

Financial Management and Planning

Assignment 2: Board Report

Module Code: ACPA 7002

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Capital Project Appraisal – Board Report

The Pudding Compartment Limited

Project appraisal for the Board of Directors on
a potential Capital Investment Project –
Accelerated Growth Project

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Introduction

The Pudding Compartment (TPC) has is a manufacturer of bespoke artisan bakery products that has made a vast range of different products – Steamed Puddings, Cheesecakes, Traybakes, Cream Cakes, Sweet Buns, Pastries, Traybakes, Cookies, Shortbreads, Biscuits, Muffins, and Cupcakes.

Despite some product rationalisation this has led to a proliferation of different SKUs which are inefficient to manufacture and require high stocks of materials. Many products are low margin when taking the true costs associated with the complexity of the products and formats into account.

Recently TPC has been successful at attracting a new type of customer who want significantly bigger quantities of products which need to be consistent in quality, dimensions, and weight. This presents a great opportunity to move the business onto new levels of sales, efficiency, and profitability. The business strategy has been updated to focus on high volume products using more mechanisation and automation for improved efficiency and margins. The businesses' ability to develop new bespoke products remains a unique selling point for these higher volume customers.

What problem does this project solve?

Artisan=inconsistent processes = inconsistent products (Quality, Dimensions, Textures, Bake colours, Product weights, manufacturing cycle times, and costings).

The outcomes are dependent on skill levels and inconsistent products present problems with downstream processes such as flow wrapping and causes increased reject rates. TPC currently flow wrap around 80% of the products that are made but the flow wrapping process output is only around 40-50% of its potential, and this is the bottleneck in the entire production flow.

When selling to bigger customers such as coffee shop chains or large retailers, product consistency is expected. The current low efficiencies and product inconsistencies result in products are not competitive, cannot be made in significant volumes, and are too inconsistent for the larger customers to consider. This project will fix these issues.

The required outcomes of this project are:

1. Increase capacity to support higher sales
2. Improve efficiencies and margins
3. Reduce product inconsistencies – especially dimensions and weights
4. To reduce waste
5. Improve the business's long term financial sustainability and profitability.

TPC will focus on tray products which make the best use of the resources available, require lower skill levels, and can be made efficiently in large volumes with the equipment included in this project.

Project Details

This is a capital expenditure project with investment in equipment to achieve the project objectives along with a change of layout to improve product flow. The project requires a total investment of £280K which can be completed in 2 phases – the first phase requiring £196,500 and the second phase requiring £83500. A successful application for 40% grant funding from the Food Business Investment Scheme would reduce the total funds required by TPC to £168K, however the financial appraisal for the project has been completed excluding any grant funding. The equipment will have a useful lifespan of at least 10 years. The details of the investment are below:

Melting Tanks	x 4	£19K
160Q Programmable Mixer & bowl lifter	x 2	£48K
Auto Press	x 1	£45K
Rack Ovens	x 2	£40K
Auto Cutter	x 1	£70K
Flow Wrapper	x 1	£30K
Services & Set Up		£12K
Commissioning & Training		£16K
Total Project Cost		£280K

Financial Rational

Without this project TPC could has the capacity to support sales of tray products up to £1.35M per annum based on a single 8-hour shift. However, the products would still be inconsistent so this will result in uncompetitive prices and variable products which will significantly hamper sales growth.

If this project is approved, then the following should be achievable:

Gross Margin increase from 63% to 75%

Capacity increase from £1.35M to £3.25M (at 100%)

Different Scenarios to consider:

Scenario 1: Convert existing sales to Tray products only, no investment:
63% x £1.35M = £850K Gross Margin/Year

Scenario 2: Project goes ahead, no sales increase (worse case scenario):
72% x £1.35M = £972K GM/Year.
Improvement of £122K in Gross Margin

Scenario 3: Project goes ahead, sales increased to £3.25M (best case scenario):
75% x £3.25M = £2.43M
Improvement of £1.58M/year at full sales capacity

The financial analysis has assumed a worst-case scenario of 5 years to achieve this sales increase.

An added benefit of the project is that the operational aspects of the business would be simplified and be less reliant on skilled labour, so additional shifts could also be added if required.

Financial Models

This project will require investment in capital but will also require a lot of time invested which needs to be considered. There are various models that can be used to assess the viability of the project, each model has advantages and disadvantages. Some models provide base level analysis and are useful for screening projects in the first instance such as Return on Investment and Pay Back period. They don't consider the time value of the resources but are useful to screen the project:

Annual ROI %	Payback Period	Year 1	Year 2	Year 3	Year 4	Year 5
Scenario 2	2.3 Years:	43%	43%	43%	43%	43%
Scenario 3	1.56 Years:	43%	176%	307%	440%	577%

The payback time in Scenario 2 is 2.3 years, so we will get all of the investment funds back in just under 28 months. This analysis overlooks profitability so it does have limitations, but it is a quick and simple method. For scenario 3 this reduces to less than 19 months. Return on Investment (ROI) expresses this as a %, and as the return from the project improves each year in Scenario 3 the ROI (per year) improves over the 5 years modelled above, so the peak return is 577% in year 5. The average ROI over the 5 years is around 308% which is a very good return. These 2 models suggest that it is worth considering this project.

The other financial models are more complex and do take into account other factors such as inflation, interest rates, time value of money etc. This means they adjust the future returns to take these factors into account and are a good way to validate the project:

Financial Validation:	NPV	IRR	PI
Scenario 2:	£128,963	33%	1.46
Scenario 3 (WACC 15%)	£2,276,352	132%	9.13

WACC (Weighted Average Cost of Capital) is a way to consider the factors mentioned above that affect the future value of money. 15% has been used which is quite high, this is because interest rates (Gallo, 2014) are rising and inflation is high. This effectively compounds over the 5 years of the project.

NPV (Net Present Value). This discounts future cash flow streams by considering the WACC. A positive number means the return on the project is favourable despite the high WACC. Scenario 3 has a very high NPV which confirms that the benefit of the project will be significantly higher if the sales growth is achieved. The numbers also prove that the project will be favourable even if sales are flat. NPV is not a ratio so it doesn't allow for direct comparisons between projects.

'By looking at all of the money you expect to make from the investment and translating those returns into today's dollars, you can decide whether the project is worthwhile' (Gallo, 2014).

PI Profitability Index. This has the advantage of taking profit into account. It compares the future values of the returns from the project against the original investment. Our project has a greater value than 1 for both scenarios which is favourable. Even in the worst-case scenarios the discounted future profits are worth 1.46 x the original investment. PI is 9.13 for scenario 3.

'The PI is helpful in ranking various projects because it lets investors quantify the value created per each investment unit' (Chen, 2022).

IRR (Internal Rate of Return)

'The internal rate of return (IRR) is a metric used in financial analysis to estimate the profitability of potential investments..... Generally speaking, the higher an internal rate of return, the more desirable an investment is to undertake' (Fernando, 2022).

If the IRRs are above 15% that is good news for the project as it higher than the 15% WACC. The IRR is 33% for scenario 2 so the return is more than double our WACC for the worst-case scenario – so this also points to the project being worthwhile, especially as the IRR for scenario 3 is very favourable at 132%.

Funding Options

There are several different ways that the funding can be raised for this project such as Equity, Director Loans, Bank Loans, Overdrafts, Asset Finance, Grant Funding, Cash reserves etc. As the project is mainly concerned with equipment purchases this makes it particularly suitable for asset financing which is relatively straight forward to obtain and has competitive interest rates as the loans are secured against the assets (equipment).

'This type of finance is used by organisations who have the need or the opportunity to grow their business but perhaps may not have the funds readily to hand or prefer to spread the cost over a longer term' (Woolley, 2022).

Suggested funding –	First Choice	Second Choice
	40% Grant Funding	80% Asset Finance/Hire Purchase
	(FBIS Welsh Government)	20% From company reserves
	60% Asset Finance/Hire Purchase	

Recommendations

It is recommended that TPC:

1. Goes ahead with this project in a staged implementation
2. Funds the project with grant funding and asset finance.
3. Implements phase 1 with existing product mix to make current production more efficient and consistent whilst adding extra future capacity
4. Lines up additional sales to start utilising additional new capacity. (Concentrate on Tray products for new sales)
5. Implements Phase 2. Phase out other products, replace with further sales of tray-based products to reach full potential (Scenario 3)

Steve West

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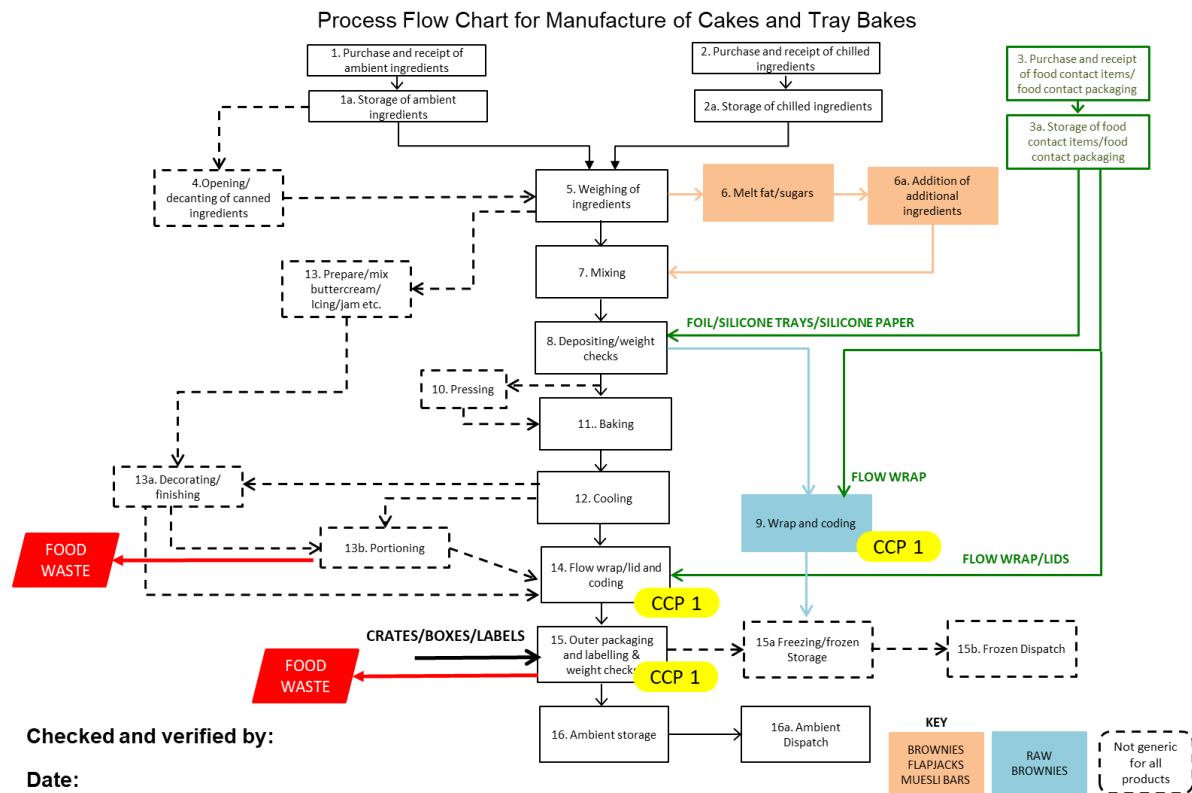
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Appendices

Appendix 1 - Manufacturing Process



Appendix 2 – Timeline

Staged implementation:

• Prepare services	Month 1
• Re-layout existing equipment	Month 2
• 2 x Melting tanks	Month 3
• 1 x Rack Oven	Month 3
• 1 X 160Q Programmable Mixer & bowl lifter	Month 3
• Auto Press	Month 4
• Cutter	Month 5
• Training	
• SUB TOTAL INVESTMENT	£196,500
• 2 x Melting tanks	Month 13
• 1 x Rack Oven	Month 14
• 1 X 160Q Programmable Mixer & bowl lifter	Month 14
• Flow Wrapper	Month 15
• SUB TOTAL INVESTMENT	£83,500

Appendix 3 – Calculations

Investment & Recovery									
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5			
Machinery	£252,000								
Services & Set Up	£16,000	£0	£0	£0	£0	£0			
Training / Trials Etc	£12,000	£0	£0	£0	£0	£0			
	£280,000	£0	£0	£0	£0	£0			
Current Volume - Scenario 2									
0	1	2	3	4	5				
-£280,000	£122,000	£122,000	£122,000	£122,000	£122,000		PB	2.30	years
15%							NPV	£128,963	
-£280,000							PI	1.46	
IRR	33.17%								
Increased Volume - Scenario 3									
0	1	2	3	4	5				
Sales	£1,350,000	£1,825,000	£2,300,000	£2,775,000	£3,250,000		MANUALLY CALC		
-£280,000	£122,000	£495,000	£860,000	£1,234,500	£1,618,500		PB	1.56	years
15%							NPV	£2,276,352	
-£280,000							PI	9.13	
IRR	132.04%								

IND DOUGH PRODUCTS E.G. SCONES							
CURRENT PROCESSES & EQUIPMENT	PROCESS STEPS					£0.30	Price per portion of product
Step:	5	7	8	11	14	40	grams per portion
Process:	Weighing	Mixing	Depositing	Baking	Flow Wrap	£90.00	Ingredients £ per 60kg mix
Equipment Cycle Time (Mins):	Manual	20	50	24	25	0.064	£ per product
Labour Time mins / mix	15	10	150	6	187.5	369	labour mins per mix
Maximum number of mixes per 7 hrs			8.4	17.5	16.8	2476	labour mins per shift
Uptime %		100.0%	100.0%	100.0%	40.0%	41	labour hrs per shift
Max Mixes / shift for this process			8.4	17.5	6.7	£12.50	Hourly rate
Yield %:	100.0%	99.5%	98.0%	99.0%	97.5%	£516	total labour £ per shift
Cum Yield %	100.0%	99.5%	97.5%	96.5%	94.1%	£0.054	Labour £ / product
Actual Yield (Mixes per 7 hrs)					6.3		
Output (Kg per shift) - 60 Kg per mix					379		
Output - Products per shift (40g per product)					9487	60.63%	

TRAY PRODUCTS E.G. FLAPJACKS												
CURRENT PROCESSES & EQUIPMENT		PROCESS STEPS								£0.60	Price per portion of product	
Step:	5	6a	6b	7	8	10	11	13b	14	60	grams per portion	
Process:	Weighing	Prep Margarine	Melt Fat/Sugar	Mixing	Depositing	Pressing	Baking	Portioning	Flow Wrap	£96.00	Ingredients £ per 60kg mix	
Equipment Cycle Time (Mins):	Manual	Manual	40	40	Manual	Manual	25	38	20	£0.120	£ per product	
Labour Time mins / mix	20	20	20	20	60	60	6.25	40.0	120.0	366	labour mins per mix	
Maximum number of mixes per 7 hrs			10.5	10.5			16.8	11.1	21.0	4048	labour mins per shift	
Uptime %			100.0%	95.0%			100.0%	95.0%	50.0%	67	labour hrs per shift	
Max Mixes / shift for this process			10.5	10.0			16.8	10.5	10.5	£12.50	Hourly rate	
Yield %:	100.0%	99.9%	99.0%	99.5%	99.0%	98.0%	98.0%	96.0%	94.0%	£843	total labour £ per shift	
Cum Yield %	100.0%	99.9%	98.9%	98.4%	97.4%	95.5%	93.6%	89.8%	84.4%	£0.095	Labour £ / product	
Actual Yield (Mixes per 7 hrs)									8.9			
Output (Kg per shift) - 60 Kg per mix									532	£0.39		
Output - Products per shift (62g per product)									8865	64.20%	GM%	

TRAY PRODUCTS E.G. FLAPJACKS											
CURRENT PROCESSES & EQUIPMENT		PROCESS STEPS								£0.60	Price per portion of product
Step:	5 6a		6b	7		8	10		11 13b	14	
Equipment	Weighing	Prep Margarine	Melting Tanks x 4	160Q programmable Mixers	Depositing	Auto Press	Rack Oven x 2	Semi Auto Cutter	2 x flow wrappers	£96.00	Ingredients £ per mix
Equipment Cycle Time (Mins):	Manual	Manual	60	15	Manual	12	32	16	28.8	£0.103	£ per product
Labour Time mins / mix	20	20	6	1.5	60	3	4	4	86.4	205	labour mins per mix
Maximum number of mixes per 7 hrs			28.0	28.0		35.0	26.3	26.3	14.6	4781.0	labour mins per shift
Uptime %			100.0%	100.0%		100.0%	100.0%	99.5%	80.0%	79.7	labour hrs per shift
Max Mixes / shift for this process			28.0	28.0		35.0	26.3	26.1	23.3	£12.50	Hourly rate
Yield %:	100.0%	99.9%	99.9%	99.8%	100.0%	99.9%	98.0%	99.5%	99.0%	£996.04	total labour £ per shift
Cum Yield %	100.0%	99.9%	99.8%	99.6%	99.6%	99.5%	97.5%	97.0%	96.0%	£0.046	Labour £ / product
Actual Yield (Mixes per 7 hrs)									22.4		
Output (Kg per shift) - 60 Kg per mix									1344	£0.45	
Output - Products per shift (62g per product)									21679	75.1%	GM %