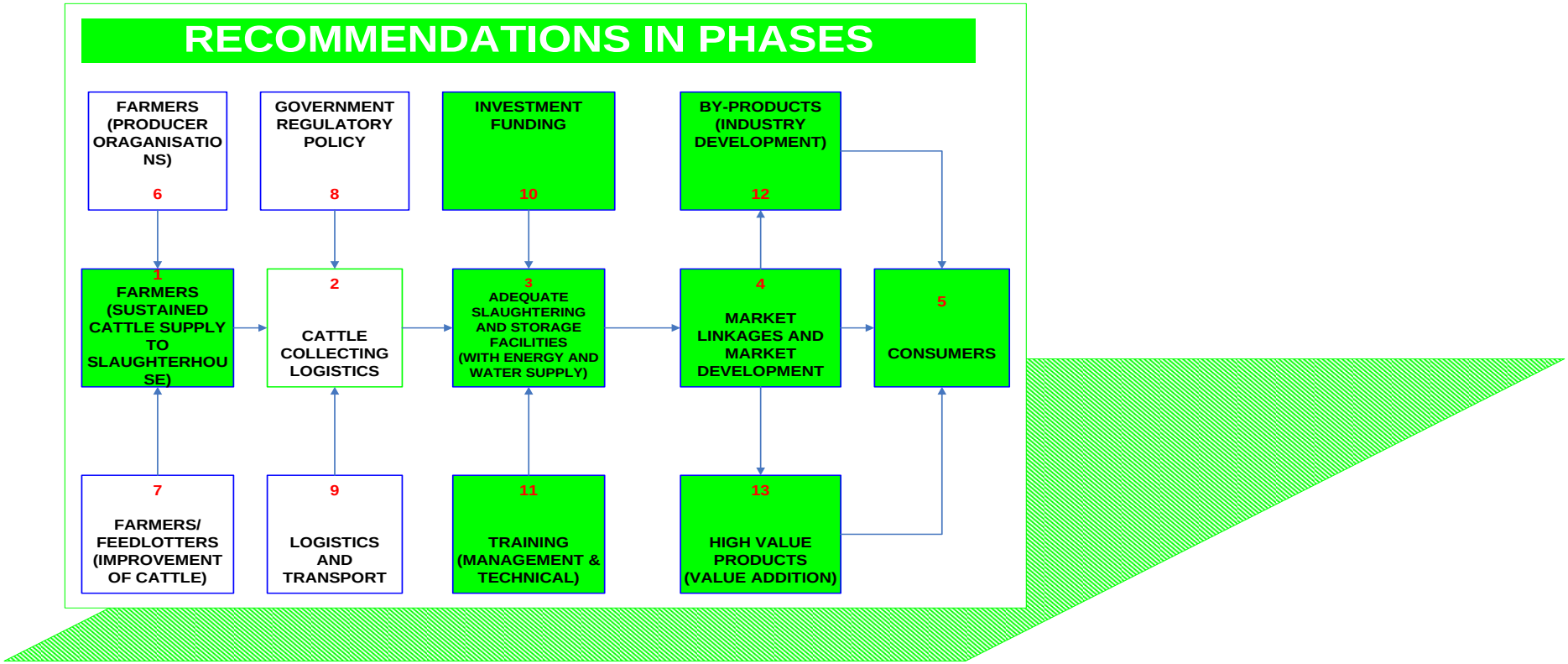
In conclusion, from discussions in chapter 5 above, it can be said that backyard slaughtering practices remain underdeveloped because most of the factors necessary for a successful slaughtering business at the disposal of butchers in the 12 villages studied are inadequate. These include inadequate supply of cattle for slaughtering, inadequate collecting logistics, ineffective enforcement of rules, inadequate slaughtering and storage facilities, inadequate training, lack of investment funding, very little value addition, low use of by-products, inadequate market development, and local consumers' inability to pay for value addition.

From the visual problem appraisal of the rural butchers' supply chain; much inefficiency was revealed. Actors in the chain do not share information and they do not trust each other. In fact, actors in the chain suspect each other, they do not have business agreements and very little value addition was seen along the chain. The chain inefficiencies resulted in very high costs of doing business and consequently high end prices for consumers to pay. The rural butchers had very low gross margins which is a disincentive to improve. For it to be "a value chain", someone must be able to pay for the value added. Therefore, form the chain analysis, the reason why backyard butchers do not operate the value chain approach is that, currently local consumers cannot pay for value addition on beef.

Chapter 7 RECOMMENDATIONS

Recommendations from the study will be made following the schematic diagram (in fig. 7.1) below.

Figure 7.1: Recommendations design from the studies



Although conclusions made above show that backyard slaughtering is underdeveloped and that the chain is a supply chain rather than a value chain, leaving local butchers out of the 3ADI red meat/leather chain development is not an option given the many people already engaged in the sector. Therefore, using inclusive value chain development strategies, backyard butchers could be assisted to improve efficiencies in their practices and improve quality because by and by it must still be competitive business if backyard butchers will remain sustainable after the project is ended. So, improving the chain efficiency should be in such a way that results in a competitive value chain like the model case in the study, ORPUL Ltd.

Development of good post-harvest management system for beef is a very critical entry point in the chain. It provides the downstream actors with variety of products (finished and semi-finished) and at the same time provides the upstream actors with ready market for their cattle. But proposed intervention must be carried out through a programme that has a number of projects and not just a single project as can be seen in fig. 7.1 above. All the green shaded boxes (fig. 7.1) should be implemented simultaneously.

Therefore, in the first phase and simultaneously, the intervention programme should contain project activities in boxes 1, 3, 4, 5, 10, 11, 12 and 13 (fig 7.1) as follows:

7.1 Sustained supply of cattle to the slaughter (No. 1, fig. 7.1)

Currently livestock farmers have other reasons for keeping cattle other than just to sell. Interventions should target encouraging business attitude to livestock farming. There should be introduction of standardized measures (traditional or weight system of assessing cattle) that is acceptable to both famers and butchers. This would encourage fattening and feedlotting and guarantee a good reward for improving cattle quality. Fattening of cattle may take from one month to three months within which period the farmer or feedlot keeper needs inputs. Project activities geared at funding and guaranteeing reward on fattening of cattle should be designed to improve cattle grades for slaughter. These funding sourcing activities may not necessarily be bank loans. It could just be the reduction of herd size with respect to carrying capacity of given land. It could also involve encouraging large herd livestock farmers to sell some of the animals and use the money to fund fattening under a clear business plan that guarantee better returns to the farmer. These activities will improve cattle supply to the slaughter slab.

7.2 Adequate slaughtering facilities (No 3, fig. 7.1)

From the conclusions, slaughtering facilities were inadequate in most villages. Therefore, there is a need to upgrade and build new slaughtering slabs, not necessarily in every village. However, slaughtering facilities should include storage and even the butchers' shops (outlets). Outlet butchers must be trained and equipped with the capacity to maintain the quality of meat at the level that meat came from the storage of the slaughterhouse. Transportation (cold van) should be provided. The slaughterhouse should also have uninterrupted energy supply, may be, through biogas plant. Slaughterhouse should also have good source of water such as a borehole to avoid meat contamination from dirty water. A single good slaughter places (with cold vans) is suggested for a group of villages. From the regions studied, it can be suggested that pilot slaughtering facilities be sighted in Chalinze (Dodoma). In Chalinze, the butchers have formed a cooperative and have undergone some training from VETA. Surrounding villages could be served beef from Chalinze through a cold van. In Chalinze, there are also some activities on preliminary treatment of hide and skin. Mbande is another possible location within Dodoma region. But although they have a new slaughter slab by the government, the butchers were less proactive than those in Chalinze. With regards to the other two regions such as Manyara and Morogoro, all the butchers were

at the same level. Therefore, criteria other than butchers' attitude should be used to choose location for slaughterhouse. ORPUL Ltd located in Naberela, Manyara is an important factor in choosing where to site a slaughterhouse in Manyara.

7.3 Market linkages and market development (No 4, fig. 7.1)

Production of certain high quality beef cuts from backyard slaughtering will need niche markets. Letting consumers know the quality of meat they can buy from the transformed backyard butchers must be handled professionally because sustainability could only be achieved when backyard butchers become competitive in the market place. So, in the management team of each slaughterhouse, there should be a qualified marketing officer. If markets are found for the choice parts of the meat or special cuts (sold for premium price), then the other parts of the meat could be sold at affordable prices to local consumers. This will improve the income of the local butchers at the same time that meat is available to all.

7.4 Consumers (No 5, fig 7.1)

It is one thing to be unable to pay the price for value added to beef. But it is quite another thing not to know the conditions under which the meats in the butchers' shops are slaughtered and possible health implications. The recommendation here is massive campaign to make consumers aware of safety implications of meat that is not properly handled. When consumers start to demand for quality, then the butchers will respond in order to stay in business especially if there are options (competitors). And besides, value chain is all about the "pulling" effect on products from the demand side. So, by educating the local consumer and empowering those with knowledge on quality and safety the pulling effect in the value chain would have been activated.

7.5 Investment funding (No 10, fig. 7.1)

The need for investment funding can never be overemphasised. When butchers were asked why they buy a grade B or C cow and slaughter immediately without trying to fatten, they all said it was impossible to tie down money in the cow during the fattening period. Investment funds could also assist the butchers to access adequate technology and equipment like the saw rather than using the wood log and axe to chop the meat. Therefore, there must be some project activity targeting provision of investment funds to backyard butchers and their critical partners within the chain. There are several value chain finance mechanisms but the most suitable form of funding will be case specific. This funding will enable upgrading and access to meat processing technologies.

7.6 Training (No 11, fig. 7.1)

Training and change of attitude is so fundamental to the success of planned interventions. Except for butchers in Chalinze village, the rest of the butchers interviewed had no training on meat handling. Even the training at VETA was a technical three-week course only. The training curriculum may in addition to technical training also include management and business that will make butchers successful in the slaughtering as a business. It is suggested that these trainings should be mobile where trainers go to the trainees. This is because most of the butchers may not be able to leave their jobs and families for long periods to go to train. In most villages visited, the same butchers did not slaughter everyday. They mostly rotate. Therefore, a training programme in which butchers go to train on their "off" days would proof more successful.

7.7 Use of by-product (No 12, fig. 7.1)

Building a central slaughter facility serving several villages has the additional advantage of concentrating the by-products such as the horns, blood, hide and skin thereby facilitating initiation of industrial use. Development of industries around the 5^{th} quarter (30% of the cattle) will improve income in the chain. Linkages with potential markets for by-products' finished products should be an integral part of the intervention.

7.8 Value addition (No 13, fig. 7.1)

Value addition is so important in the intervention. It can start as simple classification of meat parts with different prices, then to special cuts, and further to products that are solely on demand from costumers. Value addition that will convert less important parts of the meat to valuable products must be part of the immediate intervention. It was gathered that there are a variety of dried meat products used in traditional dishes, fresh blood energy drinks, blood/milk preparations used as food for lactating mothers and babies that are currently used only in the rural setting. These products could make up specialty regional products of high economic value if developed.

Transportation of the animals to the slaughtering slab (No 2, fig. 7.1) is marked differently because, in the rural areas, trekkers are able to bring the animals more easily than heavy trucks given the state of the roads. If the slaughtering facility is sighted in the rural areas, transportation can be conveniently handled by trekkers. The rest of the factors are equally important as well but under the specific environment of backyard slaughtering, these factors, No 2, 6, 7, 8, and 9 (fig. 7.1), can come in the second phase of the programme or be articulated to support initial activities as need be. If these recommendations are implemented, the value chain approach will automatically be activated.

A general remark is that most of the butchers met were very hard working. But the level of information they have on possible way forward, is very limited. It was noticed that they were very afraid whenever a government official was sighted in the visiting team and consequently will volunteer very little information than when visits were with just an interpreter. Probably this was because they have to pay a lot of fees, some which most of them think they do not know why. The butchers generally were willing to be trained. IT was also noted that when the butchers are organise, their activities were more advanced.

7.9 Suggestions on areas for further Studies

In addition to above recommendations, further studies are suggested in the following areas;

1. Why do farmers not engage in feedlot activities to increase yield?
2. A study on indigenous meat products such as dry or smoked meat with the view to developing promising products and indigenous technologies (territorial embedding) with aim to promote quality region-specific meat products in Tanzania.
3. Economic simulations on critical volumes and cash flows in the local meat chain to ascertain capital needs for successful chain development

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APPENDIX

Appendix 1 slaughtering practices by pictures


















TOYOT




Appendix 2 Questionnaire and checklist

Questionnaire

1. Location: …… Village……..
2. Region……..District……
3. Sex: man…….woman.....
4. Type of the butcher……
   Primary (a whole cow or more)
   Secondary (buy and sell meat parts only)
5. Age group
   a. Young (up to 30)
   b. Old (31 and above)
6. Did you have any formal training in meat processing Yes.....No.....
7. Do you know about government hygiene rules on meat handling?
8. Where do you usually buy cows for slaughter from?
   a) Farmers
   b) Feedlots
   c) Open market
   d) Traders
9. Why do you MOSTLY buy cows from above?
   a. availability
   b. I can take the cow and pay later
   c. Cheaper
   d. They have the breed my costumers like
10. I slaughter cow only when my costumers make request.
    a. I strongly agree
    b. I agree
    c. I disagree
    d. I strongly disagree

Swahili Version of the questionnair

dodoso

1. Location: ... ... Kijiji ... ...
2. Mkoa ... ... Wilaya ... ...
3. Jinsia: mtu ... ... Mama
4. Aina ya mchinjaji ... ...

Msingi (ng'ombe Whole au zaidi)

Sekondari (kununua na kuuza hisa nyama tu)

5. umri

a. Young (hadi 30)

b. Old (31 na zaidi)

6. Je, una mafunzo rasmi katika usindikaji wa nyama .... Ndiyo Hapana
7. Je, unajua kuhusu sheria ya serikali juu ya nyama utunzaji usafi?
8. Wapi kununua ng'ombe kwa ajili ya kuchinjwa kawaida kutoka?

a) Wakulima

b) Feedlots

c) Open soko

d) Wafanyabiashara

9. Kwa nini hasa kununua ng'ombe kutoka juu?

a. upatikanaji

b. Je, Naweza ng'ombe na kulipa baadaye

c. nafuu

d. Wana kuzaliana kama costumers yangu

10. Wakati mimi tu ng'ombe kuchinjwa costumers kufanya maombi yangu.

a. Mimi sana kukubaliana

b. I agree

c. sikubaliani

d. Mimi sana hawakubaliani

Check list for interviews with stakeholders on backyard slaughtering and also for observations (personally) during field visits

Value chain concept

Information flow

- How inclusive, transparent and responsive are the information flows in the beef chain?
- To what extent are butchers' decisions (on cow breed to slaughter, when to slaughter, how to cut the beef) influenced by what consumers value?

Creation of value

- How many activities in backyard butchering add value?
- How much investment is being made in these critical butchering activities?

Level of trust and nature of relationships

- How much trust exists between butchers and other actors in the beef chain?
- What evidence is there commitment between butchers and other chain actors?
- How are risks shared and the assumption of risks rewarded in the chain?
- What level of innovation exists at the backyard slaughtering?

Pro-poor value chain concept

What are the enabling elements consciously put in the environment to enable backyard butchers operate?
What capacity building opportunities are there for the backyard butchers?
What taxes is backyard butchers requested to pay that may hinder their activities?
What training opportunities are there and known to these backyard butchers?
What financial and non financial services are there to assist backyard butchers?
What level of awareness is brought to these backyard butchers on the slaughtering business as a whole?
What value chain finance opportunities are available to backyard butchers? (direct, indirect, factoring or warehousing or others?)
What level of sensitisation and awareness on meat standards is done to backyard butchers?

Concept of successful slaughtering activity

How sustained is the supply of cattle to the slab in backyard slaughtering?
What type of holding house is used by the backyard butchers to allow animals to rest before slaughter, watering, check for pregnancy, etc?
What is the ease of collecting cattle for backyard slaughter?
What is the ease of transportation of cattle for backyard slaughter?
What is the managerial competence of the team managing the slaughter slab in backyard slaughtering?
What level of value addition is done after slaughtering cattle in backyard slaughtering?
What use is made of the by-products of slaughtering cattle in backyard slaughtering? (blood, hide and skin, bones, others)
What type of butcher stalls or shops are backyard butchers using to sell meat?
What storage facilities are available for meat in butchers' use in backyard slaughtering? (Fridge, rubber containers)
What types of surfaces, instruments, etc. are used to cut, meat in backyard slaughtering?
What level of hygiene is maintained in and around the backyard slaughtering facility? Toilets, fence, water supply, store, condemnation pit, drainage system, building/roof over the slab, location of slaughtering slab with respect to houses.
What means is used to transport meat from the slaughter slab to butcher stall/shop in backyard slaughtering?

Appendix 3 Concept of backyard slaughtering business profitability

Major assumptions have been made in calculations below. These include;

(i) Butchers purchase cattle (194kg, live weight) at 400,000Tsh.
(ii) Selling price per kg of meat is 4,500Tsh.
(iii) Each cattle is trekked from market to butcher's slaughter place at 3,000Tsh
(iv) Recovery rate of 50% only (194Kg live weight = 92 carcass weight)
(v) Averages are used where prices vary
(vi) (€1 = 2,080Tsh)

Fix costs

	Unit	Costs/unit (Tsh)	Amount	Total (Tsh)
Salaries				
Assistant	1	5,000/cow/day	2days/week=104	520,000/year
Part-time bookkeeper	-	-	-	-
Costs of the shop				
Rent shop	1	15,000/month	12months	180, 000/year
Electricity	-	-	-	-
Maintenance cost				
Shop maintenance	-	-	-	-
Shop depreciation	-	-	-	-
			Total	**700,000/year**

Variable costs per cow

What are the variable costs in slaughtering and selling a cow? (€1 = 2,080Tsh)

Item	Unit	Cost /unit	Amount	Total (Tsh)	Total/per year at 2cows per week
Price of cow	1	400,000	1	400,000	416,000
Trekker charges	1	3000/cow		3,000	312,000
Health movement permit	1	1,500/cow		1,500	156000
Stock route charges	1	2000/cow		2,000	208,000
Recovery rate	-	-			
Security contribution	1	1,500/cow	1	1,500	156000
flaying	1	1,500/cow	1	1,500	156000
Meat inspector	1	500/cow	1	500	52000
Slaughter assistant	1	500/cow	1	500	52000
Slaughter slab/ground	1	3,5000/cow	1	3,500	364000
Slaughter man	1	500/cow	1	500	52000
Village council	1	2000/cow	1	2,000	208,000
flaying	1	1,500/cow	1	1,500	156000
Meat inspector	1	500/cow	1	500	52000
Total variable costs				**416, 500**	**43316000**

Income (sales) per day/kg

How much do you sell the following parts of the cow per day?

Item	Unit	Sale price	Amount	Total/cow	Total/year at 2 cows per week
Beef (mixed)	kg	4,500	92kg	414,000	4,3056,000
Skin	-	5500	1	5500	572000
blood	-	-	-	-	
Bones	-	-	-	-	

Horns	-	-	-	-	
Legs	-	6000	4	24000	2469000
Value added products	-	-	-	-	
Total income				**443,500**	**46,124,000**

Gross margins (GM) = (income – variable cost)/income %
443500-416500 =27,000
GM = 27,000/43500 x 100 = 6.1%

Profit = (income - all costs)/all costs
=46,124,000 – (700,000 + 43316000)/ 4,4016,000 x 100
=46, 124,000 – 4,4016,000 = 2108000/4,4016,000 x 100
(approximately= 2108000/365 days = 6,000Tsh/day)

= 4.8%

Profit

Income from sales **Variable costs**	**Difference**	
Gross Margin		**6.1%**
Fixed costs		
Profit	**Difference**	**4.8%**

ORPUL LTD SLAUGHTERING (model case)
The assumption here is that the ORPUL outlet butcher also works under the same conditions of the village butcher. The exception is only that the ORPUL butcher receives already slaughtered beef from the slaughter house and does not need to hunt for cows nor struggle with cattle related charges including the slaughtering charges.

Fix costs

	Unit	**Costs/unit (Tsh)**	**Amount**	**Total (Tsh)**
Salaries				
Assistant	1	5,000/cow/day	5days/wk=260dys	1,300,000/year
Part-time bookkeeper	-	-	-	-
Costs of the shop				
Rent shop	1	15,000/month	12months	180, 000/year
Electricity	-	-	-	-
Maintenance cost				
Shop maintenance	-	-	-	-
Shop depreciation	-	-	-	-
			Total	**1,480,000/year**

Variable costs per week
ORPUL sells 30% of its 100 cattle slaughtered per week to butchers and processors. Let us also assume that butchers purchase half of the 30% beef giving 15% of 100 cows which is also 15 cows per week. ORPUL also slaughters only fattened cows. The least grade (grade B) has carcass weight between 140-170kg. The average carcass weight will be ½ (140 + 170) = 155kg. (€1 = 2,080Tsh)

Item	**Unit (cows)**	**Cost /unit**	**Amount**	**Total (Tsh)**	**Total/per year at 15 cows per week**
Price per kg of beef	15/wk	3100	15x155kg= 2325kg	7,207,500	374790000
Trekker charges	-	-	-	-	-
Health movement permit	-	-	-	-	-

Stock route charges	-	-	-	-	-
Recovery rate	-	-	-	-	-
Security contribution	-	-	-	-	-
flaying	-	-	-	-	-
Meat inspector	-	-	-	-	-
Slaughter assistant	-	-	-	-	-
Slaughter slab/ground	-	-	-	-	-
Slaughter man	-	-	-	-	-
Village council	-	-	-	-	-
flaying	-	-	-	-	-
Meat inspector	-	-	-	-	-
Total variable costs				**7,207,500**	**374790000**

Income (sales) per day/kg

How much do you sell the following parts of the cow per day?

Item	Unit	Sale price	Amount	Total	Total/year at 15 cows per week
Quality beef	kg	4,000	2325kg	9,300,000	483,600,000
Skin	-	-	-	-	
blood	-	-	-	-	
Bones	-	-	-	-	
Horns	-	-	-	-	
Legs	-	-	-	-	
Value added products	-	-	-	-	
Total income				**9,300,000**	**483,600,000**

Gross margins (GM) = (income – variable cost)/income %
Gross margins (483,600,000 – 374790000)/ 483,600,000 = 108810000/483,600,000 = 0.225

GM = 0.225 x 100 = 22.5%

Profit = (income - all costs)/all costs
=483,600,000– (1,480,000 + 374790000)/ 483,600,000 x 100
=483,600,000– 374938000 = 108662000/483,600,000 x 100
0.22469 x100 = 22.469%
= 22.5%

(approximately= 108662000/365 days = 297,704 Tsh/day)

= 22.469%

Profit

Income from sales **Variable costs**	**Difference**	
Gross Margin		**22.5%**
Fixed costs		
Profit	**Difference**	**22.5%**

Table Economic facts of slaughtering business in rural Tanzania

Factor	Village butcher	ORPUL contract butcher
Gross margins (GM)	6.1%	22.5%
Profit	4.8%	22.469%
Yearly income	2,108,000 Tsh	108,662,000 Tsh
Wages per day	6,000 Tsh	297,704 Tsh

Appendix 4 List of people met during the study

Organisation	Name	Position	Contacts		
Ministry of Livestock and Fisheries Development, Tanzania			Fax	Telephone	Email
	Dr. Anuciata Njombe	Director, Livestock Production and Marketing	0222861908	+255 (0)754 563 922	Njomde_ap@yahoo.com
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	J Kalagho			+255 (0)786341368	jkalagho@snvworld.org
Sokione University of Agriculture, Morogoro, Tz	Prof. R Mdegela			+255(0)754371 628	rmdegels@yahoo.com mgegela@suanet.ac.tz
VETA Dodoma, Tz	Dr. L Mwachambi	Head, Meat Technology Institute (VETA)		+255 (0)754844017	mwachambi@yahoo.com
MLFD, Chamiono, Dodoma	Mr. Ngalula	District Livestock Marketing officer		+255 (0)78767330	
MLFD, Mbande, Dodoma	Mr. Kukya	Meat Inspector		+255 (0)75630022	
Guides/interpreters	Cleopa (Dodoma)	Unemployed meat inspection (VETA) graduate		+255 (0)786261039	
	Josef (Morogoro)	Knowledgeable Maasai		+255 (0)785098163	joselsokone@yahoo.com
MLFD, Mvomero District, Morogoro	Susan Hamisi	Meat Inspectors		+255(0)714 571120 +255(0)754 690452	
	Shayo Ibrahim			+255(0)786341424	
	Dr. Jacob Pedro Lima	District Veterinary Officer			
MLFD, Simanjiro, Manyara	Dr Lyimo	DLDO, Simanjiro		+255(0)787155551	

		District			
	Dr S Masaza	DVO, Simanjiro		+255(0)787818568	smasazajk@yahoo.co.uk
	Mr LFO Mrindoko	meat inspector, Mererani			
	Mr Jacob L. Karyongi	auxiliary livestock officer, Mererani			
	Neema Mwenba	Meat inspector, Orkesumet			+255 (0)789421121 +255(0) 717254438
OMASI Initiative www.omasi.org	Mecku Kessy	(ORPUL Director), Naberela			mecku@yahoo.com mecku@omasi.org