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Optimizing Diets Using Local Complementary Foods for Improved Nutrition for Children Aged 6–23 Months

Business Model Calculator Tool Instruction Manual

Part of the *Optimizing Diets by Using Local Foods for Improved Nutrition for Women and Children Guide*



About USAID Advancing Nutrition

USAID Advancing Nutrition is the Agency's flagship multi-sectoral nutrition project, led by JSI Research & Training Institute, Inc. (JSI), and a diverse group of experienced partners. Launched in September 2018, USAID Advancing Nutrition implements nutrition interventions across sectors and disciplines for USAID and its partners. The project's multi-sectoral approach draws together global nutrition experience to design, implement, and evaluate programs that address the root causes of malnutrition. Committed to using a systems approach, USAID Advancing Nutrition strives to sustain positive outcomes by building local capacity, supporting behavior change, and strengthening the enabling environment to save lives, improve health, build resilience, increase economic productivity, and advance development.

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Contents

- Acknowledgments ii
- Business Model Calculator Tool: Principles 1
 - There is no right answer..... 1
 - Avoid costly mistakes 1
 - Doing is thinking 2
- Business Model Calculator: Overview of the Process..... 3
- Business Model Calculator: How the Spreadsheet Works 4
 - The BMCT has 7 color-coded worksheets: 4
- Business Model Calculator: Description of Steps 5
 - Step 0: Set up an EFB 5
 - Step 1: Develop Initial Business Model..... 9
 - Step 2: Review Initial Business Model..... 16
 - Step 3: Develop Price Scenarios 18
 - Step 4: Develop Sales Volume Scenario..... 20
 - Step 5: Adjust Business Model..... 22
 - Step 6: Max & Min Commodity Costs..... 24

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Business Model Calculator Tool: Principles

The Business Model Calculator Tool (BMCT) is designed to analyze the economic feasibility and commercial viability of the local production of an enriched flour-based blend (EFB). It is designed to be used by Resilience Food Security Activity (RSFA) staff to support local small and medium enterprises (SMEs) that operate within the project area, rather than larger, well-established, businesses that operate at a national level. These SMEs rarely use formal accounting or business planning processes or software, so the BMCT is designed as a relatively simple and user-friendly tool.

Business modeling is important to support an SME's internal planning processes. However, once refined and tested, the business model can also support applications for funding from local financial institutions that might help the SME grow and sustain its operations after RFSA has ended.

The broader business modeling process is designed for contexts in which a local business is willing and able to produce EFBs, and other fortified blended foods are available on the local market. Keep the following principals in mind when developing a business model with an SME.

The Optimizing Diets Guide includes 7 components:

1. Overview
2. Optimizing Local Diets Tool (OLDT)
3. Instruction Manual for OLDT
4. Household Pathway Workbook
5. Market Pathway Workbook
6. Business Model Calculator Tool (BMCT)
7. **Instruction Manual for BMCT**

There is no right answer

- The business modeling process is not designed to produce one “correct” answer.
- The process is designed to produce different potential scenarios that enable a review of business model variants.
- Financial modeling is about forecasting the future, which is impossible get exactly right. Rather than trying to find the “right” answer, the modeling process provides insights into changes in different key parameters and how they affect the business' bottom line.

Avoid costly mistakes

- The starting point of the business model process is to determine the break-even point: the minimum price and sales required to make a profit.
- The goal is not to develop a model that generates an enormous profit; it is to prevent you from investing in a business that is likely to suffer a loss. It is important to be realistic about sales prices, input costs, and potential sales volumes.

Start with what you have

- **Don't wait to collect lots of data. Start by running the BMCT with the information you already have.** This could be secondary data or local knowledge. Where data are missing, make informed assumptions.

- **Running an initial business model analysis will help you determine what data are most important to collect.** Some factors have a big effect on the bottom line, others don't. Knowing where to focus data collection will save you time and money.
- **There will be other opportunities to collect data and improve the model as the process develops.**
- **The business modeling process should take more one or two weeks to complete.**

Doing is thinking

- Excel models can only tell you so much.
- Analysis is only useful up to a point.
- Real learning will come when you start production.
- **Start small, talk to consumers, adapt the product.**

Business Model Calculator: Overview of the Process

The BMCT builds on the outputs of the Nutrition Calculator. You must complete the Nutrition Calculator before you can use the BMCT.

A key component in the BMCT process is to calculate the costs of and identify the cheapest EFB.

EFBs can be based on those that you have developed using the Nutrition Calculator (which is part of the Optimizing Local Diets Tool) or commercial blends that are available on the market. Once you have costed the EFB, you will need to develop an initial business model and calculate a profit and loss (P&L) statement to identify whether the business makes a profit or a loss. You will enter key assumptions and the BMCT calculates the profit margin associated with production of the selected EFB.

The BMCT then guides you through a process involving several steps (below) of reviewing the profit margins and adjusting the initial business model by changing sales prices, input costs, and potential sales volumes. The BMCT will present you with a range of scenarios to help you understand the effect of these changes on the bottom-line profitability of the business.

Step 0: Compose an EFB

Step 1: Develop Initial Business Model

Step 2: Review Profit & Loss Statement

Steps 3 & 4: Develop Price & Sales Scenarios

Step 5: Adjust Business Model

Step 6: Review Impact of Seasonal Price Changes

Business Model Calculator: How the Spreadsheet Works

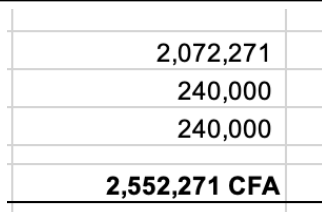
The BMCT has 7 color-coded worksheets:

- Enter data in the blue worksheets (Steps 0 & 1).
- The green worksheets show results of the BMCT and allow you to adjust key variables to develop a range of potential scenarios.

Data should only be entered in cells that are shaded blue



4,800 1,000 CFA



2,072,271
240,000
240,000
<u>2,552,271 CFA</u>

Cells with black font are based on calculations performed by the spreadsheet. You do not need to enter data in these cells, they will be populated automatically based on the data you enter into the blue shaded cells

What kind of results do the green worksheets show?

- The BMCT is based on a standard Profit & Loss (P&L) statement.
- In Step 2 the P&L statement is presented in local currency (Column C) and US\$ (Column E).
- You will find subtotals for revenue and the three main categories of costs / expenses:
 - Cost of Goods Sold.
 - Operating Expenses.
 - Capital Equipment Expenses.
- The subtotals for these main categories of expenses are shown in bold and underlined.
- In Rows 38 & 40 of Step 2, you will find:
 - Gross Profit Margin.
 - Net Profit Margin.




Business Model Calculator: Description of Steps

Step 0: Set up an EFB	
Objective	Calculate the cost of the EFB
Information needed/notes	<ul style="list-style-type: none"> • EFB ingredient list and quantities. • Price data for the EFB ingredients or price estimate based on local knowledge.

Figure 1. Screenshot of Step 0

STEP 0 : Set-up Enriched Flour-based Blend (EFB)					
Step 0.1 : Import Enriched Flour-based Blend (EFB) Copy & Paste Values from Nutrition Calculator Tool					
EFB #		1	2	3	4
1	Millet (g)	10.1	20	10	
2	Corn (g)	10.2	10	10	
3	Tiger nut (g)	9	0	10	
4	Rice (g)	11.5	10	10	
5	Wheat Flour (g)	11.5	10	10	
6	Soy (g)	9.6	10	10	
7	Peanut (g)	8.9	10	0	
8	Ginger (g)	0.5	0.5	0.5	
9	Clove (g)	0.2	0.2	0.2	
10	Sesame (g)	8.8	0	10	
*	ADDED SUGAR (g)	8.6	6.6	6.6	
*	ADDED SALT (g)	0.6	0.3	0.3	
*	Moringa Leaf Powder (g)		10	10	

Step 0.1: Import EFB

	<u>Spreadsheet:</u> Optimizing Local Diets Tool (OLDT)	<u>Worksheet:</u> 3B Nutrition Calculator tool
Cells A42–F54	Select and copy cells in worksheet 3B Nutrition Calculator Tool of the OLDLT.	
	<u>Spreadsheet:</u> BMCT	<u>Worksheet:</u> Step 0
Cells A7–E19	Select Cell A7 in the Step 0 worksheet of the BMCT. ‘Right click’ with your mouse to “Paste Values” (Edit > Paste Special > select “Values” & click “ok”).	
	Double check that the list of ingredients and quantities for each EFB in the BMCT matches those in the Nutrition Calculator Tool.	

Step 0.2: Enter Commodity Prices in Local Currency/ kg



	<u>Spreadsheet:</u> BMCT	<u>Worksheet:</u> Step 0
Cells C26–F38	Enter commodity prices/kg in the blue-shaded cells. Commodity prices are set up per quarter (every 3 months). It is recommended that the quarters are set up according to the Gregorian calendar, so Quarter 1 would be January–March. This aligns with the calendar in the Optimizing Local Diets Tool (Worksheet 2 Key Foods ID List).	
	Double check that the cost for each ingredient is per kg	



Figure 2. Screenshot of Steps 0.2, 0.3, 0.4

Step 0.2: Enter Commodity Prices in Local Currency / kg enter prices in blue shaded cells C27:F39					
note that prices should be per kg		Q1	Q2	Q3	Q4
		Jan - March	April - June	July - Sept	Oct - Dec
1	Millet (kg)	200	240	280	160
2	Corn (kg)	240	280	5	200
3	Tiger nut (kg)	250	320	420	150
4	Rice (kg)	110	110	110	110
5	Wheat Flour (kg)	90	90	120	90
6	Soy (kg)	250	250	250	150
7	Peanut (kg)	420	500	600	400
8	Ginger (kg)	12500	12500	12500	12500
9	Clove (kg)	12500	12500	12500	12500
10	Sesame (kg)	1400	1500	1500	1500
*	ADDED SUGAR (kg)	170	170	240	170
*	ADDED SALT (kg)	90	90	120	90
*	Moringa Leaf Powder (kg)	200	200	200	200



Step 0.3: Cost of EFB in Local Currency / kg Green is cheapest, Yellow is Second Cheapest, Red is Most Expensive					
		1	2	3	4
Cost of EFB:	Average	434	312	433	n/a
	High	491	360	479	n/a
	Low	368	259	372	n/a

Step 0.4: Most Expensive EFB Ingredients					
		EFB 1	EFB 2	EFB 3	EFB 4
Most Expensive Ingredient		Sesame (g)	Ginger	Sesame (g)	n/a
Cost / kg		145	71	168	n/a
Second Most Expensive Ingredient		Ginger	Peanut (g)	Ginger	n/a
Cost / kg		70	55	71	n/a

Step 0.3: Cost of EFB/kg in Local Currency/kg

	<u>Spreadsheet:</u> BMCT	<u>Worksheet:</u> Step 0
Cells C43– F45	Step 0.3 shows the total price of 1kg the four different EFBs based on average, high, and low commodity prices.	
	The total price per 1kg of EFB is calculated automatically based on the price data entered in Step 0.2 and the EFB ingredients in Step 0.1. No additional data entry is required.	
	The cells in the table are automatically color-coded to show which EFB is the cheapest (green cells); second-cheapest (yellow), and most expensive (red).	
	Note of which EFB is the cheapest. You will need this information in Step 1.	

Step 0.4: Most Expensive EFB Ingredients


	<u>Spreadsheet:</u> BMCT	<u>Worksheet:</u> Step 0
Cells C50– F53	Step 0.4 shows the two most expensive ingredients for the four different EFBs, based on average prices.	
	The two most expensive ingredients are calculated automatically based on the price data entered in Step 0.2 and the EFB ingredients in Step 0.1. No additional data entry is required.	
	Note which EFB ingredients are the most expensive.	

Step I: Develop Initial Business Model	
Objective	Enter data for all the key business costs and revenue
Information needed/notes	<ul style="list-style-type: none"> • A good understanding of the business operations and costs. • It is best to do this with key staff from the SME.

Figure 3. Screenshot of Step I


STEP I: Develop Initial Business Model <small>enter data in the light blue shaded cells</small>			
Step 1.1: Model Revenue			
1.1.1 Enter EFB Sales Volume			
Monthly Sales (kg)		200	
1.1.2. Enter EFB Sales Price			
Price / kg		750	
Step 1.2: Model Cost of Goods Sold			
1.2.0 Loss Factor			
Loss Factor		20%	
1.2.1 Select EFB			
Select EFB using drop down menu	2		312
1.2.2 Enter Other Expenses			
Packaging	/ kg	10	
Milling	/ kg	0	
Transport (ox cart)	/ kg	1	
Butane (roasting)	/ kg	10	
Cost of Goods 5	/ kg		
Cost of Goods 6	/ kg		

Step 1.1 Model Revenue

	<u>Spreadsheet:</u> BMCT	<u>Worksheet:</u> Step 1
Cell D9	Enter EFB monthly sales volume in kg. <i>Sales volume can be estimated based on similar products that are already on the market (see Stage 1: Step 2 of the Market Pathway Workbook).</i>	
Cell D13	Enter EFB sales price per kg <i>Sales price can be estimated based on similar products that are already on the market (see Stage 1: Step 2 of the Market Pathway Workbook).</i>	

Step 1.2: Model Cost of Goods Sold

Cost of goods sold refers to the costs that are linked directly to the production of the EFB. Packaging is a common cost linked directly to the production of EFB: the more EFB you produce, the more packaging you need to buy.

	<u>Spreadsheet:</u> BMCT	<u>Worksheet:</u> Step 1
Cell D19	Enter loss factor There are typically losses associated with processing commodities into a food product. For example, milling 50kg of maize grain might produce 40kg of maize flour (and 10kg of maize bran); the loss factor would be 20% ($[(40/50)*100]$) Enter the loss factor for the commodities that are being processed. If commodities are not processed or if there are minimal losses, enter a 0% loss factor.	
Cell D23	Select EFB using the drop-down menu.	

	When you select Cell D23, an icon (a square with a triangle) will appear to the right of the cell. Click on this icon and a drop-down menu will appear that contains '1, 2, 3, & 4'
	Select the number that corresponds with the cheapest EFB (from Step 0.3).
	Enter expenses linked to purchase and processing of EFB
Cells B28-33	List the different costs associated with the production of the EFB (e.g., milling, packaging, ingredient transport).
Cells D28-33	Enter the cost per kg for each of the different items.

Step 1.3: Model Fixed Operating Costs


Figure 4. Screenshot of Step 1.3

Step 1.3: Model Fixed Operating Costs		
I.3.1 EFB as % of Business		
%		30%
I.3.2 Enter Office Rent / Month		
Rent	/ Month	-
I.3.3 Enter Electricity Cost / Month		
Electricity	/ Month	40,832
I.3.4 Enter Warehouse Cost / Month		
Warehouse	/ Month	
I.3.5 Enter Other Cost / Month		
Water		10,000
Labour: loading		5,000
Cleaning		2,500
OpEx 7		

Definition: Fixed operating costs are not directly tied to the production of the EFB. Example: A common fixed operating cost is office rent. That cost is the same whether you produce 500 kg or 1,000 kg of EFB.

If the SME is producing other products, fixed operating costs will be shared between all the products that it produces. Example: Office rent may be CFA 10,000/month, but the company produces four products (including the EFB), so we can assume that the EFB is 'responsible for' 25 percent of the office rent, which equals CFA 2,500.

The spreadsheet is set up to calculate shared costs automatically. **You should enter the total costs.**

	Spreadsheet:	Worksheet:
	BMCT	Step 1


Cell D39	Enter share of cost
	Enter the <i>percentage</i> of shared costs that the EFB production represents as part of the total fixed costs.
Cell D43	Enter office rent/month.
	Enter the total office rent per month.
Cell D47	Enter electricity/month
	Enter the total electricity cost per month.
Cell D51	Enter warehouse/month
	If the SME rents a warehouse in addition to its office space, enter the total warehouse cost per month.
	Enter other costs.
Cells B55–58	List other fixed operating costs in
Cells D55–58	Enter amounts

Step 1.4: Model Staffing Costs

Staff costs, like fixed operating costs, might be shared across multiple products that the SME produces. In Step 1.4, list all the staff positions, the estimated percentage of time they work on EFB production, and the **total cost** of each position. The share of the costs allocated to EFB production is calculated automatically in the spreadsheet.

Figure 5. Screenshot of Step I.4

Step I.4: Model Staffing Costs			
I.4.1 List Staff Positions			
President			
General Manager			
Technician			
Electrician			
Custodian			
I.4.2 List Staff Time Allocation			
President	30%		
General Manager	30%		
Technician	5%		
Electrician	0%		
Custodian	30%		
I.4.3 Enter Staff Costs / Month			
President	30%	30,000	/ Month
General Manager	30%	25,000	/ Month
Technician	5%	15,000	/ Month
Electrician	0%		/ Month
Custodian	30%	15,000	/ Month

	<u>Spreadsheet:</u> BMCT	<u>Worksheet:</u> Step I
	List staff positions. List all staff positions for the SME as a whole. Use a separate row for each position.	
Cells B65–69		

Cells C73–77	List staff time allocation.
	For each position, enter the percent of time that the staff member will spend on the production of the EFB.
	Use the volume of sales of EFB in comparison to other products the SME produces as a rough guide (e.g., the SME might produce 1,500kg of sorghum flour and 500kg of EFB, making total production for the SME 2,000. EFB then, represents 25% of the SME's production, which could be used as an estimate of staff time spent on EFB).
	The percent of time allocation may vary and need not be the same for all positions.
Cells D81–85	Enter staff costs/month.
	Enter <i>total</i> monthly salary + benefits for each position.



Step 1.5: Enter Exchange Rate		
	<u>Spreadsheet:</u> BMCT	<u>Worksheet:</u> Step 1
Cell D90	Enter local currency symbol	
	Enter the symbol associated with the local currency.	
	<i>This symbol will be automatically added to subsequent worksheets</i>	
Cell D92	Enter the exchange rate.	
	Enter the local currency to US\$ exchange rate.	

Figure 6. Screenshot of Step 1.5

Step 1.5: Enter Exchange Rate			
Local Currency Symbol		ZMK	
Exchange rate		600 / US\$	
Step 1.6: Capital Equipment (CapEx)			
Capital Equipment	Cost	Repayment Period	
CapEx 1			years
CapEx 2			years
CapEx 3			years
CapEx 4			years
Interest Rate			

Step 1.6: Capital Equipment	
	<p><u>Spreadsheet:</u> BMCT</p> <p><u>Worksheet:</u> Step 1</p>
Cells B98–I01	<p>List capital equipment.</p> <p>List capital equipment that the SME needs to purchase to support production. Use a separate row for each item.</p>
Cells D98–I01	<p>Enter capital equipment costs.</p> <p>Enter the total cost for each item of capital equipment.</p>
Cells F98–I01	<p>Enter loan repayment period.</p> <p>Enter the loan repayments period in years for each item of capital equipment.</p>
Cell D104	<p>Enter the interest rate for the loan.</p>


Step 2: Review Initial Business Model


Objective	Determine whether the EFB business is profitable.
Information needed/notes	<i>All calculations are generated automatically.</i>

The initial business model is based on a standard P&L statement (figure 7). The sub-totals for revenue and three main categories of costs (*Cost of Goods Sold, Operating Expenses, and Capital Equipment Expense*) are bolded and underlined. The P&L is presented in local currency (Column C) and US\$ (Column E). Toward the bottom of this section, you will find the profit margins. Gross profit margin is calculated automatically by subtracting the cost of goods sold from revenue. Net profit margin is calculated automatically by subtracting cost of goods sold, operating expenses, and capital equipment expenses from revenue.

Figure 7. Screenshot of Step 2

STEP 2			
Review Initial Business Model			
EFB	2	ZMK	312 / kg (Cost of Ingredients)
		ZMK	US\$
Annual Sales (kg)		2,400	2,400
Unit Sales Price (kg)		750	1
Revenue		ZMK 1,800,000	\$3,000
Cost of Commodity (kg)		899,318	1,499
Packaging		24,000	40
Milling		-	-
Transport (ox cart)		2,400	4
Butane (roasting)		24,000	40
Cost of Goods 5		-	-
Cost of Goods 6		-	-
Cost of Goods Sold (COGS)		ZMK 949,718	\$1,583
Rent		-	-
Electricity		146,995	245
Warehouse		-	-
Water		36,000	60
Labour: loading		18,000	30
Cleaning		9,000	15
OpEx 7		-	-
Salary		261,000	435
Operating Expenses		ZMK 470,995	26%
CapEx 1			
CapEx 2			
CapEx 3			
CapEx 4			
Capital Equipment Expenses		ZMK 0	0%
<i>Gross Profit Margin</i>		ZMK 850,282	47%
Net Profit Margin		ZMK 379,287	21%

Step 2.1: Review Gross Profit Margin		
	<u>Spreadsheet:</u> BMCT	<u>Worksheet:</u> Step 2
Cells C38, E38	Review Gross Profit Margin.	
	If the EFB makes a gross loss , increase the price in Step 3 and increase volume of unit sales in Step 4.	

Step 2.2: Review Net Profit Margin		
	<u>Spreadsheet:</u> BMCT	<u>Worksheet:</u> Step 2
Cells C40, E40	Review Net Profit Margin.	
	<u>If the net profit is more than 30%</u> , consider reducing the price in Step 3.	
	<u>If the net profit is less than 30% but more than 10%</u> , consider increasing volume of unit sales in Step 4.	
	<u>If the net profit is less than 10%</u> , consider increasing the price in Step 3.	
	If the EFB makes a net loss , consider increasing the price in Step 3 and increasing volume of unit sales in Step 4.	

Step 3: Develop Price Scenarios	
Objective	Adjust EFB sales price until the business model is making a healthy profit.
Information needed/notes	<ul style="list-style-type: none"> <i>Net profit margin from Step 2.</i>

The data you enter here can be used to explore different “what if?” situations (e.g., what if we increased the EFB price by 50 CFA?) When creating potential scenarios, consider how realistic they are (e.g., how realistic is it to increase prices by 50 CFA? Will customers be willing and able to pay more?).



Note that you can use Step 3 to decrease prices; simply enter a negative number. This can be used to model what would happen if you sold a cheaper product, which might increase sales volumes or enable poorer households to purchase the EFB.

Figure 8. Screenshot of Step 3

STEP 3: Develop Price Scenarios						
Enter Price Factor in Cell C2 to generate Scenarios						
Price	-50	<<< factor to adjust prices				
	Step 2	Price Scenario 1	Price Scenario 2	Price Scenario 3	Price Scenario 4	Price Scenario 5
Annual Sales (kg)	2,400	2,400	2,400	2,400	2,400	2,400
Unit Sales Price (kg)	750	700	650	600	550	500
Revenue	ZMK 1,800,000	ZMK 1,680,000	ZMK 1,560,000	ZMK 1,440,000	ZMK 1,320,000	ZMK 1,200,000
Cost of Commodity (kg)	899,318	899,318	899,318	899,318	899,318	899,318
Packaging	24,000	24,000	24,000	24,000	24,000	24,000
Milling	-	-	-	-	-	-
Transport (ox cart)	2,400	2,400	2,400	2,400	2,400	2,400
Butane (roasting)	24,000	24,000	24,000	24,000	24,000	24,000
Cost of Goods 5	-	-	-	-	-	-
Cost of Goods 6	-	-	-	-	-	-
Cost of Goods Sold (COGS)	ZMK 949,718	ZMK 949,718	ZMK 949,718	ZMK 949,718	ZMK 949,718	ZMK 949,718
Rent	-	-	-	-	-	-
Electricity	146,995	146,995	146,995	146,995	146,995	146,995
Warehouse	-	-	-	-	-	-
Water	36,000	36,000	36,000	36,000	36,000	36,000
Labour: loading	18,000	18,000	18,000	18,000	18,000	18,000
Cleaning	9,000	9,000	9,000	9,000	9,000	9,000
OpEx 7	-	-	-	-	-	-
Salary	261,000	261,000	261,000	261,000	261,000	261,000
Operating Expenses	ZMK 470,995	ZMK 470,995	ZMK 470,995	ZMK 470,995	ZMK 470,995	ZMK 470,995
CapEx 1						
CapEx 2						
CapEx 3						
CapEx 4						
Capital Equipment Expenses	ZMK 0	ZMK 0	ZMK 0	ZMK 0	ZMK 0	ZMK 0
Gross Profit Margin	ZMK 850,282	ZMK 730,282	ZMK 610,282	ZMK 490,282	ZMK 370,282	ZMK 250,282
Net Profit Margin	ZMK 379,287	ZMK 259,287	ZMK 139,287	ZMK 19,287	ZMK -100,713	ZMK -220,713
Net Profit Margin %	21%	15%	9%	1%	-8%	-18%

The original P&L from Step 2 is presented in Column C (highlighted in green).

Columns D–H show five potential scenarios with a range of sales prices/kg in Cells D7–H7 (shaded in dark red). These scenarios are generated based on the price factor you enter in Cell C2 (shaded light blue).

Step 3.1: Adjust Sales Price		
	<u>Spreadsheet:</u> BMCT	<u>Worksheet:</u> Step 3
Cell C2	Adjust sales price/kg.	
	Enter a change in sales price/kg.	
	The spreadsheet will automatically generate five scenarios with increasing sales prices. Adjust the price factor until the net profit generates a profit.	
Cells D39–H39	Review how net profit margin changes across the 5 scenarios	
	<u>Identify the break-even point:</u> In which scenario does the EFB start or stop making a profit?	
	<u>Identify healthy profit margins:</u> In which scenarios are profit margins 0–30%?	
	Note of the break-even point: Which price scenario generates a profit? You will need this in Step 5.	

Step 4: Develop Sales Volume Scenario	
Objective	Adjust the EFB sales volume until the business model is making a “healthy” profit
Information needed/notes	<ul style="list-style-type: none"> Net profit margin from Step 2.



The data you enter here can be used to explore different “what if?” situations (e.g., what if we doubled sales volumes?). When creating potential scenarios, consider how realistic they are (e.g., how realistic is it to double sales volumes?).

The original P&L from Step 2 is presented in Column C (highlighted in green). Columns D–H show five potential scenarios with a range of sales volumes in Cells D6–H6 (highlighted in dark red). These scenarios are generated based on the sales factor you enter in Cell C2 (shaded light blue).

Figure 9. Screenshot of Step 4

STEP 4: Develop Sales Volume Scenarios						
Enter Sales Volume Factor in Cell C2 to generate Scenarios						
Sales Volume	-300	<<< Factor to adjust sales				
	Step 2	Sales Scenario 1	Sales Scenario 2	Sales Scenario 3	Sales Scenario 4	Sales Scenario 5
Annual Sales (kg)	2,400	2100	1800	1500	1200	900
Unit Sales Price (kg)	750	750	750	750	750	750
Revenue	ZMK 1,800,000	ZMK 1,575,000	ZMK 1,350,000	ZMK 1,125,000	ZMK 900,000	ZMK 675,000
Cost of Commodity (kg)	899,318	786,903	674,488	562,074	449,659	337,244
Packaging	24,000	21,000	18,000	15,000	12,000	9,000
Milling	-	-	-	-	-	-
Transport (ox cart)	2,400	2,100	1,800	1,500	1,200	900
Butane (roasting)	24,000	21,000	18,000	15,000	12,000	9,000
Cost of Goods 5	-	-	-	-	-	-
Cost of Goods 6	-	-	-	-	-	-
Cost of Goods Sold (COGS)	ZMK 949,718	ZMK 831,003	ZMK 712,288	ZMK 593,574	ZMK 474,859	ZMK 356,144
Rent	-	-	-	-	-	-
Electricity	146,995	146,995	146,995	146,995	146,995	146,995
Warehouse	-	-	-	-	-	-
Water	36,000	36,000	36,000	36,000	36,000	36,000
Labour: loading	18,000	18,000	18,000	18,000	18,000	18,000
Cleaning	9,000	9,000	9,000	9,000	9,000	9,000
OpEx 7	-	-	-	-	-	-
Salary	261,000	261,000	261,000	261,000	261,000	261,000
Operating Expenses	ZMK 470,995	ZMK 470,995	ZMK 470,995	ZMK 470,995	ZMK 470,995	ZMK 470,995
CapEx 1						
CapEx 2						
CapEx 3						
CapEx 4						
Capital Equipment Expenses	ZMK 0	ZMK 0	ZMK 0	ZMK 0	ZMK 0	ZMK 0
Gross Profit Margin	ZMK 850,282	ZMK 743,997	ZMK 637,712	ZMK 531,426	ZMK 425,141	ZMK 318,856
Net Profit Margin	ZMK 379,287	ZMK 273,002	ZMK 166,716	ZMK 60,431	ZMK -45,854	ZMK -152,139
Net Profit Margin %	21%	17%	12%	5%	-5%	-23%

Step 4.1: Adjust Sales Volume

	<u>Spreadsheet:</u> BMCT	<u>Worksheet:</u> Step 4
Cell C2	Adjust sales volume/month.	
	Enter a change in sales volume.	
	The spreadsheet will automatically generate five scenarios with increasing sales prices. Adjust the sales factor in C2 until the net profit generates a profit.	
Cells D39–H39	Review how net profit changes across the 5 scenarios.	
	<u>Identify the break-even point:</u> In which scenario does the EFB start or stop making a profit?	
	<u>Identify healthy profit margins:</u> In which scenarios are profit margins 10–30%?	
	Note of the break-even point: Which sales volume scenario generates a profit? You will need this in Step 5.	

Step 5: Adjust Business Model


Objective(s)	Adjust the business model until it is making a healthy profit
Information needed/notes	<ul style="list-style-type: none"> • Price scenario from Step 3. • Sales volumes scenario from Step 4.

Step 5 is designed to enable you to combine the price scenario from Step 3 and sales volume scenario from Step 4 into one business model. You can do this using the two drop-down menus that are linked to the previous worksheets.


Figure 10. Screenshot of Step 5

STEP 5: Adjust Business Model			
Select Price & Sales Scenarios			
Price Scenario (Step 3)	Scenario 3	<<< select using drop down menu	
Sales Scenario (Step 4)	Scenario 4	<<< select using drop down menu	
	ZMK		US\$
Annual Sales (kg)	1,200		1,200
Unit Sales Price (kg)	600		1
Revenue	ZMK 720,000		\$1,200
Cost of Commodity (kg)	449,659		749
Packaging	12,000		20
Milling	-		-
Transport (ox cart)	1,200		2
Butane (roasting)	12,000		20
Cost of Goods 5	-		-
Cost of Goods 6	-		-
Cost of Goods Sold (COGS)	ZMK 474,859		\$791
Rent	-		-
Electricity	146,995		245
Warehouse	-		-
Water	36,000		60
Labour: loading	18,000		30
Cleaning	9,000		15
OpEx 7	-		-
Salary	261,000		435
Operating Expenses	ZMK 470,995	29%	\$785
CapEx 1			
CapEx 2			
CapEx 3			
CapEx 4			
Capital Equipment Expenses	ZMK 0	0%	\$0
Gross Profit Margin	ZMK 245,141	34%	409
Net Profit Margin	ZMK -225,854	-31%	(\$376)

Step 5.1: Select Price & Sales Volumes Scenario

	<u>Spreadsheet:</u>	<u>Worksheet:</u>
	BMCT	Step 5
Cell C2	Select price scenario.	
	Select the break-even price scenario from Step 3 using the drop-down menu.	
Cell C3	Select sales volume scenario.	
	Select the break-even sales volume scenario from Step 4 using the drop-down menu.	

Step 5.2: Review Profit Margins & Adjust Scenario

	<u>Spreadsheet:</u>	<u>Worksheet:</u>
	BMCT	Step 5
Cells C40 & E40	Review net profit margin	
	Ideally, the business model should generate a healthy net profit margin (10–30%) that is neither too small, which might put the business at risk of making a loss if factors change, nor too large, which might make the EFB unaffordable to lower-income households. If the net profit margin is not healthy, return to Step 5.1 and adjust the scenarios until it is.	

Step 6: Max & Min Commodity Costs

Objective(s)	Determine whether the business still makes a profit when commodity prices are at their highest.
Information needed/notes	<ul style="list-style-type: none"> • <i>None: all calculations are generated automatically.</i>


Worksheet 6 summarizes the results of the business model with two scenarios for high and low commodity costs. This enables you to determine whether the business still makes a profit when commodity prices are at their highest.

Step 6 includes details of the business model from Step 5, presented in Column C (shaded in light green) as well as two price scenarios for low and high commodity prices (highlighted in dark red). The variable that has been adjusted to generate the scenarios is highlighted in dark red. These price scenarios are automatically calculated based on the seasonal price data that were entered in Step 0.

Figure 11. Screenshot of Step 6

STEP 6:				
Max & Min Commodity Costs				
Calculated Automatically (no data entry required)				
		Step 5	Max	Min
Annual Sales (kg)		1,200	1,200	1,200
Unit Sales Price (kg)		600	600	600
Revenue		ZMK 720,000	ZMK 720,000	ZMK 720,000
Cost of Commodity (kg)		449,659	518,959	372,312
Packaging		12,000	12,000	12,000
Milling		-	-	-
Transport (ox cart)		1,200	1,200	1,200
Butane (roasting)		12,000	12,000	12,000
Cost of Goods 5		-	-	-
Cost of Goods 6		-	-	-
Cost of Goods Sold (COGS)		ZMK 474,859	ZMK 544,159	ZMK 397,512
Rent		-	-	-
Electricity		146,995	146,995	146,995
Warehouse		-	-	-
Water		36,000	36,000	36,000
Labour: loading		18,000	18,000	18,000
Cleaning		9,000	9,000	9,000
OpEx 7		-	-	-
Salary		261,000	261,000	261,000
Operating Expenses		ZMK 470,995	ZMK 470,995	ZMK 470,995
CapEx 1				
CapEx 2				
CapEx 3				
CapEx 4				
Capital Equipment Expenses		ZMK 0	ZMK 0	ZMK 0
Gross Profit Margin		ZMK 245,141	ZMK 175,841	ZMK 322,488
Net Profit Margin		ZMK -225,854	ZMK -295,154	ZMK -148,508
		-31%	-41%	-21%

Step 6.1: Review Max & Min Commodity Costs and Net Margin

	<u>Spreadsheet:</u> BMCT	<u>Worksheet:</u> Step 6
Cell D10	Review the high commodity cost scenario.	
Cell D39	<ul style="list-style-type: none"> ● Compare the cost of commodity in the high-cost scenario in Cell D10 with the cost of commodity in the average cost scenario in Cell C10. ● Review the net profit margin in the high-cost scenario in Cell D39. ● If the business is making a loss in the high-cost scenario, consider the feasibility and cost implications of purchasing commodities when prices are lower. 	
Cell E10	Review the low commodity cost scenario.	
Cell E39	<ul style="list-style-type: none"> ● Compare the cost of commodity in the low-cost scenario in Cell E10 with the cost of commodity in the average cost scenario in Cell C10. ● Review the net profit margin in the low-cost scenario in Cell E39. ● Consider the feasibility and cost implications of purchasing commodities when prices are lower. 	



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