IPRO 306 - Improving Global Supply Management

Goals > Progress > Results
Sloan Valve

- World’s leading manufacture of water-efficient solutions
- Headquarter: Franklin Park, Illinois
- Founded in 1906
- Facilities in Michigan, Massachusetts, Pennsylvania, California, Arkansas, Mexico, and China
A term used to express the need to integrate key business processes from end user through original supplier
Overall Project Goals

- Survey suppliers using Green survey and metrics
- Create a data based automatic scoring system for Sloan’s suppliers
- Create a OEE data collection process and system for more efficient data collection and on demand analysis
- To develop a user friendly and functional tool that helps objectively compare costs of items from different sources.
Overview

1. To finalize and implement Green Survey and Metrics from previous semester.
2. To create a system to reliably and efficiently rate Sloan’s suppliers against a set criteria.
3. To reduce time lost due to inspection of parts received from supplier.
4. To create a system that allows suppliers to easily view their scores.
Green Team Progress

Timeline

- Surveys Combined and sent
- Stakeholder Interviews Conducted
- Data and requirements assessed
- Scorecard Developed and tested
- Final Adjustments and Modifications

Feb | Mar | Apr
---|---|---
| | |
GREEN Team Results

Results

1. Combined existing Sloan survey with last semester’s Green survey.
   - Initial set of suppliers resulted in expected scores

2. Created an automatic scorecard for suppliers.
   - Scores can be done automatically or manually.
   - Parameters can be changed for future fine tuning.
   - Data used to source score can be shown to suppliers for verification of score.
While creating a Supplier Certification Program was a little beyond the scope of our IPRO, our team was able to get a pretty good start.

For a Certification program to function, there needs to be a reliable and efficient way to score suppliers.

Reliability is important in that all suppliers should be judged using the same set of criteria.

Efficient in that it would function on an automatic basis with data that is already routinely kept.
SAP is the Enterprise Resource Planning (ERP) software that Sloan uses.

- ERP software is used by enterprises all over the world to easily manage all their resources.
- It encompasses all branches of the company from financial/accounting to manufacturing to management and serves as a gateway for all Sloan’s data collecting and processing.
Sap Screenshots

**Inspection Lot Selection**

- **Selection Profile**: Variant
- **Lot created on**: Environment
- **Insp. start date**: Created by
- **End of Inspection**: Changed by
- **Plant**: Original language
- **Inspection origin**: Material

**List settings**

- Select all inspection lots
- Select only inspection lots without a usage decision
- Select only inspection lots with a usage decision

**Ranking List of Vendors**

- **General Data**
  - Purchasing Organization: 1
  - Vendor(s)
  - Vendor Class

- **List**
  - Scope of List: STANDARD
  - Number of Vendors: 50

- **Further Data**
  - ABC Indicator
  - Industry Sector
  - Country of Supply
  - Weighting Key

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Scorecard Criteria

- Using SAP we were able to set up a form that automatically rates a supplier based on the information we have on that supplier.
- The system will take into account data from the past 200 days.
- The system can also do scores for multiple suppliers at once or show a ranking of suppliers.
A supplier’s score consists of 2 main parts, Quality and Delivery.

Quality is weighted at 55% while delivery is weighted at 45%.

Quality is determined by the amount of rejected lots over the number of accepted lots.

Delivery is determined by the on time delivery and the quantity reliability of each shipment.
## Scores for Semi-Automatic and Automatic Subcriteria

**Purch. org.:** 1  Main Purchasing Org  
**Vendor:** 1200890  FALCON WATERFREE TECHNOLOGIES  
**Eval. by:** KAKARLN1  On: 04/13/2011

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>Individual</th>
<th>All logs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old scores</td>
<td>New scores</td>
<td></td>
</tr>
</tbody>
</table>

### Overall evaluations: 82 | 75

<table>
<thead>
<tr>
<th>Subcriteria</th>
<th>Old Score</th>
<th>New Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Price</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>01 Price level</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>02 Price behavior</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>02 Quality</td>
<td>100</td>
<td>63</td>
</tr>
<tr>
<td>01 GR inspection/accep</td>
<td>100</td>
<td>63</td>
</tr>
<tr>
<td>03 CAPA Audit/response</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>03 Delivery</td>
<td>97</td>
<td>97</td>
</tr>
<tr>
<td>01 On-time delivery</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>02 Quantity reliability</td>
<td>79</td>
<td>79</td>
</tr>
<tr>
<td>03 Compl. w/Ship Instr.</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>06 Quality - GR only</td>
<td>76</td>
<td>63</td>
</tr>
<tr>
<td>01 GR Inspection</td>
<td>100</td>
<td>63</td>
</tr>
<tr>
<td>07 Del - On time &amp; qty</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>01 On-time delivery</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>02 Quantity Reliability</td>
<td>79</td>
<td>79</td>
</tr>
</tbody>
</table>
Results and Recommendations

- Scorecard is a big step forward.
- Changes to scoring criteria may be made as more suppliers are rated.
- A site where suppliers can check their scores would be the next step.
- This would ensure score reliability and allow suppliers to contest scores they feel are unjust.
Organizational Structure

Supply Chain
TO Sloan

Green

Internal Improvements

Lean

OEE

Cost

Matrix

Supply Chain
FROM Sloan
• Overall Equipment Effectiveness
• Measures the effectiveness of machinery being used
OEE Issues

- There are no formal procedures on how OEE is recorded or evaluated
- Only limited history of equipment and components are registered
- No data collection mechanism/system
- Data cannot be retrieved on demand
- Data entered only upon administrative personnel availability. No live data
OEE Project Goals

- Create a process instruction for data collection
- Data collection program to store and retrieve information on demand.
- Identify possible solutions for data collection
- Propose system that is operator friendly and administratively functional and friendly
**Lean – OEE Team Progress**

**Timeline**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial research</td>
<td>[Orange]</td>
<td>[Orange]</td>
<td></td>
</tr>
<tr>
<td>Exploring Initial Ideas</td>
<td></td>
<td>[Orange]</td>
<td></td>
</tr>
<tr>
<td>Meeting with Sloan Management</td>
<td>[Blue]</td>
<td>[Blue]</td>
<td></td>
</tr>
<tr>
<td>Discussion on Possible improvement</td>
<td>[Blue]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developing OEE Collection methods</td>
<td></td>
<td>[Green]</td>
<td></td>
</tr>
<tr>
<td>Finalizing OEE Process</td>
<td></td>
<td>[Green]</td>
<td></td>
</tr>
</tbody>
</table>

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OEE Results

- Researched OEE
- Analyzed current Sloan Valve’s OEE system in place
- Developed new ideas
- Combined current OEE system and implemented in with new idea for a better long lasting system.
Operator Completes OEE data collection Sheet

After shift is over, heads over to OEE electronic station.

The Operator will enter into system by pressing the “ENTER OEE DATA” button on the screen
Operator will provide: Employee Number, Equipment Number, Shift number, Count and Scrap

The system will show the same sheet layout as Operator holds on hand.

Operator will enter in All data as operator recorded on OEE collection Sheet.
OEE Results

- Detailed information entered for each line on OEE datasheet
- Scan OEE Sheet into system
- All data will be store in a live database
OEE Results

tblDepartment
- PK: DepartmentID
- DepartmentName

tblEquipment
- PK: EquipmentID
- EquipmentName
- FK1: DepartmentID

tblCategory
- PK: CategoryID
- CategoryName

tblEntry
- PK: EntryID
- SessionID
- StartTime
- EndTime
- TimeDifference
- CategoryID
- IssueID

tblIssues
- PK: IssueID
- FK2: CategoryID
- IssueName

tblSession
- PK: SessionID
- EmployeeID
- EquipmentID
- Date
- ShiftID
- Counter
- Scrap

tblShifts
- PK: ShiftID
- ShiftName

tblEmployee
- PK: EmployeeID
- EmployeeName

tblFile
- PK: FileID
- FileName
- FileAttach

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OEE Results

• When Implemented
  – Perform OEE data analysis on demand
  – Have centralized and detailed information about performance of each machine
  – Devise better preventative maintenance plans
  – Increase production per shift
• Cost of equipment
  – Industrial Touch screen ~$1000.00
  – Scanner ~$300
Implementing OEE system properly is a key component of being successful in collecting data.

- SAP could be linked with OEE data for better analysis.
- Place OEE on each machine or strategically throughout the shop floor.
Organizational Structure

**Internal Improvements**

- Lean
- Cost Matrix

**Supply Chain**

- TO Sloan: Green
- FROM Sloan: Lean

**OEE**
Defining the scope

To develop a tool that helps Sloan easily analyze and compare cost of a specific item from different vendors.
There is no “tool” to cost compare supply chains
Different perceptions of the cost(s) associated with supply chain
Management wants a data driven decision process
- Base line data
- Costing comparison before/after
Sloan needs a tool to make strategic decisions from
Total cost will be the basis for the comparison
Cost Decision Matrix Goals

- To develop a user friendly and functional tool that helps objectively compare costs of items from different sources.
- Standardized the entire sourcing process across all the plants/regions
- Reduce the complexity and clumsiness when analyzing cost
- Increase the organization’s awareness on the total cost involved
- Better understanding of various cost thru cost segmentation
## Cost Decision Matrix Tool

<table>
<thead>
<tr>
<th></th>
<th>Vendor A</th>
<th>Vendor B</th>
<th>Vendor C</th>
<th>Vendor D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Price</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>2</td>
<td>Currency Terms payment</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Commodity code (hts coding)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Freight cost / unit</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td></td>
<td>Duties &amp; Taxes</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td></td>
<td>Total cost / unit</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>4</td>
<td>Cost of Inventory Lead Time (in days)</td>
<td>#VALUE!</td>
<td>#VALUE!</td>
<td>#VALUE!</td>
</tr>
<tr>
<td></td>
<td>Non Quality cost</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>6</td>
<td>Total Cost</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
</tbody>
</table>
### Cost Decision Matrix Tool

#### Vendor A

<table>
<thead>
<tr>
<th>Variable price</th>
<th>Input variable price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor</td>
<td>Input labor cost</td>
</tr>
<tr>
<td>Material</td>
<td>Input material cost</td>
</tr>
<tr>
<td>Fixed</td>
<td>Input fixed cost</td>
</tr>
<tr>
<td>Price</td>
<td>Input purchased Price</td>
</tr>
<tr>
<td>Cost</td>
<td>$0.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Currency</th>
<th>Enter currency name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volatility</td>
<td>(Pull Down Menu)</td>
</tr>
<tr>
<td>Terms of payment</td>
<td>Type terms as they show on quote</td>
</tr>
<tr>
<td>HTS code</td>
<td>[For HTS codes click on this link]</td>
</tr>
<tr>
<td>Country</td>
<td>Enter Country’s name items ships from</td>
</tr>
<tr>
<td>City</td>
<td>Enter City’s name items ships from</td>
</tr>
</tbody>
</table>

#### Vendor B

<table>
<thead>
<tr>
<th>Variable price</th>
<th>Input variable price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor</td>
<td>Input labor cost</td>
</tr>
<tr>
<td>Material</td>
<td>Input material cost</td>
</tr>
<tr>
<td>Fixed</td>
<td>Input fixed cost</td>
</tr>
<tr>
<td>Price</td>
<td>Input purchased Price</td>
</tr>
<tr>
<td>Cost</td>
<td>$0.00</td>
</tr>
</tbody>
</table>

| Currency       | Enter currency name |
| Volatility     | (Pull Down Menu)    |
| Terms of payment | Type terms as they show on quote |
| HTS code       | [For HTS codes click on this link] |
| Country        | Enter Country’s name items ships from |
| City           | Enter City’s name items ships from |
Results

- Tool breaks down cost into different elements
- Tool follows standard work process
- Creates a data driven tool for strategic sourcing
- Helps Sloan identify potential market to source their products from different countries
- Total projected company savings: 10%
Green supply chain is good for the environment and a good business statement

Good OEE system helps:
- Reduce manufacturing cost
- Take full advantage of capital
- Reduction of working capital
- Identify potential market to source their products from different countries saving the company approximately 10%
Acknowledgements

- Mr. John Caltagirone, Faculty Advisor
- Sloan Valve’s Management and Staff
- IPRO Office
QUESTIONS?