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Research Article

The Economics of Manufacturing the most important Horticultural Crops in Egypt

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Abstract

The study mainly aims at estimating the economic effects of manufacturing the most important horticultural crops in Egypt, through estimating the added value of the food processing process for green okra and orange crops, in addition to developing a future vision for the possibility of advancing the food industry sector through the establishment of some agricultural manufacturing projects that contribute to Economic and social development in Egypt. The results showed that the value of the total loss of green okra and orange crops amounted to about 2909 million pounds in 2021, and it was found that the value added from the process of manufacturing frozen okra and orange crops is estimated at 12450 and 11338 pounds / ton, respectively, while the value of the total margin is estimated for mediators The distribution of frozen okra and orange drink is about 4,250 and 5,750 pounds/ton, respectively. Egypt is represented by the obsolescence of the technologies used in the production process and the high cost of production as a result of the high prices of production inputs, in addition to the high transportation costs. Therefore, the study recommends the necessity of promoting the economic and technical efficiency of agricultural industrialization, especially in the Egyptian countryside, and modernizing machines and equipment for agricultural industrial activities and projects through soft loans to their owners, modernizing and developing them, because of this's impact on improving the quality and quality of the product, reducing waste and reducing production costs.

Keywords: Food Industry, Horticultural crops, added value, Horticulture, Production

Introduction

The food processing sector is one of the important pillars in achieving food security in Egypt. Agricultural industries are considered one of the most important industries in countries with agricultural resources and wealth, as these industries balance the supply and demand of agricultural crops, by manufacturing the surplus to the need for fresh consumption, in addition to providing the supply of preserved products throughout the year. It also leads to a reduction in agricultural production losses, which helps to increase the income of the agricultural product, and thus increase the efficiency of the agricultural sector (Mohammad, 2022).

The financial analysis of the food industry sector in Egypt is a necessary preliminary step for economic development, as this analysis relies on data of manufacturing processes, including raw materials used in the manufacturing process, and the revenue list. Therefore, revealing the strengths and weaknesses in estimating the added value of the process of manufacturing the most important horticultural crops may affect the development of various policies affecting the profitability of companies and factories operating in the field of food industries. And revealing the strengths gives the administration an opportunity for success, just as revealing the weaknesses gives it the opportunity to identify its causes and try to eliminate them early so that they do not hinder future plans (El-eshmawiy, 2021). The provision of food also represents a real challenge to the Egyptian society as a result of the imbalance between the consumer's needs on basis nutritional and proper protection and what is already available of food, which resulted in a nutritional gap between production and consumption. The products of food industries are among the important commodities for human consumption in Egypt, and the continued decline in their local production in a way that is not commensurate with the increasing demand for them has led to the emergence and increase of the food gap for these products on the one hand, and the continued decreasing rates of self-sufficiency from them on the other hand.

The food industry is a group of operations that aim to achieve an increase in the satisfaction of the members of the community of food commodities and services by changing its fresh image to another image that is easier to preserve for a longer period, facilitates circulation, and reduces waste, which increases the added value and leads to an increase in national income. Egypt is considered one of the countries that have a long history in food processing. Since the era of the Pharaohs, the ancient Egyptians knew the preservation processes of vegetables, fruits, meat and fish. The food industry sector in Egypt contributes about 24.5% to the gross domestic product, with investments amounting to about 500 billion pounds, and employs more than 7 million workers, directly or indirectly. The food industry sector also ranks third in the forefront of the most exporting sectors, as the volume of its exports amounted to $3.4 billion in 2019, achieving a growth rate of 17% compared to 2015, and 78% of the total production of food industries is concentrated in the governorates of Lower Egypt (Hafeez, 2021).

Research Proble:

The research problem lies in the high percentage of losses in horticultural crops, which causes the national economy large financial losses at the same time that can be converted into economic benefits if the large quantities of these crops are manufactured which are lost throughout the year, as well as the high prices of these crops as a result of their seasonal production. In addition to the decrease in the value of annual exports, in the fresh form, due to the high percentage of idle capacities in the food industry sector, despite the fact that the food industry sector in Egypt enjoys many comparative advantages such as the availability of production requirements of vegetables and fruits throughout the year at reasonable prices, as well as the availability of manpower. Low-paid skilled workers, as well as the existence of markets in Arab countries that are characterized by a taste similar to the Egyptian taste for these products, and the European and American markets.

Statistics indicate that Egypt annually loses approximately 33% of green okra and 31.5% of oranges. This confirms the need to pay attention to food processing to reduce losses from agricultural crops and increase farm incomes for producers on the one hand, and to add job opportunities and added value to the national economy on the other hand.

Study Objectives

The study mainly aims at estimating the economic effects of manufacturing the most important horticultural crops in Egypt, through estimating the added value of the food processing process for green okra and orange crops, in addition to developing a future vision for the possibility of promoting the food industry sector through the establishment of some agricultural manufacturing projects that contribute to economic and social development in Egypt.

Research Method and Data Sources

The study will depend on the methods of descriptive and quantitative economic analysis, such as arithmetic averages, frequencies, and indicators of economic efficiency, in addition to all methods that achieve the objective of the study.

The study also relies on two sources of data, the first of which is: published and unpublished secondary data from the Ministry of Agriculture and Land Reclamation "Economic Affairs Sector", the Central Agency for Public Mobilization and Statistics, databases on the Internet, in addition to the results of previous studies and research and references specialized in the field of study. And the second: the primary data, which was obtained through personal interviews with officials of the Qaha Preserved Food Company, which is affiliated with the Holding Company for Food Industries, with regard to orange juice, in addition to the United Company for Food Industry "Montana" to obtain data on frozen okra, during the 2021 season.

Results and Discussion

The economic value of the waste of the most important horticultural crops used in the production of the food industry:

Waste refers to a shortage in the amount of food available for consumption, which leads to a decrease in agricultural and individual income. The importance of his study lies in clarifying the positive effects of limiting its increase and its impact on all actors in food production chains and value chains and improving their efficiency and sustainability, which helps in improving food security conditions and the standard of living of the population (Siyam, 2020). As well as increasing the efficiency of using natural resources and improving the ability to cope with the effects of climate change.

Table 1 indicates that the total loss of the green okra crop is estimated at 19.14 thousand tons during the farm, wholesale and retail stages, at rates of 7.5%, 11%, and 14.5%, respectively, of the total production of green okra with its three loops, which amounts to about 58 thousand. tons, and the value of the loss of green okra during the previous three stages is estimated at about 258 million pounds, according to the prevailing prices in each stage, in 2021. While the total loss of oranges is estimated at about 509 thousand tons during the stages of farms, the wholesale market, and the retail market, with rates of 7.8%, 11.2%, 12.5%, respectively, of the total production of oranges, amounting to about 1617

thousand tons, and the value of orange losses during the previous three stages is estimated at about 2.651 billion pounds, according to the prevailing prices in each stage, in 2021.

Table 1. The quantity and value of losses from some horticultural crops distributed over the stages of the series in 2021.

Crop	stage	% Wastage	total production (Thousand tons)	wastage amount (Thousand tons)	price (pounds/ton)	the value (One million pound)
Green okra	farmer	7.5	58	4.35	8715	37.9
	wholesale market	11	58	6.38	13145	83.9
	retail market	14.5	58	8.41	16200	136.2
	Total	33	58	19.14	13299	258
orange	farmer	7.8	1617	126	3120	393
	wholesale market	11.2	1617	181	5200	941
	retail market	12.5	1617	202	5620	1.317
	Total	31.5	1617	509	5208	2.651
The total value of losses from green okra and orange crops						2909

Source: Collected and calculated from: 1- Personal interviews with producers, wholesalers and retailers of the most important horticultural crops

2- Central Agency for Public Mobilization and Statistics, Trade Movement Bulletin, 2020.

It is estimated that the value of the total loss of green okra and orange crops will reach about 2909 million pounds in 2021, which indicates the need to pay attention to reducing the losses of these crops, either by improving the methods and systems of internal and external marketing of the fresh crop, or by encouraging the establishment of food industries in Areas of production of these crops, especially in new agricultural urban areas, or the development of old factories working in the field of manufacturing horticultural crops, and the introduction of modern technologies in the manufacturing process.

Technical and Economic Indicators for Manufacturing Frozen Okra at the United Company for Food Industry "Montana"

The estimates recorded in Table 2 refer to the most important technical and economic indicators for the manufacture of frozen okra product at the United Company for Food Industry "Montana" for the year 2021.

Costs of Manufacturing a Ton of Frozen Okra

The items of manufacturing costs per ton of frozen okra are represented in the direct costs, which include the value of the agricultural raw material (fresh okra), the value of packages and packaging, in addition to labor wages. Indirect costs include administrative expenses, electricity, water, diesel, marketing fees...etc. It is clear from Table 2 that the value of the raw material is estimated at 16,425 pounds - according to the estimated conversion factor

1.25: 1 - representing about 68.7% of the total costs amounting to about 23,925 pounds, while other costs represent packing items and packages, labor wages, and indirect expenses. About 10.4% for each of the total costs of manufacturing a ton of frozen okra in 2021. The value added to manufacturing: The value added to manufacturing is estimated by calculating the difference between the selling price of the factory or company for the frozen okra product and the value of the agricultural raw material (fresh okra). Estimates in the previous table indicate that the added value of manufacturing a ton of frozen okra is estimated at 12450 pounds/ton.

The total margin of the distribution intermediaries and the wholesaler: The total margin of the distribution intermediaries is estimated by calculating the difference between the retail price for the consumer and the selling price of the factory, which expresses what the intermediaries who carry out the marketing process get. Estimates in Table 2 indicate that the total margin of mediators for distributing frozen okra is estimated at 4250 pounds/ton.

Net factory yield: It expresses the difference between the factory selling price and the total manufacturing costs per ton. Estimates in the previous table indicate that the net yield per ton of frozen okra is estimated at 4950 pounds, according to 2021 prices.

Table 2. Manufacturing costs and value added for manufacturing a ton of frozen okra, according to 2020 prices.

Clause	The value is in pounds
Conversion factor between raw materials (fresh okra: frozen okra)	1.25:1
1- Raw material costs (fresh green okra, considering the price per ton is 13140 pounds)	16425
Packing and packages	2500
employment	2500
Indirect expenses	2500
2- The costs of other items	7500
total costs	23925
Retail price for the consumer (considering the price of the package 400 gm = 13.25 EGP/package)	33125
Factory selling price (considering the price of the package 400 gm = 11.55 EGP/package)	28875
Manufacturing value added (factory selling price - raw material costs)	12450
Total margin for distribution brokers and wholesalers (retail price to the consumer - factory selling price)	4250
Factory net profit (factory selling price - raw material costs - other items costs)	4950

Source: Collected and calculated from the field research questionnaire of Kaha Food Industries Company.

- Indirect expenses include items of administrative expenses, electricity, water, diesel, marketing wages etc.

Technical and economic indicators for the manufacture of orange drink at Kaha Food Industries

The estimates recorded in Table 3 indicate the most important technical and economic indicators for the manufacture of the orange drink product at Kaha Food Industries Company for the year 2021.

Costs of manufacturing a ton of orange drink

The items of manufacturing costs for a ton of orange drink are represented in the direct costs, which include the value of the agricultural raw material (fresh oranges), the value of

raw materials such as sugar, stearic acid, CMC, the value of packages and packaging, in addition to labor wages. Indirect costs include administrative expenses, electricity, water, diesel, marketing fees...etc. It is clear from Table 3 that the value of the raw material is estimated at 1662 pounds - according to the estimated conversion factor 4:1 - representing about 17.2% of the total costs amounting to about 9617 pounds, while the other costs are for items of raw materials, packaging and packages, and labor wages. And indirect expenses are about 10.4%, 37%, 10.4%, and 25% of the total costs of manufacturing a ton of orange drink in 2020. The added value of manufacturing: The added value of manufacturing is estimated by calculating the difference between the selling price of the factory or company for the manufactured product and the value of the agricultural raw material (the fresh crop). Estimates in the previous table indicate that the added value of manufacturing a ton of orange drink is estimated at 11,338 EGP/ton.

The total margin of the distribution intermediaries and the wholesaler: The total margin of the distribution intermediaries is estimated by calculating the difference between the retail price for the consumer and the selling price of the factory, which expresses what the intermediaries who carry out the marketing process get. Estimates in Table 3 indicate that the total margin of orange drink distribution brokers is estimated at 5750 pounds/ton.

Net return to the factory: It expresses the difference between the factory selling price and the total manufacturing costs per ton. Estimates in the previous table indicate that the net return per ton of orange drink is estimated at 3383 pounds, according to 2021

Table 3. Manufacturing costs and value added for manufacturing a ton of orange drink, according to 2021 prices.

clause	The value is in pounds
Conversion factor between raw materials (fresh orange: orange drink)	1:4
1- Raw material costs (fresh oranges, considering the price per ton is 6650 pounds)	1662
Raw Materials (C MC + Citric + Sugar)	1000
Packing and packages	3555
employment	1000
Indirect expenses	2400
2- The costs of other items	7955
Total costs	9617
Retail price for the consumer (considering the price of the package 200 mm = 3.75 pounds/pack)	18750
Factory selling price (considering the price of the 200 ml package = 2.6 pounds/pack)	13000
Manufacturing value added (factory selling price - raw material costs)	11338
Total margin for distribution brokers and wholesalers (retail price to the consumer - factory selling price)	5750
Factory net profit (factory selling price - raw material costs - other items costs)	3383

Source: Collected and calculated from the field research questionnaire of Kaha Food Industries Company.

• Indirect expenses include items of administrative expenses, electricity, water, diesel, marketing wages etc.

The most important problems facing the food processing operations at Kaha Company for Food Industries: Table (4) indicates the most important problems facing the food industries in Egypt, which can be classified as follows:

1- Technical problems: represented in the obsolescence of the technologies used in the production process, the use of non-manufacturing items, in addition to the producers' non-compliance with supplying according to the terms of the contract and the lack of quality of the supplied product.

2- Economic and marketing problems: represented in the high cost of production as a result of the high prices of production inputs, in addition to the high transportation costs, in addition to the imposition of additional fees on highways and the deterioration of the marketing infrastructure.

3- Export problems: represented in the presence of restrictions on export, in addition to the presence of problems in the Gulf region and the failure to complete the food safety system, in addition to non-compliance with international specifications for the manufactured product.

Table 4. The most important problems facing food processing in Egypt.

Problem type	The problem
Technical problems	Obsolete technologies used in the production process
	Use of non-manufacturing items
	Non-compliance of producers to supply in accordance with the terms of the contract
	Non-compliance with international standards and quality
Economic and marketing problems	The high cost of production as a result of the high prices of production inputs
	High transportation costs, plus highway tolls
	Deterioration of the basic marketing infrastructure
Export problems	The existence of export restrictions, in addition to the presence of problems in the Gulf region and the failure to complete the food safety system
	Narrow export base and limit it to a few major exporters
	Non-compliance with the international specifications of the manufactured product

Source: The field research questionnaire of Kaha Company for Food Industries and the United Company for Food Industry "Montana".

Conclusion

The results of the study indicate the importance of food processing in increasing national income and providing job opportunities. The promotion of comprehensive and sustainable industrialization in Egypt has become necessary to raise the efficiency of using available resources in society, provide food commodities throughout the year, and achieve added value to the national economy. Micro, small and medium agricultural establishments are considered the cornerstone of the economic and social development process, through their ability to treat the problem of unemployment and provide new job opportunities, in addition to the optimal exploitation of local primary resources and maximizing the added value and happiness of individuals. The study recommends the necessity of working and paying attention to the tools and means of promoting the economic and technical efficiency of agricultural industrialization, especially in the Egyptian countryside, and modernizing the machines and equipment of agricultural industrial activities and projects by providing soft loans to their owners, modernizing and developing them, because of this's impact on improving the quality and quality of the product, reducing waste and reducing production costs.

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