Lessons from Implementing MTA in a Traditional MTO Company

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Structure

1. MTA – key injections
2. The technical implementation
3. Issues to be considered for the implementation
4. The role of the pilot
5. Outcomes of the pilot
6. NBRs and how to address them
7. More practical lessons
8. What happens if we skip the pilot?
The TOC solution for MTA is conceptually simple, practical and technically straightforward.

Yet, the change in the flow and in managing the flow is challenging.

The logic of moving from MTO to MTA is that there is potential to grow the manufacturing company by offering availability to the downstream chain.

The presentation here is based on companies that produce parts and kits for servicing the after market (automotive, agriculture and marine). (the OEM part of the business continues to be run under MTO).

Operating MTO in environment that demands availability has created difficulties (limitations) to the system. Nevertheless, the system learned how to live with it and created rules and procedures.

These rules and procedures cause the major challenges to the MTA implementation.

The pilot – applying the solution to limited number of SKUs and a part of the downstream channels – is very important step in the implementation.
Supply Chain Management (SCM)
Moving to TOC replenishment Solution - MTA

Production – MTA
Ensure Availability in the Plant (Central) Warehouse

Distribution Chain
Set-up and maintain a reliable and effective Distribution System

Final Manufacturer

RM → Production → SKU → Distribution → SKU → Stock → Transport → SKU

Raw Materials and components → Plant (Central) Warehouse

Customers
1. The Key Injections of the TOC Solution for MTA

**Mindset**
- Produce to ensure availability
- Injection 1

**Immediate improvement in availability**
- Injection 2-5

**Continuous improvement**
- POOGI
- Process of Ongoing Improvement
- Injection 6-8

**Injection 2**
- Stock Buffers in the Plant (Central) Warehouse are maintained to ensure 100% availability, with Production Work Orders (WO) released according to the consumption from the P(C)W Buffers

**Injection 3**
- Open Work Orders (WO) are prioritized according to the status of their corresponding buffers in the Plant (Central) Warehouse

**Injection 4**
- Buffer Management for recovery actions is in place

**Injection 5**
- Availability of Raw Materials and components is monitored and managed
1. MTA Key Injections - Challenges

Injection 1 – Mindset and the measurements

• Commitment to availability

• Higher inventory turns (lower DIOH)

Injection 2 –

• The concept of Stock Buffer, initial size and DBM

• Giving the control to the Plant Warehouse by replenishing consumption

• Very short horizon production plan (more Ad-Hoc).

Injection 3 – setting priorities to WOs

Injection 4 – BM for recovery actions

• What to do with too many WOs in the Black and in the Red

Injection 5 – Availability of Row Materials and components
2. The Technical Implementation

The IT software is simple but demands a lot of detailed work.

Many times companies develop their own software based on Excel,

The first challenge is setting up the Stock Buffer Sizes.

For injection 1 there is a need for a global view: Availability and Inventory Turns (or DIOH)

For Injection 2 – there is a need to deal with every SKU individually.

For that there is a need to have the daily control file that gives the inventory profile of every SKU which is under the MTA.

The file is simple (can be an excel file) but it demands a lot of calculations and data manipulations to present the relevant information for managing availability.
### Example – Daily Control File of Pilot SKUs in SFG Warehouse

<table>
<thead>
<tr>
<th>Date</th>
<th>SKU - Name/Description</th>
<th>Buffer Size (Target Level)</th>
<th>Buffer Size (Buffer Size?)</th>
<th>Minimum Order Quantity</th>
<th>Balance on hand</th>
<th>Buffer Status</th>
<th>In Production</th>
<th>Buffer Statistics - What is the WO waiting for?</th>
<th>Corrective Actions</th>
<th>Date of Expected Delivery</th>
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</table>
Injection 1 – Availability Reports

Example – Availability of a family of SKUs in the SFG Warehouse

End of the month - Deliveries
Example of the profile of an individual SKU
Managing the SKYs – Where to focus?

There is too much data!  How not to lose the big picture?

<table>
<thead>
<tr>
<th>Daily Buffer Penetrations per SKU</th>
<th>Average Penetration</th>
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</thead>
<tbody>
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</tbody>
</table>

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3. Issues to be considered for the implementation (as raised by the implementation team)

1. How to handle Final Assembly?

Major Concerns of Top Management at the outset

2. How to handle the dealers?

3. Payment terms for the dealers. [some had concerns that the elasticity of the sales will have significant impact on cash flow. this is actually a NBR]

4. Motivation – How do we handle the pay for our people? (given that at current reality people are paid buy piece?)

5. RM Budget – how should we plan and control it? What will be the impact on cash flow?
The company produces and sells packaged kits, as well as just the parts of the kit. It is a “T” plant with high level of commonality.

It is possible to give better level of service with less inventory if the company maintains a warehouse of semi finished goods (SFG) and Kit To Order (KTO)

Kitting Buffer (KB) = 3 days

Q: Where do we put kits ready before the shipping day?
A: Arrange the shipping dock with marks of the truck ready to be loaded to the trucks. What is assembled is put in the marked area for loading.

Q: Shall we have FG Buffer?
A: Yes, but a small one – to restore some kitting capacity and for minimum batch of low runners.
General Structure of the implementation

Procurement → Production → Final Assembly → FGWH

- SFWH: Semi Finished Goods warehouse
- FGWH: Finished Goods warehouse
- Dispatch Area

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How to handle the dealers?

Why to consider the dealers at this stage of the implementation?

The pattern of working with the dealers is causing picks in demand.

Certain products are in shortage due to a BN situation causing the dealers to order more than consumption and stock.
Suggestions to the Dealers

How to handle the dealers?

How to involve the dealers with MTA?

Suggestion to the dealers:
No need to give order for 20-50 days
Daily inventory
Buying back (excess)
Flat scale of discount (like the competitors)
Covering transport cost – no need to send tracks to collect
Ensure availability: 70% 1/week, 20% 1 per 2 weeks, 10% - once every 4 weeks
Sales representative will search for shops and attach them to the dealers.
Direct sales will be given to the closest dealer.
Motivation – How do we handle the pay for our people? (given that at current reality people are paid buy piece)

Suggestion:

Reduction in Scrap. Set the level of scrap of the last 6 months as the norm. Pay for improvement, punish for deterioration (assuming is legally possible).

NBRs
1. Diminishing return
2. Rewarding for lousy performance
3. Potential slow down of work
4. Cannot prevent “new ideas” how to make thing worse (so to be paid for improving them).
4. The Role of the Pilot

We suggested: 3 kits 20 dealers \( \text{will need} \) 60 SKU-Locations

3 kits means 12 SKUs in the SFG
The Stakeholders in the pilot

1. Top Management
2. Production (owners)
3. Logistics
4. Maintenance
5. Tooling
6. Suppliers within the group
7. China – RM, assemblies, products
8. Suppliers
9. Sales
10. Dealers
11. Accounting Department
5. Pilot - outcomes

Pilot was run for one month

1. Sales – no increase
2. Transport - +15-20% (previous decision that coincided with the MTA)
3. OE – no impact
4. FG Inventory – minus 30%, SFG – no change
5. WIP – down in general, (for one production area - reduction of 15%)
6. Impact on production – Kitting up, labor hours up
7. Kitting – used to work to monthly plan which was “great”. Smaller batches – cause difficulties.
8. A Major concern – one supplier that provides C-type parts. They work to monthly plan. They supply to the plant as well as to their own customer (on MTO).
5. Pilot - outcomes

Results after 2 months – with increased number of SKUs under MTA - Improvements and achievements:

- Uniform distribution of shipments on time, normalizing the distribution of products to dealers
- Simplify the process of planning and focus on the most problematic positions
- Rapid response to changes in demand production
- Increasing the number of proposed improvements through better understanding of problem areas, increase employees' initiatives
- Changed the motivation based on TOC (production management, foremen, workers)
A Typical profile of a SKU under MTA

On Hand Stock

Daily Sales (Dispatched)
Results after 2 months – with increased number of SKUs under MTA – Problems and Difficulties:

- Consideration of the lines with a high degree of load
- There has been a fall in the volume of products shipped after implementing MTA dealer network due to the large presence of the latest products
- Due to a decrease in shipping network, and the collection of third-party supplies semi-finished stocks saw an increase in the holding
- The inertia of consciousness and commitment of staff to the old methods of management influence the rate of implementation of the new approach to the management of the entire holding
- Introduction of new management principles require global changes in all areas of
6. Potential NBRs

1. Short term loss of sales
2. The impact of the MTA parts and products on the MTO SKUs
3. Overloading the production area with orders for filling up the buffers
4. Can the company support the increased inventory in order to achieve the target level of all MTA SKUs?
5. Attempts to regulate the consumption – regional warehouses
6. Handling Dealers
7. What to do with Bottlenecks
8. Managing the assembly
9. What to do with semi-finished products?
Impact of MTA on sales (14/9)

Dealers had 3 months of stock (around 600m)

They moved to replenishment of 1,2 or 4 weeks (as before). They were given “mafia offer” to entice them to accept the new way.

Availability went up

Target stocks were based on past consumption – which was artificially inflated (based on speculations)

Target stocks will go down to one month

1/8 stock was 570

14/9 is down to 500

Sales are 200 per month

Replenishment is about 140-150 per month. Lost sales of 100 in 2 months.

At the same time – MTO orders went down from 120 to 75 per months. Another 90 m. loss. TVC is 42%
The Problem:

The supplier gets a plan for the month from PPC, produces according to their own production plan, cannot respond to urgent orders and ships once a month.
The Problem:

During the first month of the pilot PPC could not influence the deliveries from the supplier.

![Availability Chart]

**Availability**

- Dates range from 28/05/2012 to 30/07/2012.
The way it was handled:

1. The supplier gets a plan for the month from PPC – production planning and control department

2. PPC sends frequent updates to the plan in accordance with Buffer Status – Black or Red - of the parts in the SFG store

3. If the parts are in WIP – they are expedited. If not – they are on the wait to be released.

4. PPC has a special report (excel) to monitor the supplier. The report contains some special fields such as:
   - Buffer Size (Target Stock)
   - In order
   - On hand
   - In production
   - Cause of delay (waiting for?)
   - Expected date of arrival to the plant (7 day transport)
What should be the Target Level?

Considerations:

1. The part is produced once a month

2. It is unknown when it will be produced. Once it is produced – it takes 7 days of transport

3. PPC calculated: 1 week order process time, 4 weeks in production, 1 week transport and 2 weeks OLT. Total replenishment time – 8 weeks

4. Buffers were very large. The supplier did not have capacity to fulfill the demand and hence the majority of parts were in red or black.
7. Practical Lessons

Concerns:

1. How to budget the purchasing
2. How to incorporate it in the cash flow
Assessing the levels of inventory and what can be learned from the findings

<table>
<thead>
<tr>
<th>FG profile</th>
<th>TVC 28-30%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/9 81m</td>
<td></td>
</tr>
<tr>
<td>10/9 68m</td>
<td></td>
</tr>
<tr>
<td>Dead stock – 10 m (5-7 days)</td>
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<td>46 m – 18.4 days (6m 2.5 m)</td>
<td></td>
</tr>
<tr>
<td>38m – 15.2 days</td>
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</table>

TVC of sales: 30-40%

<table>
<thead>
<tr>
<th>SFG profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/9 118m</td>
</tr>
<tr>
<td>8m kitted (3 days)</td>
</tr>
<tr>
<td>22 Sister company</td>
</tr>
<tr>
<td>59 China (4 m once a month)</td>
</tr>
<tr>
<td>22 own production</td>
</tr>
<tr>
<td>8 other local suppliers</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>88 m 35.8 dioh</td>
</tr>
</tbody>
</table>
How to Budget

RM Budget – how should we plan and control it? What will be the impact on cash flow?

RM
Suppliers + frequency
Consumption
Buffers (targets)

WIP
Sum of all targets

SFG
FG
Sum of Buffers (targets)

Budget for the month = TVC of the replenishment, +/- Delta T.L +/- Delta of what is missing for the T.L.
What to do when the company is in a cash crisis?
Will MTA Save the company?

Considerations
What happened in reality

FG inventory went down from 90m to 45 min (18 to 9 dioh)
Saving 13-18m of RM
This is not enough – need to increase sales
Dealers to sell more to wholesalers (no knowledge of the availability at their level)
Need to introduce new shops – 500 potential ones, 20 signed up, investment in sales reps
8. What happens if the pilot is skipped

Due to the financial pressure the company decided to skip the pilot and to apply the MTA solution to all stock SKUs.

The company was not ready for the implications of the MTA.

As NBR were not addressed prior to the start the company faced many NBRs during the implementation.

The pilot has also to establish the conditions in which increased availability cause increase in sales. Without that - the improvements are only internal and not always can justify the investment in implementing MTA.