



Value Chain Analysis of Medicinal Plants in South Africa

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ABSTRACT This paper explored the implications posed by the functioning of the medicinal plants value chain in South Africa on the economic viability and sustainability of smallholder enterprises. The paper identifies the main actors in the medicinal plants value chain as well as the opportunities and constraints associated with entry into the formal markets. The study made use of formal surveys with the medicinal plants market key informants and organisations. The formal value chain is very strict with very few actors engaged in partnership vertical integration characterised by strict quality control. The study advocates for strong support for medicinal plant producers by development agents, especially the smallholders together with assisting them to gain access into the high value chain. In addition, since processed or semi-processed products fetch higher prices, smallholder producers of medicinal plants need to be supported with agro-processing facilities to enable them to reap higher returns from their farming activities.

INTRODUCTION

A great proportion of the world's population, in excess of 80 percent, relies primarily on conventional medicines for their primary health-care needs (Beyene et al. 2016; Ekor 2014). An increasingly growing consumer population and corresponding demand for medicinal plants has also been reported. This increase in demand in for both in the number of species and in the volume of plant materials being traded (Noorhossainia et al. 2017). The demand for medicinal plants, at times, can create species-specific trade network that can extend beyond national boundaries (Dold and Cocks 2002). The growth in high demand for traditional medicine is particularly realised in developing countries mainly due to the low prices and efficacy of these medicines (Mahomoodally 2013; Sheldon et al. 1997) together with the cultural and religious preferences of the consumers. There also is frequently inadequate access to allopathic medicine as well as lack of effective modern treatment for some ailments in developing countries such as Africa (Mahomoodally 2013). Furthermore, the significance and worldwide growth of interest in medicinal plants is also seen in increased trade as commodities (both in traditional and allopathic medicine) in local, regional and global markets (Schipman et al. 2002; FAO 2005).

The South African Medicinal Plant Industry

The South African medicinal plant industry was worth an estimated R2.7 billion per annum in 2007 (Mander et al. 2007) with an estimated annual consumption of between 35 000 and 70 000 tonnes of local medicinal plants by the approximate 28 million users (Mander and Le Breton 2006; DWAF 2005). In spite of the medicinal plants being consumer demand driven to a large extent (Williams 2004), the expansion of the trade is attributed to the continuous embracing of the medicinal plants as an income opportunity by many unemployed people (Tshisikhawe 2012). However, many people in South Africa heavily rely on harvesting plants from the wild, thus threatening some species of medicinal plants with the extinction of certain popular naturally occurring species such as pepper bark tree (*Warburgia salutaris*) and wild ginger (*Siphonochilus aethiopicus*) already been reported (DWAF 2005). The fast declining and extinction of various high value medicinal plants species in the wild has serious implications for the health and livelihoods of humans, prompting changes in the medicinal plant market and consequently creating opportunities in favour of commercial cultivation (DWAF 2005). The demand for certain species exceeded supply and there were cases of acute shortages of such species resulting in price increases, as reported by Dold and Cocks (2002). The shift to cash economy, emergence of commercial harvesters and the pressure to generate income especially in rural com-

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munities, has led to ignorance of conservative harvesting methods which protected the plant species to some extent (Dold and Cocks 2002).

In the face of threats of the extinction of some species caused by wild harvesting, the question of sustainability of medicinal plants has emerged very strongly lately as there generally are few commercial producers compared with the many gatherers (Mander 2004). In addition to contributing to conservation, cultivation of medicinal plants can provide additional income to smallholder growers. However, securing contracts for the purchase of the plant material is crucial in order to guarantee returns on investment owing to the high costs associated with the establishment of medicinal plants enterprises. Thus, cultivation potentially excludes a great majority of the current harvesters as well as traders, predominantly individuals from remote and underprivileged rural areas (DWAF 2005).

Sustainable cultivation of medicinal plants can help alleviate pressure on uncontrolled wild plants harvest in addition to restrictions on their extraction and trade. In order to promote the twin objectives of conservation and income generation, the Agricultural Research Council (ARC) in collaboration with the Department of Rural Development and Land Reform (DRDLR) undertook an initiative to promote the cultivation of medicinal plants in 7 provinces of South Africa namely, Gauteng, Mpumalanga, Limpopo, North West, KwaZulu Natal, Eastern Cape and Free State. The intervention entails the establishment of economically viable medicinal plant nurseries as well as commercial smallholder farming enterprises. Value chain analysis and linking the entrepreneurs to formal markets is a fundamental and integral part of the implementation process of the projects. However, the value chain in the trade of these plants is not very clear, thus necessitating the undertaking of this study.

Value chain describes the full range of activities that are required to bring a commodity from conception, processing and delivery to final consumers and its final disposal (Weijers et al. 2006; Kaplinsky and Morris 2000). Analysis of the value chain is one of the most valuable methodologies for understanding how markets function for a particular commodity (Kanji et al. 2005). Value chain analysis and managing linkages facilitate the optimisation and coordination of in-

terdependent activities through suggesting areas of costs minimisation or enhancement of differentiation in the value chain (Walters and Lancaster 2000). It is a necessary underpinning for meaningful efforts to upgrade an industry since it involves a detailed understanding of the actors (and their corresponding roles in the value chain), linkages, and conceptualisation of value-adding activities through which the product passes from the initial production stage to distribution and final delivery to the consumer (McCormick 2000; Kaplinsky and Morris 2001). Moreover, improved value chain reduces inequality at the producer level by contributing to social sustainability. Existing commercial producers engage in bulk trade of raw medicinal plants products directly with processing and manufacturing companies, where these are processed into tablets, capsules, tonics or creams (DWAF 2005). The value chain analysis was done in conjunction with the establishment of commercial medicinal plants enterprises in seven provinces of South Africa. Thus, the current study was conducted from the view point of low-income producers with the objective of exploring the implications posed by the functioning of the chain for the economic viability and sustainability of their enterprises. The study has strong policy implications as it sheds light on viable ways of establishing cultivation of medicinal plants to curb wild harvests that in turn threaten extinction of some species, while matching the worldwide increased need for medicinal plants medicine.

METHODOLOGY

The value chain analysis of medicinal plants was conducted for purposes of providing information for the coordination and optimisation of activities across firms in a value chain. Ultimately, the analysis should culminate in ensuring increased resource productivity and economic growth through the development of competitive enterprises, and informed empowerment of smallholder entrepreneurs, and generating information that will help in identifying and strengthening or reinforcing areas of competitiveness, while removing barriers to the sustainable medicinal plant entrepreneurship. The assessment of an enabling environment including relevance and adequacy of institutional support

for the medicinal plant value chain management and/or development is also imminent. Thus, analysis of the medicinal plant value chain was carried out for purposes of reinforcing the establishment of economically viable and sustainable enterprises through finding avenues of strengthening relationships between primary producers and product manufacturers.

The analysis of the value chain requires both qualitative and quantitative information (Kanji et al. 2005). Qualitative information relates to how the chain 'functions'. Quantitative data includes the prices and costs borne by different actors in the chain. However, the latter is not easy to obtain. This study used data and information collected through interviews with key informants from key actors in the value chain (both the formal and informal markets) and organisations with knowledge of the industry. Market surveys were conducted with specialist and industry experts, formal and informal traders of medicinal plants as well as industrial processors. Data was collected from seven provinces of South Africa namely, Gauteng, Mpumalanga, Limpopo, North West, KwaZulu Natal, Eastern Cape and Free State Provinces. Key groups of medicinal plant traders surveyed included hawkers (street traders and gatherers), formal businesses (retail shops and processors) and *muthi* shop traders (formal herbalist shops). The value chain analysis was employed from the point of view of low-income producers for purposes of exploring the implications posed by the functioning of the chain for the economic viability and sustainability of their enterprises.

RESULTS AND DISCUSSION

This section presents the results of this study. The study presents the types of medicinal plants markets and their share of traded volumes, the primary suppliers of plant materials and the medicinal plants value chain.

Type of Medicinal Plants Markets

The market survey revealed that there are various avenues of marketing medicinal plants broadly categorised into formal and informal markets. The medicinal plants are traded in raw and processed form through both formal and

informal traders. Table 1 shows that medicinal plants trade is dominated by street traders (62%), mostly selling raw medicinal plants, while 28 percent were formal businesses (processors plus retailers). Similarly, Dold and Cocks (2002), indicated that in Eastern Cape the medicinal plant trade is largely informal, dominated by gatherer-hawkers, most of them being middle aged women with low education levels. What is important to note is that all the retail shops sold medicinal plants as processed commodities rather than raw. These medicinal commodities in retail shops were sold as tablets, powder or liquid form, where named medicinal plants were either the only ingredient or a mixture with other active ingredients. The retail shops were not involved in processing medicinal plants, but obtained already processed products from medicinal plant processors. Some of these retail shops were involved in packing, labelling and selling while some received already packaged products from processors for example, Clicks, Dischem. Based on this background, medicinal plant farmers who are interested in supplying their raw produce to formal markets should somehow link with medicinal plant processors. Data collected from retail shops, however, help inform farmers that medicinal plants/products are available in the formal markets, and this market can be pursued by producers of medicinal plants, especially those who can process their own produce.

Table 1: Distribution of types of medicinal plants markets

Type of medicinal plants market	Proportion
<i>Muthi</i> shops	10%
Processors	8%
Hawkers	62%
Retailers	20%
Total	100%

The small number of formal businesses and *muthi* shops is probably influenced by the licensing requirement in the industry for traders to be legally recognised as traders. Thus, most hawkers most likely by-pass the licensing process. However, when the quantities that are sold per type of market were compared, it was noted that *muthi* shops and formal businesses had a wide variety of medicinal plants/products, and kept large stock compared to hawkers. There-

fore, commercial producers of medicinal plants should consider supplying mainly formal businesses and *muthi* shops in the event that they are capable of supplying large quantities coupled with running sustainable enterprises. However, hawkers and *muthi* shops still need explanations that the active ingredients in the cultivated plants are not compromised as they generally prefer plants that are collected from the wild. Table 2 summarises the main differences between the formal and informal markets. The major characteristics of the formal sector is concerned about the quality of the raw materials as well as the reputation of their suppliers forcing them to source materials from established producers and suppliers. Despite being small in number, the formal markets consume the largest quantities of medicinal plants in the country. The vast number of the informal medicinal plants traders (hawkers) on the other hand has no strict quality control measures and usually source their materials from the gatherers.

Forms in Which Medicinal Plants are Sold

Table 3 shows that medicinal plants are sold either in raw or processed form. Most of the products sold by hawkers are unprocessed (81.8%), while those who reported to process referred to drying, grinding, chopping and/or mixing, which in most cases is done manually. The processing from the formal businesses includes application of scientific methods where the plant products are often tested for active ingredients, the form is changed using machinery, mixed with certain preservatives and has a stipulated shelf life. For formal businesses, the

medicinal plant products are usually in the form of cosmetics (for example soaps, shampoos, tissue oils, lotions, and lip balms), immune boost products (liquids or powders), medicines (capsules, tablets, liquids) and tea bags. When prices were compared, as expected, the prices increased with the type of processing applied, where products processed using more complex methods fetched higher prices.

Table 3: Forms in which products are sold

	<i>Freq- uency</i>	<i>Per- cent</i>	<i>Cumu- lative percent</i>
Unprocessed	288	60.50	60.50
Processed	188	39.50	100
Total	476	100	

<i>Type of market and form of product (%)</i>			
	<i>Hawkers business</i>	<i>Formal</i>	<i>Muthi shops</i>
Unprocessed	81.83	5.3	70.2
Processed	27.28	94.7	29.83

Figures 1, 2 and 3 are pictorial presentations of the medicinal plants displayed for sell in different markets visited during the market survey. Figure 1 portrays the presentation of medicinal plants by hawkers. The medicines are exposed to various weather conditions and there is no packaging. Where packaging is utilised, it is simple plastic bags without labels and the consumers rely on the description and word of confirmation of the seller as to which medicine they are purchasing. Hygiene is compromised to a larger extent compared to the medicine sold in formal markets. This is closely the case with

Table 2: Major differences between the types of medicinal plant markets

<i>Informal</i>	<i>Formal</i>
Large number of informal traders but consuming small amounts	Small number of formal market, but consuming large amounts of produce
Sell raw products (dried or fresh)- minimal processing through grinding, cutting, mixing	Use partially processed products (for example, powders). Process, pack and distribute (for example, Clicks, Dischem)
Informal market has no quality and standards control measures.	Strict quality and standards control measures
Keep fairly small stock (can keep stock up to 6months)	Keep large stock of raw materials
Majority source from gatherers in bulk and repack into small packets	Largely source materials from established producers and suppliers



Fig. 1. Medicinal plants displayed for sell by the hawkers

those medicinal plants sold in *muthi* shops (Fig. 3). Medicinal plant medicine sold in formal markets is not only processed but also well-packaged and labelled with much of it provided with information on dosages and at times the ingredients in the medicine (Fig. 2).

Sources of Plants

When traders were asked about their sources of medicinal plants, a greater proportion of retail shops were not aware of primary sources of their products. They only knew the compa-



Fig. 2. Presentation of medicinal plants in the formal markets



Fig. 3. Presentation of medicinal plants in the Muthi shops

nies that supplied them with the products. As such, the majority (68.3%) of the formal businesses did not know their primary sources (Table 4). The majority (80.7%) of the plants sold by hawkers were harvested from the wild. Although they reported that they often fetched the plants from communal lands, some respondents mentioned cases where gatherers trespass and collect medicinal plants from privately owned land without permission. Similarly, Moeng and Potgieter (2011) reported that major quantities of plant material traded in informal markets in Limpopo province were harvested from the wild specifically communal lands, farms and protected areas. Also, traders of medicinal plants from the wild claimed that they had valid permits to harvest. Harvesting plants from the wild without replacing poses a challenge to the environment, especially when roots, stems, bulbs and barks of plants are used. A study conducted by Dold and Cocks (2002) in Eastern Cape, concluded that 93 percent of the species traded were harvested unsustainably since they were entirely or partially removed leading to plant death. Further explanations from the respondents show that there are no monetary costs incurred in collecting plants from the wild if the traders harvest themselves, they only incur transport costs. However, in some cases, they get medicinal plants from gatherers who charge them a fee.

Table 4: Primary source of raw material and type of market

Type of market	Source of raw material (%)		
	Muthi shops	Hawkers	Formal business
Farmer	22.53	15.3	16.5
Wild	54.5	80.7	7.87
Cooperative	22.97	4.27	8.23
Do not know	0	0	68.3

Muthi shops obtain their medicinal plants from all three sources (Individual farmers, the wild and cooperatives). Although the majority (54.5%) of *muthi* shops source from the wild, a considerable percentage either source from cooperatives (23%) or from individual farmers (22.5%). The small percentages of cultivated medicinal plants sold by hawkers were either from their own planted land or obtained from other farmers. These results indicate that medicinal plant traders are open to cultivated medicinal plants, thus challenging the general perception that medicinal plants that are collected in the wild work better as compared to those that are cultivated. This is supported by the fact that about 82 percent of urban based healers and 69 percent of clinic patients surveyed in other studies indicated their acceptance of cultivated material (Dold and Cocks 2002).

The majority (86.3%) of respondents reported to fetch most of the plants within their provinces, where 22.7 percent reported that their suppliers deliver commodities to them and 53.7 percent collect from the source (Table 5). Respondents who reported that goods were delivered to them were mostly retailers and processors. Those who collected from the source bore transportation costs, and those who depend on public transport complained of high costs they incurred in transporting their commodities, since the fare is charged according to the quantity of goods being transported and distance. Traders who fetched commodities outside the province either fetched them within South Africa or from neighbouring countries such as Zimbabwe, Mozambique or Swaziland and mainly those that were unavailable locally. This information shows

Table 5: Places of origin for medicinal plants sold

		Frequency	Percent	Cumulative percent
Delivered by Supplier	Within the province	23	14.4	14.4
	Outside the province	29	18.3	32.7
Collect from Source	Within the province	86	54.3	87
	Outside the province	21	13	100
Total		159	100	

that traditional supplies of medicinal plants are not sustainable, the reason why cultivation of medicinal plants needs to be supported per province. As a result, the plants can be sourced within the provinces and transportation costs can be reduced.

Common Medicinal Plants in South Africa

Table 6 indicates the most common and highly demanded medicinal plants as indicated by the interviewed traders. Fourteen species were identified to be highly demanded by customers. Apart from the traders mentioning that these species are highly demanded, it was evident from a relatively large number of traders selling these same species, indicating that the market for these species exist. Three of the 14 listed species, *Hypoxis hemerocallidea*, *Sutherlandia frutescens* and *Siphonochilus aethiopicus*, are also listed in other studies as commercially important South African medicinal plants (Street and Prinsloo 2013). *S. aethiopicus* and *Alepidea amatymbica* were again amongst the top eight most frequently encountered species in *muthi* shops, in a study done in Limpopo province (Moeng and Potgieter 2011).

Market Prices

Table 7 shows prices for raw commodities and processed products sold on the market. In

Table 6: Estimated volumes of top 10 medicinal plants demanded over an average period of 1 month

Medicinal plants	Formal traders		Informal traders		Total (kg)
	Volume (kg)	%	Volume (kg)	%	
<i>Siphonochilus aethiopicus</i>	1300	42.5	1760	57.5	3060
<i>Hypoxis hemerocallidea</i>	21900	74.6	7440	25.4	29340
<i>Aloe verrox</i>	9800	92.5	800	7.5	10600
<i>Artemisia afra</i>	18100	84.9	3220	15.1	21320
<i>Sutherlandia frutescens</i>	16500	84.4	3040	15.6	19540
<i>Scabiosa columbaria</i>	9900	81.8	2200	18.2	12100
<i>Moringa oleifera</i>	17400	90.3	1870	9.7	19270
<i>Helichrysum odoratissimum</i>	3500	85.4	600	14.6	4100
<i>Alepidea amatymbica</i>	7200	74.9	2410	25.1	9610
<i>Drimia sanguinea</i>	2000	68.7	910	31.3	2910
<i>Eucomis natalensis</i>	5500	88.4	720	11.6	6220
<i>Asparagus africanus</i>	38400	98.5	600	1.5	39000
<i>Jatropha zeyheri</i>	4950	93.2	360	6.8	5310
<i>Eucomis autumnalis</i>	7200	72.0	2800	28.0	10000

Source: Market survey (ARC-VOP 2014-2015)

Table 7: Market prices for the top ten species (Volume and/weight)

<i>Plant species</i>	<i>Unit of sale</i>	<i>Minimum price (ZAR)</i>	<i>Maximum price (ZAR)</i>	<i>Average price (ZAR)</i>
<i>Siphonochilus aethiopicus</i>	Raw (packet)	10.00	15.00	13.00
	Processed (60 tablets)	65.00	100.00	85.00
<i>Hypoxis hemerocallidea</i>	Raw bulb (2- 4 in packet)	8.00	10.00	9.50
	Powder (100g)	30.00	50.00	35.00
<i>Aloe verrox</i>	Raw (bunch)	10.00	15.00	12.00
	Processed (500ml)	30.00	50.00	45.00
<i>Artemisia afra</i>	Raw (packet)	5.00	10.00	8.00
	Processed (500g)	35.00	50.00	45.00
<i>Sutherlandia frutescens</i>	Raw (1kg)	10.00	15.00	11.00
	Processed (1l)	25.00	80.00	60.00
<i>Scabiosa columbaria</i>	Raw (packet)	10.00	12.00	10.50
	Powder (100g)	40.00	70.00	60.00
<i>Moringa oleifera</i>	Raw (bunch)	10.00	15.00	12.00
	Processed (100 tablets)	100.00	180.00	140.00
<i>Helichrysum odoratissimum</i>	Raw (packet)	8.00	10.00	9.80
	Processed (1l)	30.00	75.00	50.00
<i>Alepidea amatymbica</i>	Raw bulb (2- 4 in packet)	15.00	25.00	20.00
	Powder (50g)	250.00	400.00	350.00
<i>Drimia sanguinea</i>	Raw bulb	5.00	10.00	6.00
	Processed (1l)	40.00	70.00	55.00

Source: Market survey (ARC-VOP 2014-2015)

all cases, prices are higher where medicinal plants were sold as processed products compared to the raw forms. While prices are high in formal markets and for processed products, they also fluctuate between markets, depending on the trader's access to resources and the proximity of business site to source of medicinal plants/commodities. Botha et al. (2007) also reported a considerable variation in traders' perception of species availability, resulting in price fluctuations even within the same market. Prices of almost all raw commodities ranged between R5.00 to R15.00 per unit. The highest price charged for raw commodities was charged for *Alepidea amatymbica*, with the minimum price of R15.00 and maximum of R25.00. The difference in price of raw commodities and of processed products was high for *Alepidea amatymbica* and *Moringa oleifera*, where the average price of raw commodities was R20.00 and R12.00 respectively, and yet the average price of 50g of *Alepidea amatymbica* was R350.00. A hundred tablets of *Moringa oleifera* had an average price of R180.00. Similar price differences in the value chain has been reported for *Pelargonium sidoides*, an important medicinal plant, where harvesters were paid between R4.00 and R4.50/kg of wet material compared to R120/kg paid to the

exporter of the processed material of the same species (Motjotji 2011).

The difference in prices between raw and processed products should encourage producers to be involved in processing medicinal plants. Thus, value chain analysis was necessary before investing in cultivation of medicinal plants in order to evaluate different options as well as associated costs of the forms through which the products can be sold. Van Niekerk and Wynberg (2012) argue that the lack of competition between buyers in the medicinal trade plays a role in the price harvesters receive. Botha et al. (2007) recommends that, since transport and time of collecting medicinal plants in the wild are highest costs for informal traders and yet they are excluded in the pricing, inter-cropping medicinal plants with food crops be encouraged to facilitate a ready source of material that could be harvested as required. This recommendation is worth taking into consideration.

Medicinal Plants Value Chain

Figure 4 shows the medicinal plants value chain and key actors. The main value chain players in the South African medicinal plants industry are very diverse as owing to the diverse

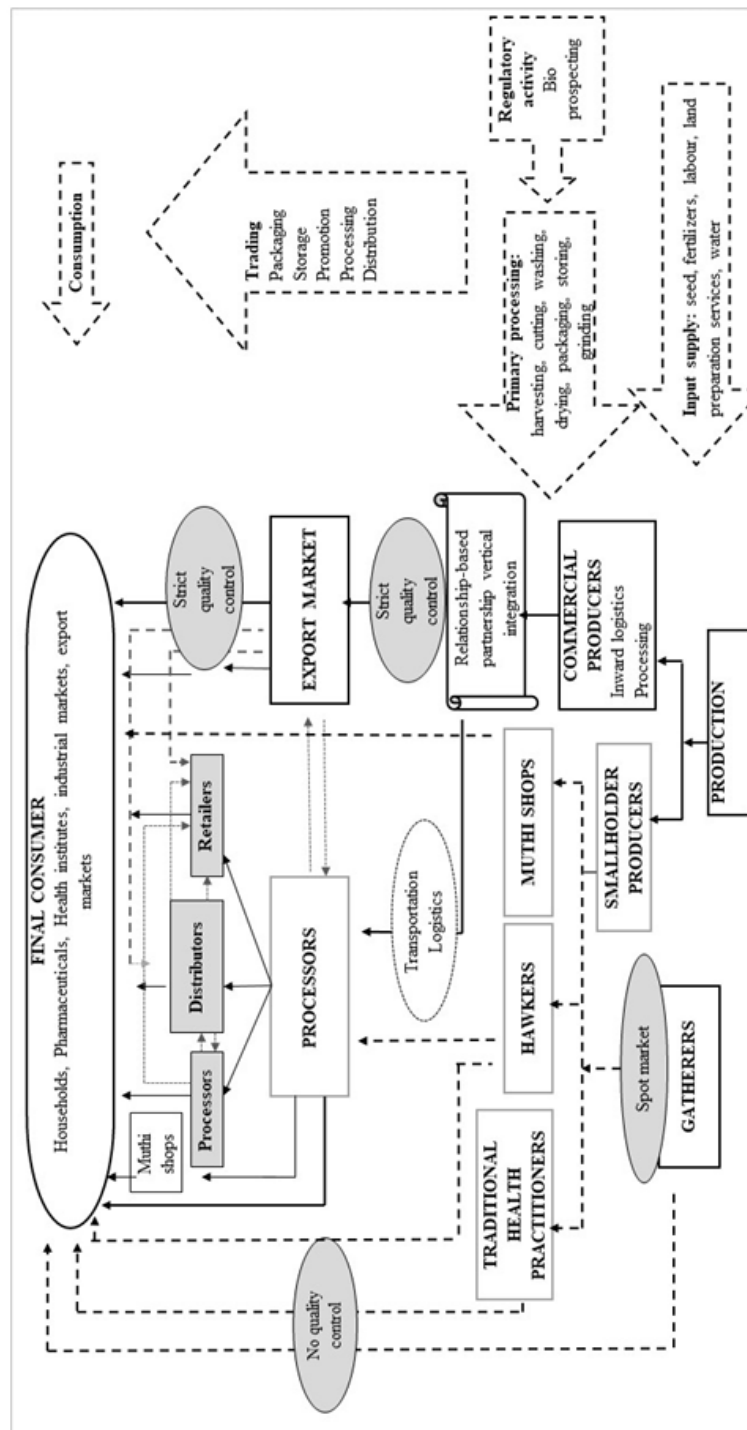


Fig. 4. Medicinal plant value chain
Source: Market survey (ARC-VOP 2014-2015)

sources of medicinal plant material. These sources comprise of gatherers from the wild, input suppliers, primary producers, processors, traders, wholesalers, manufacturers, distributors, traditional health practitioners, retailers (mainly supermarkets) and consumers. Processors play a vital role in the downstream value chain through the process of transforming raw materials into products. However, the buyer driven value chain tends to be exploitative, extracting as much resources and demanding lesser price from suppliers. This monopolistic behaviour, as described by Van Niekerk and Wynberg (2012) characterises an industry where benefits to the producers are very limited, accompanied by major differences in the bargaining positions of the manufacturer and the primary producer. The commercial production is characterised by a relationship-based partnership together with strict product quality control. These relationships seem to be found only among a few players involving commercial producers and apparently render the medicinal plant value chain more effective and productive. The most common relationships include contracts, vertical integration, strategic alliances and joint ventures. It is characterised by high degree of processing and export activity. An enabling environment is thus essential for the purposes of supporting the smallholder producers.

Generally, marketing of medicinal plants is beset with diverse constraints including poor coordination among actors in value chain. There also is limited access to market information as well as lack of grades and standards. Of the two major marketing channels, the formal markets are a sustainable option for the producers. The smallholder producers are then faced with two options in the marketing of their produce through the formal market value chain, either establishing processing plants and competing with established commercial traders or partnering aimed at producing for purposes of supplying the established formal markets. Competing with already established commercial medicinal plant businesses implies that the smallholder enterprises need the establishment of agro-processing plants. In order to partner with established commercial medicinal plant businesses, intense market survey is inevitable.

CONCLUSION

The value chain analysis revealed that the buyer-seller relationships are predominant in the medicinal plant value chain. The commercial cultivation of medicinal plants can be an economically viable and competitive venture when efforts are directed towards improved access to formal markets, greater control over good product quality and consistent supply.

The medicinal plant market is difficult for the smallholder producers to penetrate. The market is beset with many difficulties ranging from the value chain being a closed chain for the few. Also, the cultivation of the plants which have not been previously domesticated is beset with many difficulties which undermine the economic benefits associated with the industry.

RECOMMENDATIONS

Collaboration among farmers, research organisations and the medicinal plant industry is critical for a sustainable value chain for medicinal plants. Collaboration in the initiative to establish commercial medicinal plants enterprises will ensure effectiveness towards curbing extinction of certain medicinal plant species, meeting high demand of the natural medicine while creating income generation opportunities for the smallholder farming industry. The establishment of medicinal plant enterprises thus need a thorough assessment of the technical and economic feasibility of the chain to be developed amidst the understanding of the prevalent farming systems which will have impact on the performance of the chain and the ability to undertake long term involvement to ensure the success of the chain. Planting of larger hectares should be promoted and encouraged among the smallholder medicinal plants producers in order to obtain sufficient stakes, thereby increasing the chances of success. Due to the high competition between cash crops and medicinal plants, the cultivation of medicinal plants stand a greater chance of success only when the returns are more than those from alternative cash crops. This study thus recommends the establishment of agro-processing plants for smallholder producer enterprises in order for them to reap higher benefits from their entrepreneurial activities. Both the

vertical and horizontal integration among commercial actors and supporting agents will be beneficial for both the producers and the processors with regards to accessing high value chains, pricing, quality supply volumes and continuous improvement. The role, competency and commitment of all actors are not invaluable for the establishment of a sustainable and integrated value chain.

Networking with key value chain players such as private and government institutions, research institutions and agencies as well as other support organisations is essential for creating a sustainable and competitive advantage and recognition of the products in the market. Efforts should be put into creating an enabling environment aimed at an efficient and integrated value chain which advocates will enable primary producers to become active participants who are motivated to manage their resources, reinvest and innovate rather than merely remaining as passive suppliers

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