

# Welcome to the *Advanced CBA Webinar: Finding Hidden Cash Using Cash Conversion Cycle* *July 10, 2007*

*Please: 11:00 a.m. – 12:00 p.m. EDT*

- Check Browser for plug-ins
- Un-plug PDAs (Personal Digital Assistants)
- Turn cell phone to off (not vibrate)
- Use chat feature to type in questions
- Presentation slides can be located at: [www.sbdccbba.com](http://www.sbdccbba.com)

**Ohio**

Department of  
Development



*SBDC...the driving  
force behind small  
business success!*



# Biography



Dale T. Eesley, Ph.D.

Dr. Eesley received his doctorate from the University of Wisconsin, Madison and is an assistant professor of Entrepreneurship & Strategy at The University of Toledo, where he teaches family business, entrepreneurship and strategic management. His current research centers on entrepreneurial related topics such as coping with surprise, outsourcing, intrapreneurship and human resources. He is also a consultant to entrepreneurial businesses and serves on the board of the Small Business and Entrepreneurship Institute.

# Finding Hidden Cash:

## Using the Cash Conversion Cycle as a Management Tool

Dr. Dale T. Eesley

University of Toledo

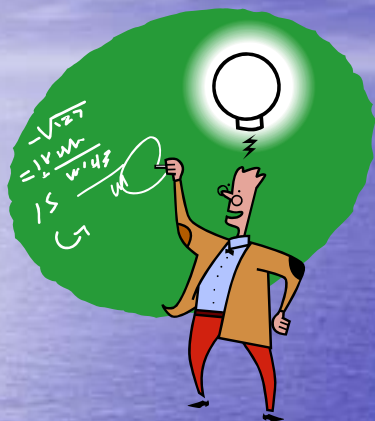
# What is Working Capital?

- Working capital is the fungible funds available to meet the daily obligations of a business.



- Working capital is money that is used to meet the day-to-day expenses of:
  - Inventory (both raw materials and labor)
  - Lending to customers (credit sales)
  - Miscellaneous expenses
  - Minimum levels of Cash
- Unlike Fixed Assets or Long-term Debt, Working Capital fluctuates based on the behavior of customers and suppliers.

# Defining Working Capital



Working Capital is defined as  
Current Assets – Current Liabilities.

Without additional outside funding, firms that are under funded, poorly managed, or growing beyond a sustainable growth rate can run out of cash, leading to conflicts with suppliers, employees, and lenders. It can lead to insolvency and bankruptcy.

# Outgrowing Working Capital

Despite a booming business, a firm with a high growth rate may run out of cash because collections trail expenses.

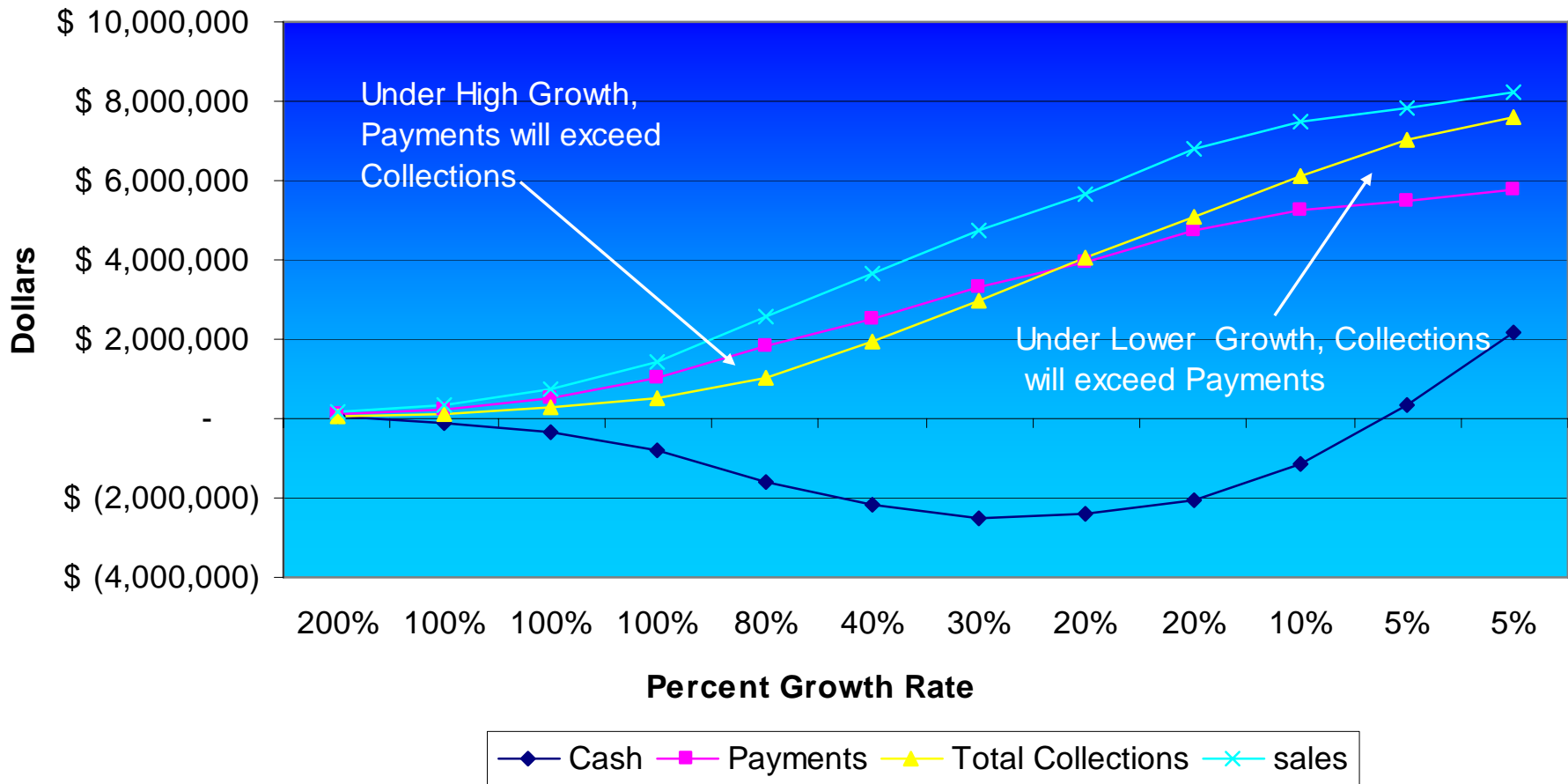
Example:

- Small firms must pay employees weekly
  - Pay suppliers in 30 days.
  - Carry increasingly greater amounts of inventory for future sales
  - Customers may take 45 to 60 days.
  - Growing firms fails to keep up with collections
- **Working Capital requirements may outpace Working Capital available!**



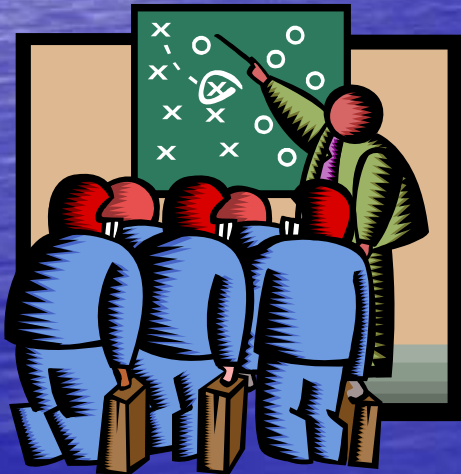
# Growing too Fast

## Growth beyond the Sustainable Growth Rate



# Improving Working Capital

- To raise more working capital without additional financing, firms can:
  - Reduce the time Inventory is stored
  - Reduce the time they take to collect money
  - Increase the time they take to pay bills



These three items make up the Cash conversion cycle. They provide useful information on the day-to-day management of the company.

# Cash Conversion Cycle

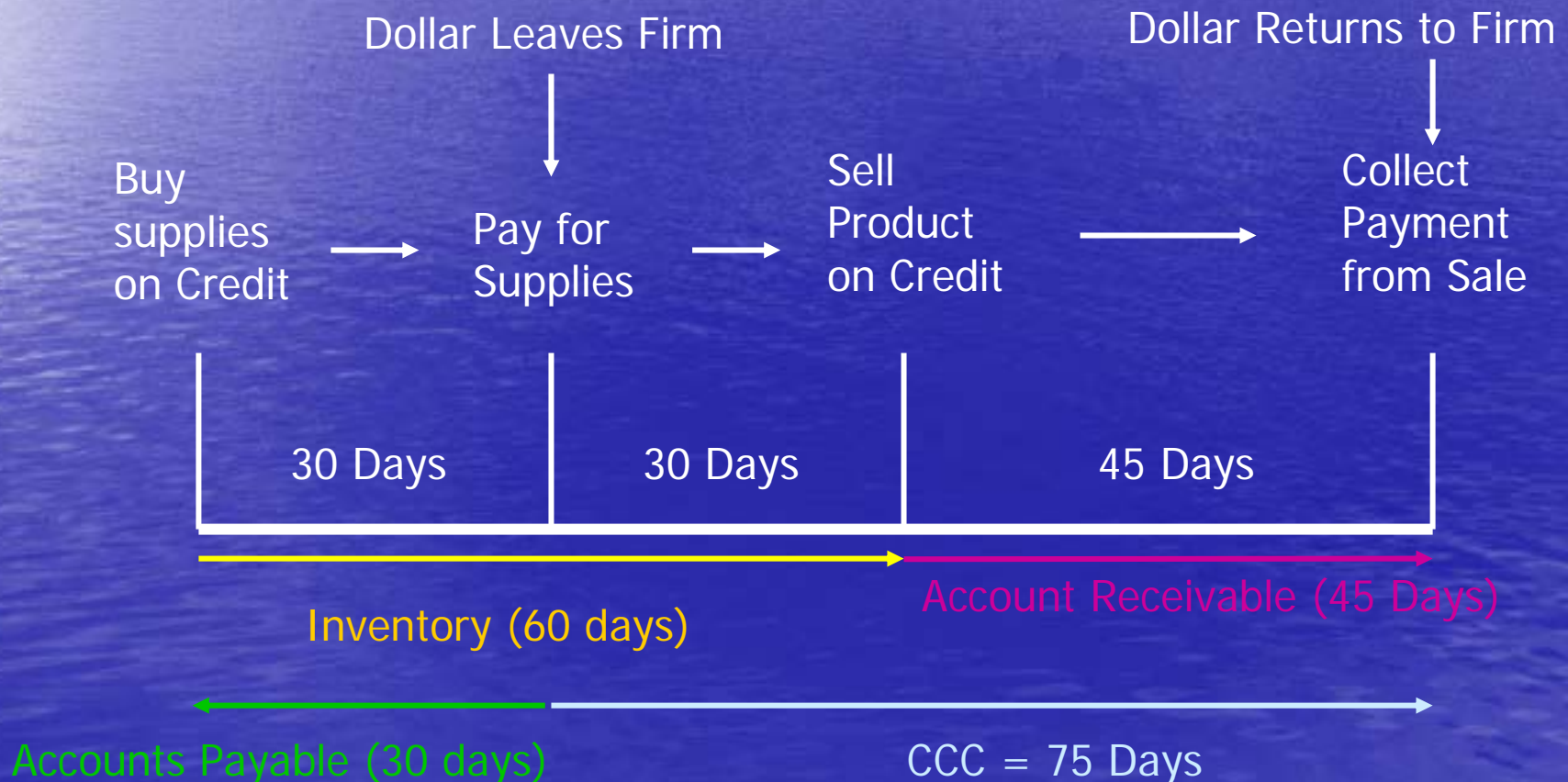
- The (CCC) = Days Inventory + Days Accounts Receivable - Days Accounts Payable
- The cash conversion cycle (CCC) calculates the time it takes for a dollar spent by the firm to be converted into a dollar received by the firm.

The longer this cycle is, the more working capital is required, which may require more financing!



In this example, a firm buys supplies and it is stored as inventory for 60 days. They then sell it on credit and collect the debt 45 days later for a total of 105 days. However, they also bought their supplies on credit, so this reduces the cycle.

Days Inventory + Days Accounts Receivable – Days Accounts Payable.  
The CCC = 60 + 45 - 30 = 75 Days.

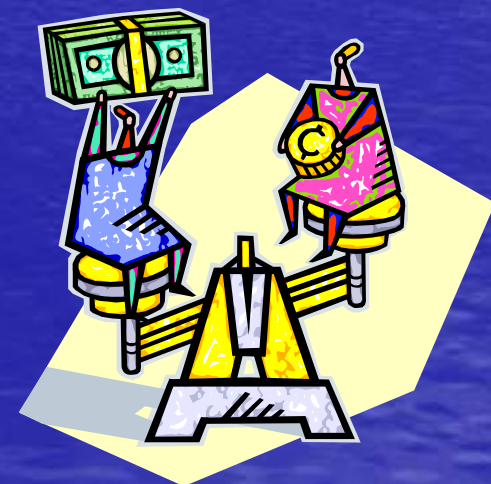


# Cash Conversion Cycles in Various Industries

	Plumbers Top 25%	Plumbers Bottom 25%	Fabricated Pipe Mfg. Top 25%	Fabricated Pipe Mfg. Bottom 25%	Appliance Retailer Top 25%	Appliance Retailer Bottom 25%
<b>Days Inv.</b>	0	11	33	115	50	133
<b>Days AR</b>	47	83	33	61	6	24
<b>Days AP</b>	21	47	17	55	21	53
<b>CCC</b>	26	47	49	121	35	104

# Goal of the CCC

- The CCC can be used to:
  - Compare your performance to similar firms and identify areas to improve
  - Make adjustments to your financial management that:
    - increase your liquidity
    - provides the necessary working capital
    - Reduces the need for financing



# ABC Plastics Manufacturing Example

Income Statement		Balance Sheet			
Net Sales	22,380	Current Assets		Current Liabilities	
Less Cost of Goods Sold	12,533	Cash	24	Accounts Payable	1,471
Gross Profit	9,847	Accounts Receivable	3,137	Accrued Expenses	764
Less SGA	7,979	Inventory	4,533	Current Portion Long Term Debt	313
Less Depreciation	397	Other Current Assets	734	<b>Total Current Liabilities</b>	<b>2,548</b>
Earnings Before Interest and Taxes	1,471	<b>Total Current Assets</b>	<b>8,428</b>	Long-Term Debt	6,195
Less Interest Expense	781				
Earnings Before Taxes	690	Fixed Assets		<b>Total Liabilities</b>	<b>8,743</b>
Less Taxes	193	Land, Bldg., Mach., Equip.	6,721	Shareholders (Owners) Equity	
<b>Net Income</b>	<b>497</b>	Less Accumulated Depreciation	4,061	Common Stock	340
		Other Fixed Assets	1,314	Retained Earnings	3,319
		<b>Total Fixed Assets</b>	<b>3,974</b>	Less Dividends	
				<b>Total Equity</b>	<b>3,659</b>
				<b>Total Liabilities &amp; Equity</b>	<b>12,402</b>
		<b>Total Assets</b>	<b>12,402</b>		

## Calculating the Net Balance Position & the Cash Conversion Cycle

<b>Working Capital Available</b>		<b>II - Reducing Accounts Receivable</b>	
Long-term Interest Bearing Debt*	6,195.0	Accounting Receivable	3,137.0
Plus Owner's Equity	3,659.0	Sales	22,380.0
Equals Permanent Capital	9,854.0	Sales per day	61.3
<i>Less Fixed Assets</i>	3,974.0	<b>Collection period</b>	51.2 days
<b>= Working Capital Available</b>	<b>5,880.0</b>	<b>Reduction needed to have NBP = 0</b>	<b>-10.2 days</b>
		<b>New Collection period</b>	<b>41.0 days</b>
<b>Working Capital Required</b>			
Minimum Cash	306.6	<b>III- Extend Payment Deferral Period</b>	
Plus Average AR	3,137.0	Non-interest Bearing Current Liabilities	2,235.0
Plus Average Inventory	4,533.0	Cash Expense	21,486.0
Less Average AP	1,471.0	Cash Expense per day	58.9 days
<b>Working Capital Required</b>	<b>6,505.6</b>	<b>PDP (dy)</b>	<b>38.0 days</b>
		<b>Increase needed to have NBP = 0</b>	<b>10.6 days</b>
<b>Net Balance Position (WCA-WCR)</b>	<b>-625.6</b>	<b>New PDP</b>	<b>48.6 days</b>
<b>Cash Conversion Cycle</b>		<b>Old Cash Conversion Cycle</b>	145.2 days
<b>I - Reducing Inventory</b>		<b>New Cash Conversion Cycle</b>	106.2 days
COGS	12,533.0		
Inventory	4,533.0		
Average COGS per day (COGS/365)	34.3		
<b>Age of Inventory (Inv. / Avg. COGS)</b>	<b>132.0 days</b>		
<b>Reduction needed to have NBP = 0</b>	<b>-18.2 days</b>		
<b>New Age of Inventory</b>	<b>113.8 days</b>	*(include RLOC)	

# First Step: Net Balance Position

Working Capital is typically defined as  
Current Assets – Current Liabilities.

For consulting with small business, Net  
Balance Position is a helpful tool to assess  
whether there is an adequate amount of  
Working Capital.

# Working Capital Available

Net Owner's Equity	_____
+ Long-Term Debt	_____
(Inc. Rev. Line)	
= Permanent Capital	_____
- Net Fixed Assets	_____
= Working Capital	_____
Available	

# Working Capital Available

Net Owner's Equity	3,659
+ Long-Term Debt (Inc. Rev. Line)	6,195
= Permanent Capital	<u>9,854</u>
- Net Fixed Assets	<u>3,974</u>
= Working Capital Available	5,880

# Working Capital Available

Minimum Cash Required*	_____
(sales ÷ 365) x 5	
+ Average Accounts Received	_____
_____	
+ Average Inventory	_____
- Average Accounts Payable	_____
= Working Capital Required	_____

\*This is a simple rule of thumb; business owners may be able to give a more useful estimate of Minimum Cash relative to Sales based on the market conditions, industry, and time of the year.

# Working Capital Available

Minimum Cash Required

$(\text{sales} \div 365) \times 5$	307
+ Average Accounts Receivable	3,137
+ Average Inventory	4,533
- Average Accounts Payable	<u>1,471</u>
= Working Capital Required	6,506

# Net Balance Position

$$\begin{array}{r} \text{Working Capital Available} \\ - \text{Working Capital Required} \\ \hline \\ \hline \\ = \text{Net Balance Position} \\ \hline \end{array}$$

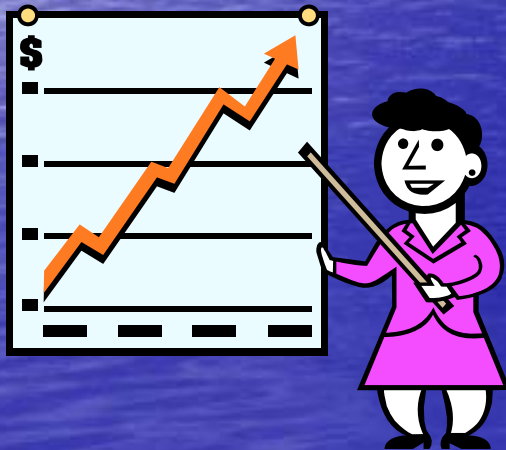
# Net Balance Position

Working Capital Available	5,880
- Working Capital Required	<u>6,506</u>
= Net Balance Position	-626

If NBP is negative, immediate action must be taken to achieve CASH LIQUIDITY!

# NBP Can Be Improved by:

- Reducing Inventory
- Reducing Accounts Receivable
- Reducing Cash Needs



- Increasing Accounts Payable
- Increasing Debt
- Increasing Equity Investment

# Reducing Inventory

Calculate Age of Inventory:

Age = Inventory ÷ (COGS/day)

Inventory = \_\_\_\_\_

COGS ÷ 365 = \_\_\_\_\_

Age = \_\_\_\_\_

Calculate reduction needed  
to correct negative NBP:

Net Balance Positions = \_\_\_\_\_

<NBP> ÷ COGS per day = \_\_\_\_\_

*New Age of Inventory* = \_\_\_\_\_

# Reducing Inventory

Calculate Age of Inventory:

$$\text{Age} = \text{Inventory} \div (\text{COGS}/\text{day})$$

Inventory	=	\$4,533K
COGS $\div$ 365	=	\$34.3K per day
Age	=	132.0 days

Calculate reduction needed  
to correct negative NBP:

Net Balance Position	=	-\$626K
<NBP> $\div$ COGS per day	=	-18.2 days

$$\text{New Age of Inventory} = 113.8 \text{ days}$$

# Reducing Accounts Receivable

Calculate Collection Period:

Col. Period =  $AR \div \text{Sales per day}$

Sales  $\div$  365 = \_\_\_\_\_

Accounts Receivable = \_\_\_\_\_

Col. Period = \_\_\_\_\_

Calculate reduction needed  
to correct negative NBP:

Net Balance Position = \_\_\_\_\_

NBP  $\div$  Sales per day = \_\_\_\_\_

*New Collection Period* = \_\_\_\_\_

# Reducing Accounts Receivable

Calculate Collection Period:

Col. Period =  $AR \div \text{Sales per day}$

Sales  $\div$  365 = \$61.3K per day

Accounts Receivable = \$3,137K

Collection Period = 51.2 Days

Calculate reduction needed  
to correct negative NBP:

Net Balance Position = -\$626 K

NBP  $\div$  Sales per day = -10.2 Days

*New Collection Period* = *41.0 Days*

# Increase Payment Deferral Period

Calculate Payment Deferral Period:

$$\text{PDP} = \text{Non-Interest bearing current liabilities} \div \text{Cash Expense per day}$$

Non-Interest Bearing Current Liabilities =

$$\text{Current Liabilities} - \text{Interest bearing debt} = \underline{\hspace{2cm}}$$

*(Interest Bearing Debt could be: CPLTD, Revolving Line Of Credit, Short Term notes etc.)*

$$\text{Cash Expenses}^* \div 365 = \text{Cash Expense per day} = \underline{\hspace{2cm}}$$

$$\text{NIBCL} - \text{Cash Expense per day} = \underline{\hspace{2cm}}$$

Calculate increase needed to correct

Negative NBP:

$$\text{Net Balance Position} = \underline{\hspace{2cm}}$$

$$\text{NBP} \div \text{Cash Expense per day} = \underline{\hspace{2cm}}$$

\*Sales – Cash Expenses = Net Income + Depreciation

Cash Expenses = Sales – (Net Income + Depreciation)

Think of it this way: Sales is all the \$ that comes into the business; Net Income is the amount of \$ you get to keep. Depreciation is a non-cash charge against Net Income, so you get to keep that as well. Subtract what you keep from what you receive, and that is the amount you pay out.

# Increase Payment Deferral Period

Calculate Payment Deferral Period:

$PDP = \text{Non-Interest bearing current liabilities} \div \text{Cash Expense per day}$

Non-Interest Bearing Current Liabilities =

Current Liabilities – Interest bearing debt = \$2,235K

*(Interest Bearing Debt could be: CPLTD, Revolving Line Of Credit, Short Term notes etc.)*

Cash Expenses\*  $\div$  365 = Cash Expense per day = \$58.9K per day

NIBCL  $\div$  Cash Expense per day = 38.0 days

Calculate increase needed to correct

Negative NBP:

Net Balance Position = -626K

NBP  $\div$  Cash Expense per day = 48.6 days

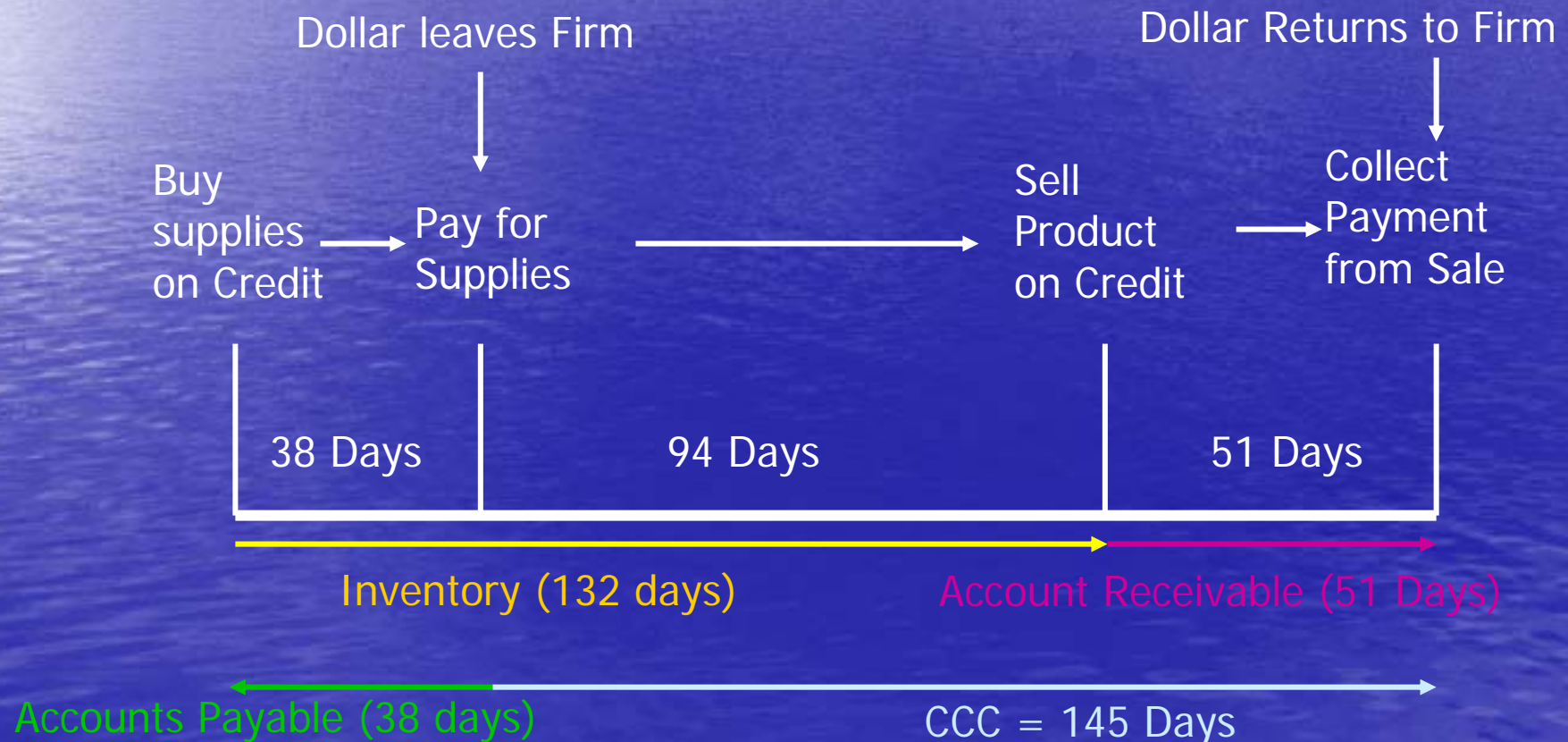
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# Calculating the Old Cash Conversion Cycle

Days Inventory + Days Accounts Receivable – Days Accounts Payable.  
The CCC = 132 + 51 - 38 = 145 Days.



# Comparable Cash Conversion Cycles

	ABC Plastics Old CCC	ABC Plastics New CCC	Plastics MFG Bottom 25%	Plastics MFG 3rd Quartile	Plastics MFG 2nd Quartile	Plastics MFG Top 25%
<b>Days Inv.</b>	132	114	>75	75- <b>50</b>	<b>50-33</b>	<33
<b>Days AR</b>	51	41	>60	60- <b>48</b>	<b>48-36</b>	<36
<b>Days AP</b>	38	47	>50	50- <b>38</b>	<b>38-24</b>	<24
<b>CCC</b>	145	108	>85	85- <b>60</b>	<b>60-55</b>	<55

# Improving to the Median

- If the firm reaches the median score on each element of the cash conversion cycle, how much cash would it raise?
  - Days of Inventory  $(132-50)*\$34.3K = \$2,812.6K$
  - Days of AR  $(51-48)*\$61.3K = \$183.9K$
  - Days of AP  $(38-38)*\$58.9K = \$0.0K$

# Making Recommendations

In order to raise \$626.0K in Working Capital:

1. Inventory Reduction: This has plenty of room for improvement. This is the low lying fruit that should be picked first.
2. Collection Period: This is close to median, room for improvement but not as much as Inventory Reduction.
3. Deferred Payment Period: Already at the median. While it is the simplest to do (just don't pay!) you are moving toward the lower quintiles of performance, which is the wrong direction!

# Making Recommendations

Once the analysis has been performed, recommendations should also focus on how:

- Inventory can be reduced
  - Increase turns, JIT practices, reduce COGS
- Accounts Receivable can be reduced
  - Reduce time before billing, prompt second notices, personal contact, customer evaluation, collection incentives, lockboxes, etc.
- And possibly if they can extend their payments.

# Conclusion

- Net Balance Position and the Cash Conversion Cycle offer businesses a way to more profitably manage their business with lower amounts of Working Capital.
- When planning future growth, NBP and the CCC can be analyzed to determine if the firm can grow within its own capital structure or if additional financing is required.

**For answers to questions, please  
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