

InnoVeg

Horticulture Australia Limited



BUSINESS CASE

Expansion Through Vertical Integration



Horticulture Australia

"The Vegetable Industry Development Program is funded by HAL using the vegetable levy and matched funds from the Australian Government".



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Business Case

EXPANSION THROUGH VERTICAL INTEGRATION

What is a business case?

A business case is a formal process of planning to provide the decision-maker with useful information to help them make a decision. You will have greater confidence in your decision, if you use a formal process and make sure you count the right things the right way, whilst also considering the things that cannot be counted.

Thinking about expansion and vertical integration?

Vegetable growers from time to time contemplate expanding their farming activities to include new enterprises such as through vertical integration. What is vertical integration?

Vertical Integration is the process of moving the 'next step' or a number of steps further down the supply chain from a 'crop growing only' position. Historically, a business may have grown vegetable crops and sold those crops in the wholesale markets in bulk lots. Vertical integration may involve an additional component of sorting, washing, mixing, packaging and distribution, and then supplying products to a new customer or group of customers. Another term used to describe vertical integration is value adding.

This process of vertical integration, or value adding, is usually accompanied with an expansion in business activities. This expansion is likely to require new infrastructure (capital) and/or additional staff to sort, pack, transport or market the products.

What is the decision?

The decision is to expand the business activities through additional sorting and packaging into small packages for sale to existing wholesale and retail market places. This example examines the costs and benefits associated with the sweet corn market and opportunities to do some simple 'value adding' to create more profit.



Most importantly, find out exactly what your customer base wants before you investigate...

Where do you start?

Define the opportunity

It is important to begin with a clear definition of what you are proposing to do – write it down with as much detail as possible. This will include a list of potential customers that you have spoken to who are keen on your proposal and comfortable with the prices, payment terms and quality that you have on offer.

Most importantly, find out exactly what your customer base wants before you investigate whether you can give it to them at a profitable price!

Test your assumptions

Talk to other growers and producers who have completed similar processes. Find out what worked and what did not work when they commenced a vertical integration process. It is much cheaper to learn from other people's mistakes!

Spend plenty of time in the market place talking to customers and making sure that what you are proposing will suit their requirements.

- What sort of supply do your customers require?
- Is seasonal supply suitable and for what period of time?
- What will happen if you cannot meet that supply due to frost or drought impacts?

Understand the marketplace

- Who are your competitors?
- What prices do they achieve and how do they meet the needs of the purchaser?
- What is your point of difference?

In 30 seconds, you must be able to describe how you are offering something better and different than is currently available in the marketplace. If you have a 'quality' point of difference it must be clearly defined and measurable.

Determine the Costs and Benefits

Once you have clearly defined the opportunity, then a simple calculation will help determine the profitability and whether or not to proceed with the opportunity. This is a very important step as often there are capital and depreciation costs that need to be recovered in selling prices to ensure that the vertical integration is sustainable and makes money in the future.

What do you have to count?

The following items need to be considered to enable a calculation of the profitability and risk associated with this vertical integration opportunity.

Depreciation

An investment in new machinery or infrastructure will increase your depreciation. This is not a cash cost, but a critical allowance to make when calculating profit. If you do not account for **depreciation**, then you will not have any money available to replace the machinery when needed.

Cost of capital

An investment in new machinery also means that you will need to use spare cash or increase borrowings to pay for the machines or infrastructure. Thus, you need to consider the **cost of capital**. The cost of borrowed capital is obvious (i.e. the interest cost), but the cost of your own capital is less so. It is known as its opportunity cost.

Additional variable costs

The new process of value adding will have different and additional **variable costs**. Thus, you need to quantify the cost to store the product, package the product, employ additional staff, and all the supporting and ancillary costs, such as vehicles and power.

Additional overhead costs

There are likely to be some **additional overhead costs** that occur as a result of this new component of your existing vegetable business. They might include: infrastructure insurance, public liability insurance, higher rates charges and additional administration costs.

Additional prices achieved

When calculating the new price achieved, it is critical to test the new opportunity against the current situation. Where the business currently sells wholesale in bulk lots, the question really is, “**what additional price is achieved for the value added product?**”, NOT “what is the total sell price of the value added product?”.

The trouble with value adding is that it is also a process of ‘**cost adding**’ and many businesses have created a value added product only to find that they have a smaller profit due to the additional costs outweighing the additional income achieved.

The scenario

A vegetable grower operates a mixed farming business and grows a number of vegetable crops. One of these crops is sweet corn for the fresh market. Another grower in the region has been value adding the sweet corn cobs and instead of sending them to market in half tonne bins, has been packaging them into 3 cobs per packet with the husk removed.

The scenario to calculate is:

What are the additional costs and additional income achievable from vertical integration / value adding of a portion of the sweet corn crop for the fresh market?

Scenario A:

Describes the business as it currently operates with bulk picking and despatch of sweet corn cobs in half tonne bins for the wholesale market.

Scenario B:

Describes the business with vertical integration. Approximately 20% of the total crop will be de-husked, have the ends of the cobs removed and packaged into 3 pack Styrofoam packets for a retailer. The balance of the crop will continue to be sold in bulk lots on the wholesale market.

What do you count?	Scenario A – Existing Production System	Scenario B – Vertically Integrate a portion of the crop
Depreciation	There is no additional depreciation.	The additional cost of shedding, cool room storage and processing equipment is estimated at \$80,000 (some existing areas will also be utilised). After 10 years we expect the new structures to be worth \$20,000, so the depreciation cost is \$6,000 per annum.
Cost of Capital	There are no additional capital costs.	The cost of capital or ‘opportunity cost’ relates to the \$80,000 initial investment. The business has a small overdraft facility throughout the year to help with cash flow so the interest rate adopted is 8%. Therefore, the capital cost is \$6,400 per annum.
Additional Variable Costs	There are no additional variable costs. The existing transport cost is \$12/bin freight.	The additional budgeted variable costs for the vertical integration opportunity include: <ul style="list-style-type: none"> • Packaging at 1.5c/cob • Labour at 1c/cob • Electricity at 0.2c/cob • Transport of 3c/cob. There will also be a transport saving for the cobs not sent as wholesale produce at \$12/bin.
Additional Overhead Costs	There are no additional overhead costs.	The additional overhead costs anticipated in this process include: <ul style="list-style-type: none"> • Rates at \$350 • Insurances at \$2,000 • Administration of \$8,000. The additional administration includes time for additional payroll and managing the processing operations.
Additional Prices Achieved	The prices achieved are in line with historical performance. 30 ha of corn with a yield of 1,200,000 cobs. Wholesale price of \$100 per half tonne bin of corn with approximately 1,220 cobs per bin.	There will be a reduction in wholesale income of 205 bins at \$100 per bin. The 205 bins that would have been sold at wholesale will now be value added and sold at 28c / cob, i.e. 250,000 cobs at 28c / cob.

How do you calculate it?

The following table outlines the assumptions used and the calculation of the additional cost or benefit to the business from the vertical integration opportunity.

ASSUMPTION	SCENARIO A	SCENARIO B	CALCULATION	SCENARIO A	SCENARIO B
Production Assumptions			Gross Income		
Area under corn (ha)	30	30	Wholesale product	\$98,400	\$77,900
Yield (cobs/ha)	40,000	40,000	Value added product	\$0.00	\$70,000
Total yield (cobs)	1,200,000	1,200,000	Total Gross Income	\$98,400	\$147,900
Fresh weight per corn cob (kg)	0.41	0.41	Additional Costs		
Cobs / half tonne bin (#)	1,220	1,220	Depreciation	\$0	\$6,000
Capital Costs			Interest / opportunity cost	\$0	\$6,400
New capital expenditure	\$0	\$80,000	Variable Costs	\$0	\$14,250
Salvage value	\$0	\$20,000	Overhead Costs	\$0	\$10,350
Expected life (years)	0	10	Total Additional Costs	\$0	\$37,000
Interest rate / opportunity cost	8.0%	8.0%	Costs Saved		
Additional Variable Costs			Wholesale freight	\$0	\$2,460
Packaging (\$/cob)	\$0	\$0.015	Total Cost Saved	\$0	\$2,4600
Labour (\$/cob)	\$0	\$0.010	Net Income		
Electricity (\$/cob)	\$0	\$0.002		\$98,400	\$113,360
Transport (\$/cob)	\$0	\$0.030			
Wholesale freight saving (\$/bin)	\$0	\$12			
Additional Overhead Costs					
Additional rates	\$0	\$350			
Additional insurances	\$0	\$2,000			
Additional administration	\$0	\$8,000			
Prices Achieved					
Total yield (cobs)	1,200,000	1,200,000	Is it more profitable? YES		
No. of units value added (cobs)	0	250,000	By how much? \$14,960		
No. of units wholesale (cobs)	1,200,000	950,000	Money at risk if market fails (depreciation, opportunity cost & overhaeads) \$22,750		
No. of units wholesale (bins)	984	779			
Wholesale price (\$/bin)	\$100	\$100			
Value added price (\$/cob)	\$0.28	\$0.28			

In this scenario, the grower has:

- Gross income of \$147,900
- Additional costs of \$37,000
- Costs saved of \$2,460.

Thus, the vertical integration opportunity has a net income (or "profit") of \$113,360 compared to the existing \$98,400. As a result, the vertical integration is supplying an additional \$14,960 value to the business.

One very important issue to consider with such an opportunity is, what happens if the new market fails, or is no longer available? In particular, how financially exposed

are you? This is calculated as the sum of the depreciation (\$6,000), interest / opportunity cost (\$6,400) and additional overhead costs (\$10,350) incurred as a result of investing in this new opportunity. Remember, that you will not have to expend the additional variable costs if you have no market to supply.

In this example, the financial exposure to market failure is \$22,750 annually. It is important to compare the likely additional revenue of \$14,960 against this financial exposure of \$22,750 to see how comfortable you are with making the investment and becoming more vertically integrated.



How sensitive is the result?

This sensitivity table describes the impact to additional income when the price per cob and number of units sold are changed. It describes a minimum requirement of around 200,000 units sold at 25c/cob, as the level where a financial advantage commences. It also shows the logical impact of increasing the number of units sold and the price per unit, i.e. the financial outcome improves!

ADDITIONAL INCOME		NUMBER OF UNITS VALUE ADDED (COBS)		
		200,000	250,000	300,000
PRICE (\$/COB)	0.25	\$1,418	\$7,460	\$13,502
	0.28	\$7,418	\$14,960	\$22,502
	0.30	\$11,418	\$19,960	\$28,502

What are the risks and how can they be managed?

What is the risk?	Why is this a risk?	How can this risk be managed?
It takes a while to "get it right"	One of the big risks with adopting a new system is that it takes you longer than you think to "get it right". New systems and machinery may look great, but it can be difficult to master and achieve the necessary efficiencies.	Make sure you have completed your research, talked to other people who run similar operations and have trialed the systems. It may also be valuable to employ a staff member that has previous experience in the operations that you are commencing.
Losing a market	If the initial investment is made and the opportunity to sell the packaged crop disappears, then there is a large capital risk. This scenario calculated that risk to be \$22,750 annually.	It is important to continue to develop markets and sales avenues for crops and products. Also, consider a longer-term supply agreement, if it is available, to lock in a profitable result.
Increased competition in the market place	Over time there is normally additional competition in market places. What can be a great idea and lucrative vertical integration opportunity normally diminishes over time.	Continue to invest in process improvements and market development. Additional efficiency gains and selling opportunities will enable further growth.



What else is important?

Unmeasurable benefits and costs

Every decision involves change (benefits and costs) in your business that can be measured and those that cannot be measured. The calculations presented demonstrate how to count the things that can be counted, but it is also important to consider those things that cannot be calculated.

This business case explains a changing business model with additional focus and exposure to the supply chain. This increased scope of business activities also requires effort from the business owner to manage this opportunity. It can create excitement or stress that needs to be considered when thinking about the business as a whole.

Quality

Produce quality is also an important factor in success. Normally, when times are difficult in the marketplace and there is oversupply, the high quality product will maintain price or supply quantity or both. In this situation, maintain a focus on quality control parameters to ensure that no second grade cobs end up in the packaged product, as this can damage your long-term credibility in the marketplace.

Cash Flow

The other significant consideration when looking to vertically integrate is that of cash flow management. Payment terms are normally short when dealing with the wholesale markets, however payment terms are often quite different as you move further along the supply chain.

The impact of this is that there is less cash coming in at harvest, additional costs associated with processing and packaging and a delay in payment. These impacts need to be carefully considered and modelled to ensure that there is not a cash flow deficit at any point in time.



Appendix – Detailed calculation

ASSUMPTION	EXISTING	NEW	CALCULATION	EXISTING	NEW
Production Assumptions			Interest / opportunity cost		
Area under corn (ha)	30	30	New capital expenditure	\$0	\$80,000
Yield (cobs/ha)	40,000	40,000	Multiplied by interest rate	8.0%	8.0%
Total yield (cobs)	1,200,000	1,200,000	Equals interest / opportunity cost	\$0	\$6,400
Fresh weight per corn cob (kg)	0.41	0.41	Additional Variable Costs		
Cobs / half tonne bin (#)	1,220	1,220	Packaging	\$0	\$0.015
Capital Costs			Plus labour	\$0	\$0.010
New capital expenditure	\$0	\$80,000	Plus electricity	\$0	\$0.002
Salvage value	\$0	\$20,000	Plus transport	\$0	\$0.030
Expected life (years)	0	10	Equals additional variable costs per cob	\$0	\$0.057
Interest rate / opportunity cost	8.0%	8.0%	Multiplied by no. of units value added	0	250,000
Additional Variable Costs			Equals additional variable costs	\$0	\$14,250
Packaging (\$/cob)	\$0	\$0.015	Additional Overhead Costs		
Labour (\$/cob)	\$0	\$0.010	Additional rates	\$0	\$350
Electricity (\$/cob)	\$0	\$0.002	Plus additional insurances	\$0	\$2,000
Transport (\$/cob)	\$0	\$0.030	Plus additional administration	\$0	\$8,000
Wholesale freight saving (\$/bin)	\$0	\$12	Equals additional overhead costs	\$0	\$10,350
Additional Overhead Costs			Total Additional Costs		
Additional rates	\$0	\$350	Depreciation	\$0	\$6,000
Additional insurances	\$0	\$2,000	Plus interest / opportunity cost	\$0	\$6,400
Additional administration	\$0	\$8,000	Plus additional variable costs	\$0	\$14,250
Prices Achieved			Plus additional overhead costs	\$0	\$10,350
Total yield (cobs)	1,200,000	1,200,000	Equals total additional costs	\$0	\$37,000
No. of units value added (cobs)	0	250,000	Costs Saved		
No. of units wholesale (cobs)	1,200,000	950,000	No. of units value added (cobs)	0	250,000
No. of units wholesale (bins)	984	779	Divided by cobs / half tonne bin	1,220	1,220
Wholesale price (\$/bin)	\$100	\$100	Equals no. Of bins saved	0	205
Value added price (\$/cob)	\$0.28	\$0.28	Multiplied by wholesale freight saving	\$0	\$12
			Equals costs saved	\$0	\$2,460
			Net Income		
CALCULATION			Total gross income		
EXISTING			\$98,400		
NEW			\$147,900		
Wholesale Income			Less total additional costs		
No. of units wholesale (bins)	984	779	\$0		
Multiplied by wholesale price	\$100	\$100	Plus costs saved		
Equals wholesale income	\$98,400	\$77,900	\$0		
Value Added Income			Equals Net Income		
No. of units value added (cobs)	0	250,000	\$98,400		
Multiplied by value added price	\$0.28	\$0.28	\$113,360		
Equals value added income	\$0	\$70,000	Is it more profitable?		
Total Gross Income			YES		
Wholesale income	\$98,400	\$77,900	by how much?		
Plus value added income	\$0	\$70,000	Net income of new system		
Equals Total Gross Income	\$98,400	\$147,900	\$113,360		
Depreciation			Less net income of existing system		
New capital expenditure	\$0	\$80,000	\$98,400		
Minus salvage value	\$0	\$20,000	Equals by how much?		
Equals amount to depreciate	\$0	\$60,000	\$14,960		
Divided by expected life	0	10	Money at risk if market fails		
Equals depreciation cost	\$0	\$6,000	Depreciation		
			\$0		
			Plus interest / opportunity cost		
			\$0		
			Plus additional overhead costs		
			\$0		
			\$10,350		
			Equals Net Income		
			\$0		
			\$22,750		



Disclaimer

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