

Baseline Marketing Surveys and Supply Chain Studies for Indigenous Fruit Markets in Tanzania, Zimbabwe and Zambia

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1 Introduction

Indigenous fruits are mostly consumed as snack food except in time of famine when it becomes the only food available and consequently fulfil a much more substantial role in the daily diet. Snack foods are especially important for children who need to eat more frequently than adults and wild fruits and nuts are good sources of the micronutrients that may be deficient in common serial based diets (Ruffo *et al.*, 2002).

Indigenous fruit trading and marketing are important economic activities in countries such as Tanzania, Zambia and Zimbabwe. Studies by Ramadhani (2002) and Kaaria (1998) show that fruits are sold in both urban and rural markets. These markets present an interesting study in agricultural marketing as the supplier and consumer are much closer together in the supply chain than in the case of modern day agricultural commodities.

Baseline marketing surveys were conducted in selected markets in Zimbabwe, Tanzania and Zambia during 2003 and 2004. These surveys focussed on detailed descriptions of the markets and the associated supply chains with the objective of identifying research intervention areas.

2 Methodology

During January 2003 to May 2004 a total of 42 markets were surveyed in Zimbabwe, Zambia and Tanzania. During these surveys 322 people were interviewed along the indigenous fruit supply chain from collector to consumer.

2.1 Zimbabwe

Market surveys were conducted during January 2003 at the following markets in Zimbabwe:

- Mbare market in Harare (urban traders)
- Dombotombo market in Marondera (rural collector-traders)
- Domboshawa market in Domboshawa (rural collector-traders)

A total of 17 interviews were conducted with 10 traders and 7 collector/traders.

2.2 Tanzania

The Tabora markets were visited during July 2003 and May 2004. The first visit focused primarily on activities in and around the markets. During the second visit the supply chains to these markets were traced back to the forests where the fruits are collected.

The following markets were visited:

- Tabora Market
- Isevy Market
- Roadside stall – Dodoma road
- Roadside stall – Mg’ambo clinic
- Mama Farida market

Supply chains were traced to the following areas:

- Inala on the Dodoma road
- Impenge Village close to Thumbi

A total of 12 market traders and two fruit harvesters were interviewed.

2.3 Zambia

A total of 34 markets were surveyed in Zambia between December 2003 and February 2004 (Table 1). During the survey 293 interviews were conducted with fruit collectors, wholesalers, retailers and consumers.

Table 1: Markets surveyed in Zambia

Province	District	Markets #	Name of Markets
Eastern	Chipata	10	Mchini, Kaumbwe, Dyakanani, Magazine, Saturday, Jere, R Davies, Kapata, Nabvutika, Muchenga
Copperbelt	Ndola	10	Chifubu, Kawama, Masala, Chipulukusu, Twapia/Njanji, Ndeke, New Mushili, Maria Chimona, Ndeke, Lubuto
	Kitwe	4	Nakadoli, Chimwemwe, Itimpi, Chisokone
Lusaka	Lusaka	11	Soweto, Chipata, Mandevu, Marapodi, Northmead, Chaisa, Olympia Park, Thorn Park, Lilanda, Ng’ombe, Town Centre, Lusaka City Market
Total		34	

3 Description of fruits observed during surveys

The following indigenous fruits were observed during the various surveys:

- *Vitex doniana* (Tanzania)
- *Vitex mombassae* (Tanzania)
- *Strychnos cocculoides* (Tanzania)
- *Uapaca kirkeana* (Zambia and Zimbabwe)

3.1 *Vitex doniana*

It is a savanna species in wooded grassland and can also be found along forest edges. It can be found throughout tropical Africa from Senegal to Cameroon, Tanzania, Mozambique, Malawi, Zimbabwe, Zambia to Angola.

The fruit are black, edible, sweet and mealy. It is frequently eaten as a snack and sold in local markets. The fruits are approximately 3 cm long and contain one to four seeds. The fruits are collected from April to June. Fresh fruits cannot be stored for long time periods (Ruffo et al., 2002).



Figure 1: *Vitex doniana* fruit at market in Tabora

3.2 *Vitex mombassae*

It can be found in scrub and secondary thicket bush land but is also abundant in open areas where natural vegetation has been partly cleared. It can be found in Tanzania, Kenya, parts of central Africa and south to South Africa.

The fruits are juicy and eaten raw. They have a sharp persistent taste and an unpleasant smell, but are much eaten especially by children. The fruits are approximately 2 to 3 cm long. Fruits are collected from April to June. Fresh fruits cannot be stored for long time period. The fruits are usually collected from the wild but the species is also protected on farms by local people (Ruffo et al., 2002)



Figure 2: *Vitex mombassae* fruits sorted in small heaps at market in Tabora

3.3 *Strychnos cocculoides*

It grows naturally in *Brachystegia* and deciduous woodlands, often on sand, especially on rocky hills. It can be found from Tanzania westwards towards Angola and southwards towards South Africa.

The fruit have a hard woody shell and can be up to 7 cm in diameter. It contains a juicy pulp and many seeds. The seeds contain Strychnine. The fruit can take up to a year to mature on the trees. A refreshing juice is made by soaking the pulp in water and adding sugar. It is sold in rural markets and is also traded between countries in Southern Africa. Ripe fruit can be stored for about two weeks in the shade (Ruffo *et al.*, 2002).



Figure 3: *Strychnos cocculoides* fruits at market in Tabora

3.4 *Uapaca kirkiana*

It can occur in extensive pure stands in deciduous woodlands, upland wooded grasslands and along streams, often on stony soils or rocky slopes. It has a widespread distribution in Tanzania, Malawi, Mozambique, Zimbabwe and Zambia.

The fruit is a rounded, rusty green berry up to 3 cm in diameter, turning rusty red yellow when ripe. The pulp is fleshy, sweet and eaten raw. It surrounds 3 to 4 seeds. It is delicious and eaten by all ages and gender groups. The pulp can be used to make jam. Ripe fruits are fermented and made into a local wine. A pleasant juice is prepared by squeezing the fruits in water.

It is much marketed and is an important source of income. The ripe fruits are collected from October to January but the fresh fruits cannot be stored for long time periods (Ruffo *et al.*, 2002)



Figure 4: *Uapaca kirkeana* fruits at market in Chipata

3.5 Nutritional composition of indigenous fruits

The four fruit species under investigation are all rich in nutrients and minerals. Table 2 and 3 give summaries of the nutritional compositions of these fruits (Ndabikunze, *et al.*, 2002).

Table 2: Proximate composition (%), vitamin C and reducing sugar (mg/100g of edible portion) of fruit pulp of selected forest trees/ shrubs species in Tanzania

Species	DM	Ash	Fat	Fibre	Protein	Total CHO	Reducing sugar	Vitamin C
<i>Strychnos cocculoides</i>	25.1	5.4	1.3	1.9	0.6	90.8	36.9	135.3
<i>Uapaca kirkiana</i>	29.5	5.4	2.4	14.9	7.0	70.2	98.6	430.8
<i>Vitex domiana</i>	28.0	5.6	0.5	6.6	2.0	80.8	93.7	107.5
<i>Vitex mombassae</i>	32.1	5.1	1.5	12.3	3.9	77.2	24.7	427.7

Values are means of triplicate determinations based on Dry Mass (DM), DM (Determined on fresh weight basis)

Table 3: Mineral content (%) of selected edible fruit pulps in Tanzania

Name of species	Fe	Na	K	Ca	Mg	P
<i>Strychnos cocculoides</i>	0.07	1.11	1.68	1.04	0.25	0.02
<i>Uapaca kirkiana</i>	0.09	0.34	3.09	0.72	0.17	0.48
<i>Vitex domiana</i>	0.08	0.27	3.21	1.09	0.25	0.30
<i>Vitex mombassae</i>	0.05	0.11	3.41	0.87	0.07	0.32

Values are means of triplicate determination expressed on DM.

4 Description of markets and supply chains

4.1 Zimbabwe

4.1.1 Goods traded

At the Mbare market in Harare *Uapaca* fruit wholesalers and retailers were observed. The wholesalers trade from an open area outside the market while the retailers trade at stalls inside the market. The wholesale operations are marked by the presence of large heaps of indigenous fruits placed on plastic sheets on the ground. It is then also the only product sold by these wholesalers. Indigenous fruits are but a small component of the products offered by the

retailers. A typical retailer would sell tomatoes, beans, citrus and a small quantity of indigenous fruits.

At the smaller rural markets indigenous fruits are traded in small quantities and as in the case of the retailers at Mbare indigenous fruit is one of a number of products on sale.

4.1.2 Selling of indigenous fruits

The wholesale traders at Mbare market are buying substantial volumes of fruit per week from fruit collectors. Between 50 and 3,000 20-liter¹ containers of fruit are bought per week (averaging approximately 1,036 containers per week). Retailers, especially at the rural markets, are buying much less per week and it is estimated that they buy 5 to 25 20-litre containers of fruit (averaging 15 containers per week). Most of the wholesalers indicated that they buy directly from collectors who bring the fruits to the market.

The Mbare wholesalers sell on average approximately 712 containers of fruit per week. This is 324 containers less than what is bought on average. This 31% loss in stock volume could be ascribed to spoilage, as fruits are stored in heaps in the open where their quality would deteriorate fairly rapidly.

The retailers sell on average approximately 12.5 containers per week with a far lower percentage (16.6%) of stock loss due to spoilage.

The average price that a wholesaler would pay for fruits was approximately Z\$ 366 per 20-litre container of fruit and the selling price that the wholesaler would charge was approximately Z\$ 611. The minimum amount of profit that a wholesaler would take on a 20-litre container of fruit was 40% and the maximum amount was 133%.

Retailers paid on average Z\$ 470 per 20 litre container of fruits and sold the container at an average price of Z\$ 780. Their average profit percentage was 66% with a maximum of 71 % and a minimum of 60% profit

Wholesalers would pay on average Z\$ 379,176 per week to collectors and would have sales of Z\$ 435,032. This leaves a profit of Z\$ 55,856 per week if it is assumed that they incur no other costs.

Retailers would pay on average Z\$ 7,050 per week to either wholesalers or collectors. They would then have sales of Z\$ 9,750 with a net profit of Z\$ 2,700 per week if no other costs are incurred.

¹ A 20-litre container was taken as a standard measure to allow comparison between different actors in the supply chain.

4.1.3 Market storage

Fruits in the wholesale section of the Mbare market are stored in large heaps on the open ground with no cover to protect it from the sun, wind and rain. This way of bulk storage has a detrimental effect on fruit quality. Fruits in the bottom of the heaps are squashed by the weight of the fruit on top while the sun bakes the fruit at the top of the heaps. It is then not surprising that up to a third of the fruit is lost due to spoilage.

Traders indicated that one of their biggest problems is related to storage. Fruits that are not properly stored discolour and spoil easier.

In the retail section of the markets fruit are either stored in small containers or small heaps. The retail section has a roof so fruits are protected against the elements. It was observed that the indigenous fruits were not displayed as prominently as the other exotic fruits on sale.

4.1.4 Harvesting

Fruits supplied to the Mbare market are coming from the Murewa, Musana, Domboshawa areas. The fruits traded at the Domboshawa market are from the local area. Most of the traders at this market also indicated that they collect the fruits themselves. Traders at the Marondera market indicated that they obtain their fruit from the Musana and Murewa areas.

Four of the seven collector/traders that were consulted felt that there are enough fruit available and that there are no resource problems. The other felt that the resource is dwindling due to fires and land occupation. They also indicated that there is competition from wild animals (especially monkeys) for the fruits.

4.1.5 Transport

The fruit collectors are responsible for transporting fruit to the markets. They have indicated that they are either making use of public transport or hire trucks and other vehicles. When public transport is used fruits are normally packed into large bags. Fruit transported by means of hired vehicles are transported in bulk on the back of pick-ups or trucks. Both methods of transport could lead to excessive fruit damage and would reduce the quality and shelf life of the fruits.

4.1.6 Legality of trade in indigenous fruits

According to Zimbabwean laws and customary beliefs is it illegal to trade in indigenous fruits. Most of the traders also indicated that one of their biggest problems is prosecution for the sale of indigenous fruits. They have to pay fines when found guilty of selling fruits.

4.1.7 Supply chains

The supply chains are fairly short with the longest chain consisting out of collectors, wholesalers, retailers and consumers. Figure 5 gives a summary of the possible supply chain combinations. Table 4 presents a cost benefit analysis of the different actors along the supply chain

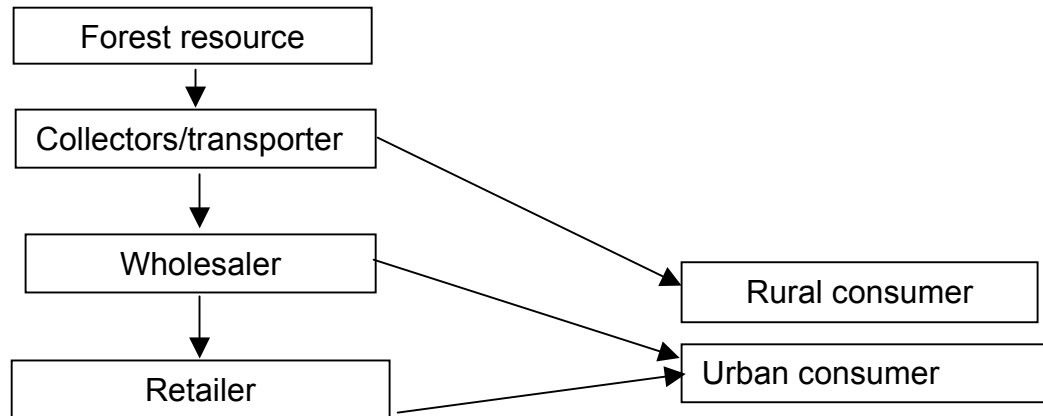


Figure 5: Supply chain combinations observed in Zimbabwe

Table 4: Cost benefit analysis

Actor	Costs	Benefits
Collector	<ul style="list-style-type: none"> Responsible for transport costs Prosecution for illegal harvesting Access to resource might be difficult 	<ul style="list-style-type: none"> High margins if selling directly to consumer Can sell to wholesaler, retailer or consumer Access to “free” resource
Wholesaler	<ul style="list-style-type: none"> Possible market space rent/tax High stock losses due to spoilage Dependent on collectors for supply Prosecution for illegal selling of fruit Highest risk in supply chain 	<ul style="list-style-type: none"> Bulk buying allows for setting of purchase prices Relative high profit margins
Retailer	<ul style="list-style-type: none"> Possible market rent/tax 	<ul style="list-style-type: none"> Less spoilage than wholesalers

Actor	Costs	Benefits
	<ul style="list-style-type: none"> • Stock losses due to spoilage • Dependent on wholesalers • Prosecution for illegal selling of fruits • Low volume sales 	<ul style="list-style-type: none"> • Diversification by selling not only indigenous fruits • Relatively high profit margin

4.2 Tanzania

4.2.1 Goods traded

It was observed that none of the fruit traders were only selling indigenous fruits. They were selling indigenous fruits in combination with products such as pumpkins, tomatoes, lemons, banana, cabbage, okra, chillies, and fish.

During the July 2003 survey it was found that the retailers sell a combination of *Vitex mombassae*, *Vitex donnianea* and *Strychnos cocculoides*. In May 2004 *Vitex mombassae* and *Vitex donnianea* were found in the markets. In all instances it was found that indigenous fruits were not the primary product being traded.

4.2.2 Selling of indigenous fruits

In general the indigenous fruits were not in such a good condition than the other exotic fruits traded. The *Vitex* fruits were bruised and tended towards overripe. In some instances the fruits were stored in dirty buckets with flies swarming over them.

Ten of the twelve market traders indicated that they wash the fruit before selling it. Seven traders indicated that they grade the fruits according to size. The one trader was observed selling fruits of similar size in heaps of seven to eight. It seems grading is done more as a way of presenting the fruits to customers than as a price setting activity.

In most instances the indigenous fruits were not displayed as dominantly as the other produce. In some instances the other produce would be displayed on tables while the indigenous fruits would be kept in containers on the ground.

The fruits are sold mostly to women and children as a snack that is often eaten fresh in the market. None of the traders indicated that they sell large volumes to individuals. Indigenous fruits can thus be seen as an impulse product. People

come to the market to buy other goods and see that indigenous fruits are present. They then buy these fruits to snack on.

Strychnos fruits are sold per fruit while *Vitex* fruits are sold in small bundles. The selling price for *Strychnos* differs between 10 shs to 30 shs per fruit and traders sell between 10 and 30 fruits per day. *Vitex* fruits are sold at approximately 10 shs for a heap of six to eight fruits. Traders sell between 10 and 30 heaps per day.

Prices are determined by adding a profit to all costs (purchasing costs, rental, security, tax). Seasonality as well as fruit taste (sweetness) does play a role in the setting of prices. Market traders also determine prices based on quantities available and demand. They look at the number of suppliers bringing fruit to the market, listen to hearsay information from villages and observe buying behaviour. It is estimated that the average profit percentage is approximately 50%.

It seems as if traders buy fairly low volumes of fruit from suppliers. The maximum quantity of fruits observed to be bought from suppliers was two times twenty-litre containers full of *Strychnos* fruits. A trader dealing in *Vitex* fruits also reported that she sells three 5-litre containers of fruit per week.

4.2.3 Market storage

Storage of fruit in the market seems to be one of the biggest problems. Fruits only last for a short while and storage conditions are less than optimal. Fruits are kept in buckets or in heaps where the fruits press against each other, leading to bruising. *Strychnos* fruits were reported to last up to three months by one trader. Traders also wanted to know how to store fruits for a long time so that it can be sold out of season when less fruits are available and the demand is higher.

4.2.4 Harvesting

The two interviewed fruit collectors indicated that they collect fruit every third day during the fruiting season. They walk into the forest and collect fruits that have fallen on the ground below fruit trees. They assumed that when fruit fall to the ground they are ripe. They visit the same trees a couple of times during the season as all the fruits do not ripen at the same time. Collection trips could take up to five hours at a time. The biggest problems that they experience are with wild animals and snakes. They collect on average about three buckets of fruits at a time.

4.2.5 Transport

Both collectors indicated that they transport the fruits to the Tabora markets in large baskets on the back of a bicycle. The roads to the markets are in a bad

condition and journey to the market is slow. It takes on average five hours to reach the markets in Tabora

4.2.6 Supply chains

The supply chains are in general very short and consist of the fruit collector selling to either a retailer or wholesaler (Figure 6). The retailer would sell to the consumer while the wholesaler would sell to the retailer.

There seems to be no fixed relationships or contracts between suppliers and traders. Regular suppliers would sell to traders but traders buy from any suppliers as stock is required. Suppliers can also provide fruits to any trader.

There are also no credit relationships between suppliers and traders and business is done on a cash basis. Table 5 presents a cost benefit analysis of the different actors along the supply chain

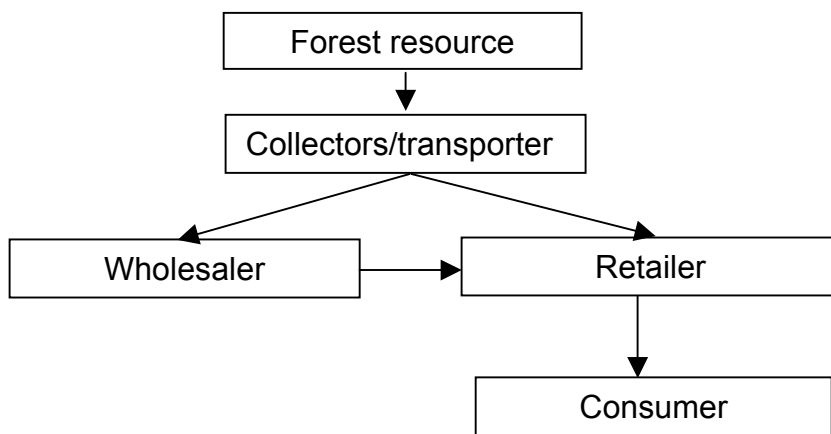


Figure 6: Supply chain combinations observed in Tanzania

Table 5: Cost benefit analysis

Actor	Costs	Benefits
Collector	<ul style="list-style-type: none"> • Responsible for transport • Having to deal with wild animals and snakes • No fixed agreements with retailers or wholesalers 	<ul style="list-style-type: none"> • Can sell to wholesaler and retailer • Access to “free” resource
Wholesaler	<ul style="list-style-type: none"> • Possible market space rent/tax • High stock losses due to spoilage • Dependent on collectors for supply • Highest risk in supply chain 	<ul style="list-style-type: none"> • Bulk buying allows for setting of purchase prices • Can buy from any collector • Relative high profit margins
Retailer	<ul style="list-style-type: none"> • Possible market rent/tax • Stock losses due to spoilage • Dependent on wholesalers • Low volume sales 	<ul style="list-style-type: none"> • Less spoilage than wholesalers • Diversification by selling not only indigenous fruits • Relatively high profit margin • Can buy directly from collector

4.3 Zambia

4.3.1 Goods traded

It was observed that several fruits were sold together with *Uapaca kirkiana* fruits. The retailers traded a total of approximately 20 different fruits. The fruits comprised:

Exotic/domesticated tree and non-tree fruits: *Mangifera indica* (mangoes), *Persia americana* (Avocado), *Psidium guajava* (Guava), Oranges, *Citrus limon* (Lemon), *Musa* spp (Bananas), *Vinifera* spp. (Grapes), *Ananas* spp. (Pineapples)

Native/wild fruits: *Uapaca kirkiana* (Masuku), *Strychnos cocculoides* (Tusongole), *Parinari curatellifolia* (Mpundu), *Anisophyllea boehmii* (Nfungo), *Strychnos pungens* or *innocua* (Tugome), *Garcinia huillensis* (Nsongwa), *Diospyros mespiliformis* (Chenja) *Landolphia kirkii* (Mabungo)

Uapaca kirkiana was ranked first as the most traded in fruit followed by *Mangifera indica* (Mango).

The fruits were traded in different unit measures. For the wholesalers in Chipata, baskets (locally known as *Dengos*) were the trading unit measures. In Ndola baskets (*Miseke*), tubs and other tins (ranging from 5 to 25 kg) were used for trading transactions and transportation. At retailers level, in both districts tins, plates, cups and heaps of various sizes (weight or number of fruits) were used as unit measures for the transactions. The sizes (weight) of the unit measures ranged from 0.3 to 5 kg.

4.3.2 Selling of indigenous fruits

Generally, prices of fruits were set jointly, with the collectors/wholesalers who sold first in the season determining the prices. Other traders then follow by asking the same prices. Negotiation with buyers was another form of price setting. In some cases and according to some traders, this method of pricing was done to avoid conflict from competition.

Factors such as labour costs (including physical hardships undergone and risks involved at collection and subsequent handling and transportation of the heavy fruits), fruit availability (included natural fruit production and time of season) and household needs played a role in deciding the price. For example, the profit margin was determined based on the need to solve prevailing and immediate domestic and other problems.

Pricing at retail level is similar to those for the collectors/wholesalers in both method and factors considered. In order of value, the main factors appeared to be the order price, taking the price set by other traders and total cost and the prices set by the first sellers.

4.3.3 Market storage

Collectors/wholesalers store their fruits mostly at home and in the open. Most store fruits in containers or in sacks with only a small percentage storing it loose on the ground. Collectors/wholesalers lost some of the fruits in the trading process through the following:

- Damage due to handling (during public and private transportation and harvesting) (82.9%)
- Rotting (11.4%)
- Heat (2.9%)
- Type of containers used for example the use of sacks instead of baskets (2.9%)

Retailers, like wholesalers, also stored their fruits in a variety of places such as in houses or market buildings. Fruits are stored in containers or loose on the ground. Sales turnover was approximately 1.5 days while fruits took about 3 days before becoming rotten.

Retailers reported that the main reasons for fruit losses are:

- Rotting (60%) if fruits are not sold within 3 days
- Breaking (33.3%)
- Theft (6.7%) especially when stored in market areas

The approximated weight of the unit measures were Cup (0.3 kg), small plate (0.3 kg), small dish (5 kg) and large dish (20 kg)

4.3.4 Harvesting

The supply time for *Uapaca* fruits was during the natural fruiting season from October to January and in some rare cases to mid February. The peak supply time was December.

The average collection time per trader was three months. However, some did not collect throughout the season due to the following reasons:

- They could not manage the labour involved especially in collection and transportation to market places. Transportation involved long distances and carrying the heavy fruits loads
- They lacked or had limited transportation means such as bicycles
- Involvement in other livelihood activities. Of these activities, selling other merchandise and agricultural activities were the most commonly mentioned.
- Trading in *Uapaca kirkiana* fruits was done as a part-time business mostly during the peak time of fruit supply

There were mainly four sources of fruits at the collectors' stage. These were government forests (44.8%), communal areas (12.1%) and private woodlands (43.1%). The sources were more or less the same for the Ndola and Chipata districts.

Government forests include forests in Zambia, Malawi and the Democratic Republic of Congo. The private sources comprised company and individual farm areas, while open woodlands and agricultural farmlands characterised communal sources of fruits.

Reasons for harvesting from these areas are:

- The fruits were plenty in the areas compared to other potential collection sources. They were also good fruits available in these places (66.1%)

- The places were nearest to residential areas or homesteads (villages, urban residences) (19.4%).
- These were the only local and foreign areas where the fruits were found in adequate quantities. This include in Zambia. Some traders (8.1%) said there were either no or inadequate fruits in Zambia near their places of residence to motivate trading the *Masuku* fruits.

4.3.5 Transport

The main modes of transport for Uapaca fruits include carrying by head load, bicycles, public transport and wheelbarrow (table 6). Only 14.3% of traders said they incurred or paid transportation costs.

Table 6: Transportation mode for fruit from collection sources to the markets

Transportation Mode	Overall % (n = 34)
On foot/walking	65.7
Bicycle	17.1
Public vehicle	11.4
Wheelbarrow	2.9
No transportation: retailers come to buy	2.9
Total	100

In Chipata, retailers expect that the suppliers must carry the fruits on bicycles at no additional cost from the transaction point to the market once they have bought the fruits.

4.3.6 Legality of Trade in Indigenous Tree Fruits

According to Chapter 199 of the Laws of Zambia, fruits such as *Uapaca kirkiana* and other non-wood forest products like mushrooms may be collected free of charge from the forest reserves as well as traditional land (trust land).

4.3.7 Supply chains

Supply chains seems to be short with collectors/wholesalers selling either to retailers or directly to consumers (Figure 7). The retailers traded from more than one place depending on the location and market situation. Retailers conducted business either from home, legally designed market places or at roadside and street vending markets.

In most instances the collectors/wholesalers are responsible for bringing the fruits to the market where retailers and consumers can purchase it. Table 7 presents a cost benefit analysis of the different actors along the supply chain

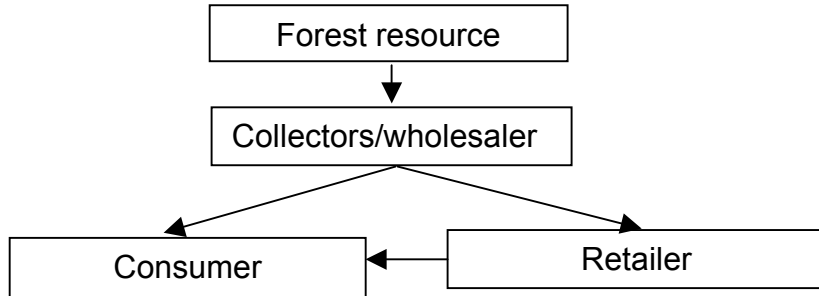


Figure 7: Supply chain combinations observed in Zambia

Table 7: Cost-benefit analysis of the different market actors along the supply chain

Actor	Costs	Benefits
Collector/ wholesaler	<ul style="list-style-type: none"> • Arrest and prosecution for selling in non gazetted/illegal market areas and for collection from neighbouring countries • Difficult and risky accessibility of the fruit resource in the forest (distance, snakes, wasps, heavy loads, etc) • Fruit losses due to handling and transportation • Exploitation by retailers (who set fruit prices at times) 	<ul style="list-style-type: none"> • Limited costs due to non-involved of motorised transport and access to “free” resource • Has bigger segment of ‘consumers’: can sell to wholesaler, retailer or consumer • Less spoilage of fruits from perishability
Retailer	<ul style="list-style-type: none"> • Daily market fees and/ or rent and security • Stock losses due to spoilage from theft, persishability and post harvest handling and limited buyers (Low volume sales) especially at peak times • Dependent on wholesalers and/or collectors • Prosecution for illegal selling in undersigned market areas 	<ul style="list-style-type: none"> • Less spoilage than wholesalers • Diversification by selling not only indigenous fruits • Relatively higher profit margin than for the collectors and wholesalers

5 Discussion

5.1 Observations on the status quo

5.1.1 Supply driven consumption

Consumption is largely determined by availability and seasonality of crops, thus determined by supply instead of demand. In this vein the consumption is highly affected by the nature of supply in terms of quantity, quality, time, location, price, scarcity value, etc. It is unclear whether the nature of demand is concomitant to this supply, or whether demand is of a more consistent nature like with most food products. Hence, the general tendency to move to year-round supply of fruits and other food products in conventional markets. There is certainly a case to be made for seasonality in supply due to the benefits of consumption linked to novelty value, rituals, festivities, and the like. It is however doubted that the consumption of indigenous fruit is associated with these factors and occurrences. It simply appears to be a matter of periodic availability. A key implication here is that the supply of fruit has to be adapted to demand (current or latent), which calls for greater consistency in the quantity and nature of supply.

5.1.2 High transaction costs

Marketing and post harvest handling is subjected to high transaction costs in the markets that were observed. This can be readily expected from developing country markets. The transaction costs manifest in various ways including:

- Product losses
- Time delays
- Costs of monitoring transactions and agents in markets
- Negotiation or haggling costs
- Transport and logistics inefficiencies
- Less informed behaviour
- Etc.

Transaction costs are better contended with through improved coordination and information flows in supply chains. This is a key challenge for economic development efforts in emerging markets.

5.1.3 Generic products

All the products that were identified and studied are generic and undifferentiated. Generic marketing certainly has a place even in modern markets, but are more associated with mass produced products that are consumed in large quantities, as opposed to niche oriented seasonal products. Thus, having indigenous fruit marketed as generic products, even in low-income markets, appears to be a

misfit in strategy. The main implication here is therefore, greater attention to products differentiation on the basis of product attributes and the nature of supply and demand.

5.1.4 Small margins and limited value addition

The fruits studied are all marketed by adding very small marketing margins and little value adding in the form of packaging, processing, certification, quality control, and adding other utilities. This probably stems from the focus on low-income domestic/local markets, where consumer spending power is limited. This implies that any attempt to add value or increase the marketing margin must be associated with targeting higher income consumers who are able to compensate for this.

5.1.5 Orientation to local markets

Supply and consumption is entirely directed at local markets given the traditional status of the products and consumption habits. The local markets are assumed as low-income markets by and large, with limited ability to pay for greater sophistication and value addition that add significantly to the marketing margins. Hence, the current tendency to favour generic marketing of produce. The implication here is arguably that limited benefit can be derived from much value addition in local markets. At best the improvements can be incremental. Alternatively the improvements could radically change the product offer through processing (e.g. juices, jams, preserves, etc) whilst retaining the product appeal. Another alternative may be to consider acceptability in higher income markets and adapt the product accordingly.

5.1.6 Indigenous demand

The product is undoubtedly associated with indigenous demand which establishes its current appeal. This is a positive factor and a key element in a marketing strategy, especially in a world that is showing greater appreciation for organic and natural products. This implies that the attributes and motivations that underlie this indigenous demand could be useful selling attractions in new higher income markets where novelty and indigenous aspects are valued.

5.1.7 Limited promotion

The product is offered in its generic form as and when available with little done to promote consumption other than mere presentation. Encouraging consumption in local and especially new markets would require much greater efforts in this regard. Promotion could be focused in selling the particular product attributed beyond simply taste. These attributes may be medicinal value, uniqueness, scarcity value, novelty, etc. Promotion would largely be associated with new and

especially higher income markets dominated by corporate entities and chain stores. Collaborative efforts are required here.

5.2 Theoretical perspectives

A number of theoretical aspects may be considered in devising appropriate marketing strategies for indigenous fruits.

5.2.1 Consumer behaviour

There is a clear need to study in greater detail the consumer behaviour, needs and preferences that underpin existing consumption. This would avail valuable information about product benefits and characteristics that are appreciated and can be used in future marketing strategies, tactic and positioning. The fact that current markets are low income and developing country focused is less relevant since other markets may also appreciate the same aspects as at present.

5.2.2 Transaction costs

The present marketing is riddled with enormous transactions costs typical of developing country markets and institutions. There is a need to understand the extent and nature of transactions costs, as attempts have to be made to reduce some of these in future marketing strategies. The main transaction costs seem to be related to hold ups, product losses, information costs, monitoring costs, specified assets, investment risks, etc.

5.2.3 Supply creates its own demand

The nature of the products suggests that demand is prompted by availability though be it sporadic. This same principle could hold in new marketing strategies base on natures producing cycles. This should not divert from the principle that demand supply responds to demand. However for this to occur requires that the nature of supply be proper and acceptable in the market. Hence, effort is required to appropriate supply to elicit the desired demand response. This effort would entail product quality, consistency, value addition, logistics, promotion, etc.

5.2.4 Product attributes

A key aspect of any future research and endeavours would be to establish the saleable attributes in defined target markets, including the existing target local market. Ultimately any marketing strategy must be premised on selling key attributes to consumers. These attributes must relate to known or latent needs of consumers and thus require smart investigation and subsequent promotional activities. Proper expertise becomes a prerequisite.

5.2.5 Consumer psychology

It is equally important to identify and understand the psychology of consumers when they purchase and consume products of this nature. These would differ in different market segments. Consumer studies must be undertaken to gather the relevant information followed by testing and tasting studies.

5.2.6 Chains logistics and efficiency

Logistical problems are known to reduce marketing efficiency in the present markets as acknowledged earlier under transaction costs. There is clearly need to attend the technical efficiency aspect marketing and logistics with the purpose of reducing losses, improving product quality, time utility, cost, etc. This would entail assessing the need for cooperative action by way of transportation, storage, inventory, procurement, asset ownership, investment, and the like.

5.2.7 Innovation

Improving the marketing of a product in existing or new markets require innovation in product, logistics, promotion, tactics. This innovation is not entirely available in the present setup and has to be attracted through collaboration with retailers, product developers, researchers, and the like. The innovation at ground level must also be harnessed to this end.

6 Recommendations and strategies

The following recommendations should be considered in developing future indigenous fruit market strategies:

- Study carefully consumer behaviour in current and potential future markets.
- Product offer in alternative higher income markets requires consideration.
- Collaborate with retailers in high income markets to find acceptability and appropriate marketing strategies.
- Formulate suitable product promotion strategies when introducing product into new markets or when revising the product offer in present markets.
- Formulate logistical arrangement to improve chain efficiency.

- Conduct more detail studies on indigenous crops to ascertain the nature of demand, consumer characteristics, preferences, and product attribute.
- Options for greater value addition in existing and new markets must be investigated and exercised. This appears already in progress and perhaps more collaboration with industry could provide valuable further impetus.
- Establishing appropriate marketing and producer related institutions are essential to entrench more efficient production, communication, logistics, technology transfer and market relations. These institutions include; producer organizations, cooperatives, marketing firms, contractual relations, and so on. This further entails the development of a credible marketing system.
- A key challenge in marketing and producing less known commodities is communication and information exchange with markets. Systems and strategies must be formulated to improve information flows across all interfaces.
- Each product of group of associated products requires a formulated marketing strategy.
- Opportunities with farming with selected suitable commodities must be assessed to enable standardization and consistency in supply.

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