SHELFY BY VITESY

Finance & Pricing Strategy Group Assignment

MSC STRATEGIC MARKETING 2023 - 2024

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Overview and Existing Pricing Strategy

Shelfy is an intelligent purifier designed to address food waste issues and to prolong freshness of produce by eliminating bacteria and odours within refrigerators. It contributes to the prolonged freshness up to twice as long, enhancing the flavour and aroma of food which in turn minimises food wastage, allowing for cost savings (ChatGPT, 2023 - Exhibit 16.) Shelfy caters to a diverse audience, including families, students, and individuals committed to sustainability, all seeking to extend the shelf life of fruits and vegetables. This is appealing to families dealing with substantial food quantities, students aiming to economise, and sustainability-conscious consumers minimising food waste.

Currently Shelfy follows a value-based pricing model wherein the product's price is set based on the value it delivers to consumers. Shelfy utilises various psychological pricing techniques such as price anchoring and rounding off technique to place the product as a premium in customer's mind, influencing consumers' perceptions of value. Currently, Shelfy is providing aggressive discounts in the form of "Early Bird offers" to attract customers and to capture maximum revenue from early adopters. It is also incorporating bundle offers to maximise the profit.

Strengths

Shelfy demonstrates healthy growth in unit sales volume at a CAGR of +30%, indicating strong market demand. Positive gross and net profit margins suggest effective cost management and pricing strategies and value-based pricing often allows for healthy profit margins.

Weaknesses

If consumers in the target market are highly price-sensitive, a value-based pricing strategy might limit Shelfy's market share, posing a barrier to entry for some budget-conscious consumers. Additionally, the CAGR for rent is relatively high at 9%, which could impact fixed costs significantly. Depreciation is a fixed cost that should be monitored to ensure it aligns with the business's strategic needs.

Profitability Analysis

We estimated a 30% CAGR for sales annually which is typical for startup businesses, and as it scales it will stabilise. Therefore, we generated the forecast of potential unit sales until 2027 based on the initial sales of £12k in 2023 (Exhibit 5). Furthermore, we found the Net Profit Margin and Gross Profit Margin if the price of the product holds constant (Exhibit 12.)

We identified three fixed costs: Rent, salary and depreciation (Exhibit 13.) Additionally, we determined four variable costs: Labour, material, electricity, and shipping. The total variable production cost per unit for Shelfy is £40.40. Moreover, we assumed that Vitesy produces the exact same amount of goods as the number of consumption, allowing us to estimate the cost of electricity per unit at £1.60 (Exhibit 14.) Shelfy's manufacturing cost to procure the raw materials was included in the overall shipping cost, which is an expense for the company rather than for the customer.

Impact of Fixed & Variable Cost on Profitability
In general, both fixed and variable costs directly impact profitability. If fixed costs increase, operating funds will decrease, requiring higher revenue for profitability. If variable costs increase, unit profit margins will decrease, causing inefficiencies in the production process. The differences between the impact of fixed and variable costs are: 1. The variable cost is more flexible for the business to maintain profitability and competitiveness; 2. A high fixed cost results in higher risk if the business faces an unexpected significant decrease in sales; 3. A high variable cost is a good sign of a business's ability to scale up because the cost is more directly related to the total unit sales.

Proposed Pricing Strategy Changes
Shelfy is built for early tech adopters willing to pay a premium and therefore requires specific pricing considerations. To determine the best strategy for a proposed pricing change, we focused on the assumed target customer. Thus, we propose price skimming or price penetration. Price skimming is when the current launch price is high and gradually decreases to capture the remainder of value below the demand curve or in response to new competitors. In contrast, price penetration is when the product is launched at a low price initially to build a customer base. Since Shelfy does not have additional product offerings, cannibalisation and alienation do not apply. Additionally, we introduce the psychological effects of our proposed pricing strategy and identify two possibilities: framing and left-digit effect. Framing refers to offering discounts to make the true price appear lower, whereas left-digit pricing refers to setting the leftmost digit of the price just below the next whole number.

In terms of competition, there are similar products to Shelfy that are designed to save produce spoiling, ie. vacuum seal bags, fridge deodorisers, and ethylene gas absorbing options (Exhibit 15.) These are cheaper alternatives, which could cause pricing pressures, forcing Shelfy to lower its prices. Shelfy needs to consider the specific pricing strategies of its competitors and offer pricing alternatives to differentiate themselves in the market. Therefore, we calculated the EVC at £79.2, which is considerably lower than Shelfy's current price at £129 (Exhibit 10.) Although EVC is not the best price indicator, it can be a good guideline. Thus, we note these variables in the impact assessment.

Impact Assessment

Price Skimming
At its current pricing of £129, price skimming decreases the price to £99.99 (Exhibit 1.) Given that innovators and early adopters tend to be price insensitive, the elasticity is estimated to be inelastic at 0.5 for 2024. Furthermore, it is assumed to be elastic at 2 for the early majority in 2025 and 2.2 for late majority in 2026 and 2027. We presumed these elasticities because our target market is likely to be price sensitive. An incremental break-even analysis was performed, and the actual increase in sales volume surpassed the break-even increases (Exhibit 2.)

Shelfy can adopt multiple psychological pricing techniques since prices are already set to utilise the left-digit effect. Shelfy may also refine its price-framing, by keeping the price constant but increasing discounts to give consumers a higher sense of gain. Therefore, the combined effect of these techniques is inferred to yield an additional 5% increase for innovators and early adopters, and 20% for the majority.

The relevant changes to sales volume were calculated as seen in Exhibit 3. Additionally, we conducted a risk sensitivity analysis and although the risk is low (Exhibit 4,) the resulting net income and NPV decreased from 2023 compared to the original forecast, therefore this strategy should be rejected.

The sales increase can only be achieved if Shelfy delivers a good user experience and strategically fits into the technology adoption curve. Additionally, the forecasts do not account for the potential influence of competitors, as predicting the timing and quantity of competing products entering the market in the future, along with their quality and marketing strategies, is inherently challenging. The gradual decreases in price could also make Shelfy suffer from the reference point effect. However, as Shelfy is able to sustain more than 5 years, consumers are unlikely to repeat purchases.

Price Penetration
In this strategy, the price will be lowered by 22.5% for 2024, priced at £99.99 and increase by £7 every year. To analyse the viability of this price change, we found the break-even volume of sales to match the expected gross profit (Exhibit 6). The increased volume sold at a lower price will result in higher revenue and COGS, meaning the gross profit and all P&L line items remain the same as for the forecasted original business plan.

Exhibit 5 demonstrates the break-even scenario for how many units in total need to be sold. We incorporated calculations for increased and decreased sales by 10% and factors related to price elasticity and price framing. The best case scenario will have sales increasing by 10% each year. This is a probable outcome if the price decreases, sales will increase and Shelfy will gain a larger customer base (Exhibit 7). In the second scenario, we included two new variables: the effect of price elasticity and framing (Exhibit 8). Since the price will decrease significantly from year 1 to 2, the elasticity is assumed at 2, thus boosting sales. However, when the price slowly increases, assuming similar elasticity, the positive impact will reduce. Similarly, price framing will have a larger effect at the beginning then diminish over time increasing sales by 20% in 2024 to 5% in 2027. Finally, we analysed the impact if sales decrease by 10% each year, which could happen due to unexpected events such as economic downturn or black swan events (Exhibit 9.)

NPV and IRR Analysis
We conclude that price penetration is the best proposed pricing strategy change for Shelfy, thus we conducted NPV analysis to determine the viability of the new pricing project. In this case, a discount rate of 11.33% was chosen (Damodaran, 2023). An initial cost of £80,000 was estimated to employ two full-time employees to implement the pricing strategy. Exhibit

11 demonstrates the changes from 2024 onward once the new pricing strategy is implemented as well as the subsequent changes to NPV based on the different scenarios.

Based on the NPV calculations, this is a profitable project to invest in because it yields high returns (Fernando, 2023). To minimise negative impact, Shelfy can try to reduce the implementation costs. Additionally, since Shelfy is already a profitable business, the discount rate and riskiness of the project may be lower. Furthermore, the NPV may yield different results if the analysis were conducted over a longer period of time. The IRR is estimated at 143.8% for the increased sales volume which is high and the subsequent IRR sensitivity depending on the assumed 10% expected return yields positive returns. Exhibit 11 shows the impact of the expected return from 5-15% and the sensitivity of NPV.

The customer perception of value and quality is difficult to measure because the comparable products are much cheaper. Therefore, consumers may assume that Shelfy is a premium product and expect higher quality. Thus, lowering the price to an introductory offering will remove a purchase barrier for the consumer and allow for social proof and brand awareness (Kassabov, 2017.) Applying price reductions can have a positive impact initially, but the effects can wear off once the promotion is over, which Shelfy should keep in mind when increasing the price over time (Williams, 2023.)

Recommendations

As per the impact assessment of the proposed pricing strategy, we recommend that price penetration will be a more profitable approach for Shelfy because it leads to higher sales volume and profits over time. To further boost sales, Shelfy can start selling through retailers instead of crowdfunding websites which will increase the trustworthiness of the product. Additionally, the introduction of product guarantees will lower the perception of risk. Similarly, Shelfy should address delays in shipping to create a positive brand image (INDIEGOGO, 2023.) Finally, Shelfy can improve social proof by encouraging testimonials and reviews, and increase advertising and marketing spend to gain larger reach.

References

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Appendix

Exhibit 1: Price Skimming

	2023	2024	2025	2026	2027
Average selling price - per unit	GBP 129.00	GBP 123.99	GBP 115.99	GBP 107.99	GBP 99.99

Exhibit 2: Price Skimming Incremental Break-even Analysis

	2024	2025	2026	2027
Breakeven Quantity Change	959.4578835	2277.3363	3463.179963	5436.751857
Actual Quantity Change	4,221.0	9,586.7	13,120.8	17,480.9
	Accept	Accept	Accept	Accept

Exhibit 3: Price Skimming NPV

	2022	2023	2024	2025	2026	2027
1 Business Plan						
Revenue	-	1,548,000	2,011,240	2,921,403	3,606,957	4,384,049
COGS	-	(485,160)	(663,491)	(907,507)	(1,241,448)	(1,698,515)
Gross Profit	**-**	**1,062,840**	**1,347,749**	**2,013,896**	**2,365,509**	**2,685,534**
SG&A	(1,000,000.0)	(90,000.0)	(97,700.0)	(106,061.0)	(115,139.9)	(124,998.6)
EBITDA	**(1,000,000)**	**972,840**	**1,250,049**	**1,907,835**	**2,250,369**	**2,560,535**
D&A	-	(10,000.0)	(10,000.0)	(10,000.0)	(10,000.0)	(10,000.0)
PBT	**(1,000,000)**	**962,840**	**1,240,049**	**1,897,835**	**2,240,369**	**2,550,535**
Tax	-	(240,710.0)	(310,012.3)	(474,458.8)	(560,092.3)	(637,633.8)
Net Income	**(1,000,000)**	**722,130**	**930,037**	**1,423,376**	**1,680,277**	**1,912,901**
Overall Income						**5,668,721**
NPV 2023						**4,642,816**

Overall Income	5,668,721	NPV 2023	4,642,816
Change	(1,110,284)	Change	(1,881,293)
%Change	-16.38%	% Change	-28.84%

Exhibit 4: Price Skimming Risk Sensitivity Analysis

Sensitivity to PED		
-2&-2.2	-1.8&-2	
5,668,721	5,569,390	-1.75%

Sensitivity to Psychology Pricing		
10%	9%	
5,668,721	5,594,319	-1.31%

Sensitivity to Price		
Decrease by 8 p	Decrease by 7 per year	
5,668,721	5,488,149	-3.19%

Exhibit 5: Price Penetration Changes to Sales Volume

	2023	2024	2025	2026	2027
Unit Sales Volume - Old Price	12,000.0	15,600.0	20,280.0	26,364.0	34,273.2
Unit Sales Volume - New price Incremental BE	12,000.0	23,476.2	27,017.4	31,342.1	36,580.1
Unit Sales Volume - New price 10% Yearly Sales Increase	12,000.0	25,823.8	29,719.2	34,476.3	40,238.1
Unit Sales Volume - New price - Elasticity and Price Framing	12,000.0	27,139.6	27,053.9	33,726.8	41,447.4
Unit Sales Volume - New price 10% Yearly Sales Decrease	12,000.0	21,128.6	24,315.7	28,207.9	32,922.1

Exhibit 6: Price Penetration Break-even and Volume Implications

	2023	2024	2025	2026	2027
8 Break-even analysis					
8.1 Customer movement - Pricing					
Price change: 0 = No ; 1 = Yes	-	1	1	1	1
New Price Assumption	129.00	99.99	107.99	115.99	123.99
Old price	129.0	129.0	129.0	129.0	129.0
New Price	-	100.0	108.0	116.0	124.0
Original volume	12,000.0	15,600.0	20,280.0	26,364.0	34,273.2
(+) Break-even effect	-	7,876.2	6,737.4	4,978.1	2,306.9
Break-even volume	**12,000.0**	**23,476.2**	**27,017.4**	**31,342.1**	**36,580.1**

Exhibit 7: Price Penetration - Increased Sales by 10%

	2023	2024	2025	2026	2027
3 Business Plan - New Price 10% Yearly Sales Increase					
Revenue	1,548,000	2,582,126	3,209,374	3,998,904	4,989,127
COGS	(485,160)	(1,098,327)	(1,329,900)	(1,623,445)	(1,994,127)
Gross Profit	**1,062,840**	**1,483,799**	**1,879,474**	**2,375,459**	**2,995,000**
SG&A	(90,000.0)	(97,700.0)	(106,061.0)	(115,139.9)	(124,998.6)
EBITDA	**972,840**	**1,386,099**	**1,773,413**	**2,260,319**	**2,870,001**
D&A	(10,000.0)	(10,000.0)	(10,000.0)	(10,000.0)	(10,000.0)
PBT	**962,840**	**1,376,099**	**1,763,413**	**2,250,319**	**2,860,001**
Tax	(240,710.0)	(344,024.9)	(440,853.3)	(562,579.8)	(715,000.4)
Net Income	**722,130**	**1,032,075**	**1,322,560**	**1,687,739**	**2,145,001**

Exhibit 8: Price Penetration - Elasticity and Price Framing

4 Business Plan - New Price with Elasticity and Price Framing	2023	2024	2025	2026	2027
Revenue	1,548,000	2,713,693	2,921,550	3,911,975	5,139,064
COGS	(485,160)	(1,154,290)	(1,210,631)	(1,588,154)	(2,054,056)
Gross Profit	**1,062,840**	**1,559,403**	**1,710,919**	**2,323,821**	**3,085,008**
SG&A	(90,000.0)	(97,700.0)	(106,061.0)	(115,139.9)	(124,998.6)
EBITDA	**972,840**	**1,461,703**	**1,604,858**	**2,208,681**	**2,960,010**
D&A	(10,000.0)	(10,000.0)	(10,000.0)	(10,000.0)	(10,000.0)
PBT	**962,840**	**1,451,703**	**1,594,858**	**2,198,681**	**2,950,010**
Tax	(240,710.0)	(362,925.8)	(398,714.4)	(549,670.2)	(737,502.4)
Net Income	**722,130**	**1,088,778**	**1,196,143**	**1,649,011**	**2,212,507**

Exhibit 9: Price Penetration - Reduced Sales by 10%

5 Business Plan - New Price 10% Yearly Sales Decrease	2023	2024	2025	2026	2027
Revenue	1,548,000	2,112,649	2,625,851	3,271,831	4,082,013
COGS	(485,160)	(898,631)	(1,088,100)	(1,328,273)	(1,631,558)
Gross Profit	**1,062,840**	**1,214,018**	**1,537,752**	**1,943,557**	**2,450,455**
SG&A	(90,000.0)	(97,700.0)	(106,061.0)	(115,139.9)	(124,998.6)
EBITDA	**972,840**	**1,116,318**	**1,431,691**	**1,828,418**	**2,325,456**
D&A	(10,000.0)	(10,000.0)	(10,000.0)	(10,000.0)	(10,000.0)
PBT	**962,840**	**1,106,318**	**1,421,691**	**1,818,418**	**2,315,456**
Tax	(240,710.0)	(276,579.4)	(355,422.6)	(454,604.4)	(578,864.0)
Net Income	**722,130**	**829,738**	**1,066,268**	**1,363,813**	**1,736,592**

Exhibit 10: EVC Analysis vs. Fridge Friend (assumed percentages)

10 EVC analysis			
WTP compared to Fridge Friend	£ 48.00		
Re-chargeable (vs. Disposable batteries)	20.0%	£	9.60
No need to change filters	20.0%	£	9.60
Longer device battery life	15.0%	£	7.20
Connect to Alexa or Google home	10.0%	£	4.80
Total		£	79.20

Exhibit 11: NPV, IRR and Sensitivity Analysis

	2023	2024	2025	2026	2027
9 NPV analysis					
9.1 NPV Base, BE, Increased and Reduced					
Discount rate	11.3%				
Pricing strategy cost	(80,000.0)	*2 full-time employees working on the project for 1 year*			
Year	-	1.0	2.0	3.0	4.0
Factor	1.0	0.9	0.8	0.7	0.7
New Price Incremental Break-even Volume	(80,000.0)	-	-	-	-
New Price 10% Yearly Sales Increase	(80,000.0)	101,168	128,146	161,963	204,205
New Price with Elasticity and Price Framing	(80,000.0)	157,871	1,729	123,234	271,711
New Price 10% Yearly Sales Decrease	(80,000.0)	(101,168)	(128,146)	(161,963)	(204,205)
NPV - New Price Incremental Break-even Volume	(80,000.0)				
NPV - New Price 10% Yearly Sales Increase	364,566.9				
NPV - New Price with Elasticity and Price Framing	329,380.4				
NPV - New Price 10% Yearly Sales Decrease	(524,566.9)				
IRR - New (Increased)	143.8%				
IRR - New (Computed sales)	146.3%				
			Volume above break-even		
	5.0%	**7.5%**	**10.0%**	**12.5%**	**15.0%**
IRR sensitivity - New (Increased) #	70.6%	108.5%	143.8%	177.8%	211.0%
NPV sensitivity	**10.30%**		**11.30%**	**12.30%**	
Break-even	(80,000.00)	-	(80,000.00)	(80,000.00)	-
Increased	375,379.00	3.0%	364,566.90	354,147.70	-2.9%
Computed	339,641.70	3.1%	329,380.40	319,514.60	-3.0%
Reduced	(535,379.00)	2.1%	(524,566.90)	(514,147.70)	-2.0%

Exhibit 12: Net Profit Margin and Gross Profit Margin

Average Selling Price per Unit	Revenue	Gross Profit	Net Profit	Net Profit Margin	Gross profit margin
129.0	1,548,000	1,066,800	966,800	62%	69%
129.0	2,012,400	1,354,314	1,246,614	62%	67%
129.0	2,616,120	1,715,991	1,599,930	61%	66%
129.0	3,400,956	2,169,580	2,044,440	60%	64%
129.0	4,421,243	2,736,475	2,601,476	59%	62%

Exhibit 13: Fixed Cost Calculations

Fixed Cost		
Rent CAGR=9%	**Salaries CAGR8%**	**Depreciation**
50,000	40,000	10,000
54,500	43,200	10,000
59,405	46,656	10,000
64,751	50,388	10,000
70,579	54,420	10,000

Exhibit 14: Variable Cost Calculations

Variable Cost			
Labour CAGR=5%	Electricity CAGR=5%	Shipping CAGR=3%	Material CAGR= 6%
0.5	1.6	10.0	28.0
0.5	1.7	10.3	29.7
0.6	1.8	10.6	31.5
0.6	1.9	10.9	33.3
0.6	1.9	11.3	35.3

Exhibit 15: Shelfy Competitors

Shelfy Competitors	Link	Price	Specifications	Pricing Strategy
Blueapple	Blueapple - Amazon	£19 / 2 units	1. Keeps produce fresh for up to three months; 2. Refillable packets; 3. Produce tastes better	Penetration pricing
Fridge Deodorizers	Fridge Friend	£48 / unit	1. Keeps produce fresh, lasting 169% longer; 2. Need three or more Fridge Friends if more than two people	Value-based pricing
Fridge Purifier	GreenTech Environmental pureAir Fridge	£128 / unit	1. Keeps produce fresh three times longer; 2. Uses ionoisation and activated oxygen (ozone) technologies; 3. Rechargeable battery; 4. Purifies up to 24 days	Value-based pricing
Vacuum Seal Bags & Containers	Zwilling Vacuum Seal Starter Pack	£135.85 / unit	1. Keeps food freshers for up to 5 times longer; 2. Heat resistant glass; 3. Microwave, freezer and dishwasher safe; 4. Pump is rechargeable via USB; 5. Bags save space	Value-based pricing

Exhibit 16: ChatGPT Citation

ChatGPT prompt: *Paraphrase and edit the given text to make it professional [..]*
Answer: *Shelfy is an intelligent purifier designed to address food waste issues and to prolong freshness of produce by eliminating bacteria and odours within refrigerators. [..]*