

Economic Analysis of Production Costs and Marketing Margins of Honey in Tikrit and Al-Alam Districts, 2024 Production Season

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Abstract:

This study aimed to analyze the production and marketing costs and measure the margins and marketing efficiency of honey in the districts of Tikrit and Al-Alam for the 2024 production season. A random sample of 76 beekeepers was surveyed. The study employed a descriptive-analytical approach, utilizing field data obtained from questionnaires and analyzing it using cost-benefit and marketing efficiency indicators. The results showed that total production costs amounted to 156.191 dinars per hive, which is equivalent to 22.30 dinars per kilogram of honey, while marketing costs were 1.683 dinars per kg. The average selling price from the beekeeper was 27.200 dinars/kg, and the wholesale price was 33.100 dinars/kg, resulting in a profit of 3.217 dinars/kg for the beekeeper and 4.078 dinars/kg for the wholesaler. The absolute marketing margin was 5.9 dinars/kg, representing 17.82%. Marketing efficiency also ranged between) **85.39–%79.07%**) According to various measurement methods, the results indicated several marketing obstacles, most notably weak marketing organization, the prevalence of adulterated honey, and a lack of modern marketing channels. The researcher recommended government support to reduce transportation and packaging costs and improve marketing infrastructure, thereby contributing to lower marketing costs and increased economic efficiency.

Keywords: Marketing costs and margins, honey

food and pharmaceutical industries. It is a commodity with growing demand both locally and internationally, especially given the global trend towards healthy and organic foods[5]. Beekeeping and honey production are agricultural activities characterized by relatively

Introduction:

Honey is one of the most important biological products with nutritional, medicinal, and economic value. Scientific literature and international reports agree that it is a versatile natural product used in the

meet the needs and desires of consumers by providing the right goods and services at the right time, place, and price. Based on this, the districts of Tikrit and Al-Alam in Salah al-Din Governorate are considered promising areas for honey production, given their natural grazing environment and vast agricultural lands. However, the marketing reality does not match the production potential and suffers from weak promotion, the absence of marketing associations, and low marketing awareness among producers. This study seeks to analyze the marketing reality of honey in the districts of Tikrit and Al-Alam during the 2024 season. By diagnosing the characteristics of producers and the market, estimating marketing costs and returns, calculating marketing efficiency indicators, and analyzing the problems and obstacles associated with the honey marketing process, the aim is to provide a scientific and economic vision that contributes to building sound marketing policies and practical, applicable recommendations.

Research Problem:

The main problem that this study seeks to address is the weak marketing performance of honey in the districts of Tikrit and Al-Alam, which still faces multiple challenges related to weak marketing organization, the absence of supportive institutional structures, and the low level of marketing

low investment costs and high economic returns when combined with effective marketing systems. Experiences in developing countries have shown that supporting this industry and enabling producers to access markets contributes to improving rural income levels and achieving sustainable economic and social development [4]. Iraq, despite the fact that most governorates possess environmental diversity and suitable grazing plant resources for beekeeping, still suffers from structural imbalances in the marketing system, which are represented in: the lack of institutional organization, price fluctuations, the absence of marketing targeting, and weak packaging tools, which prevents maximizing the benefit from the product locally and internationally. Data from the Central Statistical Organization shows that honey production in Iraq reached about 5,970 tons in 2023, distributed among more than 490,000 hives spread across most governorates, with an average production of 12.2 kg/hive annually, while local demand is estimated at more than 8,000 tons annually, which shows a real marketing and market gap that needs systematic intervention and in-depth economic analysis[3]. Marketing is one of the most important economic and administrative activities in the modern era, as it represents the link between production and consumption [9,10]. Its aim is to

ISSN 2072-3857

measuring marketing efficiency, and identifying the most significant obstacles hindering the marketing of this vital product. The ultimate goal is to develop practical, scientifically sound recommendations that contribute to improving marketing efficiency and increasing the economic returns for beekeepers in the region

Analytical Methodology of the Study:

This study adopted a descriptive-analytical approach supported by quantitative analysis to achieve its research objectives of diagnosing the marketing reality of honey in the districts of Tikrit and Al-Alam. A range of statistical and economic methods were used to analyze the field data collected through a questionnaire designed for this purpose. This questionnaire comprised (76) forms distributed to a random sample of (5%) of the total population of beekeepers registered with the Department of Agriculture. The descriptive statistical analysis of the sample characteristics was performed using means, percentages, and an analysis of marketing costs and returns (revenues, net income, fixed and variable costs). Marketing efficiency indicators were also measured, such as:) Marketing Efficiency()Marketing Margin(

Results and Discussion:

efficiency among producers, as well as the reliance on traditional channels in distribution and promotion, which results in a decrease in economic efficiency and a lack of opportunities for market expansion, despite the existence of good production capacities and latent marketing potential that has not been exploited.

Research Hypothesis:

Based on the research problem and objectives, the study's hypotheses revolve around the relationship between producer characteristics, marketing realities, and economic efficiency. The marketing of honey in the studied region suffers from low marketing efficiency indicators, leading to reduced economic returns for beekeepers. Furthermore, the limited marketing channels, the absence of brands, and the lack of market regulation negatively impact the profitability and market penetration of honey.

Research Objective:

This research aims to analyze the economic and marketing reality of honey production in the districts of Tikrit and Al-Alam during the 2024 production season. This will be achieved by studying the characteristics of producers, estimating costs and returns,

honey yield per hive for the 2024 production season.

A. Variable Production Costs:

These are expenses whose value changes with changes in production volume. They increase with increased production and decrease with decreased production volume, and are directly affected by changes in supply and demand [2]. Variable costs include the following items:

1 .Transportation Costs:

The cost of this item per hive was 9,065 dinars, contributing 1,295 dinars to the cost of producing one kilogram of honey. It ranked second in relative importance among variable costs, at 20.57%.

2. Supplementary Feeding Materials: The cost per hive was 3,393 dinars, ranking fifth in relative importance at 7.70%.

3 .Biostimulants and pollen: The cost per hive is 18.521 dinars, equivalent to 2.645 dinars per kilogram of honey This accounts for the largest share of variable costs at 42.03%.

4 .Health and safety supplies: The cost per hive is 8.266 dinars, or 1.180 dinars per kilogram. This represents the third largest share of variable costs at 18.76%.

5. Operating supplies: The cost per hive is 3.547 dinars, or 0.506 dinars per kilogram. This represents the fourth largest share of variable costs at 8.04%.

Calculation and Estimation of Production and Marketing Costs for Honey Production in the Districts of Tikrit and Al-Alam for the 2024 Production Season

Total Production Costs:

The Concept of Agricultural Production Costs:

Agricultural costs are the costs of agricultural production inputs. Agricultural costs differ from costs in other economic activities. The largest portion of costs in agriculture does not change; this portion is called fixed costs, and it constitutes approximately two-thirds of the total costs. In most industries, fixed costs make up the largest part, thus allowing for some adjustments to production. The other type of cost, which changes with production, is called variable costs. However, this percentage varies in some branches of agricultural production [1].

First – Estimating Production Costs for Beekeepers:

The cost of producing honey per hive was estimated, with initial data obtained from a questionnaire (Appendix 1). This questionnaire was distributed to 76 beekeepers in the study area (Tikrit and Al-Alam districts). The data was collected through direct interviews with the beekeepers, and the average production cost per hive was calculated, as well as the average

sixth place with a percentage of (2.90%) in terms of the relative importance of variable costs.

6_Loading and unloading costs: The lowest cost value was recorded at 1.285 dinars per cell, and 0.183 dinars per kg, and it came in the last

Table (1) Variable Production Cost Items for Honey Production in Tikrit and Al-Alam Districts for the 2024 Production Season

Variable Production Cost Items	Cost per cell:	Cost per kg	Relative Importance %
Transportation Wages	9.065	1.295	20.57
Supplementary Feeding Materials	3.393	0.484	7.70
Probiotics and Inoculants	18.521	2.645	42.03
Health and Safety Treatments	8.266	1.180	18.76
Operating Supplies	3.547	0.506	8.04
Loading and Unloading Costs	1.285	0.183	2.90
Total	44.077	6.293	100

Source: Prepared by the researcher based on the questionnaire form (1)

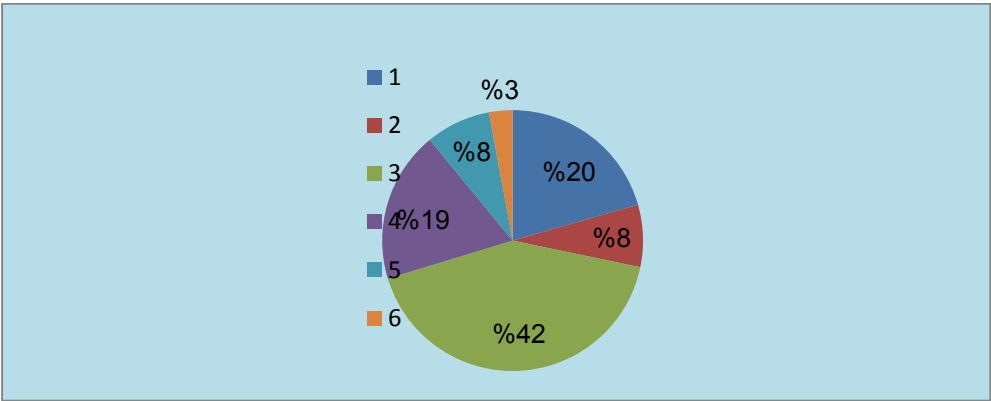


Figure (1) Relative Importance of Variable Production Cost Items

Source: Prepared by the researcher based on data from Table (1)

unchanged and independent of production volume. The establishment bears these costs

B- Fixed Costs

Fixed costs represent the largest portion of the budget, remaining

- 4- Bee smoker: The cost per hive per season is 1.901 dinars, with a cost of 0.271 dinars per kilogram of production. Its operational lifespan ranges from 2 to 3 years, making it an essential, low-cost, and highly beneficial tool in beekeeping management. It ranked sixth in relative importance among fixed costs, representing 1.70%.
- 5- Lever: Its value reached 2.789 dinars, with an operational lifespan of 3 years. Its annual cost per hive is 0.929 dinars, while its contribution is 0.132 dinars per kilogram of honey produced. It ranked tenth in relative importance among fixed costs, representing 0.82%.
- 6- Hive Base: The hive base is the essential support and platform upon which the entire hive structure rests. Its distributed cost per hive is 4.671, representing an investment value that serves as the floor of the hive, insulating the bees from ground moisture and providing them with an opening for foraging. Due to its direct contact with stressful environmental factors, its average operational lifespan is estimated at 4 years, causing its value to depreciate

regardless of production volume; that is, costs remain constant even if the level of production changes. Fixed costs include the following items:

- 1- Bee Swarm: This is the biological basis of production, consisting of a mated queen and a group of worker bees. The efficiency and productivity of the hive depend on it. Its total cost amounted to 126,842 dinars, with the hive's share per season being 31,710 dinars, or approximately 4,530 dinars per kilogram of production, with an estimated operational lifespan of four years. It ranked second among fixed costs at (28.30%).
- 2- Wooden beehives: The cost per hive during the season was 3.543 dinars, equivalent to 0.506 dinars per kilogram of honey produced. They ranked fifth in terms of relative importance, representing 3.16%.
- 3- Manual honey extractor: Its cost per hive per season was 10.910 dinars, and per kilogram, 1.558 dinars. It has the longest operational lifespan of 12 years. In terms of relative importance, it ranked fourth among fixed costs, representing 9.60%.

relative importance among fixed costs with a percentage of (1.38%).

- 9- Queen cages: Queen cages are a smart management tool that gives the beekeeper precise control over the hive's health. They are used to regulate egg-laying, facilitate queen replacement, and ensure colony stability during division, thus increasing overall efficiency without compromising honey production. Despite their pivotal role, their financial impact is very limited; their operational lifespan is two years at an annual cost of 0.350 per hive, which represents 0.05 of the cost of producing one kilogram of honey. They ranked fourteenth in terms of relative importance among fixed costs at a rate of 0.31%.
- 10- Protective suit: It represents a long-term investment with an operational life of 5 years, as its contribution does not exceed 0.17 of the cost of producing one kilogram of honey, and only 1.06% of the total fixed costs, making it low-cost and of great importance in ensuring the continuity of work, as it ranked eleventh in terms of relative importance among

annually by 1.167 per production season. Analytically, this base contributes a very small amount, 0.166, to the cost of producing one kilogram of honey, ranking ninth in relative importance among fixed costs at 1.03%.

- 7- Ventilation Box: The ventilation box is a strategic protection device designed to regulate temperature and prevent bee suffocation, especially in the hot climate of Tikrit and Al-Alam or during apiary migrations. The capital cost of a single box is 4,855. Due to its seasonal and field-based use, its operational lifespan is estimated at 4 years, resulting in an annual depreciation of 1,213 per hive per production season. From an economic perspective, this item contributes 0.173 to the cost of producing one kilogram of honey, ranking eighth in relative importance among fixed costs at 1.08%.
- 8- The swarming box: Its cost per hive was 6.184 and with an operational life of 4 years, its annual cost was 1.546 per hive, while its cost was 0.220 per kg of honey, which indicates its limited impact on the total production costs, and it ranked seventh in terms of

ISSN 2072-3857

importance among fixed costs, representing 0.63%.

- 13- Primary supplies: These primary supplies are characterized by an operational life of up to 5 years, and their total cost per hive was 2.575, while the annual cost distributed over the production season was estimated at 0.515 per hive, which represents a small financial contribution to the cost of production at a rate of 0.073 per kilogram of honey produced, and thus it ranked third in terms of relative importance among fixed costs at a rate of (0.45%)
- 14- Opportunity cost of family labor: The opportunity cost of family labor represents the most fundamental and influential pillar in the production cost structure, as beekeepers rely primarily on their personal efforts and the assistance of their family members in carrying out various beekeeping operations, thus reducing dependence on paid labor. The opportunity cost of family labor per hive and per production season reached 43,735, contributing 6,247 to the cost of producing one kilogram of honey, thus ranking first in terms of relative importance at a rate of (39.01%).

fixed costs, with a percentage of (0.97%).

- 11- Queen Bees: Queen bees are the cornerstone and driving force of the apiary's production process. **It should be noted that while a bee colony is initially purchased with its queen, this specific cost item refers to the periodic replacement of queens every 3 years.** This practice is essential to improve the genetic lineage, enhance the colony's ability to reproduce and collect nectar, and increase overall efficiency. This distinction is made to ensure production stability and avoid the perception of duplicated or inflated initial investment costs.
- 12- Hive cleaning brush: A hive cleaning brush is an essential tool in apiary management. It is used to gently remove bees from the honeycomb during harvesting or inspection, and to clean the hive floor, promoting hygiene and reducing pests without harming the bees. Its operational lifespan is approximately three years, and its cost per hive is 2.131, with an estimated annual cost of 0.710 per hive, equivalent to 0.101 per kilogram of honey. It ranked twelfth in relative

Table (2) Fixed Production Cost Items for Honey Production in Tikrit and Al-Alam Districts for the 2024 Production Season

Fixed production cost items	Cost per cell per sample	Average operational lifespan / years	Cost per hive for the production season	Cost per kg	Relative importance %
Bee swarming	126.842	4	31.710	4.530	28.30
Wooden hives	21.263	6	3.543	0.506	3.16
Manual extractor	130.921	12	10.910	1.558	9.73
Bee smoker	3.802	2	1.901	0.271	1.70
Hive lever	2.789	3	0.929	0.132	0.82
Hive base	4.671	4	1.167	0.166	1.03
Ventilation box	4.855	4	1.213	0.173	1.08
Swarming box	6.184	4	1.546	0.220	1.38
Queen cages	0.700	2	0.35	0.05	0.31
Protective suit	3.236	3	1.078	0.154	0.97
Queen bees	38.421	3	12.807	1.829	11.43
Hive cleaning brush	2.131	3	0.710	0.101	0.63
Basic supplies	2.575	5	0.515	0.073	0.45
Opportunity cost of family labor	43.735	—	43.735	6.247	39.01
Total	392.125	4	112.114	16.01	100

Source: Prepared by the researcher based on the questionnaire form (1)

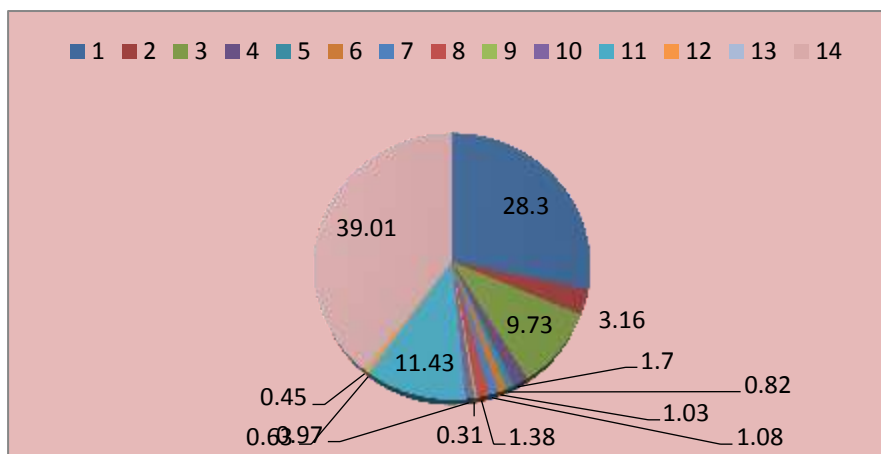


Figure (2): Relative Importance of Fixed Production Cost Items. Source: Prepared by the researcher based on data from Table (2).

.with a relative importance of 100%. This indicator is a crucial basis for evaluating the economic efficiency of production projects, as it is used in calculating profitability, analyzing economic feasibility, and comparing production costs with realized revenues. As shown in Table (4).

Third: Total Production Costs

Total production costs represent the sum of variable and fixed production costs [8] and reflect the total expenses incurred by the producer in producing honey . This total amounted to 156.191 **dinars per hive** , at a rate of 22.3 **dinars per kilogram of honey**

Table (4) Total production costs for honey production in the districts of Tikrit and Al-Alam for the 2024 production season

Total Production Cost Items		Cost per cell	Cost per kg	Relative importance%
Variable Costs	Production	44.077	6.293	28.21
Fixed Costs	Production	112.114	16.01	71.79
Total		156.191	22.30	100

Source: Compiled and calculated by the researcher based on the questionnaire form

apiary to the point of sale. These costs include transportation, packaging (containers), and labeling. These costs were identified

Marketing Costs for Beekeepers:

These are the costs incurred by beekeepers while transporting honey from the

0.617 per kg, ranking second in relative importance of marketing costs at 36.66%.

3. Labeling Costs: This item costs 0.190 per kg, ranking third in relative importance of marketing costs at 11.29%.

using the form shown in Table (5), which includes the following:

1 .Packaging Costs: This item costs 0.876 per kg, ranking first in relative importance of marketing costs at 52.05%.

2 .Transportation and Loading Costs: This activity costs

Table (5) Estimate of marketing costs for honey products in the districts of Tikrit and Al-Alam for the 2024 production season.

Marketing costs for beekeepers	Costs per kg	Relative importance%
Packaging box	0.876	52.05
Transportation and loading	0.617	36.66
Adhesive	0.190	11.29
Total	1.683	100

Source: Prepared by the researcher based on the questionnaire form (1).

4 -Reliance on traditional marketing channels and a lack of expansion into electronic or direct-to-consumer marketing.

5 -Beekeepers' limited experience in modern marketing techniques such as professional photography, content writing, and promotion via social media

Marketing Cost Items for Wholesalers:

A questionnaire was prepared for wholesalers in the study area (Tikrit and Al-Alam) and distributed to their offices. The required data was collected through personal interviews, resulting in the identification of the following cost items:

Problems and obstacles facing beekeepers in marketing operations in the districts of Tikrit and Al-Alam for the 2024 production season:

1 -A lack of extension programs that contribute to developing marketing skills and modern apiary management.

2 -The presence of imported honey that competes with the local product and affects its prices and market share.

3 -Weak trust between beekeepers and marketers or traders, which limits the establishment of stable business relationships.

expenses go towards securing shop space.

3. Capital Interest Costs: This item amounted to 0.202 dinars/kg, ranking third in relative importance at 11.08%..

1.Hired Labor : The cost of hired labor amounted to 0.980 dinars/kg, ranking second in relative importance at 53.79%.

2.Shop Rent Costs: This item amounted to 0.640 dinars/kg, ranking first with a relative importance of 35.13%, indicating that more than half of the merchant's

Table. (6) Estimated marketing costs for wholesale beekeepers in the districts of Tikrit and Al-Alam for the 2024 production season.

Marketing costs for a wholesaler	Costs per kg	Relative importance%
Hired labor	0.980	53.79
Rent	0.640	35.13
Capital interest	0.202	11.08
Total	1.822	100

Source: Prepared by the researcher based on the questionnaire form (2).

genuine and adulterated honey in the absence of accredited testing laboratories.

4 .Price volatility due to competition from imported honey or changes in supply and demand.

5 .High transportation and storage costs, especially in cases of increased demand or remote production areas.

6 .Weak marketing organization and the absence of clear, formal contracts between parties.

The most significant obstacles and problems facing wholesalers:

These problems and obstacles were identified through the questionnaire:

1 .Weak mutual trust with beekeepers due to inconsistent quality or failure to adhere to agreed-upon quantities.

2 .Instability in the quantities offered due to fluctuations in production and scarcity of vegetation.

3 .Difficulty in distinguishing between

approximately 33.100 dinars/kg, as indicated in Table(7)

Distribution of Marketing Shares for Producers and Wholesalers from the Consumer Dinar:

A- Producer's (Beekeeper's) Share of the Consumer Dinar:

The producer's share of the consumer dinar for honey was approximately (82.17%), as shown in Table(7).

B- Wholesaler's Share of the Consumer Dinar:

Regarding the wholesaler, their share of the consumer dinar was approximately (17.82%), as shown in Table (7).

7. Low consumer awareness, leading them to prioritize price over quality.

Calculating profits, marketing efficiency, marketing margins, relative importance, and individual shares for honey production for the 2024 production season.

Development of farm gate (apiary) and wholesale prices for honey, and distribution of marketing shares for producer and wholesaler in dinars.

1 .Apiary Prices (Producer Price): The average apiary price (selling price from the beekeeper) was approximately 27.200 dinars/kg, as shown in Table(7).

2 .Wholesaler Prices: The average wholesaler price was

Table (7) Distribution of shares between the producer and the wholesaler from the consumer dinar

Prices are dinars/kg		Distribution of the consumer dinar%	
Breeder	Wholesaler	Breeder's share	wholesaler's share
27.200	33.100	82.17	17.82

Source: Calculated and compiled by the researcher based on the questionnaire form

$$33.100 - 27.200 / 33.100 = 17.82$$

Second: Calculating Profits for Both Producer and Wholesaler

$$\text{Breeder's share} = \text{Breeder} / \text{Total} * 100$$

$$27.200/33.100=82.17$$

$$\text{Wholesaler's share} = \text{Total} - \text{Breeder} / \text{Total} * 100$$

1 .Producer (Breeder) Profit =
Revenue - (Total Production and
Marketing Costs)

$$27.200 - (23.983) = 3.217$$

We can calculate the producer's
profit per kilogram using the
following formula:

Table (8) shows the production and marketing costs and the producer's profit per kilogram for Breeders.

Production costs dinars/kg	Marketing costs Dinar/kg	Total production and marketing costs	Revenue (TR) Dinar/kg	Profit Dinar/kg
22.30	1.683	23.983	27.200	3.217

Source: Calculated and compiled by the researcher based on the data in Table (7)

dinars per kg. This indicates that the revenue fully covers the costs and achieves a positive profit margin for the Breeder per unit produced.

2 .Calculate the profit from the wholesaler using the following formula:

Wholesaler Profit = (Wholesale Selling Price - Product Price - Wholesaler Marketing Costs)

$$33.100 - 27.200 - 1.822 = 4.078$$

The table above shows that the average production cost per kilogram for the Breeder was 22.30 dinars, while marketing costs amounted to 1.683 dinars, bringing the total costs to 23.983 dinars/kg. In contrast, the total revenue was 27.200 dinars/kg, resulting in a net profit of 3.217

Table (9) Net profit between wholesaler and producer

Profit Distribution	Value in dinars	Relative importance
Breeder Profits	3.217	44.09
Wholesaler Profits	4.078	55.91
Total	7.295	100

Source: Prepared by the researcher based on Table (8)

and services achieved in this cycle, including wholesale trade profits. This difference is reflected in the marketing products, relatively at 17.82% of the selling price in the stage. This distribution confirms that the beekeeper (producer) still has the largest part of the final price, which was known from the complex marketing data in the study area. This margin was also clearly known for transportation costs, in addition to transporting the product from the apiaries to comprehensive distribution channels within the local distribution.

Fourth: Measuring Marketing Efficiency

Marketing efficiency is the indicator that reflects the success of the marketing system in delivering honey from the Breeder to the consumer at the lowest cost and highest quality. We will rely on two measurement methods as shown in the image [7].

Total marketing costs are calculated by adding the beekeeper's marketing costs (1.683) and the wholesaler's marketing costs (1.822), which equals **3.505."**

1 .Measuring Marketing Efficiency Using the First Relationship:

Marketing Efficiency = $100 - \left[\frac{\text{Total Marketing Costs}}{\text{Production Costs (Total)}} \times 100 \right]$

$100 - \left[\frac{3.505}{23.983} \times 100 \right]$
= 85.39%

Third: Estimating the marketing margins of Breeders in Tikrit District and the production work science in 2024.

First: The marketing margin between the wholesaler and producer stages: This is the difference between the purchase price and the selling price, expressed in monetary units [6] . Here, between the wholesaler and producer stages for beekeepers, the average marketing margin reached (5.9) dinars/kg, and it was calculated using the following formula:

Absolute (Product) Price =
 (Wholesale Price) – (Product Price)

$33.100 - 27.200 = 5.9$

The relative marketing margin was calculated and found to be (17.82%). It was calculated using the following formula:

2 .Relative (Product) Price =
 Absolute (Product) Price /
 Wholesale Price * 100

$5.9 / 33.100 \times 100$
= 17.82%

The results of the analysis of marketing margins for honey in the Tikrit and Al-Alam districts looking forward to 2024 show that the difference in the absolute price between the two stages of products and the region's distribution reached 5.9 dinars for each variety, which represents the financial value that covers all the marketing burdens

ISSN 2072-3857

79.08% according to the second formula, reflecting an acceptable marketing system that requires development.

5. Honey marketing faces several major obstacles, including the prevalence of adulterated honey, beekeepers' limited marketing experience, and insufficient reliance on modern marketing methods.

Recommendations:

1 .Develop guidance and training programs for beekeepers to enhance their skills in modern marketing and e-commerce, and improve their economic management of apiaries.

2 .Encourage the establishment of beekeepers' associations or unions to regulate the marketing process, reduce reliance on intermediaries, and improve beekeepers' negotiating power.

3 .Establish honey quality testing laboratories and issue accreditation certificates to curb the spread of adulterated honey and enhance consumer confidence in local products.

4 .Support the use of modern marketing methods and e-commerce, such as direct-to-consumer sales via social media, to expand market share and increase profits.

5. Provide government support to reduce transportation and packaging costs and improve marketing infrastructure, thereby contributing

2 .Measuring Marketing Efficiency Using the Second Relationship:

Marketing Efficiency = $100 - \left[\frac{\text{Marketing Margins}}{\text{Marketing Margins} + \text{Production Costs}} \times 100 \right]$

$100 - \left[\frac{5.9}{5.9 + 22.30} \times 100 \right]$

= 79.08%

The results above show that the marketing efficiency in the first method was 85.39% and in the second method, 79.08%. The efficiency ratio indicates a good level of efficiency at this stage, as its high value means that production costs represent the largest share of the price, compared to a relatively low marketing burden.

Conclusions:

1 .Fixed costs constitute the largest portion of production costs, representing 71.79% of total costs, indicating a high level of capital investment in beekeeping.

2 .Beekeepers achieved positive but relatively limited profits, with a net profit of 3.217 dinars/kg, suggesting a profit margin that can be improved.

3 .The marketing margin reached a moderate level of 17.82%, indicating a relative convergence between producer and wholesale prices and a reduction in intermediaries.

4 .Marketing efficiency showed relatively good levels, reaching

ISSN 2072-3857

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