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العائد الاقتصادي لإنتاج الكليم والسجاد بمحافظة مطروح

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المستخلص

في ضوء ما تسعى إليه الدولة إلى فتح آفاق جديدة وفرص جديدة للعمل في العديد من الأنشطة لإمتصاص وتقليل معدلات البطالة، فإن نشاط صناعة السجاد والكليم يعتبر أحد الأنشطة الهامة بمحافظة مطروح والذي أوشكت على الإنقراض، الأمر الذي يشير إلي أهمية عمل دراسة جدوى لهذه المهنة بداية من غزل الصوف وإنهاءً بمراحل صناعة الكليم والسجاد لهذا القطاع للتعرف على إمكانية تعظيم الإستفادة من القيمة المضافة لإحدى المنتجات الزراعية الثانوية لمربي الأغنام وهي الصوف الذي تمتاز بها البيئة الصحراوية، وذلك للإستفادة منها في قطاع صناعة الكليم والسجاد اليدوي، حيث يعد المشروع من المشروعات المتوسطة التكلفة التي لا يحتاج إلى ماكينات أو خامات غالية الثمن، فهو يعتمد بالأساس على مهارة العمال وجهدهم اليدوي. حيث يقوم المشروع على إنتاج الكليم والسجاد. وتبلغ مساحة موقع المشروع حوالي 500 متر، تبلغ مساحة المنشآت 100 متر وحدات إداريه، 200 متر لمصنع غزل الصوف، و 200 متر لورشة صنع الكليم والسجاد. بإجمالي عام لتكاليف مقايسة وحدة غزل الصوف بلغت حوالي (175.7) ألف جنية / سنويا، وإجمالي عام لتكاليف مقايسة إنتاج ورشة الكليم بلغت حوالي (214.36) ألف جنية / سنويا، وإجمالي عام لتكاليف مقايسة إنتاج ورشة السجاد بلغت حوالي بلغ (263.19) ألف جنية / سنويا، وإجمالي تكاليف إستثماريه بلغت حوالي (1880) ألف جنية / سنويا، وإجمالي تكاليف رأس المال العامل (525.35) ألف جنية، وإجمالي تكاليف ثابتته (2909.94) ألف جنية / سنويا، وإجمالي تكاليف إهلاك والبالغة (679.03) ألف جنية / سنويا لمشروع إنتاج الكليم والسجاد، وإجمالي تكاليف متغيرة (6081.31) ألف جنية / سنويا، بإجمالي عام للتكاليف يصل إلى (10872) ألف جنية / سنويا لمشروع وحدة غزل الصوف وصنع الكليم والسجاد، كما تبين من النتائج أن جميع المؤشرات المالية جاءت إيجابية وهو ما يستوجب الإستمرار في الإستثمار في المشروع، حيث يتوقع أن يدر المشروع عائداً بمعدل يبلغ 42.14% مقارنة بمتوسط سعر الفائدة السائد والبالغ نحو 13% كما يكون المشروع قادرا على تغطية رأس المال المستثمر خلال 2.37 عام فقط، وذلك خلال 10 سنوات كعمر افتراضي للمشروع.

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The economic return of kilim and carpet production in Matrouh Governorate

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ABSTRACT

the state seeks to open new horizons and new opportunities to work in many activities to absorb and reduce unemployment rates, the carpet and kilim industry activity is considered one of the important activities in Matrouh Governorate, which is on the verge of extinction, which indicates the importance of conducting a feasibility study for this Craft

starting from Spinning wool and ending with the kilim and carpet industry stages for this sector to learn about the possibility of maximizing the benefit from the added value of one of the secondary agricultural products of sheep breeders, which is the wool that characterizes the desert environment, in order to benefit from it in the kilim and handmade carpet industry sector, as the project is one of the medium-cost projects that do not It needs expensive machines or raw materials, as it depends mainly on the skill and manual effort of the workers. Where the project is based on the production of kilims and carpets. The project site area is about 500 meters, the facilities area is 100 meters for administrative units, 200 meters for a wool spinning factory, and 200 meters for a workshop for making kilims and carpets. In a total year for the assay costs of the wool spinning unit, it amounted to about 175.7 thousand pounds / year, and in a total year the costs of assaying the production of the kilim workshop amounted to about 214.36 thousand pounds / annually, and the total year for the costs of assaying the production of the carpet workshop amounted to about 263.19 thousand pounds /annually, and the total investment costs reached to About (1880) thousand pounds / annually, total working capital costs (525.35) thousand pounds, total fixed costs (2909.94) thousand pounds/annually, total depreciation costs reached to (679.03) thousand pounds /annually for the kilim and carpet production project, total variable costs (6081.31) thousand pounds/annually, with a total cost of up to (10872) thousand pounds/annually for the project of the unit for spinning wool, making kilims and carpets, as it was found from the results that all the financial indicators were positive, which requires continuing to invest in the project, as it is expected that the project will generate income Returning at a rate of 42.14% compared to the prevailing average interest rate of about 13%, and the project will be able to cover the invested capital within only 2.37 years, within 10 years as a project life.

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Introduction

Handicrafts and traditional industries occupy a large area of the Egyptian heritage, in their production the manufacturer depends on his individual intellectual and manual skills using the raw materials available in the local natural environment and imported raw materials. Many countries have realized the importance of investing their heritage and worked to establish thousands of workshops and factories, thus providing millions of Work opportunities for Omit youth and to open new markets to sell its products everywhere, which made it transform from poor countries to rich countries from the proceeds of exporting its abundant products of handicrafts to various parts of the world⁽³⁾.

The wool spinning industry is considered one of the oldest industries that spread in the entire Arab society because of its simplicity. It also contributes to the manufacture of kilims and handmade carpets in Egypt, which has become part of a handicraft on its way to extinction like other traditional crafts, especially with the replacement of industrial carpets on a large scale. although Matrouh governorate is one of the largest governorates in producing wool in Egypt, some of the few factories are still working in this field until our time. Sheep, in addition to that the spinning industry contributes to raising the added value of wool due to the potential to benefit from it in the kilim and handmade carpet industry sector.

The art of hand weaving is one of the manual skills that history has known from the early times until the present time, and it is an art linked to human innovation and to economic and civil development in general and linked to the environment and its raw materials and what is characterized by customs, traditions, beliefs and economic level, where the project is one of the medium-cost projects that do not need expensive machines or raw materials, it depends mainly on the skill and manual effort of the workers⁽⁵⁾.

Research problem

Despite the importance of the kilim and carpet industry in providing job opportunities, especially for rural women, this industry faces many difficulties and problems, as it suffers from poor funding and low sales and profits, and consequently the lack of liquidity necessary to provide salaries that are not commensurate with the effort exerted in this profession, which clearly led to the reluctance of young men and women to work in this sector, and thus increased unemployment, in addition to the distance between the place of production and the place of marketing, and the traditional marketing methods, in addition to the great crisis that the tourism sector is going through, which led to many problems that it suffers Which is reflected on the Egyptian economy as a whole, as the natural wool spinning industry depends mainly on tourism, which prompted the owners of workshops and small factories to think seriously about abandoning the profession that their ancestors practiced for decades due to the low demand for their handicrafts, and from here all these factors collectively reflect the extent of the deterioration of the profession And low performance efficiency, which may lead to the failure or stoppage of the project.

Research goal

The research mainly aims to estimate the economic return on the production of kilims and carpets as one of the small agricultural industrial projects in the desert areas, through:

- Identifying the current situation of industries based on wool spinning in Matrouh Governorate.
- Calculating the economic feasibility of the wool spinning industry and the production of kilims and carpets.
- Identifying the most important obstacles faced by the kilim and carpet production industry.

- Develop and suggest the necessary mechanisms to promote this activity to reduce the unemployment problem in the governorate.

Research importance

Learn about the possibility of maximizing the benefit from the added value of one of the secondary agricultural products of sheep breeders, which is the wool that characterizes the desert environment, as well as the importance of the role it can play in increasing the exports of these products in treating the current deficit in The Egyptian agricultural trade balance.

Research methods and Data sources

the research depends on the use of some descriptive and quantitative statistical methods for processing secondary data, and the measures for feasibility study such as the Payback period as well as the net present value, the present benefit to cost ratio and the internal rate of return (IRR) , and The study relied on published and unpublished annual data from various sources such as the State Information Service and the Industrial Development Authority, as well as websites related to the subject of the study and the personal experience of specialists through conducting a number of personal interviews with some of the stakeholders in this sector from the owners of workshops and factories in some areas (case study) of Matrouh Governorate, which It was characterized by the presence of such activity in it.

The economic importance of handicrafts ⁽¹⁾

The economic importance of handicrafts can be summarized in the following:

- 1) The possibility of creating greater job opportunities by allocating fewer resources compared to the requirements of other industries and their ability to absorb and employ large numbers of labor forces with low educational qualifications.
- 2) Take advantage of local raw materials, especially those available in economic quantities.
- 3) The woman, as a mother and housewife, can practice the craft at the times that suit her, and in the places she chooses, or even in her home.
- 4) Low costs for training, due to its reliance on on-the-job training, as well as its use of mostly simple and uncomplicated techniques.
- 5) Flexibility in spreading in the various governorates and regions of the Republic where raw materials are available, which leads to achieving balanced development between rural and urban and leads to reducing the phenomenon of internal migration and the growth of new productive societies in remote areas.
- 6) Flexibility in production and the ability to provide products according to the needs of consumer demand.

Results and discussion

Economic feasibility study for the wool spinning industry and the production of kilims and carpets.

In light of the many challenges that the project under study may face, this research came to try to shed light on most of the variables related to it and determine the extent of its economic feasibility

and the risks it may be exposed to, to help the decision-maker take what he deems appropriate to implement this investment opportunity.

Methodology And Assumptions of the Study:

- The study was adopted to determine the financial accounts of the project during a period of 10 years only, for several reasons, the most important of which is the difficulty of predicting prices after 10 years, as well as placing options before the decision maker, either to complete the project and expand it, or to end the investment opportunity and sell the project assets, and then achieve profits from the sale. This is In light of the uncertainty in the local and global economy after this period, to reduce risks.
- Based on the questionnaire, it was found that the total amount of raw wool for the project is about (8.11) ton/year and the amount of spun wool is about (3.85) tons/year.
- The discount rate of 13% was adopted when calculating the economic indicators of the project, and it is the largest interest rate in Egyptian banks during the study preparation period.
- The study relied on determining the prices of the final products of the project, as well as the prices of the project's foundational and operational requirements, on the average prices of 2021, and then determining the expected return, costs, and profitability indicators based on those prices.
- Several workshops were visited in Matrouh Governorate, and a questionnaire was designed for these workshops to obtain general indications about the current situation of the wool spinning, kilim weaving and carpet industries.

Accounting standards for estimated cases according to the foundations of the Chamber of Industries, Kilim and Carpet Production Division⁽³⁾

First: The spun wool production unit

- 1- Considering the spinning machine as the unit of production in spinning mills.
- 2- Estimate the productivity of the spinning unit in one shift at the rate of 75 kg of yarn, taking into account the quality and grade of the yarn produced.
- 3- Considering the annual working days from 280 to 300 days in normal cases, taking into account the circumstances of each factory separately and the extent of the factory's ability to dispose of its production.
- 4- Estimation of the factory's total profit percentage at 20% of the selling price of the yarn produced for its account, taking into account the difference in price according to the type of yarn produced and its marketing area.
- 5- Considering the percentage of the total spinning profit for others as 30%, taking into account the operating price of the kilo and its difference according to the type of yarn.
- 6- An estimate of the average productivity of the lay-off machine in one shift at the rate of 70 kg of rolled yarn, provided that when accounting takes into account the quality of the yarn (wool or mixed).
- 7- Considering the percentage of the total profit of the layoff for others 30%, taking into account the price of the layoff, and its difference according to the quality of the yarn, and the prevailing market price in the region.
- 8- Accounting for the dyeing activity, if any, takes into account an estimate of the dyeing price for others according to the type of yarn.
- 9- Estimating the percentage of the total dyeing profit for others at 30% of the dyeing fee.

Estimation of the percentage of wastage⁽⁷⁾

The percentage of spinning wool after the different cleaning stages depends on the degree of cleanliness of the raw wool, 56% is the highest wastage and 49% is the lowest.

$$\text{Loss ratio} = \frac{\text{weight of raw wool} - \text{weight of clean wool}}{\text{weight of raw wool}} \times 100$$

Table (1) Estimating the percentage of wastage of the amount of wool during the different spinning stages

Raw wool Tons	wastage in cleaning		wastage in combing		wastage in cord		wastage in spinning		total wastage		production actual capacity tons
	%	tons	%	tons	%	tons	%	tons	%	tons	
8.11	5	0.41	15	1.22	30	2.43	2.5	0.2	52.5	4.26	3.85

Source: According to the data of the questionnaire

Calculation of the wool spinning unit costs

Based on the data provided in the questionnaire, which was obtained from the personal interviews of the workshop owners, it is clear from the following table⁽¹⁾:

1- Raw wool

Assuming that the wool spinning unit receives a quantity of raw wool of about 8.11 tons / year at a price of 6 thousand pounds / ton, with a total value of raw wool about 48.66 thousand pounds / annually.

2- Oil

Assuming that a ton of raw wool needs about 66.67 kilos of oil needed in the fermentation process to move to the washing stage, with a total oil quantity of about 540.7 kilos of oil/year at a price of 20,000 pounds/ton, with a total oil value of about 10.81 thousand pounds/year.

3- Washing powder

A ton of raw wool needs about 33.33 kilos/ton, with a total amount of soap, about 2.7 tons/year, at a price of 5,000 pounds/ton, with a total value of soap about 13.5 thousand pounds/year.

4- Dyeing

In the event that the total amount of raw wool reaches about 8.11 tons / year, it will be produced after the completion of the different spinning stages, the total amount of pure wool amounting to about 3.85 tons / year, divided into natural wool without dye, the amount of which reaches about 1.7 tons / year, used in making natural kilims And about 2.15 tons / year of pure wool that is dyed (0.85) tons for kilim production and 1.3 tons for carpet production) at a total cost of about 13.83 thousand pounds / ton with a total value of about 29.73 thousand pounds / year.

5- The wages of the spinning unit workers

It was found that the wool spinning unit needs about 3 workers, with a total wage cost of about 72.99 thousand pounds/year.

The general total cost of a wool spinning unit

From the above it is clear that the total costs of raw materials for the wool spinning unit amounted to about 102.71 thousand pounds / year, and from it is clear that the general cost of the workers = total wages of workers + total costs of raw materials = 102.71 + 72.99 = 175.7 thousand pounds / year.

In the event that the production quantity of spun wool exceeds the needs of the two units of kilim and carpet production, it is sold to others and added to the net return with a profit margin of 20%.

Table (2) The general total cost of a wool spinning unit quantity ton - value thousand pounds

wool			Oil			Soap			Dye			Total raw material costs	Labor wages	Overall total costs
Quantity	price	value	Quantity	price	value	Quantity	price	value	Quantity	price	value	value	value	value
8.11	6	48.66	0.54	20	10.81	2.7	5	13.5	2.15	13.83	29.73	102.71	72.99	175.7

Source: The data were collected and calculated according to the questionnaire.

Second: Kilim and carpet workshop (hand looms)

1. Considering the loom as the unit of production in the kilim and carpet industry.
2. Estimation of the average weekly loom productivity according to the type of kilim produced, with the following rates being guided: Type of loom - the average weekly loom production (in meters).

production costs per meter of kilim

Based on the data provided in the questionnaire, which was obtained from the personal interviews of the workshop owners, it is clear from the following table⁽²⁾:

Each meter of natural kilim needs 1.7 kilograms of natural spun wool or colors, as well as 150 grams of warp (wool longitudinal threads).

Accordingly, the total amount of natural yarn is about 1.7 tons of natural spun wool / year at a price of 30 thousand pounds / ton, with a total value of about 51 thousand pounds / year.

Likewise, the total amount of colored yarn is about 0.85 tons of colored wool per year at a price of 58 thousand pounds / ton, with a total value of about 49.3 thousand pounds / year.

Likewise, the total amount of warp is about 0.23 tons of warp /year at a price of 62.5 thousand pounds/tons, with a total value of about 14.06 thousand pounds/year.

Table (3) The general total cost of producing kilim meter Quantity Ton - Value thousand pounds

Basic raw materials									Total raw material costs	labor wages	Overall total costs
The natural yarn			colored yarn The			The warp					
Quantity	price	value	Quantity	price	value	Quantity	price	value	Quantity	price	value
1.7	30	51	0.85	58	49.3	0.23	62.5	14.06	114.36	100	214.36

Source: The data were collected and calculated according to the questionnaire.

Accordingly, it appears from the above that the total costs of raw materials amounted to 114.36 thousand pounds / year.

The kilim production workshop needs about 5 workers, with a total wage cost of about 100,000 pounds/year.

Accordingly, the total costs of the kilim production workshop amounted to 214.36 thousand pounds / year.

production costs per meter of carpet

Drawing on the data, on the questionnaire form, which is the personal lists of the workshop owners, Table (4) is the following:

Each meter of carpet needs 3.5 kg of colored wool, It also needs 1.7 kilograms of warp (longitudinal woolen threads), as well as 1.7 kilograms of Altafwit (cotton longitudinal threads).

Therefore, the total amount of colored yarn is about 1.3 tons of colored wool per year at a price of 58 thousand pounds / ton, with a total value of about 75.4 thousand pounds / year.

as well the value of the warp 0.49 tons per year at a price of 62.5 thousand pounds / ton, with a total value of 30.36 thousand pounds / year.

The value of altafwit amounted to 0.49 tons / year at a price of 30 thousand pounds / ton, with a total value of 14,57 thousand pounds / year.

Accordingly, it appears from the above that the total costs of raw materials amounted to 120.33 thousand pounds / year.

The carpet production workshop needs about 15 workers, with a total wage cost of about 142.86 thousand pounds / year.

Accordingly, the total costs of the carpet production workshop amounted to 263.19 thousand pounds / year.

Table (4) The general total cost of producing carpet meter Quantity Ton- Value thousand pounds

Basic raw materials									Total raw material costs	labor wages	Overall total costs
The colored yarn			The warp			Altafwit					
Quantity	price	value	Quantity	price	value	Quantity	price	value	Quantity	price	value
1.3	58	75.4	0.49	62.5	30.36	0.49	30	14.57	120.33	142.8	263.19

Source: The data were collected and calculated according to the questionnaire.

Technical study of the wool spinning and weaving industry:

Determining the technical needs for establishing projects according to the following:

1. **Land:** The project site is expected to be about 500 square meters.

(Note defining that area for the project as an average category that can be doubled to increase the size of the project)

2. **Furniture and equipment:** it is expected to equip the project with furniture, establish a production workshop and its equipment, and the administration and its equipment such as office furniture, a telephone, a computer and the Internet.

3. **Facilities:** The facilities are expected to have an area of 100 meters for administrative units, 200 meters for a wool spinning factory, and 200 meters for a workshop for making kilims and carpets.

4. **Machinery, technical equipment and production lines for spinning:**

Wool passes through many stages until it reaches threads, which requires the following machines and equipment:

(Diba machine - lay-off machine - kurd machine - condasa machine)

The project's needs of machinery and technical equipment for the kilim workshop are as follows

(The loom - scissors - comb - Plastic tape measure - makok - pestle)

The project's needs of machinery and technical equipment for a workshop and carpets are as follows

(The loom - scissors - Plastic tape measure - the scalpel - al-dukhun)

5. Cars: It is expected to purchase transport vehicles according to an annual plan that corresponds to the marketing needs. a car in the first year (the start of operation of the main production lines of the wool spinning project) and another car in the fifth year of the project.

Feasibility study

1- Project cost structure

Based on the outputs of the technical study, the project cost structure can be addressed as follows:

First - investment costs

Through table (5), we find that it is expected that the project of spinning wool, making kilims and carpets will need investment costs that include land costs, facilities costs, licenses costs, machinery and equipment costs, furniture costs, automobile costs, and working capital (500 - 120 - 15 - 200 - 25 - 220 - 525) respectively, with total investment costs amounting to about (1605) thousand pounds, which are required to establish the project.

Table (5) The needs of establishing the project headquarters and providing its needs from the investment costs Thousand pounds

Item	Values
land costs	500
Facility costs	120
License costs	15
machinery and equipment costs	200
Furniture costs	25
car costs	220
Working capital	525
total investment costs	1605

Source: The data were collected and calculated according to the questionnaire.

• **Working capital**

Through what was presented in the technical study, it is clear from Table (6) that the working capital of the project can be determined, which includes the total costs of raw materials, wages of trained workers, electricity costs, water costs, maintenance costs, communications costs, stationery costs, transportation and loading costs Tax costs, and petty cash, each of which amounted to (234.69 - 242.86 - 19.20 - 3.60 - 2 - 0.50 - 0.50 - 16 - 5 - 1) thousand pounds / year, respectively, and the total costs of working capital (525.35) thousand pounds / year

Table (6) Working capital at the start of the project Thousand pounds

Item	Values
Total raw material costs	234.69
wages of trained workers	242.86
Electricity costs	19.20
Water costs	3.60
Maintenance costs	2.00
Communication costs	0.50
Stationery costs	0.50
Transportation and loading costs	16.00
Tax costs	5.00
Miscellaneous cost	1.00
Total	525.35

Source: The data were collected and calculated according to the questionnaire.

Second - fixed costs

It is clear from Table (7) that the fixed costs of the project can be determined through the following items (total permanent labor wages, total social security, fees and licenses, and total depreciation costs, each of which amounted to (1660.28 - 553.43 - 17.2 - 679.03) thousand pounds, respectively, with total fixed costs (2909.94) thousand pounds

Table (7) The total fixed costs of the kilim and carpet production project during the period (2021-2030) thousand pounds

year	Annual wages for permanent workers	Social Security	Fees and licenses	Total depreciation costs	Total fixed costs
2021	132	44	1.5	39.25	216.75
2022	138.6	46.2	1.55	41.21	227.56
2023	145.53	48.51	1.59	43.27	238.9
2024	152.81	50.94	1.64	45.44	250.82
2025	160.45	53.48	1.69	74.96	290.58
2026	168.47	56.16	1.74	78.71	305.07
2027	176.89	58.96	1.79	82.64	320.29
2028	185.74	61.91	1.84	86.77	336.27
2029	195.02	65.01	1.9	91.11	353.04
2030	204.78	68.26	1.96	95.67	370.66
Total	1660.28	553.43	17.2	679.03	2909.94

Source: The data were collected and calculated according to the questionnaire.

The annual increase in Annual wages for permanent workers, Social Security and Fees and licenses costs by (5% - 5% - 3%) was calculated based on what was indicated by some specialized references⁽³⁾ and personal interviews with officials in the kilim and carpet industry during the period of filling out the questionnaire.

- **Depreciation costs for machinery, equipment, transportation and office furniture**

Depreciation costs are considered one of the most difficult types of costs in determining their value throughout the life of the project, but according to what is customary, and through surveying the opinions of specialists working in the kilim and carpet industry, the expected depreciation costs in the project can be determined as follows:

- deduction of 5% annually from the value of machinery, equipment and production lines at the beginning of the life of the project.
- deduction of 10% annually from the cars value at the beginning of the life of the project.
- deduction of 5% annually from the value of office furniture, finishes and equipment for buildings and production halls at the beginning of the life of the project.

as shown in Table (8) the depreciation costs of each of (facilities - machines - cars - furniture) amounted to about (48.15 - 81.58 - 269.80 - 10.03) thousand pounds, respectively, with a total depreciation cost amounting to (409.56) thousand pounds for the kilim and carpet production project.

Table (8) The value of depreciation and remaining assets over the life of the project thousand pounds

year	Facilities		Machines		Cars		Furniture		Total	
	facilities value	Depreciation costs of the facilities 5%	Machinery value	Machinery depreciation cost 5%	car value	Car depreciation costs10%	Furniture value	Furniture depreciation costs5%	Total Asset Value	Total depreciation costs
2021	120.00	6.00	200.00	10.00	220.00	22.00	25.00	1.25	565.00	39.25
2022	114.00	5.70	190.00	9.50	198.00	19.80	23.75	1.19	525.75	36.19
2023	108.30	5.42	180.50	9.03	178.20	17.82	22.56	1.13	489.56	33.39
2024	102.89	5.14	171.48	8.57	160.38	16.04	21.43	1.07	456.17	30.83
2025	97.74	4.89	167.90	8.40	414.34	41.43	20.36	1.02	700.35	55.73
2026	92.85	4.64	159.51	7.98	372.91	37.29	19.34	0.97	644.61	50.88
2027	88.21	4.41	151.53	7.58	335.62	33.56	18.38	0.92	593.74	46.47
2028	83.80	4.19	143.95	7.20	302.06	30.21	17.46	0.87	547.27	42.47
2029	79.61	3.98	136.76	6.84	271.85	27.18	16.59	0.83	504.80	38.83
2030	75.63	3.78	129.92	6.50	244.66	24.47	15.76	0.79	465.97	35.53
Total		48.15		81.58		269.80		10.03		409.56

Source: The data were collected and calculated according to the questionnaire.

Third - Variable costs of the project

It is clear from Table (9) that the variable costs of the project can be determined as follows (total raw material costs, temporary labor wages, electricity costs, water costs, maintenance costs, communication costs, stationery costs, transportation and loading costs, tax costs, and Miscellaneous, which amounted to Each of them (2717.23 - 2811.77 - 22.30 - 41.68 - 23.16 - 5.79 - 5.79 - 185.27 - 57.89 - 10.46) thousand pounds, respectively, and the total variable costs are 6081.31 thousand pounds.

Table (9) The total variable costs of the kilim and carpet production project during the period (2021-2030) Thousand pounds

year	Total raw material costs	temporary labor y wages	Electricit costs y	wate r costs	maintenan costs ce	Communicati costs on	stationer costs y	Transportatio and n loading costs	tax costs	Miscellaneo us	Total variabl e costs
2021	0	0	0	0	0	0	0	0	0	0	0
2022	246.43	255	20.16	3.78	2.1	0.53	0.53	16.8	5.25	1.03	551.6
2023	258.75	267.75	21.17	3.97	2.21	0.55	0.55	17.64	5.51	1.06	579.15
2024	271.68	281.14	22.23	4.17	2.32	0.58	0.58	18.52	5.79	1.09	608.09
2025	285.27	295.19	23.34	4.38	2.43	0.61	0.61	19.45	6.08	1.13	638.47
2026	299.53	309.95	24.5	4.59	2.55	0.64	0.64	20.42	6.38	1.16	670.38
2027	314.51	325.45	25.73	4.82	2.68	0.67	0.67	21.44	6.7	1.19	703.87
2028	330.23	341.72	27.02	5.07	2.81	0.7	0.7	22.51	7.04	1.23	739.04
2029	346.75	358.81	28.37	5.32	2.95	0.74	0.74	23.64	7.39	1.27	775.97
2030	364.08	376.75	29.79	5.58	3.1	0.78	0.78	24.82	7.76	1.3	814.74
Total	2717.23	2811.77	222.3	41.68	23.16	5.79	5.79	185.25	57.89	10.46	6081.31

Source: The data were collected and calculated according to the questionnaire.

The annual increase in Total raw material costs, temporary labor wages, Electricity costs, water costs, maintenance costs, Communication costs, stationery costs, Transportation and loading costs and tax costs by (5%) and The annual increase in Miscellaneous by (3%) was calculated based on what was indicated by some specialized references⁽³⁾ and personal interviews with officials in the kilim and carpet industry during the period of filling out the questionnaire.

Total costs

The total costs related to the project were estimated during the study period, and it is clear from Table (10) that the total investment costs amounted to (1880.35) thousand pounds, the total fixed costs amounted to (2909.94) thousand pounds, and the total variable costs amounted to (6081.31) thousand pounds, with total costs up to (10871.60) thousand pounds for the project of a unit for spinning wool, making kilims and carpets.

Table (10) The total investment, fixed and variable costs and the general total costs for the kilim and carpet production project thousand pounds

Year	Total investment costs	Total fixed costs	Total variable costs	Overall total costs
2021	1605.35	216.75	0.00	1822.10
2022	0.00	227.56	551.60	779.15
2023	0.00	238.90	579.15	818.06
2024	0.00	250.82	608.09	858.91
2025	275.00	290.58	638.47	1204.05
2026	0.00	305.07	670.38	975.45
2027	0.00	320.29	703.87	1024.16
2028	0.00	336.27	739.04	1075.31
2029	0.00	353.04	775.97	1129.01
2030	0.00	370.66	814.74	1185.40
Total	1880.35	2909.94	6081.31	10871.60

Source: Calculated and compiled from Table (6),(7),(9).

2- The expected financial flows of the project

The project has two types of sources of financial flows, which are as follows:

a. The expected direct return from the project according to the estimated time stages of operation

The expected return was estimated according to the project's time phases by dividing the total return on the project phases according to the proposed plan. The return can be divided into the project phases according to the following table:

Table (11) Distributing the expected direct return on the project phases during the period (2021-2030) thousand pounds

Year	The production stage	The total return and cash flow
2021	The first production phase with a capacity of 55%	1057.50
2022	The second production stage with a capacity of 60%	1110.38
2023	The third production stage with a capacity of 65%	1165.89
2024	The fourth production stage with a capacity of 70%	1224.19
2025	The fifth production stage with a capacity of 75%	1285.40
2026	The Sixth production stage with a capacity of 80%	1349.67
2027	The Seventh production stage with a capacity of 85%	1417.15
2028	The eighth production stage with a capacity of 90%	1488.01
2029	The ninth production stage with a capacity of 95%	1562.41
2030	The tenth production stage with a capacity of 100%	1640.53
Total		13301.12

Source: The data were collected and calculated according to the questionnaire.

The annual increase in production stage by (5%) was calculated based on what was indicated by some specialized references⁽³⁾ and personal interviews with officials in the kilim and carpet industry during the period of filling out the questionnaire.

b. Financial flows from the value of the remaining fixed assets of the project after 10 years

Through the outputs of the technical study, it is possible to estimate the total financial flows from the value of the remaining fixed assets of the project after 10 years as follows:

Table (12) The expected return of the remaining assets at the end of the project Thousand pounds

Enterprise value	machinery value	car value	Furniture value	Total Asset Value
75.63	129.92	244.66	15.76	465.97

Source: Source: Calculated and compiled from Table (8).

c. Total expected return during the project feasibility study period

Table (13) The total expected return during the study period for the project thousand pounds

year	remaining assets at the end of the project	Expected return on the	return and cash flow	Total	Total
2021	0		1057.50		1057.50
2022	0		1110.38		1110.38
2023	0		1165.89		1165.89
2024	0		1224.19		1224.19
2025	0		1285.40		1285.40
2026	0		1349.67		1349.67
2027	0		1417.15		1417.15
2028	0		1488.01		1488.01
2029	0		1562.41		1562.41
2030	465.97		1640.53		2106.5
Total	465.97		13301.12		13767.09

Source: collected and calculated from Table (11) and Table (12)

3- The expected net return of the project

Table (14) net returns and cash inflows and outflows for the kilim and carpet production project thousand pounds

Year	Total costs and cash outflows	Total returns and cash inflows	Net project return
2021	1822.10	1057.50	-764.60
2022	779.15	1110.38	331.22
2023	818.06	1165.89	347.83
2024	858.91	1224.19	365.28
2025	1204.05	1285.40	81.35
2026	975.45	1349.67	374.22
2027	1024.16	1417.15	392.99
2028	1075.31	1488.01	412.70
2029	1129.01	1562.41	433.40
2030	1185.40	2106.5	921.10
Total	10871.60	13767.09	2895.49

Source: Calculated and compiled from Table (10), (13)

The project is expected to start making profits by the end of the second year of the project, as it is clear that the total net return and financial flows of the project during the study period amounted to about (2895.49) thousand pounds for the project of the unit of wool spinning, kilim and carpet making.

Project financial indicators

These indicators are represented in Table (15) as follows:

First - Payback period:

This indicator can be used when comparing different projects so that the project that recovers its investment costs in the shortest possible period is selected⁽⁴⁾, as it turns out that the expected period to recover the money invested for the project of the wool spinning, kilim and carpet making unit is (2.37) years.

Second - Net Present Value (NPV):

It turns out that the value of the net present value amounted to about (1010) thousand pounds for the project of the unit spinning wool, making kilims and carpets, which is a positive value in this case, and this means that the project achieves a return of more than 13%.

Third - Benefit / cost ratio:

It turns out that the rate of return on costs amounted to about 1.15 for the project of spinning wool and making kilims and carpets, which are very encouraging rates for the project, which indicates the feasibility of investing in this project according to this criterion.

Fourth - (IRR) Internal Rate Of Return:

It was found that the project's expected internal rate of return amounted to about 42.14%, Which higher than the opportunity cost available to invest in Egyptian banks for the year 2021, which is represented in the highest interest rate estimated at about 13%, meaning that the project receives an interest on its investments estimated at about 42.14% over the life of the project. The results confirm the safety and feasibility of the project.

From the previous financial profitability indicators mentioned to identify the expected economic feasibility of the project, it can be emphasized that there is a great economic feasibility of the project, and that it is one of the profitable projects that can be taken as an investment decision to start.

Project Sensitive Analysis

Three different scenarios have been developed to measure the sensitivity of the project and its ability to withstand price fluctuations in its revenues and costs as follows:

a. The first scenario: It is assumed that an increase in the cash outflows (costs) of the project will occur by 10% when both the discount rate is fixed at 13% and the expected revenues.

A sensitivity analysis was conducted for the project of spinning wool and producing kilims and carpets by increasing costs by 10% with the stability of other factors, It was found that a positive value was achieved in relation to the net present value (NPV) amounted to (409) thousand pounds, while the ratio of revenues to costs (B/C) amounted to (1.04) pounds, which confirms the feasibility of the project, as the ratio of revenues to costs is greater than the correct one, which means that each pound invested in the project achieves a net return estimated at (0.04) pounds.

The internal rate of return (IRR) was about (23%), which means that the rate of return is greater than the opportunity cost prevailing in the community when conducting the study, which is the interest rate of 13%, and accordingly, the payback period (PBP) for the capital of the project was estimated at about (4.3) years. This confirms that there is a longer period in recovering the capital than the original case.

B. The second scenario: It was assumed that the project's cash inflows (revenues) would decrease by 10% when both the discount rate and the expected costs were fixed at 13%.

A sensitivity analysis was conducted for the wool spinning project and the production of kilim and carpets, when the revenues decreased by 10% with the stability of the other factors, It was found that a positive value was achieved in relation to the net present value (NPV) amounted to (308) thousand pounds, while the ratio of revenues to costs (B/C) amounted to (1.03) pounds, which confirms the feasibility of the project, as the ratio of revenues to costs is greater than the correct one, which means that every pound invested in the project achieves a net return estimated at (0.03) pounds.

The internal rate of return (IRR) was about (21.5%), which means that the rate of return is greater than the opportunity cost prevailing in the community when conducting the study, which is the interest rate of 13%, and accordingly, the payback period (PBP) for the project's capital was estimated at about (4.66) years. This confirms that there is a longer period in recovering the capital from the original state.

Whereas, the Switching Value⁽⁶⁾: is the value of the variable at which the decision to invest in the project is changed.

It is usually defined as the percentage change from the original state.

The percentage change in the variable required to reduce the net present value (NPV) to "zero" at the prevailing discount rate.

Or the percentage change in the variable required to make the project's IRR equal the prevailing discount rate (say 13%).

The following two scenarios have been assumption:

c. Third scenario: Switching Value of cash outflow

the percentage change in cash outflows (total costs) to make the project return on investment IRR equal to the prevailing discount rate of 13%, and the net present value (NPV) equal to zero is 16.8%

The project bears changes in cash outflows by increasing up to 16.8%, when the IRR is equal to the opportunity cost prevailing in the community when conducting the study, which is the interest rate of 13%, after which the project is not economically feasible, and the ratio of revenues to costs (B/C) has reached (1) EGP, and therefore the payback period (PBP) for the capital of the project is estimated at about (7.7) years, which is a longer period in recovering the capital than the original case.

D.Fourth scenario: Switching Value of cash intflow

the percentage change in the cash inflows (total revenue) to make the project return on investment IRR equal to the prevailing discount rate of 13%, and the net present value (NPV) equal to zero is 14.4%

The project bears changes in cash inflows by increasing up to 14.4%, when the IRR is equal to the opportunity cost prevailing in the community when conducting the study, which is the interest rate of 13%, after which the project is not economically feasible, and the ratio of revenues to costs (B/C) has reached (1) EGP, and therefore the payback period (PBP) for the capital of the project is estimated at about (7.7) years, which is a longer period in recovering the capital than the original case

The sensitivity analysis revealed several important findings, including:

1. Although the project is financially feasible, as the project has a high internal rate of return of 42.1%, this project is very sensitive as a result of a separate decrease in revenues or a separate increase in costs, as the decrease in revenues or increase in costs individually This leads to a decrease in the internal rate of return by about half of this value, and this high sensitivity of the project is attributed to its special nature, as a result of an almost complete correlation between the annual cost figures and the annual revenue figures. Therefore, any increase in costs (especially operational) is not accompanied by a rise in the prices of the project's products, that is, its revenue leads to a further decrease in its feasibility criteria.
2. The high sensitivity of the project is confirmed when calculating the Switching Value for declining revenues or increasing costs

Table (15) results of the economic feasibility study scenarios for the wool spinning project and the production of kilims and carpets (2021-2030)

financial evaluation metrics	In the normal case	%10increase in cash outflow	%10 decrease in cash inflows	Switching Value of cash out flow (16.8%)	Switching Value of cash inflow (14.4%)
Net Present Value (NPV) (Thousand Pounds)	1,010	254	175	0	0
Internal Rate of Return (IRR%)	42.14%	23.23%	21.46%	13.00%	13.00%
Benefit/Cost Ratio (pound)	1.15	1.04	1.03	1.00	1.00
Payback Period (p.b.p) (year)	2.37	4.3	4.66	7.7	7.7

Source: Calculated and collected from questionnaire data using Excel.

Obstacles faced by the kilim and carpet production industry

Although the carpet and kilim production industry is easy to learn and practice, it faces many obstacles that limit its spread

1. It is difficult for individuals to obtain capital and loans to start kilim and carpet production projects, due to the lack of interest of finance companies in providing loans and financial support for this category of local industries.
2. Neglecting the marketing role of the products, and the lack of specialized markets for selling the products of the carpet and kilim production industry.
3. The absence of an awareness role on how to benefit from the raw materials that are abundant in the desert environment.
4. The absence of competent authorities to train the labor force in the production of kilims and carpets and to preserve them from extinction.
5. The entry of ready-made foreign products at low prices to the market, which is unlike the local handicraft products, which are sold at high prices compared to foreign ones, and require a period of time to be prepared.
6. The reluctance of workers from this industry due to low wages, especially in light of the decline in sales and the deterioration of the tourism market.

Recommendations

For the purpose of developing investment in the field of kilim and carpet production, and in order to contribute effectively to economic development, it is proposed to work on:

1. Establishing an effective mechanism for coordination between the relevant authorities in the field of kilim and carpet production.
2. Coordination with bodies such as the Ministry of Education and Technical Education and the development of training programs aimed at developing the skills and capabilities of craftsmen, especially for the younger generations, to find a permanent source of skilled manpower.
3. Suggesting designed programs to promote the activity of making kilims and carpets from sheep's wool.
4. Coordination with banks and financial institutions specialized and supportive in the field of lending to finance the craft industries on easy terms and that the funding includes encouraging incentives that make the craftsman accept to use the loan and benefit from it.
5. Paying attention to the activities of marketing the products of the kilim and carpet production industry both internally and externally, provided that these activities inside the country include craftsmen centers, tourist markets, hotels, museums, airports and ports, public parks, exhibitions and festivals, and external marketing is represented in external participation in exhibitions and conferences. and international markets.
6. Interest in activating joint cooperation with the authorities related to the kilim and carpet production industry in the countries at the regional and international levels, and benefiting from the experiences of these countries in coordination with the authorities interested in the kilim and carpet production industry in those countries.
7. Making tax adjustments to exempt the profits generated by the kilim and carpet production industry from taxes.
8. Activating the role of civil society organizations to promote the kilim and carpet production industry, voluntary mowing, and the work of wool collection centers.

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