Promoting Forest Value Chain in the Emerging Markets: *The Value Creation and Value Appropriation Context*

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Abstract

Beekeeping is among the important activities which can potentially add value to the existing forests. Bee products are among the potential non-timber forest product value chains which have remained unexploited. This qualitatively descriptive study examines how beekeepers create capture values in the beekeeping industry in Tanzania. Interpretative analysis was used to describe triangulated data collected from purposively sampled beekeeping units, =. The findings indicated that beekeepers create lesser value for various bee products because they use traditional means and scope to produce, process and sell honey and honey products in the rural markets. The majority of these beekeepers have limited capabilities to improve productivity, quality, and management channels. Beekeepers acquire lesser values because they target rural markets whose customers usually have relatively lower incomes and thus less purchasing power. In other places, beekeepers capture lesser values of the harvested products because of using inappropriate measurement units. For instance, the majority of beekeepers sell comb honey which is measured in volume and not weight. Promoting the value chain of forest products improves

the ability of chain actors to create values and capture a sizable additional profit from the activity. Value addition in each stage will therefore improve the economic and social wellbeing and hence improving the livelihood of stakeholders in each node in the value chain. The theoretical and empirical contribution to the industry architecture, value chain and value systems, and the business model are substantial. Based on the stu.dy findings and conclusions, further studies are suggested on analysing how beekeeping industry actors can co-create value for inclusive actors in the forest value chain.

Keywords: *value creation, value capture, value chain, business model*

1. Introduction

Tanzania is endowed with vast forest resources. About 40 percent of the land in Tanzania is estimated to comprise forests. About 70 percent of these forests are used for productive activities, while 30 percent are government-conserved forests (Msamula et al., 2016). Forests provide a wide range of products and ecosystem services (and hence different value chains). Some of these products and ecosystem services notably honey, timber and derivative products such as paper are reflected in monetary terms (Msamula et al., 2018; Ojapinwa, 2021; Vanhaverbeke et al., 2021). Beekeeping, which is one of the potential forest value chains provides a range of ecological, social and economic benefits. "Beekeeping is an activity of great relevance for natural ecosystems with social and economic dimensions" (Barrientos et al., 2021, p. 76). Other benefits from the forests include non-monetary and these include the ability of forest soils to purify water, regulate run-off and sequester carbon. The forest sector has a significant contribution to the national economy; however, due to methodological differences, the real contribution of forest resources to society, national and traditional economies may be underestimated. Thus, , different value chains in the forest sectors should be upgraded to realize the contribution of forest resources. This study, therefore, is limited to the beekeeping value chain as one of the potential sub-sectors in the forest value chains.

The promotion of the value chain of rural activities in the forest sector requires an understanding of how firms create value and capture value among them.

Jacobides (2006) proposes a model of describing how labour is organized and how profit is shared among the firms in the value chain. This model defines both the division of labour between the firms and the division of surplus among industries (Jacobides et al., 2006, 2018). The model also shows the value creation and the division of labour (i.e. who does what to create value) and value capture and the division of revenue that is, who gets what (Tee and Gawer, 2009; Jacobides and Kudina, 2013; Tutuba and Msamula, 2020). In order to promote forest value chain in the emerging markets, this study is limited to the beekeeping industry and analyses the existing value chain and business model of beekeepers in terms of how they create value and capture value.

The term ''value chain'' represents a series of activities that provide value to customers in the form of a product (Walsh, 2011; Msamula et al., 2018; Tutuba et al., 2020). Other scholars (Kaplinsky and Morris, 2001; Collins et al., 2015; Andersson et al., 2016) define value chain as a full range of activities that are required to present a value proposition to consumers and dispose of the product after use. Porter (1985) defines value chain analysis as a model identifying and measuring those activities comprising a firm's value chain. In the value chain, the competitive advantage of the firm depends on its abilities (Teece, 2010, 2018; Tidd and Bessant, 2018) to perform activities, to create and to add value to the product at each stage. This study defines value chain as a set of activities that a firm, beekeepers, in this case, perform to deliver a value proposition to the target consumers. The firms create value by carrying out activities that add value to a product as it is presented to target customers.

After creating value, the experience shows that firms compete to capture more value by fighting each other within the value chain. They try to make their slice of the pie bigger by making a slice of someone else smaller (Collins et al., 2015). For example, in a beekeeping industry, honey traders try to increase their slice by capturing more value of the honey business, and thus reducing the slice of other firms such as beekeepers (Sagwa, 2021; Barrientos, et al., 2021). This practice has made a value chain behaviour of the beekeeping competitive or opportunistic. Consumers switch suppliers provided they can get from elsewhere what they need at a relatively cheaper price. In addition, suppliers would abandon customers if

they get a better deal from someone else in what is known as side-selling. Honey side-selling is evident in the Tanzanian beekeeping industry.

Once the value has been created using the value chain approach, beekeepers have to present or deliver that value to the customer who equally capture part of that value. As Amit and Zott (2001) argue, the total value created equals the values captured in a business model. The total value created in a value-creating system equals the sum of values captured by different actors in a particular value system. However, this phenomenon does not tell us anything yet about the distribution of that value among the participating stakeholders (Tutuba et al., 2020; Tutuba and Msamula, 2020). It only tells us that value is captured but how much value is being captured is not stated. Responding to the how question in this model is critical because several stakeholders will benefit along the process.

Furthermore, the emergence of phenomena such as value co-creation, firm networks and the business model concept have received growing attention in research (Zott et al., 2011; Amit and Zott, 2014; Weiblen, 2014). The concept value has been defined differently by scholars from different fields (Lindgardt et al. 2009; Teece, 1998, 2010; Vanhaverbeke et al. 2012; Schneider and Spieth, 2013; Amit and Zott, 2014); however, all the scholars focus on how firms create, deliver and capture value (Tutuba et al., 2019a; Tutuba and Msamula, 2020). A business model defines the way companies create and deliver value to a set of customers at a profit that is, capturing part of the value (Osterwalder and Pigneur, 2010) or at the realization of economic value (Schneider and Spieth, 2013). At its heart, a business model performs two important functions: revenue and or value creation and value capture (Chesbrough, 2007, 2010, Vanhaverbeke, 2017). First, business model creates a net value through a defined series of activities, from raw materials acquisition to disposal of scraps and consumer satisfaction and second, it captures part of the value that is created in the value system. According to this understanding, the business model is centred on the value proposition: how the value chain creates, delivers and captures value. It is from this understanding that this study adopted the business model canvas (Osterwalder and Pigneur, 2010) to describe the value creation and value appropriation structure of beekeepers in the existing beekeeping industry in Tanzania.

Tanzania is among the countries with the highest potential for the production of bee products in the world. She is the second-largest honey producer in Africa, after Ethiopia, and the tenth in the world (Nyatsande et al., 2014; Guyo, 2015; Ismail et al., 2021). However, the Tanzania's potential in bee product production has not been fully utilized. Productivity is still low and beekeeping markets are still under-served (Tutuba and Vanhaverbeke, 2018; Vanhaverbeke et al., 2021). On the other hand, commercialisation practices of bee products are still inefficient, weak and disorganised (Sagwa, 2021).

> *"the beekeeping sector in Tanzania is currently being handled by individual beekeepers ... and there is no organized marketing system ... to encourage the development and expansion of the industry" (The International Trade Centre [ITC], 2015, p.5).*

According to Sagwa (2021), honey is the most important hive product and the main driver of producers venturing into beekeeping. However, beekeepers who are the primary producers of honey and the centre of the value chain have remained poor because they have not captured a sizable value from beekeeping activity (Tutuba and Vanhaverbeke, 2018; Tutuba et al., 2019a; Ismail et al., 2021). Therefore, the promotion of beekeeping value chain in Tanzania is necessary. It is therefore important to understand how beekeepers create and capture value in the existing beekeeping value chain. Specifically, the study addresses two research questions: (1) What do beekeepers do to create value? (2) How do beekeepers capture value in the beekeeping industry? Addressing these questions can help us understand potential actions, which can be taken to promote the beekeeping value chain and its associated by-products in the emerging markets.

The study intends to contribute to the theoretical understanding and empirical application of the value chain and business model in the beekeeping industry in Tanzania. This understanding will help different actors in the forest sector and stakeholders in beekeeping sub sector to improve value creation and value capture abilities thereby increasing the value of the pie in the beekeeping industry. Improving the ability of beekeepers and other actors to capture a sizable value will improve their livelihood in the value chain. In this respect, actors in the beekeeping industry can decide about resources, networks and positions to

take in the value chain to improve the values of various products in the emerging markets.

2.0. Methodology

This qualitative (Saunders et al., 2009; Yin, 2018) and descriptive study (Hair et al., 2007; Corbin and Strauss, 2015) was carried out in the rural areas of Tanzania, because the area has diverse vegetation and ecological zones suitable for beekeeping (Tutuba and Vanhaverbeke, 2018). Beekeepers constitute the study population whereby five sole beekeepers and 20 beekeeping associations from five regions were purposively selected (Saunders et al., 2009; Yin, 2014). The sample was drawn from Kigoma (5), Tabora (4), Morogoro (11), Singida (3) and Iringa (2). The sample was selected based on the number of hives, possession of basic beekeeping knowledge and skills, brand visibility and engagement in bee related activities for value creation and capture. Data were collected using different techniques and tools for triangulation purposes (Creswell, 2009; Flick, 2009; Yin, 2014) and each data collection tool was employed up to saturation level, that is, where no more new information was generated (Hair et al., 2007; Corbin and Strauss, 2015; Yin, 2018). The study motivation was explained to the participants and consent was sought before the actual data collection including audio and clip recording, taking of photos, and note-taking, which were used to collect information.

The data were transcribed using transcribing software (Corbin and Strauss, 2015; Yin, 2018) and the NVivo 18 was used for descriptive analysis. Thereafter, the interpretative data analysis (Elliott and Timulak, 2005; Andersson et al., 2016) were used to analyse the existing perceptions of beekeeping firms' on value creation through their business model. As Flick (2009) argues, the interpretative technique permits the conversion of data into research results through various stages. Therefore, the categorisation of data uses interpretive strategies to analyse how beekeepers create value and capture value in the beekeeping industry.

3.0. Findings and Discussion

3.1 The existing beekeepers' value chain

The beekeepers' value chain include actors in this channel such as honey hunters, beekeepers and beekeeping groups and associations. The core product for beekeepers is honey from both forms, comb and refined. To produce this product, beekeepers carry out different activities as summarized in Table 1.

Table 1. Beekeepers' Activities to Create Value and Capture Values

Value chain activities		Functions performed in the activity
Honey Production	Apiary setting	Site selection (apiary assessment), foraging, security, reachability.
	Occupancy rate	Hive sitting, hive baiting, preventing absconding and migration.
	Hive inspection	Cleaning, managing bee pests and predators.
	Harvesting	Most harvesting is improper – use of open fire, low hygiene, take all combs, bee-killing and burning, no combs grading.
	Transportation	Taking honeycombs from apiaries to storage (home) area.
	Storage	Honey is stored at home with other materials like agro-produces.
Processing	Extraction	No honey press, they use hands, mosquito nets, and available local materials as a sieve.
	Aggregation	Bulking or pilling up stocks and honey blending.
	Storage	Keep blended and aggregated honey in proper storage tanks.
Trading	Selling	Potential customers are traders, the payment structure is pre-paid and cash on sale. Pricing is per 20 Littre containers or buckets.
	Customer relationship	Transactional based. Beekeeping groups and associations.
	Transportation	Customer covers the transportation costs.
	Markets	Rural markets: Local brewers, households and traditional healers, Urban markets: Urban centres, retail shops, and middlemen.

Most beekeepers depend on traditional skills and the scope of production to produce honey. They use traditional hives, apiary management techniques and harvesting practices. They also depend on inherited knowledge and skills to perform some beekeeping activities. Beekeepers who extend their activities to the processing stage, do so in a traditional way by using traditional means. For example, some beekeepers in Morogoro and Tabora use hands to crush combs and traditional sieves or use mosquito nets as alternative sieves. This creates a lesser value of the product because honey production is lowered and the quality of honey compromised.

In honey trading, beekeepers pack and sell honey without branding logos, label or quality standard packaging materials. They mostly pack honey in recycled bottles of juice, wine and spirits or containers of edible oil and target the least profitable rural market segment. These packaging materials create low value than is the case when the products are packed in quality packaging materials. Similarly, targeting the low-income market segment captures low value as consumers are sensitive to price but not to quality and packaging. As a result, the rural market is not deriving much value from the investments made to develop the honey product to the level of consumable quality. The most reliable customers in this segment are traditional brewers and honey traders. The price in this channel is mostly negotiable depending on (1) nature or state of the honey: comb, semi-refined, and refined honey; (2) season: harvesting or peak season, normal season, and low or off-peak season; and (3) location or region: regions can be high, moderate low in potential. Moreover, the negotiation power of beekeepers is low because of internal competition, lack of coordination among themselves, and limited value added to the product. As a result, customers dictate the price and nature of honey they want to buy. On average, the price of a 20 litres bucket of comb and semi-refined honey is Tshs 60,000 and Tshs 120,000 respectively.

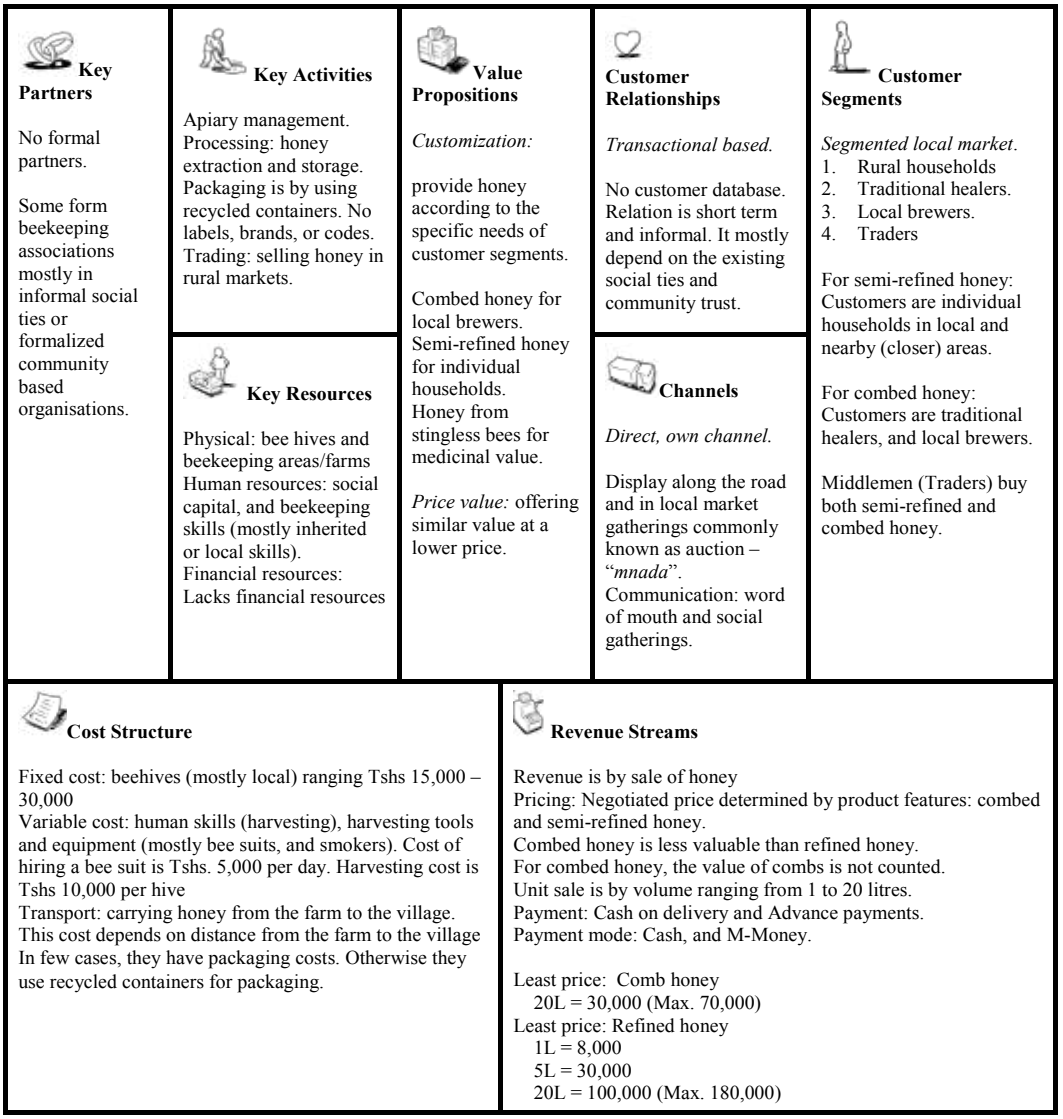
To create value, beekeepers perform all the basic functions and activities of value creation from raw material acquisition to channel management. However, they use traditional means, skills, and scope to perform these activities as they have limited financial resources to invest, limited commercial skills and limited capabilities to create a sizable value for customers. The beekeeping value chain has three key channels: the beekeepers, processors and traders. Each channel has different logistical complexities and different levels of development of products (Tutuba et al., 2020). However, this study was confined to beekeepers, therefore, only the activities performed by beekeepers were analysed.

3.2. Existing business models of beekeepers

This part presents the existing business models of the potential actors in the beekeeping industry value chain. The elements of the existing business models

are established after mapping the activities of the beekeeping industry actors onto the business model canvas as illustrated by Osterwalder and Pigneur (2010).

Figure 1. The Existing Beekeepers' Business Model



3.3 Promoting the Beekeepers' Value Chain in the Beekeeping Industry

To promote the rural value chain in the emerging market requires strategic and policy change to enhance the ability of rural firms to create more value and capture

a sizable value from rural activities. In the beekeeping industry, beekeepers can promote their value chain if they are able to perform activities which create more value (increase the size of the pie) and equally capture a sizable value from the activity. Therefore, this can be achieved by changing how beekeepers create value and capture value, that is, changing the activities in the value chain and changing the business model.

3.4 Changing Value Chain Activities to Create More Value

The first most important step in value creation in the beekeeping industry is honey production: which involves apiary management and harvesting. Honey production is the process of managing the bee colony (apiary management) effectively and efficiently and yield (harvesting) honey. If these activities are slipshod, or performed below the required standards, all the succeeding steps in the value chain will be of little importance in delivering value to customers. For example, no matter how good the honey is refined and packed, if it was harvested before maturity, then the honey will certainly decompose or ferment. Unfortunately beekeepers produce honey using traditional means – including traditional tools and equipment and depend on inherited traditional beekeeping knowledge and skills. These honey handling practices limit the ability of beekeepers to create more value through the production of extra honey. For example, beekeepers produce an average of 5kgs and 10kgs of refined honey per harvest from traditional and commercial hives respectively. Therefore, commercial hives produce more honey, as a result, create more value than traditional hives. Similarly, beekeepers manage their hives traditionally using the inherited beekeeping knowledge and skills. Hives are hanged on trees after baiting waiting for bees to come and occupy them, which can take up to six months before the bees occupy these hives. After occupancy, beekeepers wait until the harvesting season. Beekeepers inspect the hives and apiaries just to check whether the bees are still in the hives or have left. Due to this frequent visibility of the apiary, the rate of abscondment becomes high while the occupancy is low leading to low honey production. For example, if a beekeeper has 100 hives, and the occupancy rate is 60 per cent, the amount of honey that can be harvested is 600kgs, on the assumption that a hive produce 10kgs per harvest. If the occupancy rate is increased to 80 per cent, this particular

beekeeper can harvest up to 800kgs (an increase of 200kgs) of honey. Therefore, appropriate apiary management create more value by increasing honey production as a result of the improved occupancy rate.

Furthermore, the second activity performed during honey production is harvesting. Honey is at its best when it is in the combs. More handling increases the risk of contamination: the less it is contaminated, the better the quality of the honey. This means, creating value that is producing quality honey requires proper and hygienic handling of honeycombs during harvesting, storage and processing. Beekeepers harvest honey by using traditional means, and open fire or lots of smoke. They harvest all the combs including the ones with pollen, larvae, and brood – some beekeepers eat larvae and brood. After harvesting, most beekeepers carry the combs in 'home help' buckets. This harvesting practice kills the colony making the bees leave the hive because they are without food, and thus new bees to cannot be hatched. Also, these practices lead to producing mixed quality honey: taste, colour, water content, and viscosity. Honey is hygroscopic, it absorbs flavours and moisture. This type of honey is less valuable in the market, and thereby making beekeepers capture low value.

After harvesting, honey processing is the next activity in the beekeeping value creation system. Honey is a food product, and most customers want to consume safe, clean and healthy products. Therefore, having an agreeable and hygienic processing facility adds more value to beekeeping products. Most beekeepers do not process honey, and some only do extraction or semi-processing. They extract honey from honeycombs by using traditional tools and techniques, most pressing and gravitate, in poorly hygienic environments, mostly home-based. The semi-refined honey is normally left with foreign bodies such as comb particles and parts of dead bees. To promote the value chain, professionalism and investments in human resources are important in ensuring improved productivity and quality of honey products which is important in creating and capturing value in the beekeeping industry. Having skilled people in both beekeeping and processing reduce post-harvest losses and improves productivity, product quality, and maintain quality.

As for trading in the target market and customer segments, most beekeepers sell their honey to the rural markets, mostly to traditional brewers, traditional healers and individuals. Also, they sell either comb or semi-processed honey to other industry actors such as processors and honey traders. The rural market is less potential because it has poor, low-income customers, whose consumption of honey is non-essential. The urban market is reliable, potential, and profitable; it has customers who value health, medicinal and nutritional benefit of honey, and has a relatively higher income level. Thus, beekeepers capture relatively lower value than beekeeper-processors and honey traders by just targeting the less profitable market segment. Similar findings were reported by (Sagwa, 2021; Barrientos, et al., 2021).

3.4.1 Changing Commercial Activities to Capture a Sizable Value

Regarding value capture, beekeepers capture value by selling honey based on volume (litres) and not weight (Kg). Trading honey by volume captures lower value than trading by weight because honey is denser and therefore heavier. On average, a litre of honey equals 1.3kgs; a 20 litres bucket of refined honey has an average weight of 25kgs. In the rural market, 1kg and 1lt of refined honey have the same retail price of Tshs 10,000, and an average wholesale price of Tshs 6,000. Thus, trading in litres, beekeepers capture a revenue of Tshs 200,000 (i.e. 10,000×20lt) at retail and Tshs 120,000 (i.e. 6,000×20lts) at wholesale. But, trading in weight, they capture a revenue of Tshs 250,000 (i.e. 10,000×25kgs) at retail and Tshs 150,000 (i.e. 6,000×25kgs) at wholesale. Therefore, through trading in litres, beekeepers lose some value, and thus capture lower value of about Tshs 50,000 in retail and about Tshs 30,000 in wholesale than trading in Kilogram.

Similarly, beekeepers capture much less amount of value by trading comb honey instead of refined honey. For example, an average price of a 20lts bucket of comb and refined honey is Tshs 50,000 (i.e. Tshs 30,000 to 70,000) and Tshs. 150,000 (i.e. Tshs 120,000 to 180,000) respectively. Normally, three buckets of comb honey produce two buckets of refined honey. Thus, an average cost of Tshs 150,000 (i.e. Tshs 50,000*3 buckets of comb honey) create revenues of 300,000 (i.e. Tshs 150,000×2 buckets of refined honey). This means that beekeepers capture

a revenue of Tshs 150,000 by selling comb honey, and Tshs 300,000 by selling semi-refined honey equivalent to comb honey. Also, by selling comb honey, they capture revenue of Tshs 150,000 less than selling semi-refined honey.

Beekeepers can capture a sizable value (1) if they change the unit sale from volume to weight, (2) if they change the target market from the unprofitable rural market to urban market that has customers with relatively higher purchasing power. Also, a sizable value can be captured by performing branding activities: packaging of honey in quality containers with acceptable standards , apply proper labelling and use appropriate channel in both communication and delivery. Similar findings were reported by Ismail et al., (2021)

3.4.2 Changing the Business Model

In the business model, beekeepers should begin by changing the customer segment from rural to urban customers or processors in the value chain. Then, change value proposition from comb and semi-refined honey to refined and branded honey. as for marketing channels, beekeepers rely on the word-of-mouth and social interaction. This should change to the use of social media as a means of creating both communication and relationship networks. This is feasible as both mobile phones and the internet are increasingly important channels for bridging the rural-urban interaction gaps. It addresses the existing infrastructure barriers that limit access to both information and markets. Also, it reduces the costs of communication, promotion, and distribution. For example, beekeepers and traders can meet on Instagram and WhatsApp groups, manage their orders and do the delivery. Also, Beekeepers can use Instagram or WhatsApp to manage after-sales relationships, they only need to buy internet bundles from their mobile network providers. Changing revenue stream is equally important in improving sales volume and increase revenues; in this respect, beekeepers should change from using volume to using weight as revenue determinant. The use of digital payments such as 'mobile' money: M-Pesa, Tigo-Pesa, and Airtel-money is also important.

Another important observation on beekeepers' business model relates to the management of partnerships and costs. . The existing business relationships among actors are limited which implies that the firms are operating independently and the value chain in beekeeping enterprise are purely transactional, which also results in suboptimal value creation. To promote the value chain, beekeepers should partner with different actors to perform key activities, and access key resources. For example, beekeepers do not have to struggle with finances to buy harvesting materials, while they can get them from traders. Similarly, changing the business model from a fixed cost to a variable cost model will help both partners to reduce operating costs and hence create more value. For example, harvesting and working in the processing room are not full-time activities. Therefore, human resource can be equipped with different skills such that they work on short-term contracts in the value chain activities. This can enable a person work in apiary during harvest time and then work in the processing room during honey processing. In this case, all the firms in the beekeeping value chain will co-create value focusing on customers' needs. As a result, they will grow the size of the pie, through which every firm can increase their amount of value capture. This findings is consistence with those reported by Osterwalder and Pigneur (2010).

4.0. Conclusion and Recommendations

In the existing beekeeping value chain, beekeepers create value by doing all the value creation activities including honey production, aggregation and processing, trading and channel distribution. And value appropriation is by selling both comb and refined honey in the rural market. Beekeepers create much lesser value as they locally perform the activities. They use traditional skills, scope, and capabilities to produce honey, process and package, and trade honey. This leads to relatively low productivity, poor quality products and inefficient channel management. The ability of beekeepers to improve production and extend their activities to aggregation, processing and accessing the potential markets need to be addressed appropriately. This implies that promoting the forest value chain in the emerging market requires actors to upgrade their capabilities to perform value-adding activities. The upgrading can be reached when actors with limited

capabilities work together with actors with capabilities to co-create value and hence increase the size of the pie.

Similarly, value appropriation depends on the firms' capability to perform value-adding activities, bargaining abilities, and position in the value chain. In the beekeeping industry, firms which perform the honey refining, packaging, branding and selling capture more value than the rest of the participants. Firms that sell honey measured in weight in the urban market have the advantage of capturing more value. This implies that the beekeeping value chain should change from competitive and bargaining relationships to collaborative. Upgrading the beekeeping value chain requires the inclusion of other actors to co-create value and co-capture value. In this regard, value creation and value appropriation are likely to be influenced by business models and collaborative forms of action by the firms participating in the industry. This involves collective decision-making among beekeeping value chain actors to work together to create proper value propositions that meet the expectations of specific consumer segments. Key activities and resources should be managed and integrated among value chain participants. This reduces waste and improves the cost structure, which in turn allows firms to capture more value and benefit all chain participants.

This qualitative descriptive study faced some limitations including being limited to beekeepers' value chain in the beekeeping industry in Tanzania. Thus, its findings may not be generalizable to other actors or industry settings in the value chain. It is important to investigate, and design further studies using different cases with different actors and different industries. Similarly, the study is confined to the value chain and business model canvas of beekeepers in the beekeeping value chain, focusing on value creation and value appropriation.

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