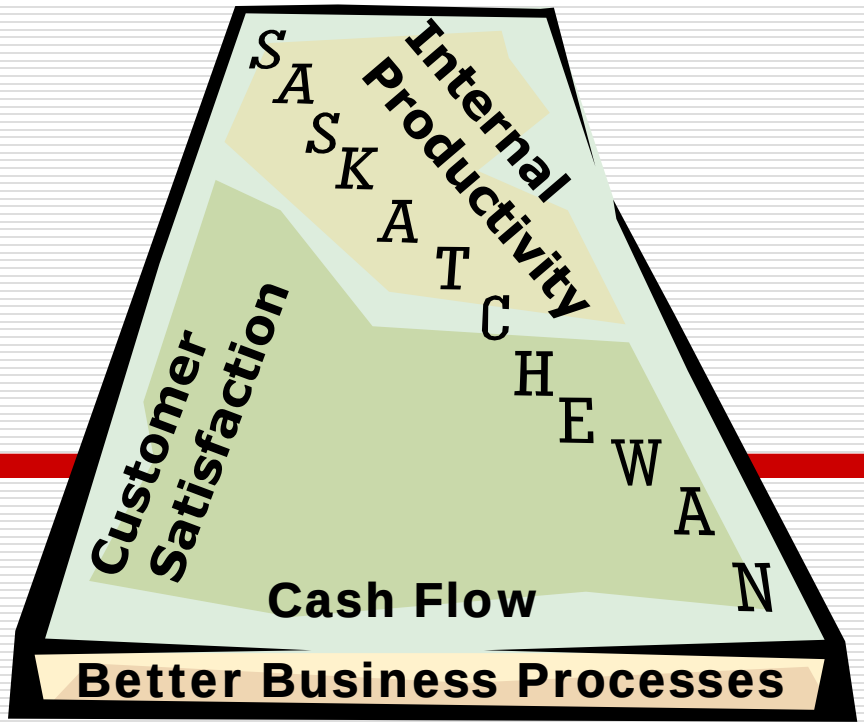
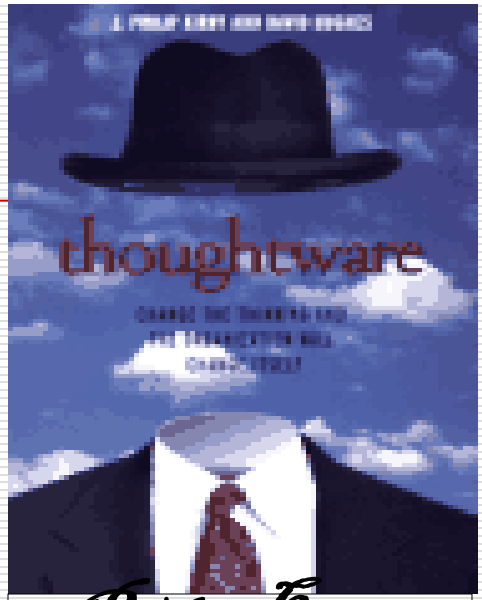


ENTERPRISE SASKATCHEWAN



Developing a Competitive Edge to Compete Globally

Philip Kirby

Organization Thoughtwar

International Inc.

Saskatchewan Mining Supply Chain Forum

April 14 2010

SMA 40+ YEARS SASKATCHEWAN MINING ASSOCIATION

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fresh thinking ... better solutions

Manufacturing in Saskatchewan Today

- Sales (10%)
- Employment (8%)
- 1450 Mftg employees on Job Share
- Increase from out of province competition
- Etc.

Challenge: How Saskatchewan can get more Global Market Share?

Opportunity: Become much more ***Competitive (***Strive for Superiority)

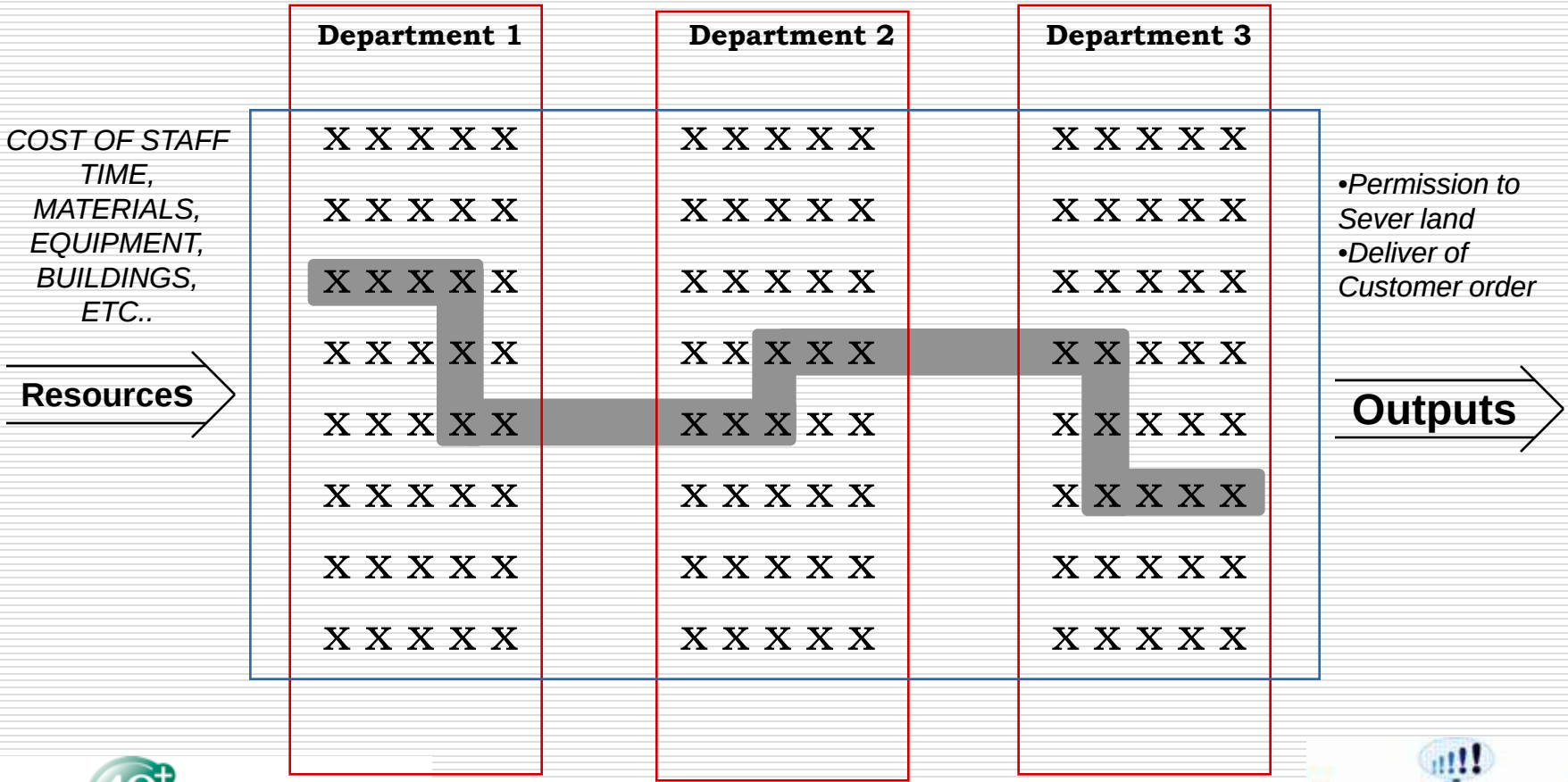
3 Critical Measures of "Competitiveness"…

- **Customer Satisfaction**: If you are growing customer satisfaction your *global market share* is sure to grow too.

- **Employee Satisfaction**: Employee satisfaction gets you *productivity*, quality, pride and creativity.

- **Cash Flow**: Cash flow is the pulse – the *vital sign of life* in a company"

These 3 Critical Measures are all a function of the **Health** of your Business Processes



Business Process have 3

...and your business process are within control

1. The Quantity of Resources
[which is driven by the]

2. Design of the Process
[consuming the resource] &

3. The Volume of Work Demanded
[the process]

Stop sending Orders

Back to the 3 Measures of Competitiveness… and what they mean

Purpose

Customer Satisfaction…**Value to the Customer**

- Design business process to deliver value as defined by the customer
- To deliver Customer Value optimize the overall process outcome, not individual or department or function subsets.

- **Purpose**…of the business process is to generate and produce against customer demand…

Measure # 2: Employee Satisfaction… Measure

Respect For People

- Give employees the information, skills and authority to identify and eliminate waste in their processes.
- Then…Ask the employees what is the problem with the way work is currently done.

This is the highest form of respect because it is saying I can't solve the problem alone

- **Measures**…the test of a good measure is to ask if the measure helps in understanding and improving performance.

Better measurement:

- Does the measure help in understanding and improving performance?

- Capability measures do… Target measures don't

- Does the measure relate to Purpose?

- From the customers point of view

- Are the measures integrated with Work

- *Are they in the hands of the people who do the work*

- "Real" efficiencies come from freedom to experiment…the people who do the work must decide the best way

Measure # 3: Cash Flow…Economy comes from **Flow** not scale

Methods

- Only by managing costs end to end, associating costs with flow, can you reduce costs in a sustainable manner
- A lousy process will consume ten times as many hours as the work itself requires.

- **Methods**…proper application of countermeasures to Variance from Purpose… (Lean Tools and Techniques)

"Bulletin to all LEAN Toolheads and Kaizen Kowboys"

Purpose…of the business process is to generate and produce against customer demand…

Measures are used to develop knowledge through action on the system

Methods (Lean Tools & Techniques) are temporary way stations on the journey to fulfill **Purpose**… to produce against demand (continuous flow)….

Lean is looking at the time line from the time we get the customer order to the time we get the customers cash.

Electronic Retailers

Retailer	Inventory Days
Circuit City	60 days
Best Buy	50 Days
Wal-Mart	40 Days
Amazon	30 Days
Apple	4 Days

A 1-2% Product Value erosion for every additional shelf day.

The good businesses ratchet down inventories through waste reduction and turn sales into cash quickly

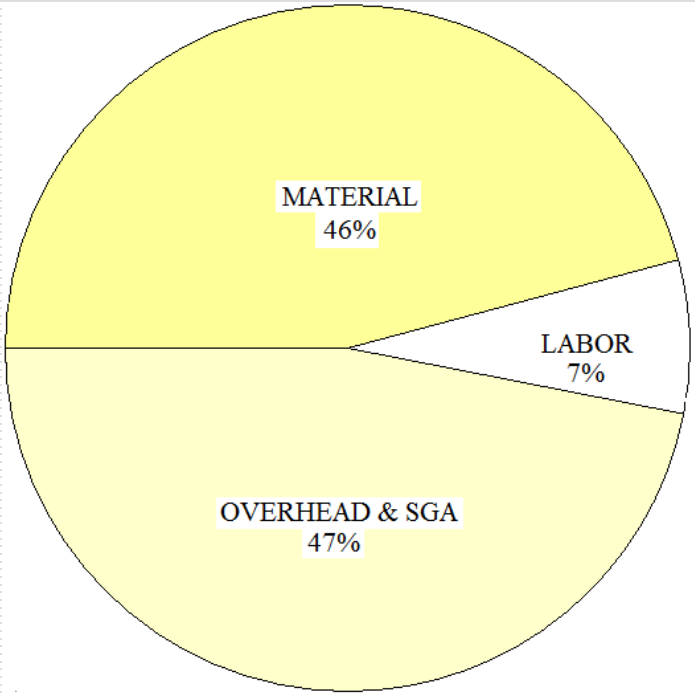
Lean Companies Generate Cash by focusing of short cycle times

Elongated supply chains go right to the heart of modern management failure.

"Quit buying everything from China then blaming everyone because you can't finance a supply chain that takes months to get your goods…how about paying attention to cycle times instead of hours agonizing over your irrelevant headcount…" *Philip Kirby*

Read the Chart Below and Guess what management's priority was?

- Yep - labor costs.



- Management had already built one plant in China and was seriously considering moving most or all of this plant there in order to get a handle on that unreasonable Western labor cost.

- The true lean companies turn inventory faster - and better - than the rest.
- They outperform the global outsourcers in large part because they use their shorter supply chain to great advantage.

Beware the False Lure of Low Labour Locations:

	Batch of 50	Batch of One	% Improvement
Elapse Time	3.25 Hours	2.0 hours	38%
Hours of Paid Labour	19.5 Hours	12.0 hours	38% reduction in Labour Costs
Processing Time	3.2	4	% for set u
Value Added Time	2.9 hours	2.9 hours	
% of Touch time	16%	33%	52% increase in productivity
% time adding Value	15%	24%	60% and lots more room to improve

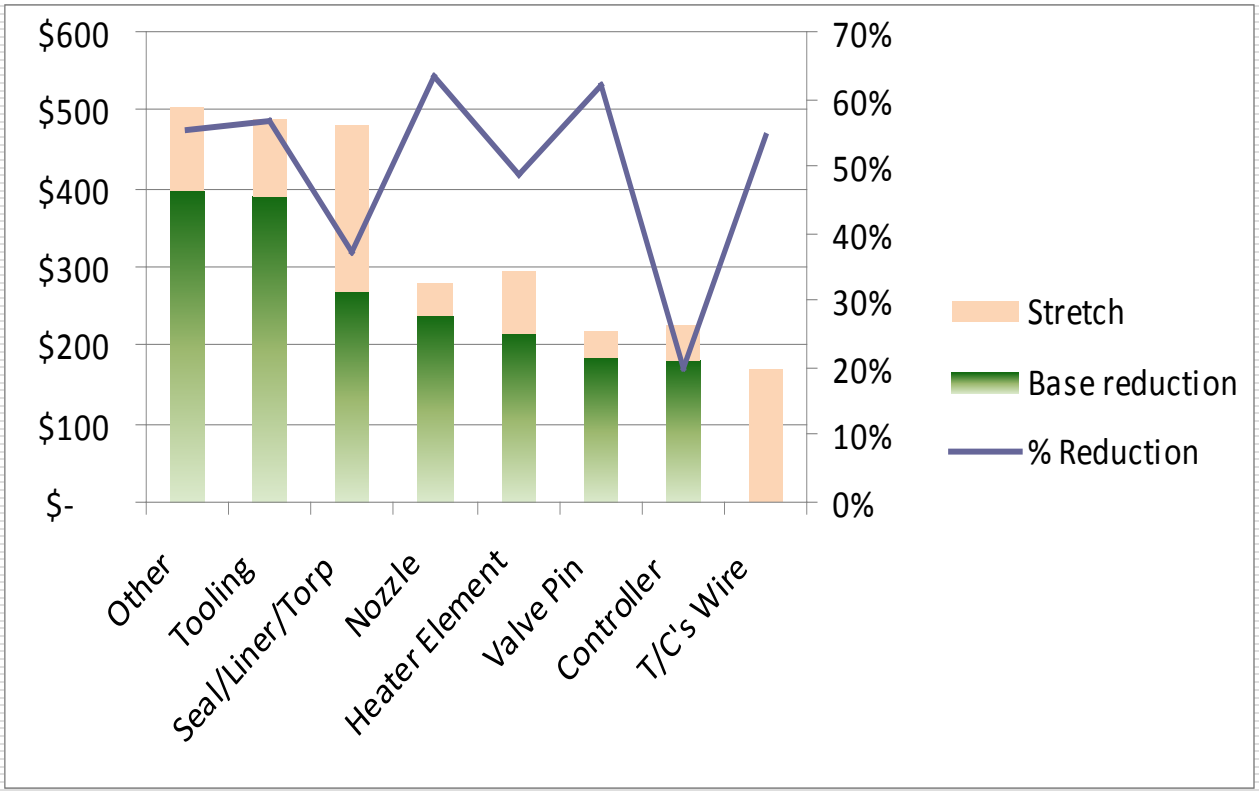
Root of all Evil: BATCHES


$252,647.38

Working Capital Productivity Ratio

- Cost driver measures of improvement (e.g shorten time to customer cycle, reduced material handling, smaller batch sizes etc.)
- Average WCPR is $.20 per dollar of revenue
- Halving WCPR=35% labour productivity advantage
- Every $ of freed up WC= 1 time boost in earnings and a permanent increase to ROA.
- Typical NA Manufacturer ties up 30% of total capital to support current operations.

Current Client: Ontario Manufacturer:



- Reduction of $2.545 MM in 8 months
- Ave from 4.0 turns to 8.8 turns
- Next 4 months additional $1.048MM (10.4 turns)
- single biggest block of non-productive cash!!

When we focus on Business Process Health we have a **Lea®n Culture…**

Systematic Linkage of between:

- **Purpose**…of the business process is to generate and produce against customer demand…
- **Measures**…the test of a good measure is to ask if the measure helps in understanding and improving performance.
- **Methods**…proper application of countermeasures to Variance from Purpose… (Lean Tools and Techniques)

Lean Thoughtware in Mining Industry

- OTI lead an employee team (Unionized) in creating the ability to change the SAG (Semi-Autogenous Grinding) Mill discharge end liners better:

  - safely (91% reduction in safety related issues)
  - in 27.5 hours (from 72 hours)
  - reducing the time required to changeover by 62%
  - at $50,000 per hour of down time the opportunity was significant.
  - left a methodology in place to apply across other operations.

General view of the beast itself.

The Mill (Clarabelle) is approx 50 ft in diameter and draws enough electricity to power a small town.

Lean liner removal inside the SAG.

We changed the discharge end liners during The event to demonstrate lean principles, (this was not the entire inner core of the mill, there are many other big plates (e.g pulp filters) which were not changed during our event .

- SAG crane in action.

We optimized safety and operational effectiveness by replacing liners at maximum safe wear point based on historical data analysis.

.

- SAG inlet (and access) port.

We optimized any essential SAG downtime by synchronizing other maintenance activities with SAG stoppages.

- Outside lean team.

Synchronize SAG stoppages with up and downstream operations so they can optimize any resulting impact.

Team Vale/Inco "Learning to See".

What does Lean really mean?

***Lean* applied properly…**

…results in the ability of the organization to *Learn*…

…however it must possess the ability to change how it thinks…

…thus Lean Thoughtware

Kiruna Truck Team: Digging deep into the process (7,000 ft level)

- Truck availability time increase by 20%

- 1 .9% increase in available production (tonnage)

Ensure the electrical /mechanical reliability resulting in the required availability of the truck and supporting the safe operation of the truck leading to fewer breakdowns.

OTI Client: Bourgault Industries

- Problem: ability to meet demand for MRB
- Solution: Lean cell
- Client Feedback:
  - Batch size: 1,000 >12
  - Capacity: 3X
  - Lead time: - 98%
  - Cost: -8%
  - Piece of mind: ***priceless!!***

OTI Client: AB Sciex

- Problem: Lack Space for growth
- Solution: Lean Flow
- Client Feedback:
  - 60% throughput increase from same footprint
  - SPO saw 99% increase in productivity
  - 2000 series first pass yield improved from 0% to 75%
  - -70% reduced material handling
  - 30% productivity gain from Lean over 2 years

OTI Client: AGI

- Problem: Lack Space for Paint line
- Solution: Lean Flow
- Client Feedback: (4 months)
  - 6,400 square feet saved
  - $1,100k inventory reduced
  - First cell +12% productivity; 100% on-time delivery
  - 3 Years: Ship 115% more (truckloads)

Where to Start…**Start Outside-In…**

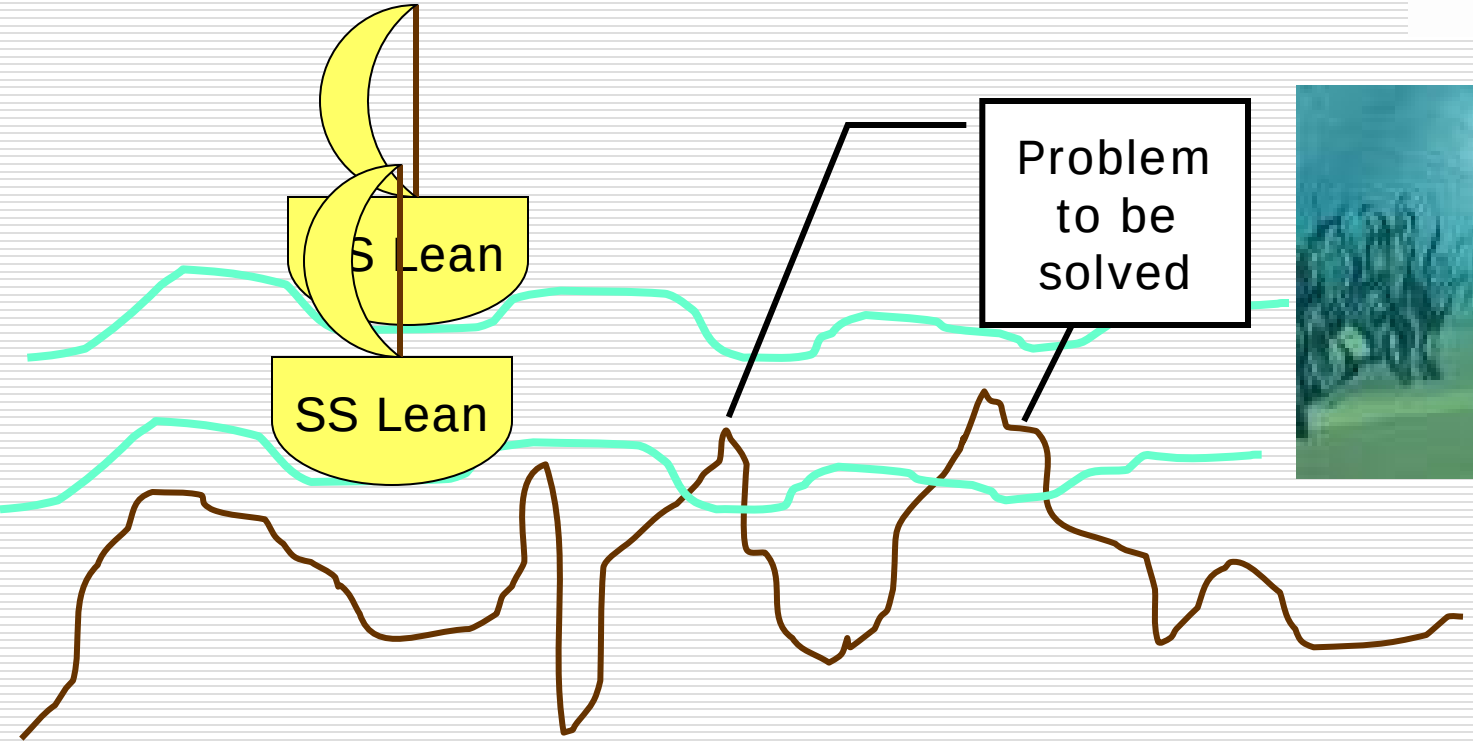
know how your organization is perceived by your **customers.**

- The **measures** need to understand and improve performance are concerned with:

- Demand-*What are the types and frequency of demand the customers place on the system?*

- Flow*- What is the capability of the flow to handle those transactions in customers terms.*

Problems are treasures



Thank You

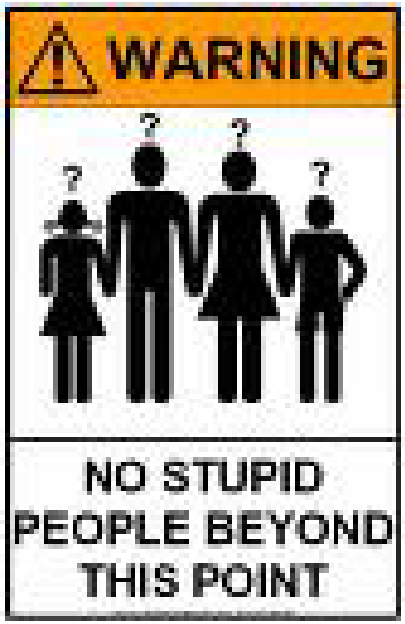
Philip Kirby

Organization Thoughtware International Inc.

philipkirby@thoughtware.ca

519-821-4924

Bozone Layer: The substance surrounding stupid people that stops bright ideas from penetrating



Survey Says…

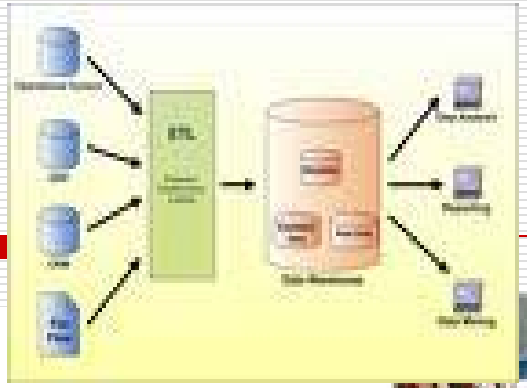
1 Issue: Unpredictability of Demand

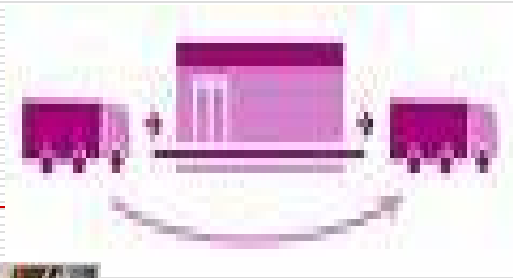
- 12% lead times
- 33% Improving forecasting

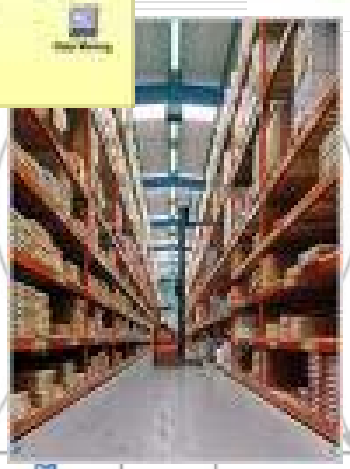
2 Issue: Improving Collaboration with Suppliers

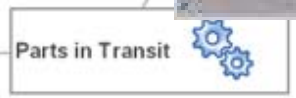
- Negotiating lower prices with suppliers as primary activity
- 60%: Executive team not supply chain specialists are most knowledgeable about global supply chains.

Example









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Data Collected During Shift Operations[1]

[1]Comparison of Shift 2 and Shift 4 in Frozen Picking using different Pick Methods

Measure	Traditional Process	Lean Process	% Change	Comments
Total Elapsed Time (minutes)	44 minutes	35 minutes	20% less	The total elapsed time to pick and load a "medium order" (7x30) of 235 items
Cost (hrs of Paid Labour)[1]	4 hours & 56 minutes	2 hours & 53 minutes	44% less	The total labour paid in the pick and stage of the order (tunnel time and stage time)
Average Elapsed time per trailer	5.7 hours	1.46 hours	74%	Truck takt time is 20 minutes.
Orders Staged	72	2	97%	Orders picked but not available to load until previous order is complete
Incidents of Side by Side Picking	4	0	100%	Safety Issue