YOUTH EMPOWERMENT PROJECT
UNLOCKING POTENTIAL TO CREATE WEALTH

International Trade Centre

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# FINAL REPORT ON ECONOMIC AND FINANCIAL OF THE POULTRY FARMING IN GAMBIA

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This report has been prepared by Olivier van Lieshout and Omar Touray at the International Trade Centre as part of "The Gambia: Youth Empowerment Project" (YEP), financed by the European Union.

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# 1 Report

## *1.1 Background*

ITC is the lead implementing agency for the "Gambia Youth Empowerment Project" (YEP) funded by the European Union (EU). The overall objective of this four-year project is to tackle the economic root causes of irregular migration through increased job opportunities and income prospects for youth. The project will improve skills, foster entrepreneurship and create employment for youth along selected value chains. During the inception phase, ITC has identified key Youth employment opportunities and income generating activities (that meet both market attractiveness criteria and relevance/suitability criteria for the Youth). These promising Youth employment opportunities include: (1) Processed Groundnut and Cashew (GN); (2) Backyard Poultry Farming (egg and meat); (3) Local Building Materials (Compressed and Stabilized Earth Blocks/CSEB); and (4) ICTs. This report addresses the opportunities in Backyard Poultry Farming.

## *1.2 Mission to Gambia*

The International ITC expert visited the Gambia in September 2017 and worked together with Dr. Omar Touray and Mr. Modou Touray to visit value chain actors, markets and to interview potential entrepreneurial youngsters in the country.

## *1.3 AVC Analysis*

The Gambia poultry value chain is described using the schedule in Annex A.

## *1.4 Cigar Box Method®*

The focus of this report is on economic and financial feasibility. The calculations were done with an internationally recognized tool, called the Cigar Box Method®. The Cigar Box Method is briefly explained in Annex B. The exchange rates used are 47 dalasi per USD and 55 per Euro.

## *1.5 Assumptions*

The cash flow models built are all very transparent and can be adjusted as needed. All assumptions are in blue color which makes them easy to find and changed. All assumptions have been critically verified. Two verifications methods were used:

1. Internal verification. This means making use of the knowledge of the Team's experts, the background data provided by ITC and Trademap, and information collected during the interviews.
2. External verification. This means actual collection of information from markets, such as prices and the quality of the products for sale.

# 2 Broilers

## *2.1 Conclusions*

1. 500 live birds. Broiler farming will only yield an attractive work/risk rewarding profit for 1 farmer with a minimum of 500 live birds (not 200). We calculated profitability with a basic salary of D 4,000 per month which is 60% higher than the common salary of D 2,500.

2. Splitting the chain. Broiler farming can be 'split up' leading to higher efficiency (less mortality and reduced housing cost per bird)
    a. DOC → Chick Brooding in 3 weeks (min. 3000 birds with experienced farmers only)
    b. Chick → Broiler Fattening in 3 weeks (min. 500 live birds suitable for beginners)

3. Frozen whole birds cannot compete with imported poultry from Brazil.

4. Small scale broiler farming is more attractive than small scale layer (egg) farming.

In the table below, we compare broiler farming with and without brooding. The investments include birds, housing and working capital. Broiler farming without brooding requires slightly more capital, but the cycle is shorter and less risky; hence very suitable for beginners. However, it requires experienced farmers who do the brooding, and this is the least profitable business. The minimum size of a brooding farm is for 3000 chicks. It can serve 6 fattening farms.

**Table 1 – Summary**

| SN | System | Birds | FTE | Investment | Investment | Cycle | Profit per cycle | Profit % | Profit per year | Pay-back period |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Broiler farm with brooding | 500 | 1 | D244,643 | $ 5,205 | 7 weeks | D14,104 | 16% | D98,725 | 2.5 year |
| 2 | Broiler farm without brooding | 500 | 1 | D272,143 | $ 5,790 | 4 weeks | D16,828 | 18% | D218,765 | 1.2 year |
| 3 | Broiler brooding only | 3,000 | 1 | D765,000 | $ 16,277 | 4 weeks | D15,829 | 7% | D205,775 | 3.7 year |
| 4 | Layer farm with eggs (small) | 500 | 1 | D357,500 | $ 7,606 | 19 months | D181,658 | 22% | D114,732 | 3.1 year |
| 5 | Layer farm with eggs (medium) | 10,000 | 1 | D6,280,000 | $ 133,617 | 19 months | D5,073,691 | 31% | D3,204,437 | 2.0 year |

OVERALL CONCLUSION: Our calculations support development of broiler farming to generate income and direct employment. The bottlenecks are the need for training and working capital.

## *2.2 Cost price comparison Broilers*

Table 2 gives an overview of the cost prices of broiler production for Live Birds and Frozen Whole Birds. The source of the international information comes from Mr. Peter van Horne from The Netherlands who wrote two cost price comparison papers on Layers (2012) and Broilers (2013). In this table we ignore effects of inflation between the years of research and today.

**For live birds,** the cost of rearing in a semi-industrial way (10,000 birds per stable), is €2.75 per bird. Compared with the Netherland (Index = 100), this is 38% more expensive. In Brazil, Argentina and the USA, the cost price is about €1.78 per bird, hence much cheaper still. But these countries cannot export live birds to Gambia.

**Frozen whole birds** are imported from Brazil and these birds cost D217 DDP Banjul – assuming import duties are duly paid. The average bird from Brazil weighs 1.89 kg frozen, so the kg price

is D116 DDP. From there it is sold onto the market with margins ranging from 15-25%. The cost price for an equal product from the Gambia is D158 per kg, or 36% more expensive.

## *2.3 Financial viability Broilers in Gambia*

**Profit**

The costs and benefits of production of 10,000 Live Birds per 7 weeks cycle is given in. All assumptions are clearly market in BLUE. It shows the earlier mentioned cost price of €2.76, the structure of all costs and the contribution. Provided that the flock of about 10,000 Live birds can be sold at about D80 per kg (D176 per bird) a profit can be obtained of D335,780, or €6,100 per cycle (19% profitability).

**Cash flow**

The bottleneck is that the business needs a cash flow injection of D1.4 million. The interest rate of 22% and the working capital loan can be repaid at the end of the 7-week cycle. The need for working capital will reduce by the profit every cycle. After 5 cycles, or 25 weeks (*ceteris paribus*) the broiler farm can operate without working capital financing. The profit will increase to €6,400 per cycle. This model is assuming that the investment in the Housing of about D3.50 million has been funded already by the farmer.

**Litter**

Table 4 shows the same result but **without litter sales** and the profit drops to €4,200 per cycle. This is to highlight the vulnerability of the business.

**Employment**

The minimum broiler farm size to employ 1 FTE is 500 birds.
A broiler farm with 10,000 birds creates 9.5 full time jobs, because it is more efficient.

# 3 Layers

## *3.1 Conclusion*

1. 10,000 birds is a good number to be economically viable.

2. Small scale layer farming (500 birds) is less attractive than small scale broiler farming.

| SN | System | Birds | FTE | Investment | Investment | Cycle | Profit per cycle | Profit % | Profit per year | Pay-back period |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Broiler farm with brooding | 500 | 1 | D244,643 | $ 5,205 | 7 weeks | D14,104 | 16% | D98,725 | 2.5 year |
| 2 | Broiler farm without brooding | 500 | 1 | D272,143 | $ 5,790 | 4 weeks | D16,828 | 18% | D218,765 | 1.2 year |
| 3 | Broiler brooding only | 3,000 | 1 | D765,000 | $ 16,277 | 4 weeks | D15,829 | 7% | D205,775 | 3.7 year |
| 4 | Layer farm with eggs (small) | 500 | 1 | D357,500 | $ 7,606 | 19 months | D181,658 | 22% | D114,732 | 3.1 year |
| 5 | Layer farm with eggs (medium) | 10,000 | 1 | D6,280,000 | $ 133,617 | 19 months | D5,073,691 | 31% | D3,204,437 | 2.0 year |

## *3.2 Cost price comparison Eggs*

Table 8 gives an overview of the cost prices of egg production in Cage Systems (cheaper) and Free-Range Systems (more expensive – better animal welfare). The source of the international information comes from Mr. Peter van Horne from The Netherlands (2012). In this table we ignore effects of inflation between the years of research and today.

**Eggs from caged birds**. The average world-wide cost is 5.54 Euro cents, ranging from 3.69 ct in India to 5.99 ct per egg in the EU.

**Eggs from free-ranging birds**. The average world-wide cost is 7.21 Euro cents and the variation between countries is small.

In Gambia there are no intensive Cage systems but only semi-intensive Free-range systems. Due to the high feed cost, the cost per egg is 7.4 Euro cents per piece but the cost structure in Gambia is very different from the cost structure in the EU. What matters more, is that Gambian Free-range eggs must compete with imported Cage eggs that are usually smaller in size (45 grams). The cost price of the cage eggs DDU Banjul is 5.1 Ct per egg, with 20% import duties that comes to D3.3 per piece (D 100 per tray).

The average Gambian egg weighs 54g and without duty it costs 48% more than an imported egg: D5.0 per egg (D150 per tray). Calculating per kg, the Gambian eggs have the same price as imported free-range eggs (D92 per kg). However, egg sorting by size is not common practice in the Gambia. Hence the higher weight is a competitive disadvantage, unless a special niche market is targeted willing to pay a better price.

## *3.3 Financial viability Layers in Gambia*

**Profit**

The costs and benefits of production of 10,000 Layers per 19 months cycle is given in Table 9. All assumptions are clearly market in BLUE. It shows a total cost (TC) of €9.0 ct per piece.

Deducting the revenues from the Spent Hen (€0.9 ct) and Litter (€0.7 ct) leads to the early mentioned cost price of €7.4 ct per egg.

A flock of 10,000 birds is expected to produce about 3 million eggs generating D16.6 million revenues resulting in a profit of D1.58 million or €28,700 per 19-month cycle (9% profitability).

**Cash flow**

Revenues from egg sales start after 20 weeks. To finance the start, the business needs a cash flow injection of D2.7 million. The interest at 22% and the working capital loan can be repaid at the end of the cycle. The need for working capital will reduce by the profit every cycle. After 2 cycles, or 38 months (*ceteris paribus*) the layer farm can operate without working capital financing. The profit will increase to €40,000 per cycle. This model is assuming that the investment in the Housing of about D4.5 million has been funded already by the farmer.

**Litter & Spent hen**

The farm's projected profit is D1.59 million. The revenues from litter (D1.1 million - 6.6%) and Spent hens (D1.5 million - 9.1%) are therefore critical for the farm's profitability. Without these revenues, the farm will run at a loss.

**Employment**

A layer farm with 10,000 birds creates 11 full time jobs.

**Table 2 – Cost price comparison BROILERS – Live Animals and Whole Frozen Birds**

| Type | Broiler | | | *Source: P. van Horne, WUR, 2013* | | | | | | | *Source: ITC 2017* | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Cost in Ct per kg** | **Country** | **Argentina** | **Brazil** | **USA** | **Thailand** | **Poland** | **Netherlands** | **Denmark** | **Germany** | **France** | **UK** | **GAMBIA** | **Cost % Gambia** | **Cost % Brazil** |
| **Row Labels** | | | | | | | | | | | | | | |
| **VC** | | **58.8** | **60.9** | **63.2** | **76.2** | **82.1** | **80.3** | **79.1** | **81.6** | **82.5** | **85.8** | **119.4** | **95.6%** | **89.8%** |
| Feed | | 45.0 | 47.5 | 49.5 | 57.6 | 60.7 | 56.4 | 54.1 | 57.9 | 57.4 | 61.9 | 84.9 | 68.0% | 70.0% |
| DOC | | 9.8 | 10.7 | 8.2 | 12.8 | 14.1 | 14.4 | 15.7 | 14.7 | 16.9 | 16.6 | 30.4 | 24.3% | 15.8% |
| Other VC | | 4.1 | 2.8 | 5.5 | 5.7 | 7.2 | 8.6 | 9.3 | 8.6 | 8.2 | 7.4 | 4.6 | 3.7% | 4.1% |
| Litter | | -0.1 | -0.1 | 0.0 | 0.0 | -0.1 | 0.9 | 0.0 | 0.4 | 0.0 | -0.1 | -0.5 | -0.4% | -0.1% |
| **FC** | | **8.0** | **7.0** | **7.0** | **6.7** | **8.1** | **10.9** | **12.3** | **11.3** | **12.5** | **11.2** | **5.5** | **4.4%** | **10.2%** |
| Housing | | 5.2 | 3.7 | 3.5 | 4.9 | 5.9 | 5.4 | 6.5 | 5.8 | 6.5 | 7.0 | 3.0 | 2.4% | 5.5% |
| Labor | | 2.2 | 2.7 | 2.7 | 1.2 | 1.4 | 4.4 | 4.6 | 4.5 | 4.9 | 3.1 | 0.4 | 0.3% | 4.0% |
| Overhead, interest | | 0.6 | 0.5 | 0.9 | 0.6 | 0.8 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 2.1 | 1.7% | 0.8% |
| **Total cost live bird per kg in Euro cents** | | **66.8** | **67.9** | **70.3** | **82.8** | **90.2** | **91.2** | **91.4** | **92.9** | **94.9** | **96.9** | **124.9** | **100%** | **100%** |
| Weight bird | | 2,600 gr | 2,625 gr | 2,500 gr | 2,300 gr | 2,300 gr | 2,200 gr | 2,100 gr | 2,200 gr | 1,920 gr | 2,300 gr | 2,200 gr | | |
| Cost price per live bird | | €1.74 | €1.78 | €1.76 | €1.91 | €2.07 | €2.01 | €1.92 | €2.04 | €1.82 | €2.23 | €2.75 | | |
| **Index Live Bird (NL=100)** | | 86 | 89 | 88 | 95 | 103 | 100 | 96 | 102 | 91 | 111 | 137 | | |
| Slaughter yield | | 72% | 72% | 71% | 70% | 70% | 70% | 69% | 70% | 69% | 70% | 70% | | |
| Slaughtered weight | | 1,872 gr | 1,890 gr | 1,775 gr | 1,610 gr | 1,610 gr | 1,540 gr | 1,449 gr | 1,540 gr | 1,325 gr | 1,610 gr | 1,540 gr | | |
| Slaughter cost per kg | | €0.23 /kg | €0.22 /kg | €0.32 /kg | €0.22 /kg | €0.25 /kg | €0.35 /kg | €0.41 /kg | €0.31 /kg | €0.35 /kg | €0.31 /kg | €0.31 /kg | | |
| **Cost price per frozen whole bird EXW** | | **€2.84** | **€2.89** | **€3.04** | **€3.08** | **€3.36** | **€3.41** | **€3.38** | **€3.40** | **€3.11** | **€3.68** | **€4.40** | | |
| **Cost price per kg EXW** | | **€1.52** | **€1.53** | **€1.71** | **€1.91** | **€2.09** | **€2.21** | **€2.33** | **€2.21** | **€2.34** | **€2.29** | **€2.86** | | |
| VC4 Transport to Gambia | | €0.24 /kg | €0.23 /kg | €0.21 /kg | €0.32 /kg | €0.21 /kg | €0.17 /kg | €0.19 /kg | €0.18 /kg | €0.19 /kg | €0.17 /kg | €0.01 /kg | | |
| Import duties (20%) | | €0.66 /kg | €0.67 /kg | €0.68 /kg | €0.72 /kg | €0.74 /kg | €0.73 /kg | €0.73 /kg | €0.73 /kg | €0.67 /kg | €0.79 /kg | €0.00 /kg | | |
| **Cost price Whole Frozen Bird Dalasi DDP** | | **D217** | **D219** | **D225** | **D237** | **D244** | **D242** | **D241** | **D242** | **D222** | **D261** | **D243** | | |
| **Index Whole Frozen Bird (NL=100)** | | 90 | 91 | 93 | 98 | 101 | 100 | 100 | 100 | 92 | 108 | 120 | | |
| Cost price Dalasi DDP per kg | | D116/kg | D116/kg | D127/kg | D147/kg | D152/kg | D157/kg | D166/kg | D157/kg | D167/kg | D162/kg | D158/kg | | |
| **Index Per Kg (NL=100)** | | 74 | 74 | 81 | 94 | 97 | 100 | 106 | 100 | 106 | 103 | 100 | | |

**Table 3 – Cash flow for an intensive BROILER farm – 10,000 birds – <u>with</u> litter sales**

| CB7 - CASH FLOW BROILER FARM | | | | GAMBIA (in Dalasi) | | | | | 2017 | | GAMBIA | | | EURO | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month | Week 0 | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Cycle | Structure VC-FC % | Cost structure % | Cost structure per kg | Cost structure per bird | Cost structure per kg | Cost structure per bird |
| Age in days | 0 | 7 | 14 | 21 | 28 | 35 | 42 | 49 | | | | | | | |
| Birds for meat | 10,000 | 10,000 | 9,840 | 9,692 | 9,595 | 9,547 | 9,509 | | **9,741** | average number of birds | | | | | |
| Culling/death % | | 1.6% | 1.5% | 1.0% | 0.5% | 0.4% | 0.3% | | **5.3%** | mortality | | | | | |
| Production % | | | | | | | | | | | | | | | |
| Weight increase per bird | | 0.223 kg | 0.336 kg | 0.418 kg | 0.428 kg | 0.387 kg | 0.368 kg | | **2.160 kg** | per bird | | | | | |
| Body weight (live) | 0.040 kg | 0.263 kg | 0.599 kg | 1.017 kg | 1.445 kg | 1.832 kg | 2.200 kg | | | | | | | | |
| Feed intake | | 0.357 kg | 0.581 kg | 0.804 kg | 0.938 kg | 0.938 kg | 0.938 kg | | **4.56 kg** | per bird | | | | | |
| Feed conversion rate | | 1.60 | 1.73 | 1.92 | 2.19 | 2.42 | 2.55 | | **2.110** | kg per kg | | | | | |
| Sales value live bird (P*q) | D80/kg | D21.045 | D47.895 | D81.354 | D115.596 | D146.576 | D176.000 | | | | | | | | |
| | | | | | | | | | | | | | | | |
| VC1 DOC | D35 | | | | | | | | | | | | | | |
| Feed in gr/bird/day | | 51 gr | 83 gr | 115 gr | 134 gr | 134 gr | 134 gr | | **107 gr** | per bird per day | | | | | |
| Feed in kg/day | | 511 kg | 817 kg | 1,114 kg | 1,286 kg | 1,280 kg | 1,275 kg | | **43,971 kg** | per cycle | | | | | |
| P feed per kg | D23 | D23 | D23 | D22 | D22 | D22 | D22 | | **D22.211** | per kg | | | | | |
| VC1 Feed cost per day | | D11,745 | D18,780 | D24,500 | D28,297 | D28,156 | D28,043 | | | | | | | | |
| VC2 Other daily costs | D1,250 | D1,250 | D1,250 | D1,250 | D1,250 | D1,250 | D1,250 | | | | | | | | |
| VC3 Packaging cost | D0.00 | | | | | | | | | | | | | | |
| VC4 Delivery cost | D0.00 | | | | | | | | | | | | | | |
| VC per day | | D12,995 | D20,030 | D25,750 | D29,547 | D29,406 | D29,293 | | | | | | | | |
| Cumm. VC of live bird | | D44.097 | D58.346 | D76.943 | D98.498 | D120.058 | D141.621 | | | | | | | | |
| | | | | | | | | | | | | | | | |
| Margin per bird | | -D23.052 | -D10.451 | D4.411 | D17.098 | D26.519 | D34.379 | | | | | | | | |
| Margin % | | -110% | -22% | 5% | 15% | 18% | 20% | | | | | | | | |
| | | | | | | | | | | | | | | | |
| Sales Value Broilers | | D210,448 | D471,284 | D788,514 | D1,109,194 | D1,399,436 | D1,673,638 | D1,673,638 | **D1,673,638** | 94.1% | | | | | |
| Income LITTER | D5 | | | | | | | D104,602 | **D104,602** | 5.9% | | | | | |
| Revenue | | | | | | | | D1,778,241 | **D1,778,241** | **100.0%** | | **D85** | **D187** | **€1.545** | **€3.40** |
| | | | | | | | | | | | | | | | |
| VC1 Repayment of DOC | D58,333 | D58,333 | D58,333 | D58,333 | D58,333 | D58,333 | D58,333 | D0 | **D350,000** | 25.4% | 24.3% | D17 | D37 | €0.304 | €0.67 |
| VC1 - Feed | | D82,216 | D131,463 | D171,499 | D198,082 | D197,091 | D196,303 | | **D976,654** | 70.8% | 67.7% | D47 | D103 | €0.849 | €1.87 |
| VC2 - Other daily costs | | D8,750 | D8,750 | D8,750 | D8,750 | D8,750 | D8,750 | | **D52,500** | 3.8% | 3.6% | D3 | D6 | €0.046 | €0.10 |
| VC3 - Packaging | | D0 | D0 | D0 | D0 | D0 | D0 | | **D0** | 0.0% | 0.0% | D0 | D0 | €0.000 | €0.00 |
| VC4 - Delivery | | D0 | D0 | D0 | D0 | D0 | D0 | | **D0** | 0.0% | 0.0% | D0 | D0 | €0.000 | €0.00 |
| VC | | €149,299 | €198,546 | €238,583 | €265,165 | €264,175 | €263,386 | | **D1,379,154** | **100%** | **95.6%** | **D66** | **D145** | **€1.199** | **€2.64** |
| | | | | | | | | | | | | | | | |
| Contribution | | | | | | | | | **€399,087** | | | **D19** | **D42** | **€0.347** | **€0.76** |
| *Contribution %* | | | | | | | | | 22% | | | 22% | 22% | 22% | 22% |
| | | | | | | | | | | | | | | | |
| FC1 Housing | D4,895 | D4,895 | D4,895 | D4,895 | D4,895 | D4,895 | D4,895 | D4,895 | **D34,266** | 54.1% | 2.4% | D1.6 | D3.6 | €0.030 | €0.07 |
| FC2 Interest | 22% | D677 | D1,523 | D2,581 | D3,681 | D4,823 | D5,965 | D0 | **D19,250** | 30.4% | 1.3% | D0.9 | D2.0 | €0.017 | €0.04 |
| FC3 Salary farmer + Overhead | D1,399 | D1,399 | D1,399 | D1,399 | D1,399 | D1,399 | D1,399 | D1,399 | **D9,790** | 15.5% | 0.7% | D0.5 | D1.0 | €0.009 | €0.02 |
| Weekly FC | | D6,971 | D7,817 | D8,874 | D9,974 | D11,117 | D12,259 | D6,294 | **D63,306** | **100.0%** | **4.4%** | **D3.0** | **D6.7** | **€0.055** | **€0.12** |
| | | | | | | | | | | | | | | | |
| TC | | D156,269 | D206,363 | D247,457 | D275,140 | D275,291 | D275,645 | D6,294 | **D1,442,460** | | **100.0%** | **D69** | **D152** | **€1.254** | **€2.76** |
| FC % of TC | | 4% | 4% | 4% | 4% | *4%* | *4%* | *100%* | *4%* | | | | | | |
| | | | | | | | | | | | | | | | |
| **Profit Live Bird** | | | | | | | | | **D335,781** | | | **D16** | **D35** | **€0.29** | **€0.64** |
| Profitability Live Bird % | | | | | | | | | 19% | | | 19% | 19% | 19% | 19% |
| | | | | | | | | | | | | | | | |
| Opening balance | D0 | D160,000 | D8,626 | D7,158 | D14,596 | D4,351 | D3,955 | D3,205 | **D160,000** | | | | | | |
| Revenues | | D0 | D0 | D0 | D0 | D0 | D0 | D1,778,241 | **D1,778,241** | | | | | | |
| VC | | -D149,299 | -D198,546 | -D238,583 | -D265,165 | -D264,175 | -D263,386 | D0 | **-D1,379,154** | | | | | | |
| FC2, FC3 | | -D2,076 | -D2,922 | -D3,979 | -D5,079 | -D6,222 | -D7,364 | -D1,399 | **-D29,040** | | | | | | |
| Working capital loan | D160,000 | D0 | D200,000 | D250,000 | D260,000 | D270,000 | D270,000 | -D1,410,000 | **-D160,000** | *check* | | | | | |
| Loan outstanding | | D160,000 | D360,000 | D610,000 | D870,000 | D1,140,000 | D1,410,000 | D0 | | | | | | | |
| Closing balance | D160,000 | D8,626 | D7,158 | D14,596 | D4,351 | D3,955 | D3,205 | D370,047 | **D370,047** | *D0* | | | | | |

**Table 4 – Cash flow for an intensive BROILER farm – 10,000 birds – <u>without</u> litter sales**

| CB7 - CASH FLOW BROILER FARM | | | | GAMBIA (in Dalasi) | | | | | 2017 | | | GAMBIA | | EURO | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month | Week 0 | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Cycle | Structure VC-FC % | Cost structure % | Cost structure per kg | Cost structure per bird | Cost structure per kg | Cost structure per bird |
| Age in days | 0 | 7 | 14 | 21 | 28 | 35 | 42 | 49 | | | | | | | |
| Birds for meat | 10,000 | 10,000 | 9,840 | 9,692 | 9,595 | 9,547 | 9,509 | | **9,741** | average number of birds | | | | | |
| Culling/death % | | 1.6% | 1.5% | 1.0% | 0.5% | 0.4% | 0.3% | | **5.3%** | mortality | | | | | |
| Production % | | | | | | | | | | | | | | | |
| Weight increase per bird | | 0.223 kg | 0.336 kg | 0.418 kg | 0.428 kg | 0.387 kg | 0.368 kg | | **2.160 kg** | per bird | | | | | |
| Body weight (live) | 0.040 kg | 0.263 kg | 0.599 kg | 1.017 kg | 1.445 kg | 1.832 kg | 2.200 kg | | | | | | | | |
| Feed intake | | 0.357 kg | 0.581 kg | 0.804 kg | 0.938 kg | 0.938 kg | 0.938 kg | | **4.56 kg** | per bird | | | | | |
| Feed conversion rate | | 1.60 | 1.73 | 1.92 | 2.19 | 2.42 | 2.55 | | **2.110** | kg per kg | | | | | |
| Sales value live bird (P*q) | D80/kg | D21.045 | D47.895 | D81.354 | D115.596 | D146.576 | D176.000 | | | | | | | | |
| | | | | | | | | | | | | | | | |
| VC1 DOC | D35 | | | | | | | | | | | | | | |
| Feed in gr/bird/day | | 51 gr | 83 gr | 115 gr | 134 gr | 134 gr | 134 gr | | **107 gr** | per bird per day | | | | | |
| Feed in kg/day | | 511 kg | 817 kg | 1,114 kg | 1,286 kg | 1,280 kg | 1,275 kg | | **43,971 kg** | per cycle | | | | | |
| P feed per kg | D23 | D23 | D23 | D22 | D22 | D22 | D22 | | **D22.211** | per kg | | | | | |
| VC1 Feed cost per day | | D11,745 | D18,780 | D24,500 | D28,297 | D28,156 | D28,043 | | | | | | | | |
| VC2 Other daily costs | D1,250 | D1,250 | D1,250 | D1,250 | D1,250 | D1,250 | D1,250 | | | | | | | | |
| VC3 Packaging cost | D0.00 | | | | | | | | | | | | | | |
| VC4 Delivery cost | D0.00 | | | | | | | | | | | | | | |
| VC per day | | D12,995 | D20,030 | D25,750 | D29,547 | D29,406 | D29,293 | | | | | | | | |
| Cumm. VC of live bird | | D44.097 | D58.346 | D76.943 | D98.498 | D120.058 | D141.621 | | | | | | | | |
| | | | | | | | | | | | | | | | |
| Margin per bird | | -D23.052 | -D10.451 | D4.411 | D17.098 | D26.519 | D34.379 | | | | | | | | |
| Margin % | | -110% | -22% | 5% | 15% | 18% | 20% | | | | | | | | |
| | | | | | | | | | | | | | | | |
| Sales Value Broilers | | D210,448 | D471,284 | D788,514 | D1,109,194 | D1,399,436 | D1,673,638 | D1,673,638 | **D1,673,638** | 100.0% | | | | | |
| Income LITTER | D0 | | | | | | | D0 | **D0** | 0.0% | | | | | |
| Revenue | | | | | | | | D1,673,638 | **D1,673,638** | **100.0%** | | **D80** | **D176** | **€1.455** | **€3.20** |
| | | | | | | | | | | | | | | | |
| VC1 Repayment of DOC | D58,333 | D58,333 | D58,333 | D58,333 | D58,333 | D58,333 | D58,333 | D0 | **D350,000** | 25.4% | 24.3% | D17 | D37 | €0.304 | €0.67 |
| VC1 - Feed | | D82,216 | D131,463 | D171,499 | D198,082 | D197,091 | D196,303 | | **D976,654** | 70.8% | 67.7% | D47 | D103 | €0.849 | €1.87 |
| VC2 - Other daily costs | | D8,750 | D8,750 | D8,750 | D8,750 | D8,750 | D8,750 | | **D52,500** | 3.8% | 3.6% | D3 | D6 | €0.046 | €0.10 |
| VC3 - Packaging | | D0 | D0 | D0 | D0 | D0 | D0 | | **D0** | 0.0% | 0.0% | D0 | D0 | €0.000 | €0.00 |
| VC4 - Delivery | | D0 | D0 | D0 | D0 | D0 | D0 | | **D0** | 0.0% | 0.0% | D0 | D0 | €0.000 | €0.00 |
| VC | | €149,299 | €198,546 | €238,583 | €265,165 | €264,175 | €263,386 | | **D1,379,154** | **100%** | **95.6%** | **D66** | **D145** | **€1.199** | **€2.64** |
| | | | | | | | | | | | | | | | |
| Contribution | | | | | | | | | **€294,485** | | | **D14** | **D31** | **€0.256** | **€0.56** |
| *Contribution %* | | | | | | | | | ***18%*** | | | ***18%*** | ***18%*** | ***18%*** | ***18%*** |
| | | | | | | | | | | | | | | | |
| FC1 Housing | D4,895 | D4,895 | D4,895 | D4,895 | D4,895 | D4,895 | D4,895 | D4,895 | **D34,266** | 54.1% | 2.4% | D1.6 | D3.6 | €0.030 | €0.07 |
| FC2 Interest | 22% | D677 | D1,523 | D2,581 | D3,681 | D4,823 | D5,965 | D0 | **D19,250** | 30.4% | 1.3% | D0.9 | D2.0 | €0.017 | €0.04 |
| FC3 Salary farmer + Overhead | D1,399 | D1,399 | D1,399 | D1,399 | D1,399 | D1,399 | D1,399 | D1,399 | **D9,790** | 15.5% | 0.7% | D0.5 | D1.0 | €0.009 | €0.02 |
| Weekly FC | | D6,971 | D7,817 | D8,874 | D9,974 | D11,117 | D12,259 | D6,294 | **D63,306** | **100.0%** | **4.4%** | **D3.0** | **D6.7** | **€0.055** | **€0.12** |
| | | | | | | | | | | | | | | | |
| TC | | D156,269 | D206,363 | D247,457 | D275,140 | D275,291 | D275,645 | D6,294 | **D1,442,460** | | **100.0%** | **D69** | **D152** | **€1.254** | **€2.76** |
| FC % of TC | | 4% | 4% | 4% | 4% | *4%* | *4%* | *100%* | *4%* | | | | | | |
| | | | | | | | | | | | | | | | |
| **Profit Live Bird** | | | | | | | | | **D231,179** | | | **D11** | **D24** | **€0.20** | **€0.44** |
| Profitability Live Bird % | | | | | | | | | 14% | | | 14% | 14% | 14% | 14% |
| | | | | | | | | | | | | | | | |
| Opening balance | D0 | D160,000 | D8,626 | D7,158 | D14,596 | D4,351 | D3,955 | D3,205 | **D160,000** | | | | | | |
| Revenues | | D0 | D0 | D0 | D0 | D0 | D0 | D1,673,638 | **D1,673,638** | | | | | | |
| VC | | -D149,299 | -D198,546 | -D238,583 | -D265,165 | -D264,175 | -D263,386 | D0 | **-D1,379,154** | | | | | | |
| FC2, FC3 | | -D2,076 | -D2,922 | -D3,979 | -D5,079 | -D6,222 | -D7,364 | -D1,399 | **-D29,040** | | | | | | |
| Working capital loan | D160,000 | D0 | D200,000 | D250,000 | D260,000 | D270,000 | D270,000 | -D1,410,000 | **-D160,000** | *check* | | | | | |
| Loan outstanding | | D160,000 | D360,000 | D610,000 | D870,000 | D1,140,000 | D1,410,000 | D0 | | | | | | | |
| Closing balance | D160,000 | D8,626 | D7,158 | D14,596 | D4,351 | D3,955 | D3,205 | D265,444 | **D265,444** | *D0* | | | | | |

**Table 5 – Cash Flow Broilers with Brooding - 500 birds**

| CB7 - CASH FLOW BROILER FARM -with Brooding | | | | | GAMBIA (in Dalasi) | | | 2017 | | | EURO | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month | Week 0 | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | **Cycle** | Structure VC-FC % | Cost structure % | Cost structure per kg | Cost structure per bird |
| Age in days | 0 | 7 | 14 | 21 | 28 | 35 | 42 | 49 | | | | | |
| Birds for meat | 500 | 500 | 492 | 485 | 480 | 477 | 475 | | **487** | average number of birds | | | |
| Culling/death % | | 1.6% | 1.5% | 1.0% | 0.5% | 0.4% | 0.3% | | **5.3%** | mortality | | | |
| Sales value live bird (P*q) | D103/kg | D22 | D48 | D81 | D115 | D146 | D175 | | | | | | |
| Price point of live bird | D175 | | | | | | | | | | | | |
| VC1 DOC | D35 | | | | | | | | | | | | |
| VC per day | | D573 | D878 | D1,132 | D1,298 | D1,292 | D1,287 | | | | | | |
| Cumm. VC of live bird | | D43 | D56 | D72 | D91 | D110 | D129 | | | | | | |
| | | | | | | | | | | | | | |
| Margin per bird | | -D21 | -D7 | D10 | D25 | D36 | D46 | | | | | | |
| Margin % | | -98% | -15% | 12% | 21% | 25% | 26% | | | | | | |
| | | | | | | | | | | | | | |
| Revenue | | | | | | | | D87,295 | **D87,295** | **100.0%** | | **€1.964** | **€3.34** |
| | | | | | | | | | | | | | |
| VC1 - Repayment of DOC | D2,917 | D2,917 | D2,917 | D2,917 | D2,917 | D2,917 | D2,917 | D0 | **D17,500** | 27.9% | 23.9% | €0.394 | €0.67 |
| VC1 - Feed | | D3,571 | D5,710 | D7,489 | D8,649 | D8,606 | D8,572 | | **D42,598** | 67.9% | 58.2% | €0.958 | €1.63 |
| VC2 - Other daily costs | | D438 | D438 | D438 | D438 | D438 | D438 | | **D2,625** | 4.2% | 3.6% | €0.059 | €0.10 |
| VC3 - Packaging | | D0 | D0 | D0 | D0 | D0 | D0 | | **D0** | 0.0% | 0.0% | €0.000 | €0.00 |
| VC4 - Delivery | | D0 | D0 | D0 | D0 | D0 | D0 | | **D0** | 0.0% | 0.0% | €0.000 | €0.00 |
| VC | | D6,925 | D9,065 | D10,843 | D12,004 | D11,960 | D11,926 | | **D62,723** | **100%** | **85.7%** | **€1.411** | **€2.40** |
| | | | | | | | | | | | | | |
| Contribution | | | | | | | | | **D24,573** | | | **€0.553** | **€0.94** |
| *Contribution %* | | | | | | | | | 28% | | | 28% | 28% |
| Investment in housing | D157,143 | | | | | | | | | | | | |
| FC1 Housing | D242 | D242 | D242 | D242 | D242 | D242 | D242 | D242 | **D1,692** | 16.2% | 2.3% | €0.038 | €0.06 |
| FC2 Interest | 22% | D296 | D296 | D296 | D296 | D296 | D296 | D0 | **D1,777** | 17.0% | 2.4% | €0.040 | €0.07 |
| FC3 Salary farmer + Overhead | D1,000 | D1,000 | D1,000 | D1,000 | D1,000 | D1,000 | D1,000 | D1,000 | **D7,000** | 66.9% | 9.6% | €0.157 | €0.27 |
| Weekly FC | | D1,538 | D1,538 | D1,538 | D1,538 | D1,538 | D1,538 | D1,242 | **D10,469** | **100.0%** | **14.3%** | **€0.235** | **€0.40** |
| | | | | | | | | | | | | | |
| TC | | D8,463 | D10,603 | D12,381 | D13,541 | D13,498 | D13,464 | D1,242 | **D73,192** | | **100.0%** | **€1.646** | **€2.80** |
| FC % of TC | | *18%* | *15%* | *12%* | *11%* | *11%* | *11%* | *100%* | *14%* | | | | |
| | | | | | | | | | | | | | |
| **Profit Live Bird** | | | | | | | | | **D14,104** | **€256** | | **€0.32** | **€0.54** |
| Profitability Live Bird % | | | | | | | | | 16% | | | 16% | 16% |
| | | | | | | | | | | | | | |
| Opening balance | D0 | D70,000 | D61,778 | D51,418 | D39,279 | D25,979 | D12,722 | -D500 | **D70,000** | | | | |
| Revenues | | D0 | D0 | D0 | D0 | D0 | D0 | D87,295 | **D87,295** | | | | |
| VC | | -D6,925 | -D9,065 | -D10,843 | -D12,004 | -D11,960 | -D11,926 | D0 | **-D62,723** | | | | |
| FC2, FC3 | | -D1,296 | -D1,296 | -D1,296 | -D1,296 | -D1,296 | -D1,296 | -D1,000 | **-D8,777** | | | | |
| Working capital loan | D70,000 | D0 | | | | | | -D70,000 | **-D70,000** | *check* | | | |
| Loan outstanding | | D70,000 | D70,000 | D70,000 | D70,000 | D70,000 | D70,000 | D0 | | | | | |
| Closing balance | D70,000 | D61,778 | D51,418 | D39,279 | D25,979 | D12,722 | -D500 | D15,796 | **D15,796** | *D0* | | | |

| | | | |
|---|---|---|---|
| Total investment required | D244,643 | $ | 5,205 |

**Table 6 – Cash Flow Broilers without Brooding - 500 birds**

| CB7 - CASH FLOW BROILER FARM -without Brooding | | | | | | 2017 | | | GAMBIA | | EURO | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month | Week 0 | Week 4 | Week 5 | Week 6 | Week 7 | Cycle | Structure VC-FC | Cost structure | Cost structure per kg | Cost structure per bird | Cost structure per kg | Cost structure per bird |
| Age in days | 0 | 28 | 35 | 42 | 49 | | % | % | | | | |
| Birds for meat | 500 | 500 | 498 | 496 | | **285** | average number of birds | | | | | |
| Culling/death % | | 0.5% | 0.4% | 0.3% | | **1.2%** | mortality | | | | | |
| Sales value live bird (P*q) | D103/kg | D115 | D146 | D175 | | | | | | | | |
| Price point of live bird | D175 | | | | | | | | | | | |
| VC1 3-week chick | D80 | | | | | | | | | | | |
| VC per day | | D1,350 | D1,344 | D1,339 | | | | | | | | |
| Cumm. VC of live bird | | D19 | D19 | D19 | | | | | | | | |
| | | | | | | | | | | | | |
| Margin per bird | | D96 | D127 | D156 | | | | | | | | |
| Margin % | | 84% | 87% | 89% | | | | | | | | |
| | | | | | | | | | | | | |
| Revenue | | | | | D90,976 | **D90,976** | **100.0%** | | **D108** | **D184** | **€1.964** | **€3.34** |
| | | | | | | | | | | | | |
| VC1 - Repayment of Chick | D13,333 | D13,333 | D13,333 | D13,333 | D0 | **D40,000** | 58.6% | 53.9% | D47.5 | D81 | €0.863 | €1.47 |
| VC1 - Feed | | D9,014 | D8,969 | D8,933 | | **D26,916** | 39.4% | 36.3% | D32.0 | D54 | €0.581 | €0.99 |
| VC2 - Other daily costs | | D438 | D438 | D438 | | **D1,313** | 1.9% | 1.8% | D1.6 | D3 | €0.028 | €0.05 |
| VC3 - Packaging | | D0 | D0 | D0 | | **D0** | 0.0% | 0.0% | D0.0 | D0 | €0.000 | €0.00 |
| VC4 - Delivery | | D0 | D0 | D0 | | **D0** | 0.0% | 0.0% | D0.0 | D0 | €0.000 | €0.00 |
| VC | | D22,785 | D22,740 | D22,704 | | **D68,229** | **100%** | **92.0%** | **D81.0** | **D138** | **€1.473** | **€2.50** |
| | | | | | | | | | | | | |
| Contribution | | | | | | **D22,747** | | | **D27** | **D46** | **€0.491** | **€0.83** |
| *Contribution %* | | | | | | 25% | | | 25% | 25% | 25% | 25% |
| Investment in housing | D157,143 | | | | | | | | | | | |
| FC1 Housing | D242 | D242 | D242 | D242 | D242 | **D967** | 16.3% | 1.3% | D1.1 | D2.0 | €0.021 | €0.04 |
| FC2 Interest | 22% | D317 | D317 | D317 | D0 | **D952** | 16.1% | 1.3% | D1.1 | D1.9 | €0.021 | €0.03 |
| FC3 Salary farmer + Overhead | D1,000 | D1,000 | D1,000 | D1,000 | D1,000 | **D4,000** | 67.6% | 5.4% | D4.7 | D8.1 | €0.086 | €0.15 |
| Weekly FC | | D1,559 | D1,559 | D1,559 | D1,242 | **D5,919** | **100.0%** | **8.0%** | **D7.0** | **D11.9** | **€0.128** | **€0.22** |
| | | | | | | | | | | | | |
| TC | | D24,344 | D24,299 | D24,263 | D1,242 | **D74,148** | | **100.0%** | **D88** | **D150** | **€1.600** | **€2.72** |
| FC % of TC | | *6%* | *6%* | *6%* | *100%* | *8%* | | | | | | |
| | | | | | | | | | | | | |
| **Profit Live Bird** | | | | | | **D16,828** | **€306** | | **D20** | **D34** | **€0.36** | **€0.62** |
| Profitability Live Bird % | | | | | | 18% | | | 18% | 18% | 18% | 18% |
| | | | | | | | | | | | | |
| Opening balance | D0 | D75,000 | D50,898 | D26,841 | D2,819 | **D75,000** | | | | | | |
| Revenues | | D0 | D0 | D0 | D90,976 | **D90,976** | | | | | | |
| VC | | -D22,785 | -D22,740 | -D22,704 | D0 | **-D68,229** | | | | | | |
| FC2, FC3 | | -D1,317 | -D1,317 | -D1,317 | -D1,000 | **-D4,952** | | | | | | |
| Working capital loan | D75,000 | | | | -D75,000 | **-D75,000** | *check* | | | | | |
| Loan outstanding | | D75,000 | D75,000 | D75,000 | D0 | | | | | | | |
| Closing balance | D75,000 | D50,898 | D26,841 | D2,819 | D17,795 | **D17,795** | *D0* | | | | | |
| | | | | | | | | | | | | |
| Total investment required | D272,143 | $ 5,790 | | | | | | | | | | |

**Table 7 – Cash Flow Broiler Brooding Only - 3000 birds**

| CB7 - CASH FLOW BROILER FARM - Brooding Only | | | | | | 2017 | | |
|---|---|---|---|---|---|---|---|---|
| Month | Week 0 | Week 1 | Week 2 | Week 3 | Week 4 | **Cycle** | Structure VC-FC % | Cost structure % |
| Age in days | 0 | 7 | 14 | 21 | 28 | | | |
| DOCs for chicks | 3,000 | 3,000 | 2,970 | 2,955 | | **2,981** | average number of birds | |
| Culling/death % | | 1.0% | 0.5% | 0.5% | | **2.0%** | mortality | |
| Sales value live bird (P*q) | D103/kg | D22 | D48 | D81 | | | | |
| Price point of live chick | D81 | | | | | | | |
| VC1 DOC | D35 | | | | | | | |
| VC per day | | D3,436 | D5,300 | D6,899 | | | | |
| Cumm. VC of live bird | | D43 | D56 | D72 | | | | |
| | | | | | | | | |
| Margin per bird | | -D21 | -D7 | D10 | | | | |
| Margin % | | -98% | -15% | 12% | | | | |
| | | | | | | | | |
| Revenue | | | | | D240,699 | **D240,699** | **100.0%** | |
| | | | | | | | | |
| VC1 - Repayment of DOC | D35,000 | D35,000 | D35,000 | D35,000 | D0 | **D105,000** | 49.0% | 46.7% |
| VC1 - Feed | | D21,428 | D34,472 | D45,665 | | **D101,564** | 47.4% | 45.2% |
| VC2 - Other daily costs | | D2,625 | D2,625 | D2,625 | | **D7,875** | 3.7% | 3.5% |
| VC3 - Packaging | | D0 | D0 | D0 | | **D0** | 0.0% | 0.0% |
| VC4 - Delivery | | D0 | D0 | D0 | | **D0** | 0.0% | 0.0% |
| VC | | D59,053 | D72,097 | D83,290 | | **D214,439** | **100%** | **95.4%** |
| | | | | | | | | |
| Contribution | | | | | | **D26,260** | | |
| *Contribution %* | | | | | | ***11%*** | | |
| Investment in housing | D440,000 | | | | | | | |
| FC1 Housing | D677 | D677 | D677 | D677 | | **D2,708** | 26.0% | 1.2% |
| FC2 Interest | 22% | D931 | D931 | D931 | | **D3,723** | 35.7% | 1.7% |
| FC3 Salary farmer + Overhead | D1,000 | D1,000 | D1,000 | D1,000 | | **D4,000** | 38.3% | 1.8% |
| Weekly FC | | D2,608 | D2,608 | D2,608 | D0 | **D10,431** | **100.0%** | **4.6%** |
| | | | | | | | | |
| TC | | D61,660 | D74,704 | D85,898 | D0 | **D224,870** | | **100.0%** |
| FC % of TC | | *4%* | *3%* | *3%* | *#DIV/0!* | *5%* | | |
| | | | | | | | | |
| **Profit Live Bird** | | | | | | **D15,829** | **€288** | |
| Profitability Live Bird % | | | | | | 7% | | |
| | | | | | | | | |
| Opening balance | D0 | D220,000 | D159,017 | D84,989 | -D2,162 | **D220,000** | | |
| Revenues | | D0 | D0 | D0 | D240,699 | **D240,699** | | |
| VC | | -D59,053 | -D72,097 | -D83,290 | D0 | **-D214,439** | | |
| FC2, FC3 | | -D1,931 | -D1,931 | -D1,931 | D0 | **-D7,723** | | |
| Working capital loan | D220,000 | D0 | | | -D220,000 | **-D220,000** | *check* | |
| Loan outstanding | | D220,000 | D220,000 | D220,000 | D0 | | | |
| Closing balance | D220,000 | D159,017 | D84,989 | -D232 | D18,537 | **D18,537** | *-D0* | |
| | | | | | | | | |
| Total investment required | D765,000 | $ 16,277 | | | | | | |

**Table 8 – Cost price comparison LAYERS – Cage Eggs and Free-Range Eggs**

| Type | Cage Eggs | | | Source: P. van Horne, WUR, 2012 | | | | | Source: ITC Gambia 2017 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sum of Ct per kg** | **Country** | | | | | | **Int'l** | **Int'l** | | | |
| **Row Labels** | **India** | **Argentina** | **USA** | **Ukraine** | **Netherlands** | **EU** | **Cage eggs** | **Free Range Eggs** | **Gambia Free Range eggs** | **Cost % Gambian eggs** | **Cost % Free range eggs** |
| **VC** | **59** | **61** | **64** | **66** | **81** | **84** | **78** | **94** | **113** | **82%** | **81%** |
| Feed | 44 | 43 | 47 | 51 | 56 | 60 | 56 | 65 | 126 | 92% | 56% |
| DOC | 16 | 15 | 13 | 16 | 17 | 19 | 18 | 23 | 4 | 3% | 20% |
| Other VC | 5 | 4 | 4 | 4 | 7 | 6 | 5 | 7 | 11 | 8% | 6% |
| Litter | -1 | 0 | 0 | 0 | 3 | 1 | 0 | | -12 | -9% | 0% |
| Spent hen | -4 | -1 | 0 | -5 | -1 | -1 | -2 | -1 | -17 | -12% | -1% |
| **FC** | **8** | **8** | **10** | **9** | **14** | **12** | **11** | **22** | **24** | **18%** | **19%** |
| Housing | 4 | 5 | 6 | 5 | 8 | 7 | 6 | 12 | 6 | 5% | 10% |
| Labor | 3 | 3 | 3 | 3 | 5 | 4 | 4 | 8 | 2 | 1% | 6% |
| Overhead | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 16 | 12% | 2% |
| **TC Egg in Euro cent/kg** | **67** | **70** | **74** | **74** | **94** | **96** | **88** | **117** | **137** | **100%** | **100%** |
| Weight of Egg | 55.0 | 62.5 | 60.0 | 63.5 | 61.4 | 62.4 | 62.7 | 61.8 | 54.0 | | |
| **Cost of egg per kg** | **3.69** | **4.34** | **4.46** | **4.72** | **5.80** | **5.99** | **5.54** | **7.21** | **7.39** | | |
| **Index Egg (NL=100)** | 64 | 75 | 77 | 82 | 100 | 103 | 96 | 124 | 128 | | |
| Weight of Exported Egg | | | | | | | 45.0 | 45.0 | 54.0 | | |
| **Cost of Exported egg Ct per piece** | | | | | | | **3.98** | **5.25** | **7.39** | | |
| VC4 Transport to Gambia | | | | | | | €0.24 /kg | €0.24 /kg | €0.02 /kg | | |
| Cost price of imported egg per piece | | | | | | | €0.051 | €0.063 | €0.075 | | |
| Import duties (20%) | | | | | | | €0.010 | €0.013 | €0.00 /kg | | |
| **Cost price Egg in Dalasi per piece DDP** | | | | | | | **D3.3** | **D4.2** | **D5.0** | | |
| **Index Egg (NL=100)** | | | | | | | 100 | 125 | 148 | | |
| Cost price Dalasi DDP per kg | | | | | | | D74/kg | D93/kg | D92/kg | | |

**Table 9 – Cash Flow Layer Farm MEDIUM**

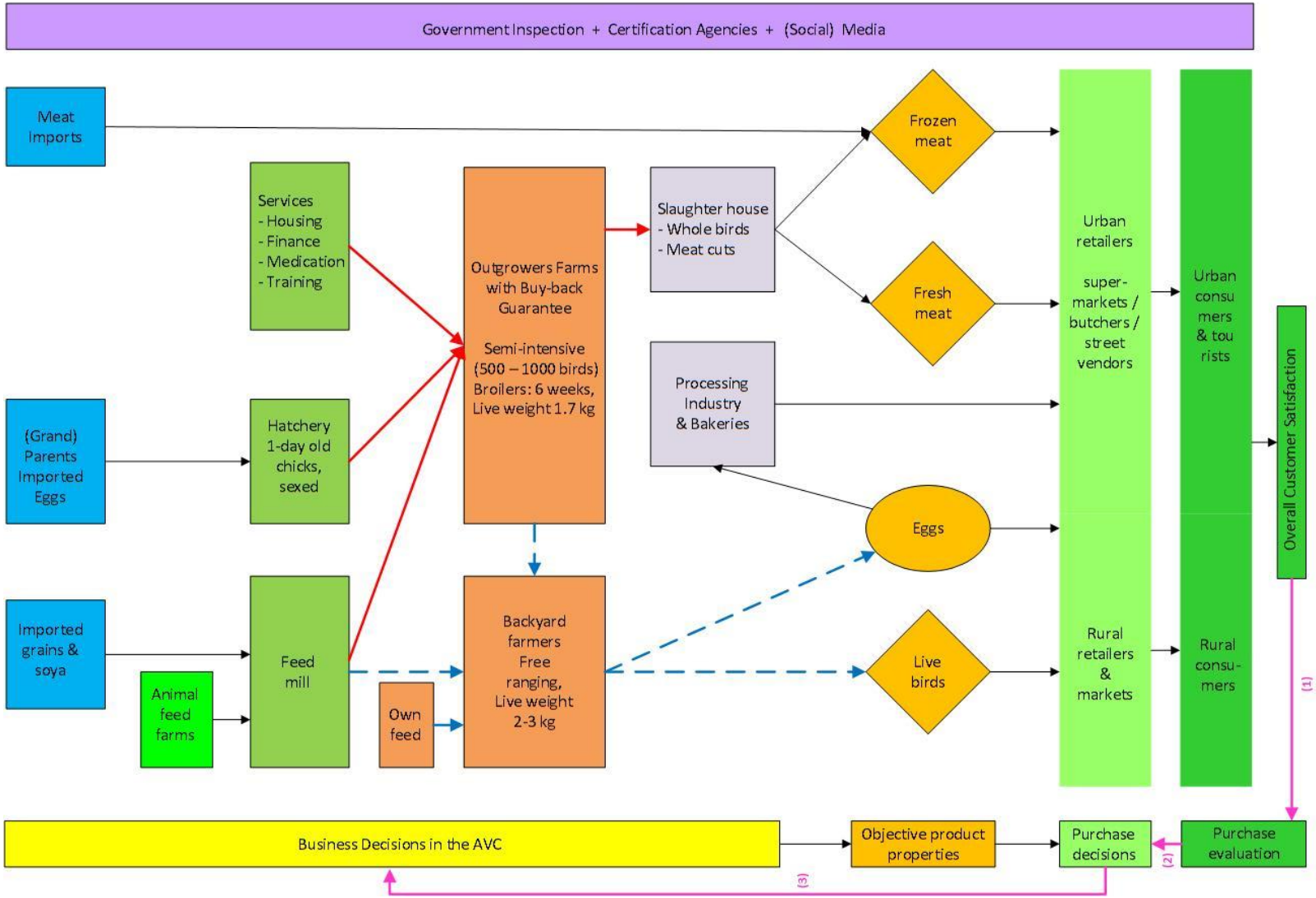
| CB7 - CASH FLOW EGG FARM MEDIUM | | | | GAMBIA (CYCLE 1) | | | | 2017 | | | | EURO | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month | Month 0 | Month 5 | Month 6 | Month 7 | Month 10 | Month 11 | Month 12 | Month 13 | Month 18 | Month 19 | Cycle | Structure VC-FC | Cost structure | Cost structure | Cost structure |
| Age in weeks | 0 | 22 | 26 | 30 | 43 | 48 | 52 | 56 | 78 | 82 | | % | % | per kg | per egg |
| Age in days | 0 | 152 | 183 | 213 | 304 | 335 | 365 | 395 | 548 | 578 | | | | | |
| Birds laying | 10,000 | 9,547 | 9,509 | 9,481 | 9,443 | 9,433 | 9,424 | 9,415 | 9,368 | | **9,513** | average number of birds | | | |
| Daily egg sales (P*q) | | D17,504 | D27,051 | D31,889 | D37,713 | D36,997 | D36,280 | D35,564 | D31,984 | | | | | | |
| | | | | | | | | | | | | | | | |
| VC1 DOC | D40 | | | | | | | | | | | | | | |
| VC per day | | D16,531 | D18,879 | D19,856 | D19,738 | D19,704 | D19,671 | D19,638 | D19,471 | | | | | | |
| Cumm. VC of bird | | D172 | D232 | D296 | D487 | D550 | D613 | D677 | D993 | | | | | | |
| | | | | | | | | | | | | | | | |
| Margin per egg | | D0.2 | D1.0 | D1.5 | D2.4 | D2.3 | D2.3 | D2.2 | D2.0 | | | | | | |
| Margin % | | 5.6% | 30.2% | 38% | 48% | 47% | 46% | 45% | 39% | 100% | | | | | |
| | | | | | | | | | | | | | | | |
| Revenue | | D525,112 | D811,537 | D1,138,478 | D1,313,197 | D1,109,897 | D1,088,415 | D1,250,257 | D961,022 | D1,680,638 | **D16,628,316** | **100.0%** | | **€186 ct** | **€10.0 ct** |
| | | | | | | | | | | | | | | | |
| VC1 - Repayment of DOC | D22,222 | D22,222 | D22,222 | D22,222 | D22,222 | D22,222 | D22,222 | D22,222 | D22,222 | | **D400,000** | 4.1% | 3.5% | €4 ct | €0.2 ct |
| VC1 - Feed | | D446,976 | D508,786 | D538,963 | D536,810 | D536,273 | D535,737 | D535,201 | D532,531 | D0 | **D8,394,078** | 85.6% | 72.6% | €94 ct | €5.0 ct |
| VC2 - Other daily costs | | D38,000 | D38,000 | D38,000 | D38,000 | D38,000 | D38,000 | D38,000 | D38,000 | D0 | **D684,000** | 7.0% | 5.9% | €8 ct | €0.4 ct |
| VC3 - Packaging | | D15,963 | D24,671 | D24,235 | D22,929 | D22,494 | D22,059 | D21,623 | D19,446 | D0 | **D302,724** | 3.1% | 2.6% | €3 ct | €0.2 ct |
| VC4 - Delivery | | D1,596 | D2,467 | D2,424 | D2,293 | D2,249 | D2,206 | D2,162 | D1,945 | D0 | **D30,272** | 0.3% | 0.3% | €0 ct | €0.0 ct |
| VC | | D524,758 | D596,146 | D625,845 | D622,255 | D621,239 | D620,224 | D619,209 | D614,144 | D0 | **D9,811,075** | **100%** | **84.9%** | **€110 ct** | **€5.9 ct** |
| | | | | | | | | | | | | | | | |
| Contribution | | D355 | D215,391 | D512,633 | D690,942 | D488,658 | D468,191 | D631,048 | D346,878 | D1,680,638 | **D6,817,241** | | | **€76 ct** | **€4.1 ct** |
| *Contribution %* | | | | | | | | | | | 41% | | | 41% | 41% |
| | | | | | | | | | | | | | | | |
| Investment in housing | D3,180,000 | | | | | | | | | | | | | | |
| FC1 Housing | D21,200 | D21,200 | D21,200 | D21,200 | D21,200 | D21,200 | D21,200 | D21,200 | D21,200 | D21,200 | **D402,800** | 23.1% | 3.5% | €5 ct | €0.2 ct |
| FC2 Interest | 22% | D49,500 | D49,500 | D49,500 | D37,125 | D33,000 | D28,875 | D24,750 | D4,125 | D0 | **D618,750** | 35.5% | 5.4% | €7 ct | €0.4 ct |
| FC3 Salary farmer + Overhead | D38,000 | D38,000 | D38,000 | D38,000 | D38,000 | D38,000 | D38,000 | D38,000 | D38,000 | D38,000 | **D722,000** | 41.4% | 6.2% | €8 ct | €0.4 ct |
| FC | | D108,700 | D108,700 | D108,700 | D96,325 | D92,200 | D88,075 | D83,950 | D63,325 | D59,200 | **D1,743,550** | **100.0%** | **15.1%** | **€19 ct** | **€1.0 ct** |
| | | | | | | | | | | | | | | | |
| TC | | D633,458 | D704,846 | D734,545 | D718,580 | D713,439 | D708,299 | D703,159 | D677,469 | D59,200 | **D11,554,625** | **€210,084** | **100.0%** | **€129 ct** | **€6.9 ct** |
| FC % of TC | | *17%* | *15%* | *15%* | *13%* | *13%* | *12%* | *12%* | *9%* | *100%* | *15%* | | | | |
| | | | | | | | | | | | | | | | |
| **Profit** | | -D108,345 | D106,691 | D403,933 | D594,617 | D396,458 | D380,116 | D547,098 | D283,553 | D1,621,438 | **D5,073,691** | **€92,249** | | **€57 ct** | **€3.0 ct** |
| Profitability % | | -21% | 13% | 42% | 53% | 36% | 35% | 51% | 30% | 108% | 31% | | | 31% | 31% |
| | | | | | | | | | | | | | | | |
| Opening balance | D0 | D1,278,821 | D1,191,676 | D1,319,567 | D2,211,720 | D2,602,537 | D2,795,194 | D2,971,510 | D3,979,099 | D4,058,853 | **D2,700,000** | | | | |
| Revenues | | D525,112 | D811,537 | D1,138,478 | D1,313,197 | D1,109,897 | D1,088,415 | D1,250,257 | D961,022 | D1,680,638 | **D16,628,316** | | | | |
| VC | | -D524,758 | -D596,146 | -D625,845 | -D622,255 | -D621,239 | -D620,224 | -D619,209 | -D614,144 | D0 | **-D9,811,075** | | | | |
| FC2, FC3 | | -D87,500 | -D87,500 | -D87,500 | -D75,125 | -D71,000 | -D66,875 | -D62,750 | -D42,125 | -D38,000 | **-D1,340,750** | | | | |
| Working capital loan | D2,700,000 | D0 | D0 | D0 | -D225,000 | -D225,000 | -D225,000 | -D225,000 | -D225,000 | -D225,000 | **-D2,700,000** | *check* | | | |
| Loan outstanding | | D2,700,000 | D2,700,000 | D2,700,000 | D2,025,000 | D1,800,000 | D1,575,000 | D1,350,000 | D225,000 | D0 | | | | | |
| Closing balance | D2,700,000 | D1,191,676 | D1,319,567 | D1,744,700 | D2,602,537 | D2,795,194 | D2,971,510 | D3,314,809 | D4,058,853 | D5,476,491 | **D5,476,491** | *-D0* | | | |

| | | |
|---|---|---|
| Total investment required | D6,280,000 | $ 133,617 |

**Table 10 - Cash Flow Layer Farm SMALL**

| CB7 - CASH FLOW EGG FARM SMALL | | | | | GAMBIA (CYCLE 1) | | | | 2017 | | | EURO | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month | Month 0 | Month 1 | Month 5 | Month 6 | Month 7 | Month 10 | Month 11 | Month 12 | Month 13 | Month 18 | Month 19 | Cycle | Structure VC-FC % | Cost structure % | Cost structure per kg | Cost structure per egg |
| Age in weeks | 0 | 4 | 22 | 26 | 30 | 43 | 48 | 52 | 56 | 78 | 82 | | | | | |
| Age in days | 0 | 30 | 152 | 183 | 213 | 304 | 335 | 365 | 395 | 548 | 578 | | | | | |
| Birds laying | 500 | 500 | 477 | 475 | 474 | 472 | 472 | 471 | 471 | 468 | | **476** | average number of birds | | | |
| Daily egg sales (P*q) | | | D875 | D1,353 | D1,594 | D1,886 | D1,850 | D1,814 | D1,778 | D1,599 | | | | | | |
| | | | | | | | | | | | | | | | | |
| VC1 DOC | D45 | | | | | | | | | | | | | | | |
| VC per day | | D453 | D927 | D1,058 | D1,114 | D1,107 | D1,106 | D1,104 | D1,102 | D1,093 | | | | | | |
| Cumm. VC of bird | | D73 | D237 | D305 | D376 | D590 | D661 | D732 | D804 | D1,159 | | | | | | |
| | | | | | | | | | | | | | | | | |
| Margin per egg | | | -D0.2 | D0.7 | D1.2 | D2.1 | D2.0 | D2.0 | D1.9 | D1.6 | | | | | | |
| Margin % | | | -5.9% | 21.8% | 30% | 41% | 40% | 39% | 38% | 32% | 100% | | | | | |
| | | | | | | | | | | | | | | | | |
| Revenue | | -D1,000 | D26,256 | D40,577 | D56,924 | D65,660 | D55,495 | D54,421 | D62,513 | D48,051 | D84,032 | **D830,416** | **100.0%** | | **€186 ct** | **€10.0 ct** |
| | | | | | | | | | | | | | | | | |
| VC1 - Repayment of DOC | D1,250 | D1,250 | D1,250 | D1,250 | D1,250 | D1,250 | D1,250 | D1,250 | D1,250 | D1,250 | | **D22,500** | 4.1% | 3.5% | €5 ct | €0.3 ct |
| VC1 - Feed | | D11,856 | D25,396 | D28,908 | D30,623 | D30,501 | D30,470 | D30,440 | D30,409 | D30,257 | D0 | **D476,762** | 86.7% | 73.5% | €107 ct | €5.7 ct |
| VC2 - Other daily costs | | D1,900 | D1,900 | D1,900 | D1,900 | D1,900 | D1,900 | D1,900 | D1,900 | D1,900 | D0 | **D34,200** | 6.2% | 5.3% | €8 ct | €0.4 ct |
| VC3 - Packaging | | D0 | D798 | D1,234 | D1,212 | D1,146 | D1,125 | D1,103 | D1,081 | D972 | D0 | **D15,136** | 2.8% | 2.3% | €3 ct | €0.2 ct |
| VC4 - Delivery | | D0 | D80 | D123 | D121 | D115 | D112 | D110 | D108 | D97 | D0 | **D1,514** | 0.3% | 0.2% | €0 ct | €0.0 ct |
| VC | | D15,006 | D29,424 | D33,415 | D35,106 | D34,912 | D34,857 | D34,803 | D34,748 | D34,477 | D0 | **D550,112** | **100%** | **84.8%** | **€123 ct** | **€6.6 ct** |
| | | | | | | | | | | | | | | | | |
| Contribution | | -D16,006 | -D3,169 | D7,162 | D21,818 | D30,748 | D20,638 | D19,618 | D27,764 | D13,574 | D84,032 | **D280,304** | | | **€63 ct** | **€3.4 ct** |
| *Contribution %* | | | | | | | | | | | | 34% | | | 34% | 34% |
| Investment in housing | D250,000 | | | | | | | | | | | | | | | |
| FC1 Housing | D1,667 | D1,667 | D1,667 | D1,667 | D1,667 | D1,667 | D1,667 | D1,667 | D1,667 | D1,667 | D1,667 | **D31,667** | 32.1% | 4.9% | €7 ct | €0.4 ct |
| FC2 Interest | 22% | D1,558 | D1,558 | D1,558 | D1,558 | D1,169 | D1,039 | D909 | D779 | D130 | D0 | **D19,479** | 19.7% | 3.0% | €4 ct | €0.2 ct |
| FC3 Salary farmer + Overhead | D2,500 | D2,500 | D2,500 | D2,500 | D2,500 | D2,500 | D2,500 | D2,500 | D2,500 | D2,500 | D2,500 | **D47,500** | 48.2% | 7.3% | €11 ct | €0.6 ct |
| FC | | D5,725 | D5,725 | D5,725 | D5,725 | D5,335 | D5,206 | D5,076 | D4,946 | D4,297 | D4,167 | **D98,646** | **100.0%** | **15.2%** | **€22 ct** | **€1.2 ct** |
| | | | | | | | | | | | | | | | | |
| TC | | D20,731 | D35,149 | D39,140 | D40,831 | D40,247 | D40,063 | D39,879 | D39,694 | D38,774 | D4,167 | **D648,758** | **€11,796** | **100.0%** | **€145 ct** | **€7.8 ct** |
| FC % of TC | | 28% | *16%* | *15%* | *14%* | *13%* | *13%* | *13%* | *12%* | *11%* | *100%* | *15%* | | | | |
| | | | | | | | | | | | | | | | | |
| **Profit** | | -D21,731 | -D8,894 | D1,437 | D16,093 | D25,413 | D15,432 | D14,542 | D22,819 | D9,278 | D79,865 | **D181,658** | **€3,303** | | **€41 ct** | **€2.2 ct** |
| Profitability % | | | | | | | | | | | | 22% | | | 22% | 22% |
| | | | | | | | | | | | | | | | | |
| Opening balance | D0 | D85,000 | D6,926 | -D301 | D2,802 | D45,041 | D65,037 | D75,053 | D84,178 | D135,015 | D138,876 | **D85,000** | | | | |
| Revenues | | -D1,000 | D26,256 | D40,577 | D56,924 | D65,660 | D55,495 | D54,421 | D62,513 | D48,051 | D84,032 | **D830,416** | | | | |
| VC | | -D15,006 | -D29,424 | -D33,415 | -D35,106 | -D34,912 | -D34,857 | -D34,803 | -D34,748 | -D34,477 | D0 | **-D550,112** | | | | |
| FC2, FC3 | | -D4,058 | -D4,058 | -D4,058 | -D4,058 | -D3,669 | -D3,539 | -D3,409 | -D3,279 | -D2,630 | -D2,500 | **-D66,979** | | | | |
| Working capital loan | D85,000 | D0 | D0 | D0 | D0 | -D7,083 | -D7,083 | -D7,083 | -D7,083 | -D7,083 | -D7,083 | **-D85,000** | *check* | | | |
| Loan outstanding | | D85,000 | D85,000 | D85,000 | D85,000 | D63,750 | D56,667 | D49,583 | D42,500 | D7,083 | D0 | | | | | |
| Closing balance | D85,000 | D64,936 | -D301 | D2,802 | D20,562 | D65,037 | D75,053 | D84,178 | D101,580 | D138,876 | D213,325 | **D213,325** | *-D0* | | | |
| | | | | | | | | | | | | | | | | |
| Total investment required | D357,500 | $ 7,606 | | | | | | | | | | | | | | |

# 4 Annex B – AVC Graph Used in this Report



# 5 Annex B - Cigar Box Method Used in this Report

The report makes analysis of cost prices of the main product categories using the Cigar Box Method®. Costs are divided into variable costs (VC) and fixed costs (FC).

The **variable costs** are subdivided into five groups:

- VC1 Cost of raw materials and ingredients (flour, yeast, butter, etc.)
- VC2 Cost of processing inputs into outputs (electricity, spare parts, consumable)
- VC3 Cost of packaging (primary, secondary, tertiary packaging)
- VC4 Cost of delivery (transportation, C&F handling, sales commission, etc.)
- Cost of returned goods (VC1+VC2+VC3+VC4 of the goods returned)

The **fixed costs** are subdivided into four groups:

- FC1 Depreciation of fixed assets
- FC2 Interest paid on capital
- FC3 Overhead costs (salaries, maintenance, communications, etc.,
- FC4 Marketing, advertisement

The **margin calculation** is done with the following formulas:

- VAT is deducted from the Sales Price
- The net sales price per unit is recalculated to a price per kg.
- VC4 (distribution cost) is deducted from the sales price per kg:
- The ex-factory price is calculated $P - VC4 = P_{(EXW)}$
- VC1 is calculated from the recipe multiplied by actual prices of the procured inputs.
- VC2 is calculated on estimated energy and labor use by the actual prices per hour plus an estimate for water, consumables and repairs.
- VC3 is the cost of primary, secondary and tertiary packaging material used
- Returned goods are estimated for the categories.
- The total variable cost of the goods sold VC = VC1 + VC2 + VC3 + returned goods cost
- The margin per kg = $P_{(EXW)} - VC$
- The margin % = margin / P

The **contribution** is calculated as follows:

- The quantity sold per product or products category is taken from the bookkeeping
- The contribution is the margin per unit * quantity sold per year
- The contribution of each product is ranked from high to low indicating the most important product categories and the least important ones.

The **profit** is calculated in two ways:

- Bookkeeping method: profit = total revenues – total costs = **P*q – (VC*q + FC)**
- Cigar Box method: profit = contribution – fixed costs = **(P – VC) * q – FC**

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