Evaporating Cash Constraint The TOC Way

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Organizational Goal

- Customer Satisfaction, Employee Satisfaction, or Making Money?
- The Goal of the organization is "Make More and More Money Now as well as in Future"
- Making money is also an index of customer and employee satisfaction
- Net Profit, Return on Capital Employed, and Free Cash Flow are good enough parameters for the financial health of an organization
- Measurement purpose?
- Taking decisions / deciding improvement actions

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Theory of Constraints (TOC)

- What is that limits your organization to achieving more of its Goal - to make more and more money
- Every ‘for profit organization’ will have a constraint in Market, orders, operations, supply or CASH. Current constraint may shift, but there cannot be any situation when there is no constraint. Had it been so, its profit would have been infinite!

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Organization as a chain

- The global improvement is not the sum total of all the local improvements.
- Often organizations spread their energies thin in all areas in order to improve the output.
- In the TOC world optimizing a sub-system would sub-optimize the whole system.

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Identifying Constraint

- Today most organizations believe that they have a constraint in the market.
- You do have ***constraint in the market*** if you have more than 50% of world market!
- Since very few organizations, other than Microsoft & Intel, have more than 50% of world market, therefore most organizations do not have constraint in market. However they may have *Order Constraint!*

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Identifying Constraint

- Let us check out if you really have an order constraint.
- Do you deliver more than 95% of your orders On-Time-In-Full (OTIF)?
- You do have an ***order constraint*** if OTIF is more than 95%.
- However most organizations do not have OTIF even close to 95%. They definitely do not have even order constraint.

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Identifying Constraint

- At this stage we have already ruled out market or orders as constraints. And OTIF is < 95%.
- Are you able to get 95% of time your supplies on time?
- If you get your supplies 95% + on time, then you do have ***constraint in operations***.
- However if you do not get your supplies 95% on time, we need to probe deeper.

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Identifying Constraint

- Do you pay your vendors 95%+ on time?
- If you pay your vendors on time, and yet you are unable to get your supplies on time, you may have ***constraint of suppliers***.
- Do you consume 50% + of the world consumption?
- If not, you do not have a constraint even in suppliers. You have a *policy constraint related to suppliers!*

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Identifying Constraint

- In case you are unable to pay your suppliers on time, and as a result you do not get your supplies on time, then you have the most undesirable constraint-***CASH Constraint!***
- You have cash constraint only and only if you have orders, manufacturing capacity, right suppliers, but you do not have cash to pay to suppliers, and they will supply only if they receive cash upfront!
- Cash shortage does not necessarily imply cash constraint. However if cash shortage is not managed in time, the organization will get into cash constraint sooner than later!

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Cash constraint

- Sufficient orders (OTIF < 90%)
- Enough manufacturing capacity (OEE < 90%)
- Sufficient suppliers
- Material shortage
- **A small increase in cash will immediately increase sales, throughput, OTIF, profit & available cash**

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Non linear cash impact

- Cash constraint impacts throughput non-linearly
- A small reduction or increase in cash impacts organization significantly in very short time
- Current net sales $ 100 / month
- Totally variable cost (TVC) ~ 50%
- Operating expenses $ 50 / month
- Cash to cash cycle time ~ one month
- Current capacity utilization ~ 50%

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Example-Precariously Balanced

Parameter	1	2	3	4	5	6
Money available	100	100	100	100	100	100
OE	50	50	50	50	50	50
Money available for material purchase	50	50	50	50	50	50
Possible sales	100	100	100	100	100	100
Money available in next month	100	100	100	100	100	100
Capacity utilization	50%	50%	50%	50%	50%	50%

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Impact of small decrease

Parameter	1	2	3	4	5	6
Money available	100	90	80	60	40	0
OE	50	50	50	50	50	50
Money available for material purchase	50	40	30	10	0	0
Possible sales	100	80	60	20	0	0
Money available in next month	100-10	80	60	40	0	0
Capacity utilization	50%	40%	30%	20%	0%	0%

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Impact of small increase

Parameter	1	2	3	4	5	6
Money inflow	100	110	120	140	180	230
OE	50	50	50	50	50	50
Money available for material purchase	50	60	70	90	130	180
Possible sales	100	120	140	180	200	200
Money available in next month	100 + 10	120	140	180	230	280
Capacity utilization	50%	60%	70%	90%	100%	100%

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Cash Constraint Environment

- High level of infighting
- Top management busy in managing crisis after crisis
- Low employee morale
- High employee attrition rate
- Race against time

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Some cash draining practices of cash starved organizations

- Purchase more than immediate requirement to take advantage of quantity discount.
- Combine supplies to get freight advantage.
- Produce more than immediate requirement for better capacity utilization.
- Not selling obsolete material below purchase price / book value.

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Cash Constraint stages

1. Overdue payments to suppliers increasing
2. Suppliers start delaying deliveries resulting in material shortages
3. Payments to bank are delayed
4. Statutory payments (PF, TDS etc.) payments are delayed
5. Top management spending all their time in allocating cash

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Implementation Steps

Overcoming resistance layer 1: Not accepting reality

- Owners / decision makers refuse to accept they have severe issues of cash
- Create cash flow statement for next 13 weeks
  - Why cash flow? Why cash flow for next 13 weeks?
- One quarter is 13 weeks
- Top management team to have clear picture for next 13 weeks. Get real!

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Implementation Steps

Challenges for creating 13 week cash flow statement - not accepting reality

- Inflated / obsolete inventory
- Significant differences in total receivables and collectible receivables
- No agreement between accounts & sales on receivables

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Implementation Steps

Get agreement from the top management team

On:

- Useable inventory in next 13 weeks
- Total overdue & due payments that can be collected in next 13 weeks
- Total money to be paid to vendors in next 13 weeks
- Operating expenses for next 13 weeks

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Implementation steps: Modify Cash Flow

Modify cash flow so that closing cash is always positive as cash can never be negative!

- Defer purchases. Use air rather than sea / short lead-time vendors though it may be more expensive
- Collect receivables early even at significant discount from customers
- Get advance from customers by offering lucrative terms
- Sell obsolete/ unusable material even at deep discount

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Implementation Steps

Create a sense of urgency & modify current measurements

Create a weekly dashboard for monitoring key parameters

- Free cash flow (throughput less operating expenses plus reduction in inventory & receivables)
- Overdue payments
- Cash in hand
- Stop measuring sales, market share, efficiency

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Implementation Steps

Balance current inventory

- Correct mismatch in inventory. Often the total inventory available at macro level is enough for few weeks but not for next few days.
- Prioritize. The priority should be for balancing inventory at hand rather than continuing existing purchasing practices

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Implementation Steps

Implement 'Full Kit'

- Often orders are started without having all the required material. Normally the small value items are the missing items. Do not start an order unless all the material is available right at the start itself.
- Prioritize all existing orders in ascending order of material requirement / cash required

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Implementation Steps

Elevation - Induct cash

- In case all the actions shared earlier are not sufficient to shift cash constraint, additional cash induction may be the only other option
- Due to the fact in cash constraint environment throughput changes non linearly in, a small increase in cash is sufficient to get out of cash constraint
- However, cash must be inducted above the survival cash level at one go

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Implementation Steps

Elevation - Adequate survival cash level

- Adequate survival level is that level of cash that would be just sufficient for surviving for ever
- Adequate survival cash = n*OE*{t/(t-1)},
  - n = cash to cash cycle time in number of time periods
  - OE = Operating expenses for one period
  - t = Sales / Totally Variable Cost

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Implementation Steps

Elevation - Adequate survival cash level

- Minimum cash induction is the difference between adequate survival cash less current cash in hand
- If cash inducted at one go is less than the minimum, it does not help

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Impact of Not inducting cash in one go

Parameter	1	2	3	4	5	6
Money available	90	90	90	90	90	80
OE	50	50	50	50	50	50
Money available for material purchase	40	40	40	40	40	30
Possible sales	80	80	80	80	80	60
Adequate survival cash required	100	100	100	100	100	100
Additional cash induction	10	10	10	10	nil	nil
Money available in next month	90	90	90	90	80	60
Capacity utilization	40%	40%	40%	40%	40%	30%

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Impact of Inducting cash in one go

Parameter	1	2	3	4	5	6
Money available	90	110	120	140	180	230
OE	50	50	50	50	50	50
Money available for material purchase	40	60	70	90	130	180
Possible sales	80	120	140	180	200	200
Adequate survival cash required	100	100	100	100	100	100
Additional cash induction	30	nil	nil	nil	nil	nil
Money available in next month	110	120	140	180	230	280
Capacity utilization	40%	60%	70%	90%	100%	100%

Implementation Steps

Elevation – Inducting Cash

- Cash Velocity= ((S/TVC)^(1/n) -1), S = Sales,
- TVC = Totally Variable Cost, n = cash to cash cycle time
- Normally throughput rate is in excess of 5-10% week for most cash constrained organizations
- It makes sense to borrow money even at high rate of interest (2-5% per week)

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Actual Results

- A capital goods manufacturer gets out of cash constraint in 100 days. Its profits increase at 60% growth rate annually for 5 years
- An automotive component manufacturer about to sold off, comes out of cash constraint within 3 months. Subsequently it acquires a competitor in the same segment
- An electrical goods manufacturers gets out of cash constraint & bankruptcy within 3 months
- A large company in steel & power shrinks its working capital by about 45% i.e. INR 30 billion (~ US $ 500 million) & thereby survives in spite of severe losses by using concept of cash velocity for decision making

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Next actions

- Start measuring EBDTA + reduction in Receivables + reduction in Inventory + reduction in Advances to suppliers
- Detail cash velocity for all orders before accepting all the terms
- Evaluate sending small quantities instead of large quantities even at some what higher freight cost / ton
- Consider purchasing small quantities instead of large quantities even at some what higher cost / ton

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Ravi Gilani, Founder and Managing Consultant of Goldratt India, introduced TOC in India in 1998. He helps organizations increase their profits by simplifying their measurements.

He enjoys striving for the impossible by challenging sacred assumptions and simplifying complexity. He is currently engaged in **curing diabetes for self & others.**

Ravi has been a member on the the board of TOCICO. He enjoys sharing his TOC journey with a regular column for India's premier business magazine, ***Outlook Business.***

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