Financial & Economical Evaluation of Cage Floating Fish Culture Projects in Babylon Province for the Production Seasons (2015 - 2016)

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ABSTRACT

Key words:

Financial, Economical Evaluation, Cage Floating Fish Culture. Babylon.

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satk74@yahoo.com Received: 19/9/2017 Accepted: 19/12/2017 The floating fish culture projects have great importance in the fish production in Iraq. The presence of such projects in the province of Babylon as one of the leading provinces in the country because of the clear impact in achieving food abundance and self-sufficiency, which made these projects one of the infrastructure of the national economy.For its obvious impact in achieving plans for sustainable development in the future. In order to apply this study, scientific principles have been followed to ensure the typical use of available resources and to develop plans to reach an optimal investment decision, maximize the benefits and minimize the risks surrounding these projects by using evaluation criteria that can be used as a source for evaluating performance through obtaining scientific results economic feasibility of such projects.

The results of the commercial profitability account showed a simple return rate of 105% and variable capital productivity is (1.407) ID, and floating cage recovery of investment costs (0.703) years about nine mounths. The economic feasibility of investment in these projects was proved by profitability guide, which has (1.306) ID as for the overall risk was low, the production safety ratio reached 81.24% and the break-even reached (425.682) tons. The results of the monetary evaluation criteria showed the success of these projects in the national income through value added, which reached (2395980680,2689992680,2395980680)ID, and achieved productivity of the capital invested (1.451) ID and thus contributed to the creation of a value added.

The study recommended that to allow investment in these projects and encourage them through the provision of government support in the field of lending and subsidis of production inputs on a regular basis to farmers.

التقييم المالى والاقتصادى لمشاربع تربية الأسماك بالاقفاص العائمة في محافظة بابل للموسم الإنتاجي (2015- 2016)

سعدون تركي عواد الشمري وجدوع شهاب احمد الجميلي وخيري خليل سليم الساطوري قسم الاقتصاد والإرشاد الزراعي/ كلية الزراعة/ جامعة تكريت

الخلاصة

تحتل مشاريع الاستزراع السمكي بواسطة الاقفاص العائمة أهمية كبيرة ومتميزة في انتاج الاسماك في محافظات العراق. حيث ان وجود مثل هذه المشاريع في محافظة بابل كونها من المحافظات الرائدة في البلد لها أثر واضح في تحقيق الامن الغذائي والاكتفاء الذاتي للمواطنين، مما جعل تلك المشاريع تكون من احدى البنى الارتكازية للاقتصاد الوطني لتحقيق خطط النتمية المستدامة في المستقبل. ولتحقيق الهدف من هذه الدراسة تم اعتماد أسس علمية سليمة من شانها التاكد من ضمان الاستغلال الامثل للموارد المتاحة ووضع الخطط للوصول الى قرار استثماري أمثل وتعظيم المنافع وتقليل المخاطر المحيطة بهذه المشاريع عن طريق استخدام معايير التقييم التي يمكن اتخاذها كاداة لتقويم الاداء من خلال الحصول على نتائج علمية ذات جدوى اقتصادية من هذه المشاريع.

أظهرت نتائج حساب الربحية التجارية مجموعة من النتائج أذ بلغ معدل العائد البسيط 105% ، وبلغت إنتاجية رأس المال المتغير (1.407) ديناراً، أما استرداد القفص العائم لتكاليفه الاستثمارية خلال (0.703) سنة أي خلال تسعة أشهر تقريباً، وثبتت الجدوى الاقتصادية من الاستثمار في هذه المشاريع من خلال عائد الدينار المستثمر حيث سجل (1.306) ديناراً ، اما بالنسبة للمخاطرة بشكل عام كانت منخفضة فقد بلغت نسبة حد الأمان الإنتاجي

الكلمات المفتاحية: التقييم المالي، الاقتصادي، تربية الأسماك، الاقفاص العائمة. سعدون تركي عواد الشمري سعدون تركي عواد الشمري البريد الالكتروني: الاستلام: 19 / 9 / 2017 القبول: 19 / 2017

¹ This paper is a part of MSc. Thesis for the first author.

(81.24)% وبلغت كمية الإنتاج عند نقطة التعادل (425.682) طناً ، وبينت نتائج معايير التقييم الاجتماعي النقدية مدى نجاح مساهمة هذه المشاريع في الدخل القومي من خلال القيمة المضافة والاجمالية والصافية للاقفاص أذ بلغت (2395980680,2689992680,2395980680) ديناراً حسب الترتيب، وحققت انتاجية رأس المال المستثمر 1.451 ديناراً وبالتالي ساهمت في خلق مقدار من القيمة المضافة. وأوصت الدراسة بضرورة اتاحة الفرصة أمام الاستثمار في هذه المشاريع وتشجيعها من خلال تقديم الدعم الحكومي في مجال الإقراض ودعم مستلزمات الانتاج وخاصة الاصبعيات والعلف.

Introduction:

Iraq enjoys favorable environmental conditions for the development of husbandry of fish from north to south. The water supply is available and the climate is ideal for fish growth due to the appropriate temperature for fish farming for between (8-9) months per year. As well as the availability of capital and human resources, but the average consumption of fish in Iraqi does not exceed (1.8) kg per year, which is low when compared to the average consumption of the Arabic individual about 10.4 kg / year, while the rate of consumption of the global individual amounts to (16.3) Kg/year for 2006 (Falluji,2011). Therefore, there is a gap between the two rates, which requires the promotion of private investment in aquaculture fishy projects, in addition to the pioneering role played by the government by providing support, protection and scientific advice for the establishment of agricultural projects. In the census of December 2016, the exploited water area reached where in Babylon province (40601) m² and includes 102 licensed farms. The number of breeding cages reached 2618 cages, and their estimated production was 894 tons/year. There are also 283 unauthorized farms. In 2011, Al-Bahadli studied the possibility of using floating cages in fish farming in Maysan province with an amount of 40 fish/m³ survival rate. He also recommended using PVC in the work of cages because they are cheap and the use of polyethylene nets, In another study, in 2012, Saleh did an economic evaluation of fish farming projects using floating cages in Babylon, where stocking densities achieved the highest costs and revenues of more than 100 fish/m³ and cash flow. In the Jabr 2012 study, showed the superiority of cage culture in the ponds in terms of final weight, low costs and maximizing cash flow. The percentage of losses in cages was much lower than the ponds.

Research Problem:

Price fluctuations and low level of fish production in Babylon province caused the inability to face the increased demand, So, the effort must be concentrated and directed to decrease the gap between domestic production and consumption, by knowing the actual problems that facing theses projects.

The importance of the research:

To identify the problems and difficulties experienced by these agricultural projects when implemented and the contribution of the financial and economic assessment process in rationalization economic activity and ensuring the economic efficiency and allocation of economic resources.

Aims of the Research:

To assess the costs and revenues in achieving profits in agricultural projects.

Hypothesis Research:

The lack of optimal use of resources and its availability in agriculture projects in Babylon province lead to waste the economic resources and consequently a decrease in the economic efficiency of these projects performance and ways to treat them optimally.

Research Sample & Research Sources:

Data and information obtained from the field sources through questionnaire. A sample of 50 fish farms was selected by floating cages, all of which are located in Babylon province.

Methods of Analysis:

The study relied on several analytical methods, including the descriptive and quantitative analysis of its economic variables, measurement of the costs structure, returns and the profits achieved, the use of financial analysis tools through the application of some of the criteria for evaluating projects that are of interest to the producers to identify the efficiency of projects and their economic returns. The most important criteria was the capital recovery period and the simple rate of return using the Excel program. Equation analysis was also applied in the evaluation of the projects under study, as well as the application of some indicators of social money assessment such as the invested capital and the added value.

Results & Discussion:

Before showing the most important results, must be aware of the most important criteria which are the following:

1- Simple Rate of Return (SRR)

The percentage between annual net profit for the invested in any project and the value of initial invested for normal year operation (Kjie Jie,2008), and counted by the following equation: Simple Rate of Return (SRR) = (Net profit÷Investement).100

2- The Criteria of the Pay Back Period (PBP)

The period that allow the pay back of the essential investment spending as fast as possible (Al-Moussawi,2004). Calculated from the following equation:

Pay Back Period (PBP) = (Invested capital ÷ Net Cash Flow)

3- Uncounted profitability guide

The ratio of input cash flow to the output cash flow (Al-Najjar,2010). This can be calculated from the following equation:

Uncounted profitability guide = (Net cash Flow ÷ Net Out Flow)

4- Rate of Return on Capital Investment Criterion

This measure reflects the return of the investor the profits gained for every unit of capital (Al-Quraishi, 2001). Calculated from the following equation:

Rate of Return on Capital Investment Criterion=(Net profit ÷ Investment).100

5- The criterion of variable capital productivity

Through this criteria, the efficiency of using this variable asset can be evaluated for every farms. The efficiency of using these resources determine the profitability of production projects (Khader, 1995). To measure this through this equation :

Variable capital productivity = (Total Revenue ÷ Total Variable Cost) (Al-Izzi,1989)

6- Benefit – Cost Ratio criterion

This is named normally profitability index (PI), which is the present value of return divided on the present value of cost (Mousa&Salam,2013). Calculated from the following equation:

profitability index (PI) = (The present value of return ÷The present value of cost) (Abdul Hamid,2000)

7- Break – even point

This point means that total return equal total costs for any product (Al-Taliouni,2011).

Total Fixed

Production quantity at break-point = -

(Average price ÷ Average variable cost)

Total Fixed

Revenue at break-point = _____

(Total variable cost ÷ Revenues Earned)

Ratio of equilibrium = (Production quantity at break-point ÷The annual production).100

Safety margin = (The annual production - Production quantity at break-point)

Productive safety margin = (Safety margin ÷ The annual production).100 (Hafez, 2009)

8- The Financial Profit Criterion

The net income gained by economic unit through sealing a good or provide services minus all the costs spend on the commodity that reach its final shape (Abdul Karim,1999). To measure this through this equation: The Financial Profit = (Total Revenue - Total Cost)

9- The Added Value Criterion

The difference between the value of product and the value of factors of product which are purchased to produce this goods (Al-Wadi,2013), and counted by the following equation:

The Added Value = The value of product in market price – (Factors of production + Depreciation +Taxes - Subsidies)

10- Total Added Value Criterion

Means the success or failed of the projects by using the availability of production resources (Khawaja,2004). To measure this through this equation:

Total Added Value = (Total Added Value - Depreciation)

11- Net Added Value Criterion

Means the added value minus depreciation (Khawaja,2004), and counted by the following equation: Net Added Value = (The value of product - Factors of production)

12- Capital productivity Criterion

Means the share of the unit cash from the invested capital to greater an amount of added value measured by cash unit (Karkhi,2000). This can be calculated from the following equation: Capital productivity = (The Added Value ÷ Invested capital)

Analysis of revenues in fish farms:

The revenue means the sum of what the project gets (production unit) through selling the products through productive life and thus it is the quantity sold multiplied in its price unit (Al-Hasnawi,2007). The determination of the profits of the project is affected by the amount of gained revenue generated. In order to identify the revenues and benefits of floating fish cages in the research sample, the gained revenues from the sale of fish constitute the only basic revenue for these farms. As shown in Table (1), the quantities of fish sold in the sample farms reached about (2269.404) tons/cage, while the productivity of the fish cage in the sample was higher at (2.354) tons/cage. The productivity of the fish cage in the third category was higher at (3.470) tons/cage due to the efficiency of the management and the use of good artificial rations. Followed by the first category farms with (2.753) tons/cage, and the fifth category was in terms of the productivity of fish cage which reached (2.258) tons/cage, while the productivity of fish cage in the fourth and second farms decreased to (2.079,2.609) respectively. The decrease in the productivity of the fish cage in the fourth and second plantations is due to the fact that some farmers have introduced small finger fish, cheap artificial feed and poor management during the production season that affect the growth and productivity of fish. The total income of the sample farms was (8735180000)ID, while the average income of the fish cage was (9061390)ID.Naturally the revenues of the farms of the third and the first categories increase in the production season to reach (10155319, 14501053) ID in each of them respectively, while the lowest income of the fish cage in the fourth category farms which amounted to (7991176)ID. Low productivity and low fish prices were the main reasons for the decline in the income of the fourth category fish cage, the competition between them and the production of farms of other groups, as well as the imported fish and the lack of protection for the local product.

It can be concluded that, the income in the sample of the study, although the possibility of fish culture in floating cages twice in the production season, and the ability to achieve higher revenues compared to other fish farming systems, but the majority of cages farms in Iraq are grown once in the season. However, it has achieved the highest revenues, benefiting from the annual increase in production. The reason for raising fish once a year is the risk to fish producers, as well the non – activation of the production law.

Categories (1)	Number of farms (2)	Number of cultured fingers (3)	Production quantity (ton) (4)	Quantity of sale (ton) Q(5)	Average Selling price (million ID/ton) P(6)	Revenues Earned (ID) TR=P.Q (7) = (6).(5)	Revenue for one ton (ID) (8) = (7÷3)
First	10	94850	129.412	129	3.7	477300000	3688220
Second	13	237550	266.91	265	9.3	1033500000	3872091
Third	8	219700	329.687	328	4.2	1377600000	4178508
Fourth	5	198500	247.435	247	3.850	950950000	3843231
Fifth	14	1149500	1295.96	1294	3.650	4723100000	3644479
Sample	50	1900100	2269.404	2263	3.860	8735180000	3849107
Average	10	380020	453.880	452.6	3.860	1747036000	3849114

Table (1) Revenues achieved for categories of research sample and to aggregate sample (ID)

Source : Prepared by the researcher based on the questionnaire.

Analysis of profits in floating cages:

The net profits of the sample farms amounted to (2050932780) ID. The fifth category was ranked the first in terms of production season of (1017304365) ID and contributed 54.16% of total net profits. And then the third category of (409078900) ID which has 21.78% The total number of farms in the fourth and second categories was about (201902975,171388450) ID, with a relative importance of (10.75%,9.12%)respectively. While the first category came last, reaching (78.578.090) ID and the lowest contribution rate (4.18%). The profit margin was 23% for the total sample farms. The third category farmers achieved a profit margin 30%, which is the highest realized profit margin for the farmers of the sample groups. While the second category farmers achieved the lowest profit margin 17%. The profit margins are low in the first and second, while in the third, fourth and fifth categories are good. In general, the profit margin for the total sample farms 23% is higher than the cost of capital which was calculated (12%) for agricultural projects later.

Categorie s (1)	Total Revenue (2)	Total Operating Cost (3)	Net profit (4) = (2-3)	Net Cash Flow (5) = (4+Depreciation)	Margin Profit (4÷2).100 % (6) =
First	477300000	398721910	78578090	91338090	%16.463
Second	1033500000	862161550	171338450	205110450	%16.578
Third	1377600000	968521100	409078900	439648900	%29.695
Fourth	950950000	749047025	201902975	241332975	%21.231
Fifth	4723100000	3705795635	1017304365	1194784365	%21.538
Sample	8735180000	6684247220	2050932780	2344944780	%23.478

 Table (2) Net profit revenues margin for the research sample categories and to aggregate sample (ID)

Source : Prepared by the researcher based on the questionnaire source.

Results of used project evaluation criteria:

This search is concerned with the study and evaluation of aquaculture projects by floating cages for the production season 2015-2016 based on several criteria to determine the success or failure of projects and the extent of deviations, if any, from the objectives to be achieved through the following criteria :-

First :- Criteria for measuring business profitability with full certainty: (A) Simple Rate of Return (SRR)

Previous studies have indicated that most developing countries rely on the cost of capital ranging from 8% to 15% for agricultural projects. So it depends on the count of the discount rate (12%) by using this equation : Simple Rate of Return (SRR)= (Net profit÷Investement).100

It is noted from the table that the simple return rates of the farmers of the research sample categories are very encouraging because they have achieved much higher rates than the prevailing interest rate in the local financial market, where they registered about 105%. The third category ranked first, with 216%. Then first categories achieved (89%). The fifth, fourth and second categories were (83%, 74%, 70%) respectively.

The financial analysis shows that the simple rate of return is much higher than the prevailing interest rate in the financial market, so these projects are economically feasible from a commercial point of view.

(B) The Criteria of the Pay Back Period (PBP)

As shown in Table (3) and by using this equation :

Pay Back Period (PBP) = (Invested capital ÷ Net Cash Flow)

The sample farms recover the investment cost of the fish cage in (0.703) years about nine months approximately. This is the period in which the investors recover their money invested in the fish cage, while the same table shows that the third category farms recover the invested capital of (175007000) ID in (0.398) years about fifth months approximately. The net cash flow in the first category farms amounted to (91338090) ID in (0.808) years to guarantee the return of the invested capital in these farms about (73810000) ID, while managed the fifth group farms and fourth and the second to recover its invested capital in (0.829,0.892,0.950) years respectively.

(C) Uncounted profitability guide

This is a good indicator according to the economic project data. It shows that the monetary unit of the annual total costs of the annual revenue from the equation :

Uncounted profitability guide = (Net cash Flow \div Net Out Flow)

From the observation table (3) It is clear that the rate of the index of profitability is not deducted in the sample of the research (1.306) ID in the sample, that means it is more than (1) and this is what the economic feasibility projects assume is that one dinar earns a higher income, and occupied the third category farmers ranked first, where it got (0.422) ID when investing one dinar, which is an indicator that these farms were feasible and achieve a good economic return , and this is clear through what an increase in fish production, which was reflected in the farmer's ability to gain revenues covering the annual total costs of those farms, The fifth and fourth category farms came to collect (0.274, 0.269) ID for each of them as a result of their investment of one dinar and then the second and the first categories have come to achieve (0.198,0.197) ID for each as an investment for one ID.

It can be conclude that, the farms of all the sample groups have achieved profits and were characterized by economic feasibility according to the results of the criterion of profitability index is not discounted and the third category farmers are more profitable to achieve returns received higher than the costs borne by farmer's costs.

(D) Rate of Return on Capital Investment Criterion

The rate of return on capital invested in the research sample was 124.2% estimated from

equation : Rate of Return on Capital Investment =(Net profit÷Investement).100

The third group recorded the highest rate of return during the study period 233.8%. and the first group came to score 106.5% as a second rank, followed by the fifth category 102.7%, followed by the fourth category 93.7%. The second group achieved the lowest rate of return 87.9%.

In general, It can be conclude that, the sample farms achieved high growth rates. The reason for the positive growth is that the percentage of increase in net profits achieved was greater than the increase in the invested capital, which is evidence of the efficiency of the farm management in exploiting the existing production capacity to the maximum extent possibility.

(E) The criterion of variable capital productivity

Table shows that the variable capital productivity in the sample farms amounted to (1.407) ID per invested, i.e., estimated from equation :

Variable capital productivity = (Total Revenue ÷Total Variable Cost)

It achieved a profit of (0.407) ID, resulting from the high rate of return of fish cage in these farms of (9061390) ID for the average The annual variable cost of ID (6436206), while the third category farms achieved the highest rate of variable capital productivity at the level of the fish cage (1.503) per dinar invested (0.503) ID, followed by the fifth category farmer, the additional yield per ID (0.378), while the variable capital productivity in the first category farms decreased to ID (1.365) per invested to become the return of the additional dinar (0.365), followed by the fourth category farmer, the additional yield per ID (0.347), and the lowest return of an additional one dinar recorded for the sample groups in the second category farms of (0.283) ID.

From this, It can be conclude that, the category third farms were more efficient in using the changing production resources than other farms.

(F) Benefit – Cost Ratio criterion

The basis for using this percentage in project evaluation is to reject a project with less than one the present value of the benefits is lower than the present value of the costs, but if the profitability is equal to one or more (excluding projects with no correlation), Is that the present value of the costs is lower than the present value of the benefits and in light of this result all projects are accepted. One method of calculating this criterion must be followed when we use it primarily to evaluate projects in order to reduce the chances of misleading selection in the order of projects. The total present value of the discounted benefits using a discount factor of 12% in the sample farms (7799642222) ID while the present value of the costs and using the same discount factor (5968364342) ID. And by using this equation :

Benefit – Cost Ratio = (The total present value of the discounted benefits Net profit \div The total present value of the discounted costs)

The ratio of current benefits to the current costs is at a discount rate of 12% in category third farms (1.422) ID. This is an indication of the feasibility of the farmers in this category. The farmer is expected to earn a net income of (0.422) per ID, followed by the fifth category (1.274) ID. The return on the dinar was 0.274 ID each ID is an investor, followed by the fourth category (1.269) ID. The return on the dinar was (0.269) ID, This percentage in the farms of the second and first categories to register (1.198,1.197) ID respectively, that is, the two farms have achieved net income (0.198,0.197) ID for each dinar invested in them.

In the results of the benefit - cost ratio criterion below, it showed that this type of fish farming is economically feasible for farmers of the sample groups in view of the above, in the results, it was found that investment in floating cages is economically feasible, with rates exceeding the cost of capital used in the cash flow discount, which reflects the opportunity cost to invest in other projects at the sample level. The third category sample is achieved the highest rate in view of the efficiency of the optimal use of investment assets in the realization of profits and over the project life comparing with other farms.

Although the results of the financial evaluation criteria are accurate, they are not a necessary and sufficient condition for the project to succeed and to achieve the expected results because mismanagement or implementation may fail all the positives inherent in it. That most of the applied experiments proved that, good management for investment projects with low economic or financial returns is often more useful than the poor implementation and management of investment projects with high economic returns.

and to aggregate sample (ID)							
categories	Simple Rate of Return ((SRR) (%)	Pay Back Period (PBP) (year)	Uncounted profitability guide (ID)	Rate of Return on Capital Investment Criterion (%)	The criterion of variable capital productivity (ID)	A Benefit – Cost Ratio (ID)	
First	%89	0.808	1.197	106.5	1.365	1.197	
Second	%70	0.950	1.198	87.9	1.283	1.198	
Third	%216	0.398	1.422	233.8	1.503	1.422	
Fourth	%74	0.892	1.269	93.8	1.347	1.269	
Fifth	%83	0.829	1.274	102.7	1.378	1.274	
Sample	%105	0.703	1.306	124.2	1.407	1.306	

Table (3) Results of the criteria for evaluating the commercial profitability of the research and to aggregate sample (ID)

Source : Prepared by the researcher.

Second : Criteria for measuring business profitability under conditions of uncertainty Break-Even Analysis

A break-point can be expressed either as a cash or quantity or as a percentage of revenue or as a percentage of production capacity. The production safety limit shows the percentage of the production that may decrease without project management being exposed to losses. Therefore, (425.682) tons, which represents the lowest quantity of production with equal total costs with the total revenues. The revenues achieved at the break point reached (1654289655) ID, which is the minimum income that earns the economic profit. The equalization rate reached 18.76% which is the proportion of production capacity of farms to achieve this profit, while the margin of safety of production about 81.24%. recorded maximum production volume at the level of the fifth category was (277.145) tons to be the margin of safety in this category 78.61%, while the margin of safety in the category third farms to about 88.85%, the highest margin of safety 11.15% of its production capacity to achieve its production at the point of equalization 36.755 tons, while the second and fourth category farms reached the production quantity at the break point (64.065,43.175) tons respectively, while the production safety level (76.00%, 82.55%) for both categories respectively, value of production at the point of exchange (255683257,166844961) ID, respectively, the revenue to be achieved in the farms of the two samples to cover the total costs. While the first category farms recorded the lowest safety margin of 61.98%, which shows the increase in production risk in fish culture with floating cages, the farms used 38.02% of their production capacity to cover the total costs and achieve economic profit by producing (49.203) tons.

It can be concluding that, the farms of the research sample groups were less risky in view of the higher productivity of the fish cage in these farms and the stability of fixed costs.

Tuble (1) Houdenon quantity at break point & The percentage of production safety mint							
Categories	Production quantity at break-point	Revenue at break-point	Ratio of equilibrium	Safety margin	Productive safety margin		
	(ton)	(ID)	%		%		
First	49.203	183410447	38.02	80.21	61.98		
Second	64.065	255683257	24.00	202.84	76.00		
Third	36.755	155910447	11.15	292.93	88.85		
Fourth	43.175	166844961	17.45	204.26	82.55		
Fifth	277.145	1013847272	21.39	1018.81	78.61		
Sample	425.682	1654289655	18.76	1843.72	81.24		

Table (4) Production quantity at break point & The percentage of production safety limit

Source : Prepared by the researcher.

Third : Criteria for Valuable Social Assessment (Cash)

(A) The Financial Profit Criterion

From the equation : The Financial Profit = (Total Revenue - Total Cost)

The study sample achieved positive profit (2050932780) ID which is the rate of profit for single recorded about (2127523) ID, while the third category farms achieved the highest profit for a single fish cage achieved about (4306093) ID from the profit sum (409078900) ID, the fifth category farm with calculated profit is (1017304365) ID, with average (1772307) ID/cage for each cage. Profit is reduced in the first and fourth categories to (78578090,201902975) ID respectively, with average (1671874,1696663) ID/cage for each cage respectively. The second category achieved the lowest profit for the single cage in the study sample (1328205) ID from achieved profit (171338450) ID.

(B) The Added Value Criterion

This criterion reflects the productive value that is created in the production process of the economic unit through its contribution to the formation of the national product with the rest of the economic units. It can be measured on the basis of total or net added value. The table (5) shows that the added value of the sample was (2395980680) ID estimated from equation :

The Added Value = The value of product in market price – (Factors of production +

Depreciation +Taxes – Subsidies)

The fifth category was the highest value added (1198781965) ID, followed by the third category (457526900) ID, and the fourth and second categories came to (227411775, 214291450) ID respectively. While the first category recorded the lowest value reached (125238590) ID.

(C)Total Added Value Criterion

This criterion is a good representative of the amount that will be distributed on the returns of factors of production, such as land, capital, labor and management, and note from table (5) that the total value added of farms sample groups achieved (2689992680) ID estimated from equation :

Total Added Value = (Total Added Value - Depreciation)

The fifth category came in the first place in terms of total value added to reach (1376261965) ID.Followed by the third, fourth and second categories to reach (488096900,266841775,248063450) for each of them, respectively. While the total added value of the first category farms reached the lowest value reached (137998590) ID.

As a result, all the sample farms have achieved a good overall value added, while the fifth category farms have surpassed them. This superiority is due to the increase in profits by increasing production values.

(D) Net Added Value Criterion

Net value added is an appropriate measure of the extent to which the economic unit contributes only to the national income as much as it is distributed and consumed within the country and for that country's benefit. Table (5) shows that the net value added of the research sample amounted to (2395980680) ID estimated from equation :

Net Added Value = (The value of product - Factors of production)

The fifth category farmers recorded the highest value reaching (1198781965) ID, followed by the third category to register (257526900) ID, followed by the fourth and second groups, where they recorded (227411775,214291450) ID for each, respectively. While the first category recorded the lowest value reached (125238590) ID.

As a result of this, the net added value of the sample groups has achieved good positive figures, especially fifth category farms, which indicate their ability to create new employment opportunities added to national income and contribute to increasing the purchasing power of the population and thus help increase the welfare level of society.

Capital productivity(E):

From the observation of the table (5) estimated from equation :

Capital productivity = (The Added Value ÷ Invested capital)

It is clear that the share of capital invested in creating a value added of the sample research achieved (1.451) ID, and this indicates that the sample farms in the case of investment for one dinar spend is (0.451) ID, which is good income for project profitability. The third category recorded a highest percentage share to reach (2.614)ID which gained (1.614)ID through the investment of one ID, due to the reasons, high added value and decreasing the invested capital, while the lowest (1.055)ID in the fourth category farms, which (0.055) ID.

According to the productivity of invested capital gives the importance of using capital in such projects.

Categories	The Financial Profit	The Added Value	Total Added Value	Net Added Value	Capital productivity
First	78578090	125238590	137998590	125238590	1.696
Second	171338450	214291450	248063450	214291450	1.098
Third	409078900	457526900	488096900	257526900	2.614
Fourth	201902975	227411775	266841775	227411775	1.055
Fifth	1017304365	1198781965	1376261965	1198781965	1.209
Sample	2050932780	2395980680	2689992680	2395980680	1.451

Table (5) Results of the criteria of the social assessment cash (ID)

Source : Prepared by the researcher.

Conclusions:

1. The cost of fish cages accounted for 98.137% of the investment costs of the sample, while the other items accounted for 1.86%. This means that the high cost center is the establishment of fish cages.

2. An analysis of the operating costs of the sample showed that the variable costs constituted 92.82% while the fixed costs constituted 7.18%. The bulk of variable costs, such as feed, are estimated at 67.373%.

3. The application of the financial and economic evaluation criteria showed that all are positive and that the third holding category (200-300 m²) is more efficient than the other categories in achieving the bulk of the studied criteria. This is due to the efficiency of agricultural management and its ability to optimize the utilization of available resources.

4. The tenure categories achieved a relatively short recovery period and contributed to encouraging farmers to invest in these projects. The return on capital ratio gave acceptable rates during the study period despite the high investment costs.

5. Analysis of value - added, gross and net value of the sample farms achieved positive results amounted to (2395980680 ·2689992680·2395980680) ID respectively, indicating that the fish farms of the sample of the research contribute positively to the creation of value added.

6. It is clear from the research that all the studied projects achieve greater profits.

Recommendations:

1- Interest in the subject of investment in fish farming in general, and we believe that state institutions can play a significant role in promoting investment in this area through support fish hatcheries and provide feed to farmers at reasonable prices.

2- Expanding the construction of floating cages projects, since they are characterized by greater productivity efficiency than other fish farming projects.

3-Emphasize the need to provide technical and economic feasibility studies prepared by specialized advisory offices, including comprehensive and accurate commercial and social assessment under risk, and before confirming before granting investment license. Otherwise, it will lead to the implementation of faltering and failed projects that exhaust the national economy and impede the development process Sustainable.

4-Emphasize the continuous cooperation between the parties responsible for investment with specialized research centers and university experience.

5-Finally, this study recommends the need to provide a comprehensive, accurate and comprehensive information and data system for the activities of floating cages projects, in order to facilitate the process of financial and economic assessment of all these projects within a short period to avoid the problems and obstacles that are discovered and ensure that they do not recur in the future.

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