Linking Lean with Business Strategy (via Hoshin Kanri)

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FOUR (4) Time AME Manufacturing Excellence Site Winner
ASQ Fellow, Shainin Medalist, CSSBB, CMQ/OE, CQE
Past-Chair ASQ QMD, NAM: STEP Ahead Awardee, MBB
Accuride Wheel End Products

- Steel Wheels
- Aluminum Wheels
- Brake Drums
- Disc Wheel Hubs
- Slack Adjusters
- Rotors & Spoke Wheels

Heavy-Duty Truck (Class 8)

Medium-Duty Truck (Class 5-7)

Trailer

Light Truck (Class 3-4)
Learning Objectives

Across this time we will…

• Tactically apply Define, Measure, Analyze, Improve and Control (DMAIC) to link Lean Management System (LMS) strategies to that of the organization via Hoshin Kanri

• See how this lean tool can be applied to any business

• Increase your understanding of how to develop, manage and execute a strategic plan
Lean is *FLOW* through pull. It uses an enterprise-wide set of concepts and tools. Lean strengthens an organization’s competitive advantage realized from operating its processes.
1. Lean “Operations”. Effective, Efficient flow of Product
2. Transactional systems: Effective, Efficient flow of Data/Information
3. Align Product & Transactional Value Streams across the Enterprise
4. Incorporate External Partners: Customers, Supply Chain, Contract Services
Lean & DMAIC: Strategically

Define

External/Internal customer needs are identified ("Interested Parties")

Measure

Determine performance baselines.
Identify necessary target levels

Analyze

Investigate causes for gaps from performance to target. Create a plan

Improve

Execute the improvements identified.
Use tools to fit the problem

Control

Monitor the results. Hold gains via accountability
Define
The “X-Matrix”

A Process to convert *Strategy* to *Reality* by using both horizontal and vertical alignment in the organization

CEO’s 3-5 year Strategic Vision

Planning across Division(s). Vertically supports CEO and Sites

Site planning. One year tactics to support and execute the strategy

aka...Hoshin Kanri
Sample “X-Matrix” Format

- **Bottom**: Key strategies. Use a “SMART” format
- **Left**: Initiatives on HOW to achieve the objectives
- **Top**: TACTICAL actions to execute the initiatives
- **Right**: Key METRICS used to monitor results
- **Far Right**: WHO has line item responsibility
“Interested Parties*” to Consider...

- **Customer**: People that use the end product/service
- **Stakeholder**: Personnel that invest in the organization (stockholders, investors)
- **Employee**: Personnel that run the organization. May be paid or voluntary
- **Supplier**: Businesses/donors that provide goods and services usually for a fee
- **Community**: Local organizational. Surroundings. Environment, tax-base...

*Formally called out in ISO 9001:2015 for Risk-Based Thinking and consideration of impact to business*
Sample Strategies

Tactical Actions

Main Initiatives

Key Strategies

Key Metrics

Resources

QCD: Quality (PPM), Cost (CI), Delivery (OTD)

Margin, Revenue, Cash Conversion, Growth

Engagement, Turnover, Satisfaction, EHS

QCD, Growth

Social Responsibility, Compliance, EHS

Customer

Stakeholder

Employee

Supplier

Community
X-Matrix Worksheet

Key Strategy Samples…

1. Increase margin by 5% by 4Q
2. Increase sales revenue by 10% by 4Q
3. Increase organic growth by 5% by 4Q (existing business)
4. Increase inorganic growth by 5% by 4Q (new products)
5. Increase New Product Introduction (NPI) rate by 10% by 4Q
6. Grow market share from 15% to 20% by 4Q
7. Reduce warranty expenses by 25% by 4Q
8. Reduce internal rejects by 25% by 4Q
9. Reduce lead time from 7 days to 5 days by 4Q
10. Reduce supplier reject rate by 50% (20K DPPM to 10K)
11. Improve customer satisfaction score by 20% by 4Q
12. Reduce recordable safety incidents by 50% by 4Q
13. Increase employee morale by 10% by 4Q
X-Matrix Worksheet

Main 1-3 Initiatives

1.1 __________________________
   __________________________
   __________________________

1.2 __________________________
   __________________________
   __________________________

1.3 __________________________

Main 1-3 Tactical Plans

1.1a __________________________
   __________________________

1.1b __________________________
   __________________________

1.1c __________________________

Key Input Metrics

1.1a __________________________
   __________________________

1.1b __________________________
   __________________________

1.1c __________________________

What are the key metrics?

Identify the top 1-3 ways of HOW you will attain the strategy

Key Strategy/Performance Goal (SMART)

1 __________________________

Write a sample Key Objective
Define “SMART” Strategies

~6-8 Key Strategies

• Improve Margin by 5% points by 4Q. Increase of $250K

While developing the Key Strategies, multiple tools may be used such as SWOT, VOC, etc. Consider a “multi-customer” approach to support organizational robustness.
~1-3 Main Initiatives per Strategy

- Reduce Warranty losses. $150K
- Reorganize Product Portfolios $100K

Identify 2-3 Initiatives

Tactical Actions

Main Initiatives

Key Metrics

Key Strategies

Resources

Improve Margin by 5% points by 4Q. Increase of $250K
Develop Tactics

~1-3 Tactical Plans per Initiative

- Implement Warranty Team. Conduct CA/PA.
- Conduct FMEA/CP Reviews on loss leaders
- Conduct VSM on Portfolio. Rationalize

Reduce Warranty losses. $150K
Reorganize Product Portfolios $100K

Improve Margin by 5% points by 4Q: Increase of $250K
Leading & Lagging Metrics

Lagging metrics are usually results to upper management. Work to identify and manage leading metrics that will affect these results.

<table>
<thead>
<tr>
<th>Leading Metrics</th>
<th>Lagging Metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OTD</td>
</tr>
<tr>
<td>OEE: Operational Equipment Effectiveness</td>
<td>+</td>
</tr>
<tr>
<td>RTY: Rolled Throughput Yield</td>
<td>+</td>
</tr>
<tr>
<td>%Cpk: Processes Capable of Meeting $\geq 1.33</td>
<td>+</td>
</tr>
<tr>
<td>MTBF: Mean Time Between Failure</td>
<td>+</td>
</tr>
<tr>
<td>C/A %Repeat: Repeating Complaints</td>
<td>+</td>
</tr>
<tr>
<td>Training Depth: Personnel Skill Levels</td>
<td></td>
</tr>
<tr>
<td>Linearity: Production Schedule Attainment</td>
<td>+</td>
</tr>
<tr>
<td>C/A TTC: Time to Close Corrective Actions</td>
<td></td>
</tr>
</tbody>
</table>
Tactical Actions

Main Initiatives  Key Strategies  Resources

Key Metrics

- Margin
- Warranty
- Family Portfolio Margins

Key Strategies

Implement Warranty Team. Conduct CA/PA  Who: Joe
Conduct FMEA/CP Reviews on loss leaders  Who: Tom
Conduct VSM on Portfolio. Rationalize  Who: Sue

• Reduce Warranty losses.  $150K
• Reorganize Product Portfolios  $100K

Improve Margin by 5% points by 4Q: Increase of $250K

Identify KPIs

Key Input Metrics
1.1a
1.1b
1.1c
### X-Matrix: Organization, Year

<table>
<thead>
<tr>
<th>Key Objectives &quot;WHAT&quot;</th>
<th>Key Tactics &quot;HOW 1&quot;</th>
<th>Main Initiatives &quot;HOW 1&quot;</th>
<th>Key Metrics &quot;BSC&quot;</th>
<th>Margins</th>
<th>Warranty</th>
<th>Portfolio Margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve Margin by 5% Points</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**X-Matrix: "How It Looks"**

- **1.2a** Conduct Portfolion Analysis. Rationalize
- **1.1b** Conduct FMEA/CP Reviews on loss leaders
- **1.1a** Implement Warranty Team. Conduct CA/PA

**Key Strategies**

- **1.2** Reorganize Product Portfolios. $100K
- **1.1** Reduce Warranty Losses. $150K
Sample X-Matrix: ASQ QMD

2nd Level Tactical Improvement Plans

QMD Vision
Engage people, organizations, and communities in continual improvement

QMD Mission
Convey lifelong quality related knowledge through information, methods and tools that add value to Organizations, Society and Individuals

Key Success Indicators (KSI) and Outcomes

Top Level Improvement Priorities

1.2 Year Strategic Objectives

1. (1, 2, 3) Membership Expertise: Provide products/services that develop continuous improvement and enhance our memberships' values

2. (1, 4) Membership Growth: Continue to grow the Membership base and improve upon retention

3. (1, 2) Determine VOC: Get feedback so that the QMD can define the products and services that are needed

4. (1, 2, 3, 4, 5, 6) Define Markets: Develop/execute a cross-market strategy and delivery mechanisms utilizing current technologies

5. (2, 6) EoQ: Insure that the Economics of Quality (EoQ) are within the context of our products and services

6. (4, 5) Infrastructure: Improve the management of the QMD... IT, Volume Utilization, Succession Planning, Budgeting, Follow Through...

Resources
Primary Responsibility
Secondary Responsibility

Chair: Heather McCain
Chair Elect: Jd Marhevko
Primary Responsibillity
Secondary Responsibility

VC Print Initiatives: Fred Walker
VC Marketing: Milt Krivokuca
VC Membership: John Sharp
VC Face to Face: David Little
VC e-Based Intitiatives: Ron Meier
VC Technical Cmte: Steve Babb
Conference Cmte: Trepanier/Denney/Bane
ASQ QMD Result

- Largest division in ASQ…>24,000 global members
- In the top 5 of all divisions for member growth and retention
- Most touch points (member-valued interactions) of any division. >30/year
- Have completed >90% of all goals and objectives for the past 5 years

A Non-Profit Organization
## Level II Matrix - YEAR 20XX

<table>
<thead>
<tr>
<th>Strategies</th>
<th>Initiatives</th>
<th>Tactics</th>
<th>Metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.3 Engineering Alignment</td>
<td>4.2 QMS Execution: TS Systems</td>
<td>4.3.b. Conduct annual reviews and training updates on ISO/TS Core Tools by 2Q</td>
<td>4.3 Engineering Alignment</td>
</tr>
<tr>
<td>4.2 QMS Execution: TS Systems</td>
<td>4.1 QMS Execution: APQP</td>
<td>4.3.a. Increase QA personnel understanding &amp; interpretation of product specs by 3Q</td>
<td>4.2 QMS Execution: TS Systems</td>
</tr>
<tr>
<td>4.1 QMS Execution: APQP</td>
<td>3.1 New MRP Implementation</td>
<td>4.2.a. Consolidate all sites to one register by 4Q</td>
<td>4.1 QMS Execution: APQP</td>
</tr>
<tr>
<td>3.1 New MRP Implementation</td>
<td>2.2 Lean/Continual Improvement Integration</td>
<td>4.1.b. Gilbert Activity Material Strategy by 3Q</td>
<td>3.1 New MRP Implementation</td>
</tr>
<tr>
<td>2.2 Lean/Continual Improvement Integration</td>
<td>2.1 Customer Satisfaction</td>
<td>4.1.a. Upgrade corporated-wide APQP processes to achieve 95% compliance on TS System score by 2Q</td>
<td>2.2 Lean/Continual Improvement Integration</td>
</tr>
<tr>
<td>2.1 Customer Satisfaction</td>
<td>1.2 Process Control (SPC/KPI)</td>
<td>4.1.a. Increase QA personnel understanding &amp; interpretation of product specs by 3Q</td>
<td>2.1 Customer Satisfaction</td>
</tr>
<tr>
<td>1.2 Process Control (SPC/KPI)</td>
<td>1.1 Scrap/Defect Reduction</td>
<td>4.1.a. Increase QA personnel understanding &amp; interpretation of product specs by 3Q</td>
<td>1.2 Process Control (SPC/KPI)</td>
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### Strategies
- Reduce scrap/rework losses by 50% by 4Q
- Increase production/process capacity
- Reduce business costs in SGA and Supply Chain
- Improve customer satisfaction via quality/warranty and OTD performance
- Grow team skills and talent levels
- Exceed safety/environmental standards
- Enable competitive costing via lean processes

### Initiatives
- Reduce scrap/rework losses by 50% by 4Q
- Increase production/process capacity
- Reduce business costs in SGA and Supply Chain
- Improve customer satisfaction via quality/warranty and OTD performance
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- Enable competitive costing via lean processes

### Tactics
- Conduct annual reviews and training updates on ISO/TS Core Tools by 2Q
- Increase QA personnel understanding & interpretation of product specs by 3Q
- Consolidate all sites to one register by 4Q
- Gilbert Activity Material Strategy by 3Q
- Upgrade corporated-wide APQP processes to achieve 95% compliance on TS System score by 2Q

### Metrics
- COPQ %COGS
- OEE
- OTD
- PPM
- Rolled Throughput Yield (RTY)
- Lean Savings
- Linearity
- DIOH
- 8D TTC
- %KPIs that meet capability
- MTBF
- TS/ISO Status
- QMS/Lean Score
- Skills Assessment Level
It Must Be Right For It To Flow

Have the QLMS leverage a three-point strategy:
1. Correct issues that are causing losses. %Cpk/COPQ focus
2. Design/Develop new products (NPI) and processes so that new issues are not “released” causing business losses. DFSS
3. Train personnel effectively in two skill sets: 1. Corrective Action and 2. Preventive, Risk-Based Thinking (RBT) design
An average reduction of \(50\%\) LT had much less working capital.

Enabling the average Productivity to more than double.

And The average CPU to be lowered by more than \(20\%\).

Observation: The more complex the process, the more LT was reduced.
Sample VSM: NPI

Original Process

170 Days

Initiative: Reduce New Product Introduction Lead Time

Action: Conduct value stream map review. Implement fixes

Results: 70% Lead time reduction. Team able to increase NPI output
Measure

What gets measured gets done.

Don’t know who said it, it works…
Sample BSC Format

- **History (2-3 yrs)**
- **Arrow for desired direction**

**Warranty % COGS**

- **Performance Goal**
- **Point of Comparison**
- **Current Performance**
Analyze

To know and not to do is not to know.

Chinese Proverb
Product Portfolio...5% Margin

Ex: If targeted margin is 5%, then 8+ items were meeting the 5% objective before and 14+ were meeting the objective after

Initiative: Improve margin by 5%

Action: Conduct VSM review on portfolio mix. Rationalize products. Continue to prune

Results: 22% Improvement in margin base
Improve

Even if you’re on the right track, you’ll still get run over if you just sit there.

Will Rogers
## Leveraging the X-Matrix (HK)

**Hoshin Kanri is not the same as Management by Objectives (MBOs)**

*Source: Toyota Culture – Jeffrey Liker and Michael Hoseus (2008)*

<table>
<thead>
<tr>
<th>Management by Objectives (MBOs)</th>
<th>X-Matrix (Hoshin Kanri)</th>
</tr>
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<tbody>
<tr>
<td><strong>Results</strong>-oriented evaluation of effort</td>
<td>Concerned with <strong>both results and process</strong> of getting those results</td>
</tr>
<tr>
<td><strong>Top-down</strong> communication</td>
<td><strong>Top-down</strong> direction setting and <strong>bottom-up</strong> flow of information and means</td>
</tr>
<tr>
<td><strong>Directive</strong></td>
<td><strong>Participative</strong></td>
</tr>
<tr>
<td><strong>Linear</strong> (no feedback, no second chance, just start over from scratch each time)</td>
<td><strong>Circular</strong> (adds feedback loops (aka Catchball) and cycles of improvement)</td>
</tr>
</tbody>
</table>
Control

There is nothing as useless as doing something efficiently that which should not be done at all…

Peter Drucker
We Strategically Applied DMAIC…

**Define**
We used an X-Matrix to define our customer needs (internal/external)

**Measure**
We used a BSC to determine baselines and set our target performance levels

**Analyze**
We used VSM to investigate causes for gaps and created a plan of attack

**Improve**
We executed improvements and used tools to fit the problem (VSM, TPM, SUR, EP…)

**Control**
We used the BSC and HR systems to enable accountability
Thank You!

Your opinion is important to us!
Please take a moment to complete the survey using the conference mobile app.

Session: ThP/50
Linking Lean with Business Strategy
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Sources/Ideas

There are hundreds of excellent books/tools/sites, etc. Here are few that I have used as recent references:

• ASQ Quality Management Division. ASQ-QM.org.
• ASQ.org
• AME.org
• Lean Enterprise Institute (LEI) at Lean.org
• Superfactory.com
• Hoshin Kanri for the Lean Enterprise. Developing Competitive Capabilities and Managing Profit. Thomas L. Jackson
• The Lean Pocket Guide: National Association of Job Shops and Small Manufacturers (NAJS)
• From Good to Great. Jim Collins
• The Tipping Point. How Little Things can make a big Difference. Malcolm Gladwell
• Blink. The Power of Thinking without Thinking. Malcolm Gladwell
• Toyota Production System. Beyond Large Scale Production. Taichii Ohno
• The Toyota Way. Jeffrey Liker
• The Executive Guide to Understanding and Implementing the Baldrige Criteria. Leonard & McGuire
• The Executive Guide to Understanding and Implementing Lean Six Sigma. Meisel, Babb, Marsh, Schlichting