

Percent and Percentage Change in Calculating Sales Returns and Markups

Ted Mitchell

- You buy apples for \$2 each and you sell them for a price of \$5 each which earns you a profit on each apple of \$3. You sell 75 apples

		Multiply times the quantity sold, Q = 75	
Selling Price, or Revenue per apple, P	\$5		
Cost per Apple, V	\$2		
Profit per apple: dollar markup, (P-V)	\$3		

- You buy apples for \$2 each and you sell them for a price of \$5 each which earns you a profit on each apple of \$3. You sell 75 apples

		Multiply times the quantity sold, Q = 75	
Selling Price, or Revenue per apple, P	\$5	\$5 x 75 = \$375	
Cost per Apple, V	\$2	\$2 x 75 = \$150	
Profit per apple: dollar markup, (P-V)	\$3	\$3 x 75 = \$225	

- You buy apples for \$2 each and you sell them for a price of \$5 each which earns you a profit on each apple of \$3. You sell 75 apples

		Multiply times the quantity sold, Q = 75	All Three Vary with the Quantity Sold All three are Identities:
Selling Price, or Revenue per apple, P	\$5	\$5 x 75 = \$375	\$375, Sales Revenue, R
Cost per Apple, V	\$2	\$2 x 75 = \$150	\$150, Cost of Goods Sold: COGS Called the Total Variable Cost
Profit per apple: dollar markup, (P-V)	\$3	\$3 x 75 = \$225	\$225, Gross Profit, G

Identities Have three parts

- Revenue, R = Selling Price, P x Quantity sold, Q
- Cost Of Goods Sold = Direct Cost per Unit x Quantity
- Total Variable Cost =
Variable cost per unit, V x Quantity sold, Q
- Gross Profit, G = Profit per Unit x Quantity
- If you know 2 of the 3 values then you can calculate the third

There are **Four** basic measures

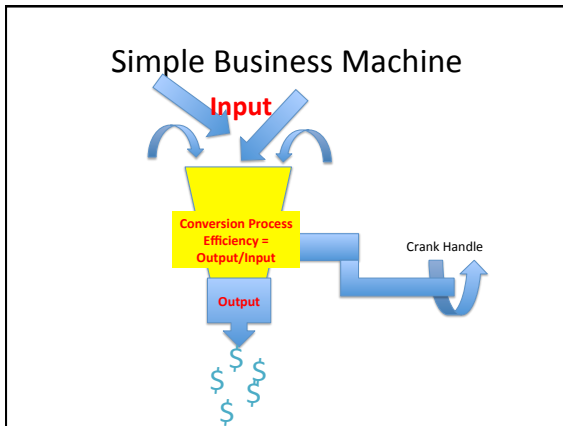
- of return and efficiency that need to be learned
- 1) The rate of sales revenue per unit being generated from the cost of the product
- 2) The rate of profit per product being generated from the cost of the product
- 3) The rate at which the cost of the product is reducing the revenue from the product
- 4) The rate of profit per product being generated from the revenue (selling price) per product

- You buy apples for \$2 each and you sell them for a price of \$5 each which earns you a profit on each apple of \$3.

		As a percent of Cost, V = \$2	
Selling Price, P	\$5	$\$5/\$2 = 250\%$	#1 My selling price is 250% of my cost for an apple
Cost per Apple, V	\$2	$\$2/\$2 = 100\%$	
Profit per apple: dollar markup (P-V)	\$3	$\$3/\$2 = 150\%$	#2 my dollar markup is 150% on my cost for an apple

- You buy apples for \$2 each and you sell them for a price of \$5 each which earns you a profit on each apple of \$3.

		As a percent of Price, P = \$5	
Selling Price, P	\$5	$\$5/\$5 = 100\%$	
Cost per Apple, V	\$2	$\$2/\$5 = 40\%$	#3 My cost is 40% of my selling price
Profit per apple: dollar markup, (P-V)	\$3	$\$3/\$5 = 60\%$	#4 My dollar markup is 60% on my price



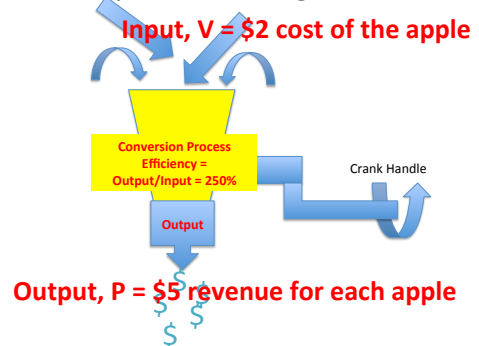
Explore 4 Basic Machines

- For Understanding the four rates or ratios identified earlier

- Have a simple machine that converts cost per apple, V = \$2, into a revenue per apple, P = \$5

		As a percent of Cost, V	
Selling Price, P	\$5	$\$5/\$2 = 250\%$	#1 My selling price is 250% of my cost for an apple
Cost per Apple, V	\$2	$\$2/\$2 = 100\%$	
Profit per apple: dollar markup (P-V)	\$3	$\$3/\$2 = 150\%$	My dollar markup is 150% on my cost for an apple

#1 Simple Marketing Machine



#1 Simple Rate as % of Price

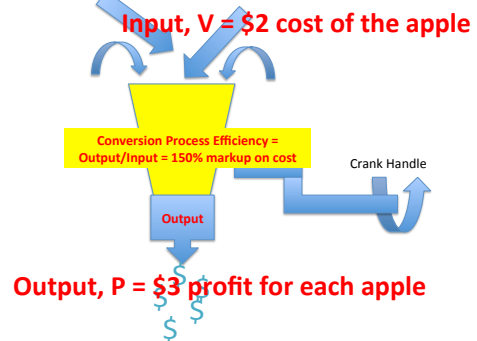
- You have a marketing machine that transforms the cost of the product, $V = \$2$ into a revenue (price) of \$5 for an apple
- Output, $P = (\text{conversion rate, \%V}) \times \text{Input cost, } V$
- $\$5 = (\text{conversion rate, \%V}) \times \2
- Conversion rate, $\%V = \$5/\$2 = 250\%$
- You get a 250% sales return on your investment in inventory

- Build Machine #2

- Have a simple machine that converts the cost per apple, $V = \$2$, into a dollar profit per apple, $(P-V) = \$3$

		As a percent of cost	
Selling Price, P	\$5	$\$5/\$2 = 250\%$	My selling price is 250% of my cost for an apple
Cost per Apple, V	\$2	$\$2/\$2 = 100\%$	
Profit per apple: dollar markup (P-V)	\$3	$\$3/\$2 = 150\%$	#2 My dollar markup is 150% on my cost for an apple

#2 Simple Marketing Machine



#2 Rate is Percent Change, $\% \Delta$, on Cost

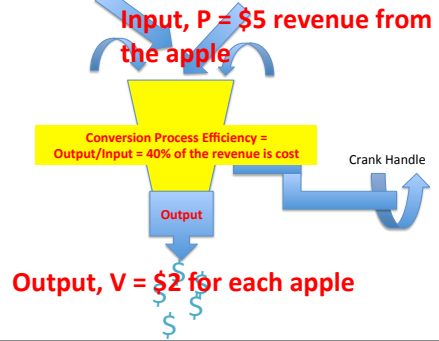
- You have a marketing machine that transforms the cost of the product, $V = \$2$ into a dollar profit $(P-V) = \$3$ from each apple
- Output, $(P-V) = (\text{conversion rate, } \% \Delta V) \times \text{Input cost, } V$
- $(\$5 - \$2) = (\text{conversion rate, } \% \Delta V) \times \2
- Conversion rate, $\% \Delta V = (P-V)/V$
- Conversion rate, $\% \Delta V = \$3/\$2 = 150\%$
- Your markup on cost is 150%

- Build Simple #3

- Have a simple accounting machine that converts the revenue per apple, $P = \$5$ into the cost per apple, $V = \$2$

		As a percent of price	
Selling Price, P	\$5	$\$5/\$5 = 100\%$	
Cost per Apple, V	\$2	$\$2/\$5 = 40\%$	#3 My cost is 40% of my \$5 selling price
Profit per apple: dollar markup, (P-V)	\$3	$\$3/\$5 = 60\%$	My dollar markup is 60% on my price

#3 Simple Accounting Machine



#3 Simple % of price Machine

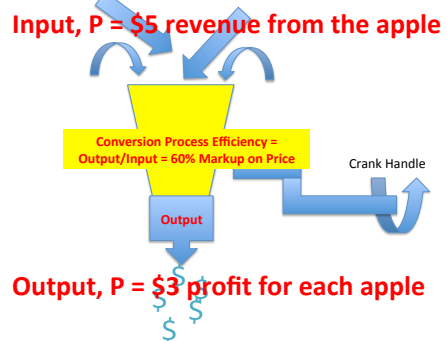
- You have an accounting machine that transforms the selling price of the product, $P = \$5$ into a cost of $V = \$2$ for each unit
- Output, $V = (\text{conversion rate, \%P}) \times \text{Input selling, P}$
- $\$2 = (\text{conversion rate, \%P}) \times \5
- Conversion rate, $\%P = \$2/\$5 = 40\%$
- Your inventory costs you 40% of the selling price

- Build Machine #4

- Have a simple machine that converts the revenue (selling price, P) from an apple into a profit $(P-V) = \$3$ from an apple

		As a percent of price	
Selling Price, P	\$5	$\$5/\$5 = 100\%$	
Cost per Apple, V	\$2	$\$2/\$5 = 40\%$	My cost is 40% of my selling price
Profit per apple: dollar markup, (P-V)	\$3	$\$3/\$5 = 60\%$	#4 My dollar markup is 60% on my price

#4 Markup on Price Machine



#4 Rate is Percent Change, $\% \Delta$, on Price

- You have an accounting machine that transforms the selling price of the product, $P = \$5$ into a profit of $(P-V) = \$3$ for each unit
- Output, $(P-V) = (\text{conversion rate, } \% \Delta P) \times \text{Input selling, } P$
- $(\$5 - \$2) = (\text{conversion rate, } \% \Delta P) \times \5
- Conversion rate, $\% \Delta P = (P-V)/P$
- Conversion rate, $\% \Delta P = \$3/\$5 = 60\%$
- Your markup on selling price = 60%

The Four machines

- help you remember interpretations of Four basic percent rates and markups as conversion rates or transformation efficiencies
- Each machine produces a difference between the input and the output
or
- Each machine produces a change from the input to the output

#1 Definition of Sales Returned on Inventory

- You are getting a 400% sales return on the cost of the inventory
- Selling price, $P = 400\% \times \text{cost of the product, } V$
- Percent sales revenue returned on product cost = $(\text{Price, } P)/(\text{Product cost, } V)$
- % sales revenue return on cost = P/V

#2 Definition of Markup on Cost, M_v

- Your Markup on Cost is $M_v = 200\%$
- Dollar profit = $200\% \times \text{cost of the Product, } V$
- Dollar Profit is the size of difference from the the cost of the product $(P-V)$
- Percent Change on cost = $\% \Delta V$
- Markup on Cost, $M_v = \text{Dollar Profit}/\text{Product Cost, } V$

#3 Defining Product Cost as a Percent of Selling Price

- Inventory cost is 40% of the selling price
- Product cost, $V = 40\% \times \text{selling price, } P$
- Product cost as % of selling price = V/P

4 Definition of Markup on Price, M_p

- Your Markup on Price is $M_p = 70\%$
- Dollar Profit is the amount of difference between the cost, V , and the price, P
- Dollar Profit, $(P-V) = 70\% \times \text{Selling Price, } P$
- Percent Change on Price, $\% \Delta P$
- Markup on Price = $(\text{Dollar Profit})/\text{Price, } P$

The **Most Important** of the Four
Conversion Rates

- Is **Markup on Price!**
- The easiest of the four is Markup on Cost
- **Remember**
Markup on Cost is not the same as Markup on
Price