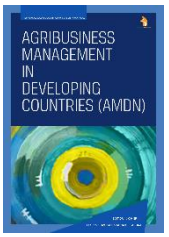
ZIBELINE INTERNATIONAL™ PUBLISHING

E-ISSN: 2990-9309 (Online)
CODEN: AMDND7

Agribusiness Management In Developing Nations (AMDN)

DOI: http://doi.org/10.26480/amdn.02.2024.109.117



CrossMark

RESEARCH ARTICLE

MARKETING EFFICIENCY OF HONEY (*APIS MELLIFERA*) IN CHITWAN DISTRICT, NEPAL

Ujjal Tiwari, Jyoti Sunar, Anu Panthy*

Department of Agricultural Economics and Agribusiness Management, Agriculture and Forestry University (AFU) Rampur, Chitwan, Nepal
Corresponding author Email: anupanthy2074@gmail.com

ARTICLE DETAILS

Article History:

Received 23 August 2024
Revised 11 September 2024
Accepted 21 October 2024
Available online 23 October 2024

ABSTRACT

A general Survey was conducted to analyze the marketing efficiency of honey in Bharatpur Metropolitan, Kalika Municipality, Khairahani Municipality and Rapti Municipality of Chitwan District. A total of 96 respondents which included 88 beekeepers, 3 wholesalers cum processor, 2 retailers and 3 consumers were selected for interview by stratified sampling technique. For primary data collection personal interview, key informant interview was used, and secondary data were collected from topic related publications of various institutions.The average honey production per annum was 24.2 kg/hive. Major market chain actors involved in marketing of honeybee products were producers, wholesalers, retailers, and consumers. The marketed surplus was observed to be 87.56%. Price spread was NRs. 201.25per kg and producers share was 68.19% on an average. Marketing efficiency in study area was found highest when sold through the means of retailers (1.67) followed by involvement of wholesalers cum processors (1.43) Furthermore, indexing identified High competition with foreign honey, inadequate collection and processing centers, insufficient certification and lab tests, problem of market access and long market chain to consumersas the major problem associated with the marketing of honeybee productsrespectively. This research explored the existing scenario of honey market and marketing channelsand the major constraints in the study area.

KEYWORDS

wholesalers cum processor, informant, Marketing efficiency

1. INTRODUCTION

1.1 Background Information

Nepal is blessed with honeybee diversity. Four native species of honeybees viz. *Apis laboriosa*, *Apis dorsata*, *Apis florea* and *Apis cerena* and one exotic species *Apis mellifera* are found in Nepal.Beekeeping with *A. cerena* began in 1960, whereas *A mellifera* was introduced in 1990 (Thapa et al., 2018). Beekeeping is a form of marginalized landless farming system which has been in practice from ancient times in Nepal (Devkota, 2020). Honey and wax are known to be the major product of beekeeping.However, pollen, propolis, royal jelly,venom, queenbees are also high in market demand (Naz et al., 2022). One million bee colonies with an annual production of more than 10,000 mt of honey is produced per year.Almost 50,000 farmers are directly and indirectly involved in the production of honey, and there are more than 100 cooperatives that individually manage 25–300 beehives, according to the Beekeeper's Association (Kc et al., 2021).

Beekeeping is one of the options available to smallholder farmers as a means of supporting their way of life. Honey is highly nutritious foodand a great source of medicine. It is used in treating various ailments such as diabetes, cough, cold, wounds constipation, sore, burning and indigestion (Famuyide et al., 2014). The main honey producing district in Nepal are Chitwan, Nawalparasi, Rupandehi, Kapilvastu, Dang, Sarlahi, Sunsari, Mahottari, Makwanpur, Banke, Bardiya and Kanchanpur (Bhandari and Kattel, 2020). Regarding the bee flora and pasture availability among the 30 districts of Nepal, Chitwan is regarded as one of the potential beekeeping districts (Pokhrel, 2009). The district has 142422 ha of forest area which is enriched with diversified flora, which supplies nectar and pollen sources for bees (Devkota, 2006). Chiuri (*Diploknemabutyracea*), mustard (*Brassica rapa*), buckwheat (*Fagopyrum esculentum*), rudhilo (*Pogostomonespp*) are the major forages for producing honey which are more in the district.

According to the research conducted by marketing system for honey in Nepal is entirely a private system that is controlled by the producers and traders, because there are many producers, there is intense competition, and traders act as monopolistic buyers (Poudel, 2003). Nepalese honey hasn't been able to gain much attraction on the international market. Only 0.07% of the world's honey comes from Nepal (Shrestha et al., 2017). If quality is guaranteed promptly, Nepalese honey can be sold both nationally and internationally (Budhathoki-Chhetri et al., 2021). Nepal only exports about 4 metric tons of honey now, but it imports about 300 metric tons every year to meet domestic demand. In the nation honey has the potential for both export orientation and import substitution (Regmi and Naharki, 2020). So, this research seeks a gap between the existing market linkages which could replace the excessive imports and improve the demand in domestic market.

1.2 Beekeeping and honey production status in Nepal

Beekeeping in Nepal is the oldest practice. Owning to its climatic and floral diversity there is a great potential of honey production in the country. Five of the world's seven species of honeybees *Apis laboriosa S, Apis dorsata F, Apis florea F, and Apis cerana F and one exotic honeybee Apismelliferaare* found from the plain to high Himalayan in Nepal (Devkota, 2020). Indigenous *Apis cerena* bee is not well domesticated in Nepal. Frequent absconding and migration have caused problems to the farmers. About 26 % of the land area is covered by forest which is also rich in bee flora. Mid

Quick Response Code	Access this article online	
	Website: www.amdn.com.my	**DOI:** 10.26480/amdn.02.2024.109.117

Cite the Article: Ujjwol Tiwari, Jyoti Sunar, Anu Panthy (2024). Marketing Efficiency of Honey *(Apis Mellifera)* in Chitwan District, Nepal. *Agribusiness Management In Developing Nations, 2(2):* 109.117.

hills being rich in its biodiversity there is a great potential. *Apis mellifera* has been introduced into Nepal fromIndia during 1990 (Akratanakul, 1986). Training on beekeeping and technical assistance was provided first time by Government of Nepal in 1968 through its Department of Cottage Industry and Remote Area Development Committee in 1968 (Bhatta et al., 2020). About 55,000 hives are owned by about 5,700 commercial beekeepers in Nepal (Aryal and Dhakal, 2020). Due to the limited use of pesticides and agro chemicals in the forests of remote areas, the honey produced by *Apis dorsata*isorganic as honey is harvested from the forests (Gupta et al., 2014). Increasing urbanization has led to decrease in forest resources, bee flora which has directly impacted bee farmers in Nepal. High application of pesticides, diseases and pest has also caused decreased in productivity of honey and other bee products. In between 1980 and 1984 Thai sac brood virus disease killed 90 to 95%of *Apis cerena* colonies in Nepal. Similarly, mites like *Acarapiswoodi,* Varroa mites, *Tropilaelaps* are causing threat to commercial beekeepers in the country.

Table 1: Beekeeping and Honey production for the last 5 years.

Year	Beehives (No.)	Production (Mt.)
2015/16	232,000	3,500
2016/17	240,000	3,950
2017/18	242,000	3,980
2018/19	242,500	3,990
2019/20	248,037	3,997

Source: (MoALD, 2019/20)

1.3 Marketing system and marketing channels of honey

Some researcher defined the term 'marketing' as the performance of all business activities involved in the flow of products and services from the point of initial agricultural production until they are in the hands of consumers (Kohls and Uhl, 1980). To meet domestic demand, Nepal has been importing honey from India and other nations. Half of all honey consumed in Nepal comes from other countries. Many traders have begun to label and package their goods. Some of the Nepalese honey brands that have been in competition with Indian brands like Dabour and Patanjali honey include Nepali honey, Himalayan honey, Gandaki honey, Gorkha honey, and Namaste honey (Bhandari and Kattel, 2020). According to the marketing channels are the routes through which agricultural products move from the point of production to the final point of consumption (Acharya and Agarwal, 1999). Producers, traders, transporter, wholesaler, retailers, and consumers are the major actors carrying out different activities in marketing system (Budhathoki-Chhetri et al., 2021).

1.4 Domestic market of Honey

Due to its nutritional and health benefits consumption of honey has been increasing. In Nepali locality, it is generally use in raw form as an ayurvedic medicine. Honey production is dependent on the availability of floral resources (Kc et al., 2021). However, it is anticipated that between 100 and 1500 metric tons will be produced annually. Around 50 % of honey is sold out in national and international market. A total of 300 to 350 tons of honey are thought to be consumed domestically each year. According to estimates, the entire annual demand for honey on the domestic market would be around 2800 tons if per-capita consumption increased by 100 g (Devkota, 2020).

1.5 International market of Honey

Nepalese honey market was extended to several countries like India, UAE, Japan, South Korea, Thailand, USA, and Bangladesh. Industrialized countries such as China and Argentina produce honey at low unit cost and export to the world market. Nepali beekeepers are unlikely to produce honey at prices that can compete with those of these major producers. When compared to honey from its neighbors, the price and volume of Nepali honey are not competitive, and the supply of honey is also inconsistent. Because of this, Nepali honey is not competitive on the mass market. China, Malaysia, India, Japan, European countries, and USA are the key export markets for Nepalese honey. In fiscal year 2016/ 17, Nepal exported 378 tons of processed and unprocessed honey (Devkota, 2020). Himalayan Organic farm, Namaste Nepal, Freedom Export, Monarch Trade Link Nepal, and Honey Overseas Service limited are the major business organization involved in buying and selling of honey in international market (Aryal et al., 2009).

1.6 Major Constraints in Beekeeping

Most of the farmers don't have adequate knowledge on benefit about the pollination. Frequent migration and absconding are the major problem in managed beekeeping (Aryal et al., 2015). Infestation from predator, parasites, diseases and pesticide poisoning is high which is responsible for poor brood rearing, reduced colony strength and low productivity of hive products (Aryal et al., 2015). Insufficient bee forages, lack of mapping of bee pasture are also the major hindrance in apiculture (Pokhrel, 2008). Most of the farmers are poor, availability of working tools and equipment are beyond their reach. Post-harvest management of beehive products is also not fully practiced due to lack of technology and training institutions (Belie, 2009). Other problem includes lack of transportation, lack of skilled resources and increasing global warming, lack of storage facilities, which results in low productivity. And there arepoor extension services, no plan and policies, work plan implemented by the government, lack of coordination between research, extension, and farmers.

2. CONCEPTUAL FRAMEWORK

Conceptual framework (Figure 1) illustrates different factors influencing marketing efficiency of honey, factors such as marketing system, marketing channels, technology adoption, marketing cost etc. It also shows different problems and constraints such as problem of market access, high competition with foreign honey, limited collection, and processing centers. However, extending marketing knowledge, SWOT analysis of beekeeping could improve production and marketing of honey.

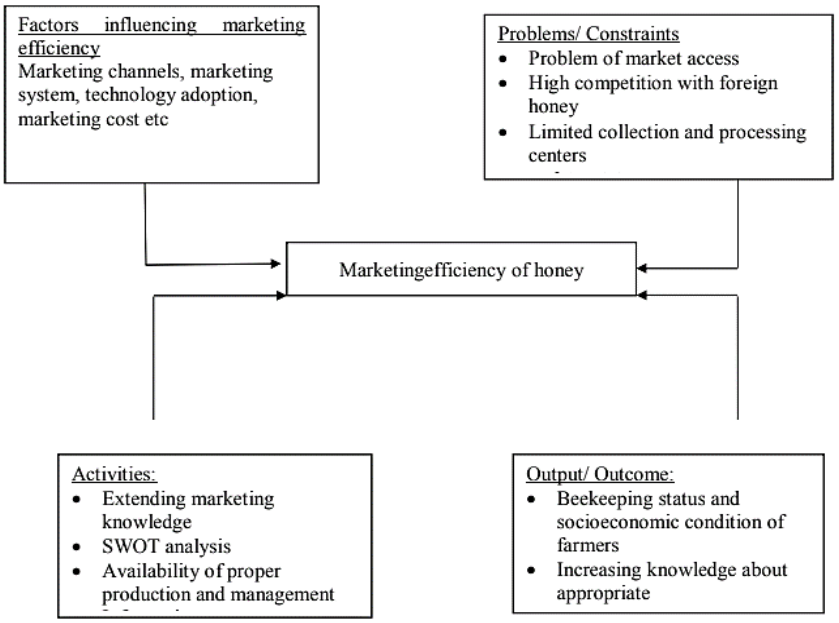


Figure 1: Conceptual framework of the study

3. Research Methodology

3.1 Description of the study area

Chitwan district is one of the 77 districts of Nepal and takes up the southern corner of Bagmati Province. Bharatpur, largest city of Nepal after Kathmandu, is its administrative center. It covers 2,238.39 km² (864.25 sq mi). and in 2011 had a population of 579,984 (279,087 male and 300,879 females. It lies between 27E21' to 27E52' North latitude and 83E54' to 84E48' East longitude with a total land area of 218000 ha, located at an altitude of 141-1943 m (Dhakal et al., 2019). The study was conducted in Bee Zone of the district i.e Bharatpur Metropolitan, Khairahani Municipality, Rapti Municipality and Kalika Municipality.

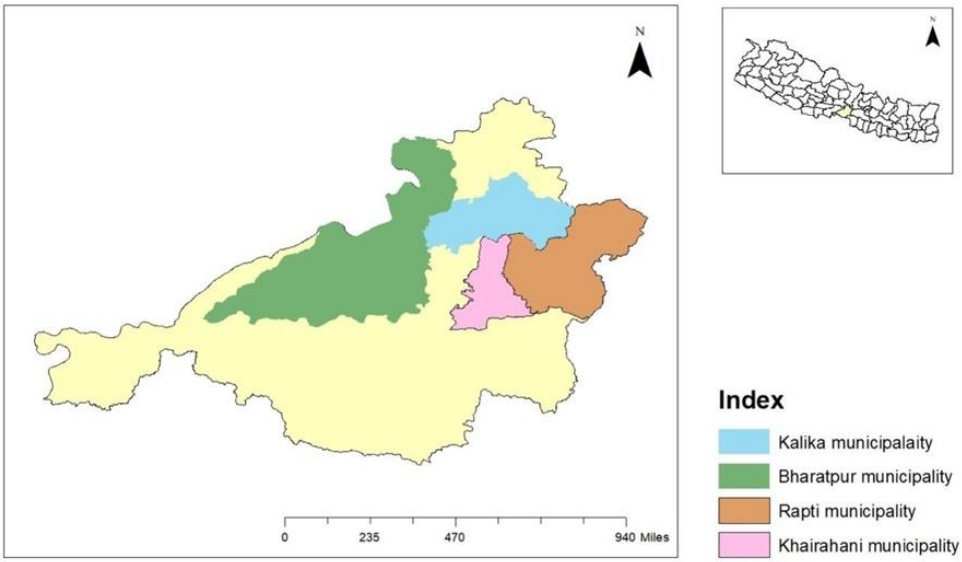


Figure 2: Map of Nepal showing study area

3.2 Sample and sampling procedures

There were altogether 126 registered beekeepers in the district. All the beekeepers in the zone area were the population for the research. (Bharatpur Metropolitan city, Kalika Municipality, Khairahani and Rapti Municipality). A list of all the beekeepers of Chitwan district was obtained from PMAMP- Project Implementation unit Bee Zone, Chitwan.

3.3 Categorization of beekeepers

On the basis of information regarding the number of hives in the study area, total population of beekeepers is divided into 3 categories. They are listed below:

Table 2: Categories of Beekeepers

Category	Number of hives	Number of samples
Small scale	5-10	40
Medium scale	51-100	39
Large scale	>100	17

Source: FNBK,2019

3.4 Sampling techniques

Total 96 samples were chosen from the study area in stratified sampling technique. Sample size was calculated using Rao soft software with margin of error 5%, confidence level 95% and response distribution 50%.

3.5 Research instruments

For the collection of primary data for study semi structured interview was carried out. For collection of information from the beekeeper's different checklist was prepared, and information was collected from producers, wholesalers, and retailers and consumers.

3.6 Data and data types

Both primary and secondary sources of data were used in this study. The primary sources of information were all the beekeepers selected for interview. Secondary information was collected from different articles, journals books and internet materials. Primary data for the study was collected with the help of Household survey, Key Informant Interview (KII). Secondary data was collected from annual report of Agriculture knowledge Centre Chitwan, PMAMP annual report, Federation of National Beekeepers, Ministry of agriculture and Livestock development and other associated organizations.

3.7 Techniques of data analysis

The information collected was coded, entered, and analyzed by using SPSS And MS -Excel software.

3.8 Market analysis Marketed surplus

The quantity of produce that is actually sold in the market after accounting for losses and

retention by the farmers and adding the previous stock left out for sale is known as marketed surplus (Arage, 2018).

Marketed Surplus=Total quantity of honey produce−(Quantity of honey used for family consumption +quantity of honey used for feeding bee + Quantity of honey loss if any)

3.9 Price spread

$$\text{Ps} = \frac{Pf}{Pc} \times 100$$

Where,

Ps = Producer's share in consumer's rupee

Pf = Price of the produce received by the farmer

3.10 Producer's share

Price received by the farmer expressed as a percentage of the retail price, which is the price paid by the consumer is known as Producer's share (Ghimire, 2019). It is calculated as:

$P_S = (P_F/P_R) \times 100\ \%$

Where P_S is the producer's share;

P_R=Price paid by consumer;

P_F= farm gate price

3.11 Marketing margin

Percentage of the final weighted average selling price taken by each stage of the marketing chain. It can be calculated as:

Absolute margin = P_R- (P_P+ C_M)

And Percentage margin =P_R-(P_P+ C_M)/ P_R ×100 %

Where, P_P=Purchase price, P_R= Sale price; C_M= Marketing cost per kg of honey

3.12 Marketing cost

Marketing costs are incurred when commodities move from farm to the final market, whether they are moved by farmers, intermediaries, cooperatives, wholesalers, retailers, or exporters. It can be calculated as

C_C=Honey transportation cost + Labor cost on loading/ unloading + Interest on capital + Tax

C_P= Honey transportation cost + Labor cost on loading/unloading + Interest on capital + Processing cost + Packaging cost+ Advertisement cost+ storage cost+ Commission +tax

C_R= Cost of honey transportation + storage cost + selling cost tax

C_{CO}= Honey transportation cost+ Labor cost on loading/Unloading +Processing cost storage and selling cost + commission

Where,

C_C= Marketing cost of collectors

C_P= Marketing cost of processor cum wholesaler

C_R= Marketing cost of retailer

C_{CO}= Marketing cost of cooperatives

Processing cost= Cost of electricity /water+labor cost +deprecation + rent + processing loss

3.13 Marketing Efficiency

It is the ratio of net price received by farmers to the sum of marketing cost and marketing margin. For each production system, marketing efficiency can be estimated by using equation adopted from Acharya and Agrawal (2001)

MME= $[RP \div (MC + MM)]$-1

Where, MME= Acharya's modified marketing efficiency RP= Price paid by the consumer

MC= Total marketing cost MM= Net marketing margin

3.14 Indexing and marketing problems

In order to provide the direction and attitude of the respondents towards different propositions scaling technique was used. Farmer's perception towards the production and marketing problems can be presented by five point scale comprising most serious, serious, moderate, a little bit and the least serious with scale value of 1, 0.8, 0.6, 0.4 and 0.2 respectively.

Mathematically, Iimp =⍰⍰Si*Fi)/N

Where, Iimp= Index of importance

⍰= Summation

Si =Scale value

Fi = frequency of respondents N= Total number of respondents

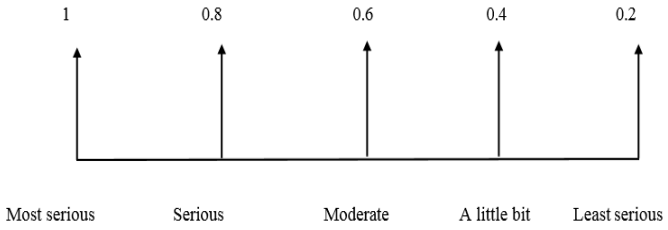


Figure 3: Ranking of Scale

3. 15 Strength Weakness Opportunities Threat Analysis

Swot analysis is a framework for identifying and analyzing an organization's strengths, weakness, opportunities, and threats.

Parameters	Internal	External
Positive	Strengths	Opportunities
Negative	Weakness	Threats

Figure 4: Concept of SWOT analysis

4. Results and Discussion

4.1 Demographic and farm characteristics

The demographic and farm characteristics include the characteristics of population like gender of respondents, age, education status of respondents, and occupation.

4.2 Distribution of the respondents by gender

Among the total 96 sampled respondents of the study areas, 88(91.7%) were male and 8 (8.3%) were female. Also, this district has 48.98 males and 51.02 females (CBS,2021). This showed that the respondents populations were dominated by males.

Table 3: Distribution of the respondents by gender

Gender	Small farmers(n=40)	Medium farmers(n=39)	Large farmers(n=17)	Overall(N=96)
Male	36(90)	35(89.74)	17(100)	88(91.7)
Female	4(10)	4(10.26)	0(0.00)	8(8.3)

Note: Figure in parentheses indicates percentage.

4.3 Age of respondents

The respondent age was further classified into 3 age groups to study about the age involved in beekeeping. They were classified with age group less than 30, 30 to 50 and above 50. Most of the respondents were from the age group 30 to 50(84.37) followed by above 50 (13.54) and less than 30 (2.08). The age group 30 to 50 years were economically independent while age group above 50 were dependent. Young beekeepers are stronger and more energetic than aged ones and can easily adopt innovations.

Table 4: Distribution of respondent based on age

Age	Small farmer(n=40)	Medium farmer(n=39)	Large farmer(n=17)	Overall(N=96)
Less than 30	1(2.5)	1(2.56)	2(11.76)	4(4.17)
30 to 50	33(82.5)	32(82.05)	12(70.59)	77(80.20)
Above 50	6(15)	6(15.39)	3(17.65)	15(15.63)

4.4 Education status of the respondent

Education plays important role on learning and adopting the new technology in Beekeeping. To know about the education status of the respondents, six different categories were made based on their education level.

From the study, it was concluded that,6.25% of respondents were illiterate,4.16% respondents can read and write, 35.41 % gained primary schooling ,45.83 have obtained secondary education,7.29 % have obtained higher secondary and only 1.04 percent have obtained university level of education. The literacy rate of Chitwan is 77.3%.

Table 5: Distribution of respondents based on education level

Education	Small	Medium	Large	Overall(N=96)
	farmer(n=40)	farmer(n=39)	farmers(n=17)	
illiterate	2(5)	3(7.69)	1(5.89)	6(6.25)
Read and write	4(10)	0(0.00)	0(0.00)	4(4.17)
Primary schooling	13(32.5)	15(38.46)	6(35.29)	34(35.41)
Secondary education	20(50)	16(41.03)	8(47.05)	44(45.83)
Higher secondary	0(0.00)	5(12.82)	2(11.76)	7(7.29)
University	1(2.5)	0(0.00)	0(0.00)	1(1.04)

4.5 Occupation of the respondent

All respondent responded Beekeeping as the primary occupation. Different categories were made to know about the secondary occupation of the farmers. In case of secondary occupation, figure showed that majority of the people are involved in agriculture i.e. 57% from small scale,46% from medium scale and 29% from large scale farmers. Besides, they were also involved in business (53%) from largescale, (28%) from small and (49%) from medium scale farmers. Also, they were involved in services (15%), (18%), (5%) from small, large and medium scale farmers respectively.

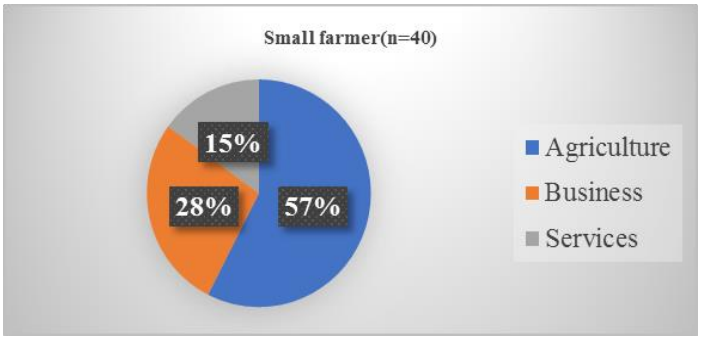


Figure 5: Occupation status of small farmer

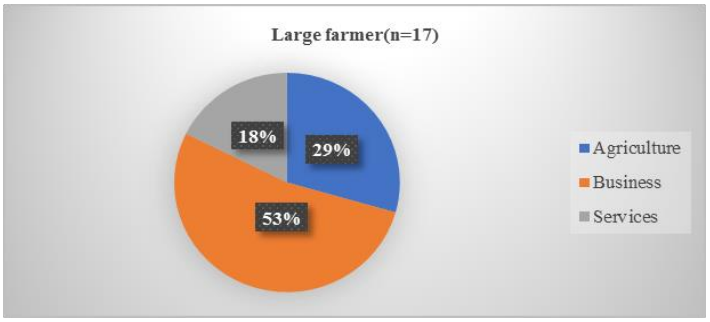


Figure 6: Occupation status of large farmer

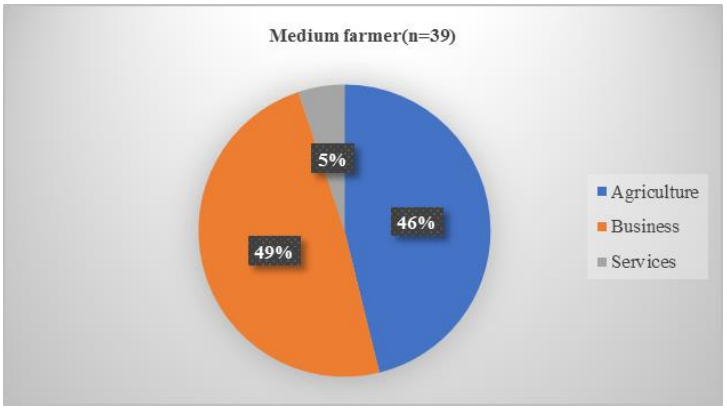


Figure 7: Occupation status of farmer

4.6 Enterprise Details

4.6.1 Type of beehive kept by farmers in the study area

Study showed that all the beekeepers in the study area are using modern hives as they are the registered beekeepers and, they get subsidy and other governmental allowances through PMAMP and AKC.

4.6.2 Honeybee species reared

Majority of the respondents were rearing *Apis mellifera*. It was originated in Africa and laterspread to Europe, Asia and throughout the world.Chepang and the hill caste communities were adapting *A. cerana* in traditional hives in hills (Pokhrel, 2009).

4.6.3 Experience of Beekeeping by beekeepers in the study area

The farmers were also asked about their experience of rearing honeybees. Majority (83.3%) of the respondents had about 10 to 20 years of experience in beekeeping. The average years of experience for the entire sample was 14 years, the minimum and maximum years of experience being 2 and 26 respectively. This shows that the beekeeping was introduce or started in the area about many years ago.

Table 6: Distribution of respondents based on experience of beekeeping				
Years	**Small farmer(n=40)**	**Medium farmer(n=39)**	**Large farmer(n=17)**	**Overall (N=96)**
Less than 10	4(10)	6(15.39)	4(23.53)	14(14.58)
10 to 20	36(90)	32(82.05)	12(70.59)	80 (83.33)
More than 20	0(0.00)	1(2.56)	1(5.88)	2(2.08)

4.6.4 Reasons for beekeeping

Beekeeping is being popular among the bee farmers of study area. Five categorizations for motivating factors toward beekeeping was studied. Among them, 11.4 percent of farmers were following the tradition,52.1 percent of the total respondent engaged regarding it easier than other occupation,16.6 percent of the total respondent were engaged regarding its higher return than other crops and 11.4 percent were following continuing beekeeping regarding technical backup from various I/NGOS. Other reasons include interest of the respondent, health benefits, bee wax.

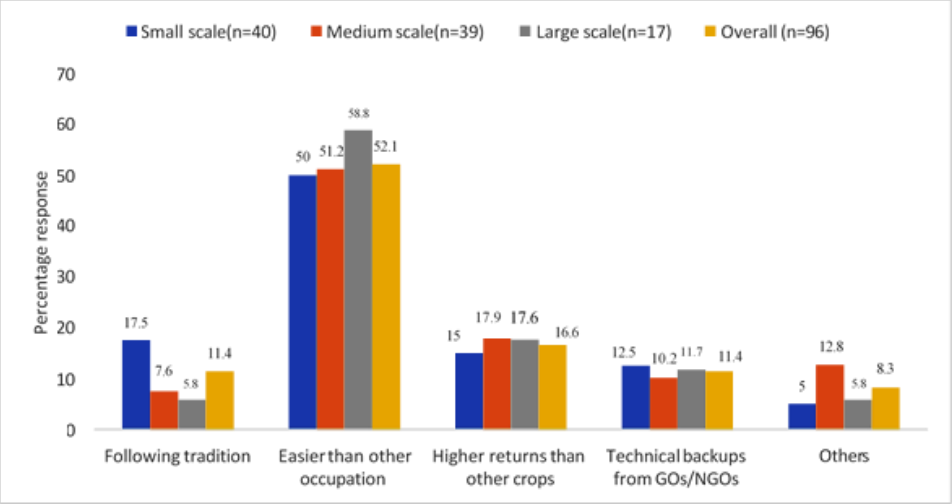


Figure 8: Reasons of beekeeping

4.7 Market Information

Out of total respondents, 70 % of the small farmers, 53.84% of medium scale farmers and 76.47 % of the large-scale farmers are getting the required market information related to beekeeping.

Table 7: Market information				
Market information	**Small farmer(n=40)**	**Medium farmer(n=39)**	**Large farmer(n=17)**	**Overall(N=96)**
Yes	28(70)	21(53.84)	13(76.47)	62(64.6)
No	12(30)	1846.15	4(23.53)	34(35.4)

4.8 Means of Communication

Out of the total respondents, 14.58% farmers get the required market information from the radio, 6.25% get the market information from the television, 76.17 % get the market information from neighbor.

Table 8: Means of Communication				
Variables	**Small farmer(n=40)**	**Medium farmer(n=39)**	**Largefarmer (n=17)**	**Overall(N=96)**
Radio	5(12.5)	7(17.95)	2(11.76)	14(14.58)
Television	4(10)	2(5.13)	0(0.00)	6(6.25)
Neighbor	31(77.5)	30(76.92)	15(88.24)	76(76.17)

4.9 Demands of honey in the market

In the study area, Rudhilo honey and Chiuri honey has the highest demand in the market which accounts for 57.3 % and 30.2% respectively.

4.10 Production of beehive products in the study area

Out of total respondent 100 % of beekeepers responded that they produce honey as the main product. Along with the production of honey, 80% respondent also produce bee wax and 30% produce propolis. The beekeepers are primarily focused on honey production without considering to the other beehive products is due to insufficient knowledge that these products have various uses in cosmetics, health supplements and even in the food industry.

4.11 Access to services

Access to credit facilities is vital for beekeeping as it enables beekeepers to invest in equipment, hive maintenance and expansion of their operations. From the study area it showed that majority (43.75) % of the people had taken loan from the bank cause bank provide the loan in low interest rate for agricultural services. Similarly, 34.37% had taken loan from groups and 21.88 % had taken loan from cooperatives.

Table 9: Access to services				
Variables	**Small farmer(n=40)**	**Medium farmer (n=39)**	**Large farmer(n=17)**	**Overall(N=96)**
Loan from Bank	10(25)	22(56.41)	10(58.82)	42(43.75)
Loan from	18(45)	10(25.64)	5(29.42)	33(34.37)
Groups				
Loan from cooperatives	12(30)	7(17.95)	2(11.76)	21(21.88)

4.12 Marketing analysis Marketed Surplus

Table 10: Marketed Surplus of honey from Apis mellifera

Particulars	Quantity of honey(kg)	Percentage
Total production	277915	100%
Total use	34561	12.44%
Total marketed surplus	243354	87.56%

From the study conducted it was observed that more than 85 percent of honey produced was sold by the producers and remaining was used for home consumption, distribution to relatives, feeding honey to the bees. Only negligible amount of honey was lost due to mishandlings. In the study area, overall marketed surplus of honey was found to be 87.56% which is slightly lower. than marketed surplus of honey as 95 percent in Uttarakhand, India (Prasad et al., 2012).

4.13 Farm gate price, price spread, and producer's share

In the study area, the farm gate price that beekeepers got differed depending on the selling or marketing channel used, as different marketing agencies paid varying prices to the producers and divided the costs of marketing in different ways. The overall farm gate price of honey from *Apismillifera*was NRs. 398.75 /Kg which was higher than reported by as NRS268.51 and it was highest when channelized through wholesalers (Budhathoki-Chhetri., 2021). Price spread was observed to be 201.25 on average. Producer's share also varied according to the different marketing channels, Producer's share was highest in self sold honey (82.12%), followed by 78.15% through retailers.

Table 11: Farmgate price of honey from *Apis mellifera*

Mode of selling	Quantity sold (kg)	Gross receipt	Marketing cost	Farmgate
Producer- Consumer	61078	434.94	24.33	410.61
Producer-Retailer- Consumer	54712	467.14	111	356.14
Producer- Processor cum wholesaler- Consumer	127564	532.5	103	429.5
Total	243354	407.74	79.44	398.75

Table 12: Price spread and producer share of honey from *Apis mellifera*

Mode of selling	Retail price per kg (NRs)	Farm gate price per kg (NRs)	Price spread	Producer's share
Producer -Consumer	500	410.61	89.39	82.12%
Producer- processor cum wholesaler retailer-consumer	700	356.14	343.86	50.87%
Producer - retailer-consumer	600	429.5	170.5	71.58%

4.14 Marketing channels

In the study area, honey producer sells their products through different channels. Three marketing channels were identified. Out of 243354 kg of honey marketed during survey year, 61078 kg and 127564 kg were marketed through Channels 1 and Channel 3 respectively. The survey results revealed that consumers and the wholesalers were the dominant receivers from producers.

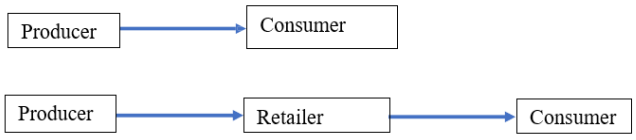


Figure 9: Marketing channels of honey in the study area

4.15 Marketing cost and margin of different intermediaries in honey

In the study area honey producers of A. mellifera did not occur any marketing cost when they sale raw honey to consumers directly from home but they incurred some marketing cost when sale to marketers. Major marketing cost of producers in the study area were honey transportation cost, cost of container if not returned by marketers, cost of packing in case of packed honey, labour charge in honey loading and unloading. Overall marketing cost of producers, processor cum wholesalers and retailers in the study area were NRs. 24.33/kg, NRs. 103/kg, NRs. 111/kg respectively. The marketing cost of producer, processor and retailers in the study area was higher found by as NRS 15/kg for retailer, NRS 70 /kg for wholesalers cum processor and NRS 25/kg for producer (Bhattarai et al., 2020). The marketing margin of processors and retailers involved in marketing of honey from A. mellifera were 36.1percent, and35.1percent respectively. Basedon their selling price, it was found that the marketing margin of wholesaler was higher as compared to processor cum wholesalers.

Table 13: Marketing margin of honey from Apis mellifera

Market intermediaries	Mode of selling	Purchase price	Market cost	Selling price	Market margin	Percentage marketing margin
Processor cum wholesalers	Processor cum wholesaler to retailers to consumer	250	103	613	160	36.1
Retailer	Retailers to consumer 350	111	71125035.16			

4.16 Marketing Efficiency of Honey from Apis mellifera

Marketing efficiency index of honey from A. mellifera was highest (1.67) when it channelized through retailers followed by involvement of producer cum wholesalers (1.13).

Table 14: Marketing efficiency of honey from *Apis mellifera*

Mode ofselling	Price paid by consumer	Marketing margin	Marketing cost of producers	Marketing cost of intermediaries	Total marketing cost	Marketing efficiency
Producers- processor cum wholesaler -retailer-consumer	553	160	24.33	103	127.3	1.13
Producer- retailer-consumer	711	130	24.33	111	135.33	1.67

4.17 Marketing problems

There are various marketing problems in the study area. The result shows, high competition with foreign Honey was the major marketing problem of sample farmers in the study area. The second major problem was lack of Collection and Processing centre. Insufficient certification and lab tests, Problem of market access was also the next major problem for the farmers, due to which they were compelled to sell their produce at lower price, thereby creating weak bargaining power of farmers. Similarly, Long market chain to consumer i.e. poor linkage with value chain actors was also the major marketing problem in the study area.

Table 15: Marketing problems

Marketing Problems	1	0.8	0.6	0.4	0.2	Weightage	Index	Rank
High competition with foreign honey	70	6	3	5	12	81	0.84	1
Inadequate collection and processing centers	12	56	10	12	6	68.8	0.71	2
Insufficient certification and lab tests	2	15	68	6	5	58.2	0.60	3
Problem of market access	6	12	9	63	6	47.4	0.49	4
Long market chain to consumers	9	7	5	9	66	33.4	0.35	5

4.18 SWOT of beekeeping enterprises in Chitwan

4.18.1 Strengths

- Wide range of climatic condition and the presence of bee flora
- Easier than other occupation.
- Availability of technical assistance and support from governmental organization to beekeepers.
- Adequate knowledge and Skill on beekeeping.

4.18.2 Weakness

- Inadequate policies and regulations.
- Insufficient amount of testing and quality control centers.
- Unavailability and inaccessibility of input materials when needed.
- Poor marketing of products

4.18.3 Opportunities

- Honey can be stored for a long time without deterioration.
- Support from the government and international organizations.
- Increase in demands due to health benefits.
- Market for honey is expanding.

4.18.4 Threats

- Changes in weather due to global climate change are affecting beekeeping.
- Competition with cheaper honey available in the market.
- Increment of artificial sweetners
- Beekeepers losing interest in beekeeping as they are unable to find market.

5. Summary

Chitwan District of Nepal has been identified as one of the most potential districts interms of honey production. In the study area, most of the respondents were male (91.7%) Majority of the people are engaged in beekeeping as their main occupation followed by agricultural production. People of age group 30 to 50 are more involved in beekeeping. Beekeeping was found as the major occupation. Most of the people have gained secondary education in the study area. Maximum number of respondents have modern bee hives with Apis mellifera as the major species reared. The average beehive number per farm was 98 hives and average honey production per annum was 24.2 kg/hive. Major market chain actors involved in marketing of honeybee products were producers, wholesalers, retailers, and consumers. The marketed surplus was observed to be 86.56%. Price spread was NRs 230.18per kg and producers share was 68.19% on an average. Marketing efficiency in study area was found highest when sold through the means of retailers. Marketing margin of wholesaler (36.1) found to be highest followed by retailers(35.1). Collecting and selling of bee wax was not practiced only few sell this product in the market mostly they use for their own purpose. Honey was the major commercialized product. In the study area, honey producers largely sell their honey in local market and the traders sell their products mostly in Pokhara and Kathmandu.

6. Conclusion

The identified major marketing chain actors, including producers, processors cum wholesalers and retailers play crucial roles in the honey industry within the study area. The average honey production per annum hive was determined to be 24.2 kg, providing valuable benchmark for understanding the productivity of beehives in the region. The study revealed a substantial marketed surplus of 87.56% indicating a significant proportion of honey production is reaching the market.

References

Akratanakul, P., 1986. Beekeeping in Asia (Vol. 4). FAO agricultural services bulletin, FAO, ISSN 1010-1365

Arage, A., 2018. Honey Value Chain Analysis in Gera District, Jimma Zone of Oromia National Regional State, Ethiopia [PhD Thesis]. Haramaya university.

Aryal, K.P., Chaudhary, P., Pandit, S., and Sharma, G., 2009. Consumers' Willingness to Pay for Organic Products: A Case from Kathmandu Valley. Journal of Agriculture and Environment, 10, PP. 15–26. https://doi.org/10.3126/aej.v10i0.2126

Aryal, R., and Dhakal, A., 2020. Honeybee Pests And Diseases In Nepal: A Review. Sustainability in Food and Agriculture, 1 (2), PP. 76-79.

Aryal, S., Thapa, R., and Jung, C., 2015. An overview of beekeeping economy and its constraints in Nepal. Journal of Apiculture, 30 (3), Pp. 135–142.

Belie, T., 2009. Honeybee production and marketing systems, constraints and opportunities in Burie District of Amhara Region, Ethiopia [PhD Thesis]. Bahir dar University.

Benla, I., and Sharma, A., 2019. Price Spread and Marketing Efficiency Measure Analysis of Tea Platation Crop in Mokokchung District, India. International Journal of Current Microbiology and Applied Sciences, 8 (06), Pp. 1164–1171. https://doi.org/10.20546/ijcmas.2019.806.144

Bhandari, P.L., and Kattel, R.R., 2020. Value Chain Analysis of Honey Sub-sector in Nepal. International Journal of Applied Sciences and Biotechnology, 8 (1), Article 1. https://doi.org/10.3126/ijasbt.v8i1.27804

Bhatta, S., Baral, S., and Datta, J.P., 2020. Economic analysis of honey production in Chitwan District, Nepal. American Journal of Agricultural and Biological Sciences, 15 (1), Pp. 132– 137.

Bhattarai, S., Pandey, S., Bhattarai, S., Karn, R., Gurung, S., Chapain, A., Bhatta, S., and Dutta, J., 2020. Value chain analysis of honey bee (Apis mellifera) products in Chitwan, Nepal. Azarian Journal of Agriculture, 7, Pp. 26–35. https://doi.org/10.29252/azarinj.026

Budhathoki-Chhetri, P., Sah, S.K., Regmi, M., and Baral, S., 2021. Economic analysis and marketing system of Apis mellifera honey production in Dang, Nepal. Journal of Agriculture and Natural Resources, 4 (1), Article 1. https://doi.org/10.3126/janr.v4i1.33249

Devkota, K., 2020. Beekeeping: Sustainable livelihoods and agriculture production in Nepal. Modern Beekeeping-Bases for Sustainable Production, 26, Pp. 1–11.

Devkota, K.H., 2006. Benefit-Cost Analysis of Apiculture Enterprise: A Case Study of Jutpani VDC, Chitwan, Nepal. Journal of the Institute of Agriculture and Animal Science, 27, Pp. 119–125. https://doi.org/10.3126/jiaas.v27i0.704

Dhakal, R., Bhandari, S., Joshi, B., Aryal, A., Kattel, R.R., and Dhakal, S.C., 2019. Cost-benefit analysis and resource use efficiency of rice production system in different agriculture landscapes in Chitwan district, Nepal. Archives of Agriculture and Environmental Science, 4 (4), Pp. 442–448.

Famuyide, O.O., Adebayo, O., Owese, T., Azeez, F.A., Arabomen, O., Olugbire, O.O., and Ojo, D., 2014. Economic contributions of honey production as a means of livelihood strategy in Oyo State. International Journal of Science and Technology, 3 (1), Pp. 7–11.

Ghimire, S., 2019. Economic analysis of commercial banana cultivation and supply chain analysis in Chitwan, Nepal.

Kalita, B., 2017. Marketing Efficiency, Price Spread, Share of Farmers In Case Of Horticultural Markets Of Assam. International Journal for Advance Research and Development, 2 (8), Pp. 65–72.

Kc, G., Bhusal, P., and Kafle, K., 2021. Production And Management Of Honey Bee In Dang District Of Nepal. Food and Agri Economics Review, 1 (2), Pp. 101–106. https://doi.org/10.26480/faer.02.2021.101.106

Naz, S., Malik, M.F., Hussain, M., Iqbal, R., and Afsheen, S., 2022. 2. To check the socio- economic importance of honeybee for developing countries in current financial crisis. Pure and Applied Biology (PAB), 11 (3), Article 3.

Pokhrel, S., 2008. The ecological problems and possible solutions of beekeeping in hills and terai of Chitwan, Nepal. Journal of Agriculture and Environment, 9, Pp. 23–33.

Pokhrel, S., 2009. Comparitive Benefits of Beekeeping Enterprise in Chitwan, Nepal. The Journal of Agriculture and Environment, 10. https://doi.org/10.3126/aej.v10i0.2129

Prasad, K., Singh, B., and Singh, R.K., 2012. Economics of production and disposal of honey in Uttrakhand—A study of HORTICO-product. International Research Journal of Agricultural Economics and Statistics, 3 (2), PP. 284–289.

Shrestha, A.J. (n.d.). Pro poor honey value chain development for inclusive growth in Hindu Kush Himalayan region: Strengthening horizontal and vertical linkages.

Shrestha, S., Pandey, B., and Mishra, B.P., 2017. Honey value chain Analysis—A case study of gahate Village, Lamjung District of Nepal. International Journal of Multidisciplinary Research and Development, 4 (6), Pp. 107–112.

Thapa, R., Aryal, S., and Jung, C., 2018. Beekeeping and Honey Hunting in Nepal: Current Status and Future Perspectives. In P. Chantawannakul, G. Williams, & P. Neumann (Eds.), Asian Beekeeping in the 21st Century (pp. 111–127). Springer. https://doi.org/10.1007/978-981-10-8222-1_5