

Concepts, Methodologies & Tools in an Operational turn-around

- This is a story about an operational turn around of a company serving the metal –fabrication/ surface finishing markets.
- This presentation will describe the approaches utilized to understand the business needs and define the methodologies & tools taken to improve operational results.

Where are we now –what is the current situation?

- Company has been in business over 40 years
- Over the last few years it has experienced low year over year growth (< 1%)
- Productivity was in the range of (65-70)%
- Cost of Quality was in the range of (4.5-5.5)% of Sales
- Delivery was also at the range of (60-65)%
- Lead time was set at (3-5) days

Some initial discussions

- What business are we in?
 - It is important to see the whole market that we serve
- How do we serve our customers?
- Do we really know & understand our customer needs?
- Do we know where we are in the supply chain?
 - OEM > Tier 1 > Tier 2 > Tier 3....
 - This is very important to know & understand well

Some initial discussions

- Can we grow the business?
 - Can we open up capacity?
 - Can we take cost out?

- What is our pricing strategy?
 - What do we offer & what are customers buying?
 - Can we segment the market?
 - Do we understand the market's demand –price elasticity?

Some initial discussions

- But we are a job shop....
Things change all the time?
- Can we be stable & respond to sudden demand changes?
Can we have a stable daily production plan?
Things change all the time?

Initial data gathering – creating a baseline.p1

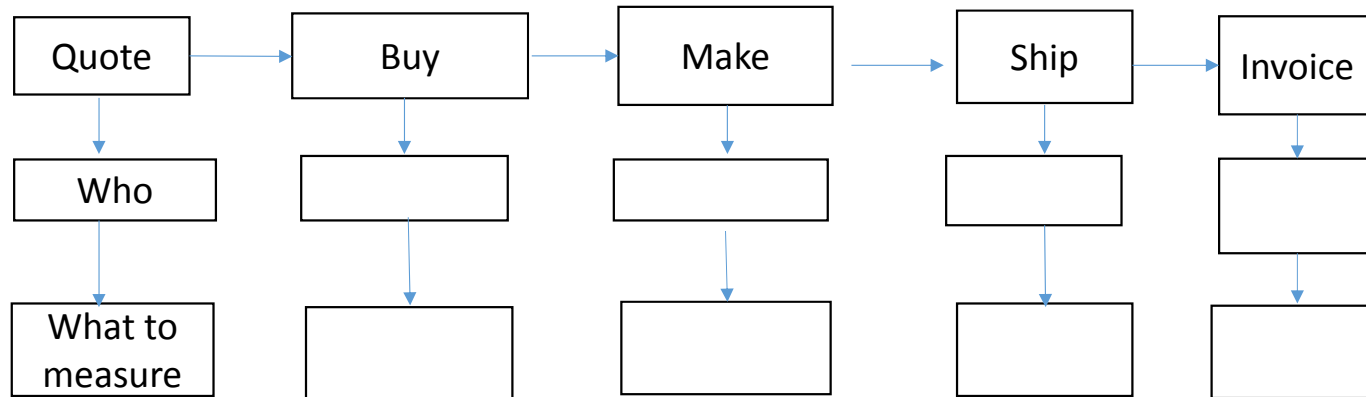
- Used the VSM approach to find out our Value added pct (%)
 - We found it to be at the (43-47)% range
 - This showed that we added value at about 45% of the time while the parts were at our shop; the other 55% the parts set somewhere.
 - Although the VA % was low it also pointed to possible gains that could be made

Initial data gathering-creating a baseline.p2

- What is our business model looks like?
 - Quote > Buy > Make> Ship > Invoice
- What are your key processes?
- Who's the owner?
- How do you measure this key processes, and
- How do you support these key processes?

Initial data gathering-creating a baseline.p2

- Sample of Business model



- So in one page you can have a very good idea about how value is created, what are the key business processes, who owns them & what is important to measure

Initial data gathering-creating a baseline.p3

- Process capability studies
- Conducted correlation studies between process settings & materials usage. In this case the relationship was between pressure settings of dispensing equipment and flow rates which in turn influenced material applied thickness.
 - The correlation showed a $r=(0.7 - 0.8)$ which pointed that controlling our process could improve our materials usage and improve our inventory turns.
 - This led to creating a disciplined approach in job setting prior to production where its job had its own settings.
 - Furthermore this created a database where process trends could be analyzed and become proactive in our decision making.

Initial data gathering-creating a baseline.p4

- Reviewed the Cash Cycle process
 - This is the Purchase Order to Invoice Cycle time
 - It may look like this: PO > Make > Ship > Invoice
- Total Cycle time was measured in days was 12 days

Steps taken.p1

- Developed Production guidelines that included:
- Production schedule was released twice per day and it was time sequenced with emphasis on meeting customer due dates. This created a stable and predictable production environment to operate with.
 - Daily production meetings were held where we reviewed daily plant-productivity, quality yield, & delivery. Participants included production supervisors, quality and maintenance technicians
 - Daily production data was posted at a plant location that was very visible to everyone
 - Rework parts had to be rescheduled within (8 to 24) hrs
 - Process settings were followed on a job by job basis; with each job having its own profile settings. This was very important since it provided process consistency from job to job and part to part..

Steps taken.p2

- Process capability procedures were developed so that:
- Process equipment & settings such as pre-treatment, dispensing and curing equipment were verified on a daily basis prior to production
- This provided critical to quality parameters to be monitored and adjusted as needed.
- The data accumulated created a database that allowed us to monitor trends & correlate process variations to product quality.
- Allowed operators to pull in advance part-profile sheets in coordination with daily production needs

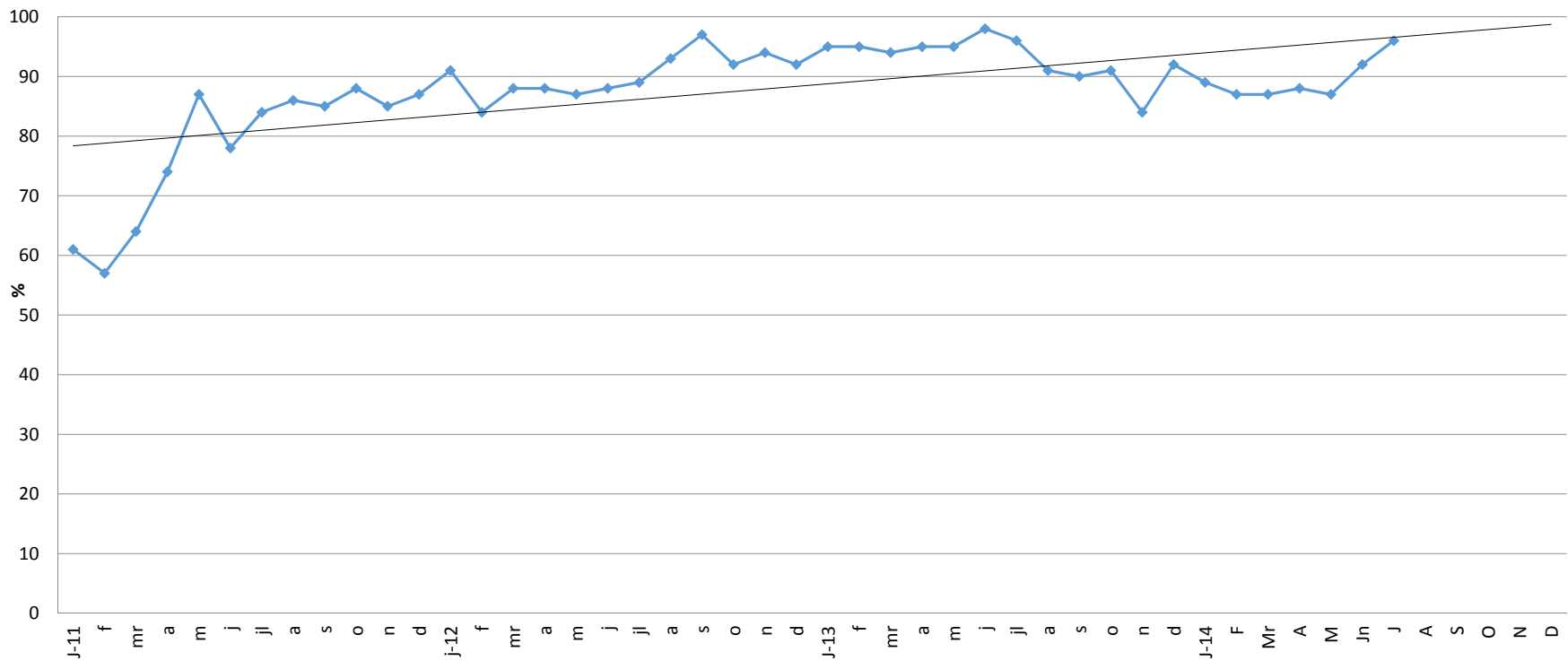
Steps taken.p3

- Creating the perfect order - Delivering & invoicing on time
- Closing out at the end of each job
 - Closing out all operations
 - Cut the packing slip
 - Invoice
 - Close the job
- This facilitates the reduction in the cycle time of the cash cycle and therefore improves the cash flow of the business.

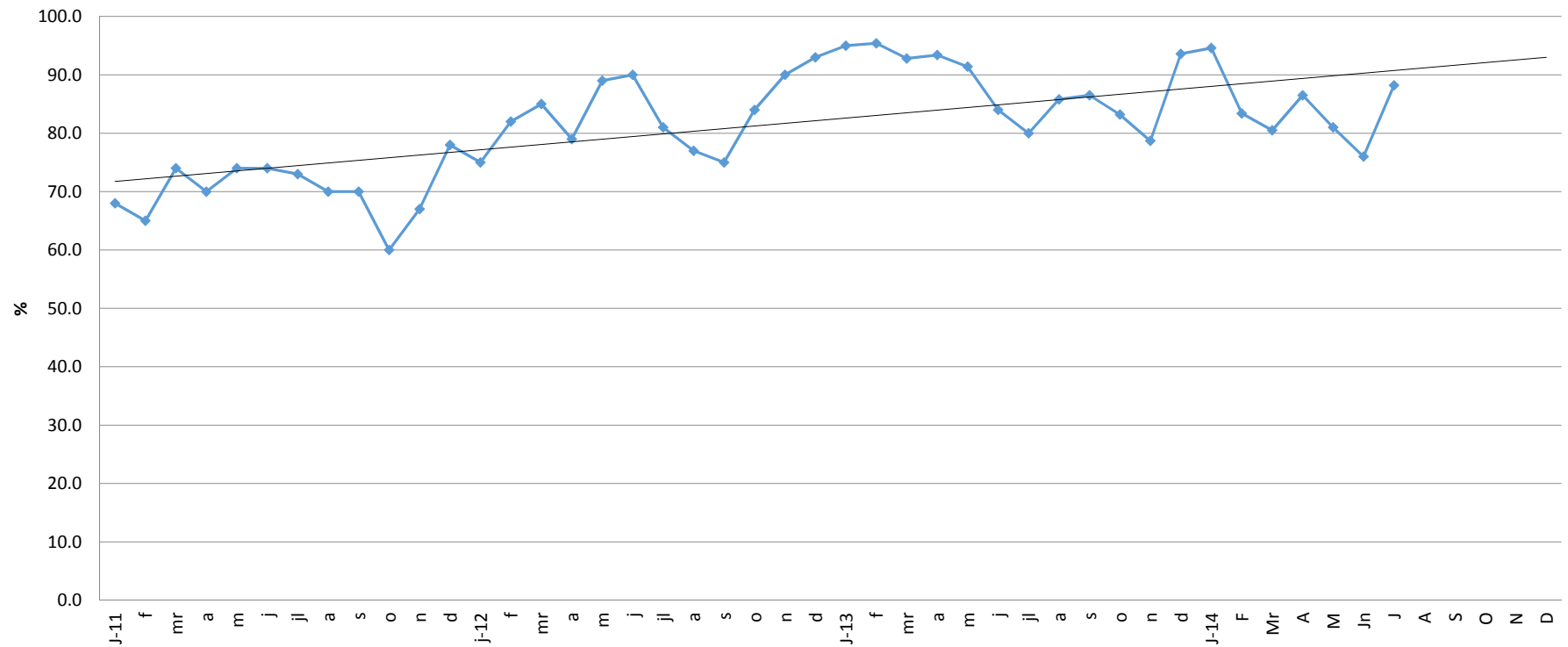
Operational Results

- The following results were achieved within the first year:
 - Sales were increased by 11.31%
 - Productivity improved by 25% from (72 to 90)%
 - Delivery improved by 18.5%, from (74 to 88)%
 - Cost of rework was reduced by 34.6%, from (104 to 68)K
 - Lead time was reduced by 50%, from (4 to 2) days
 - Cash cycle was reduced by 66.7%, from (12 to 4) days
 - Materials purchasing was reduced by \$18K/mo.

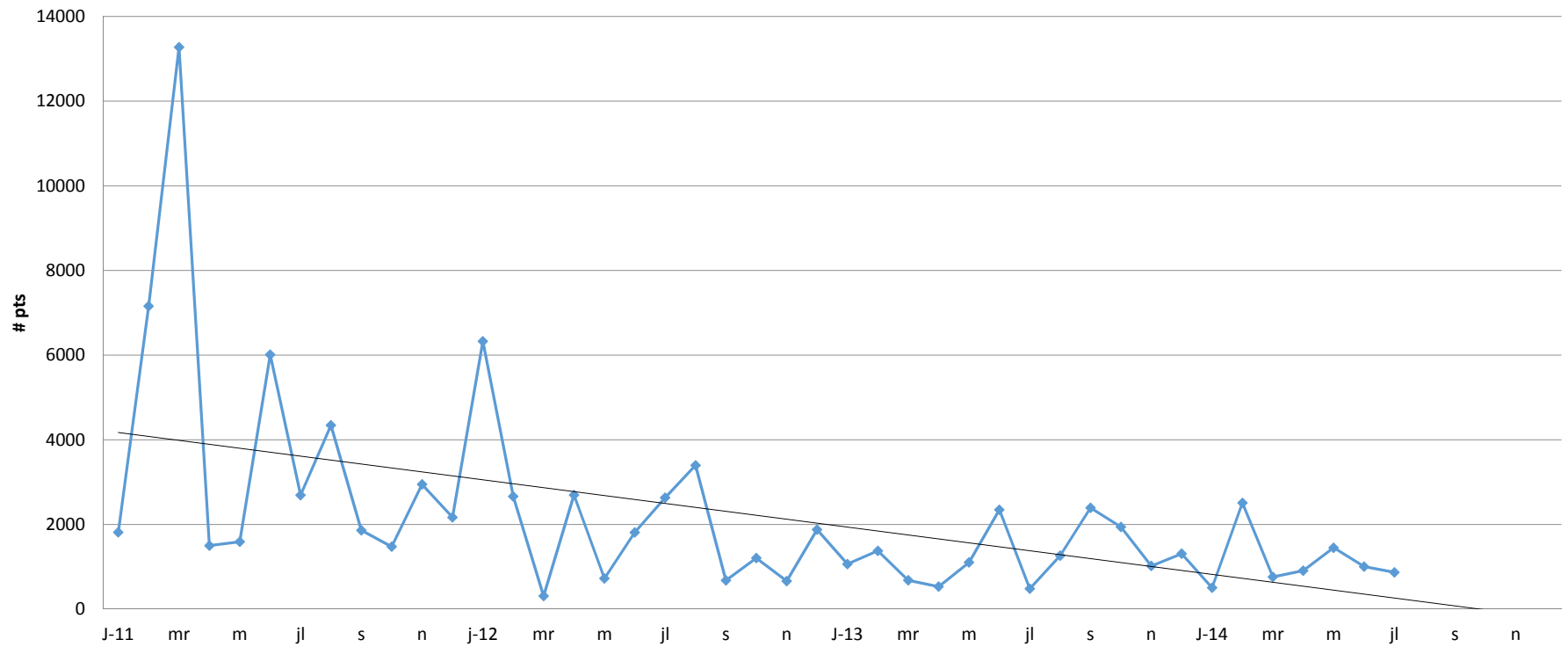
Monthly Productivity data & Trend line



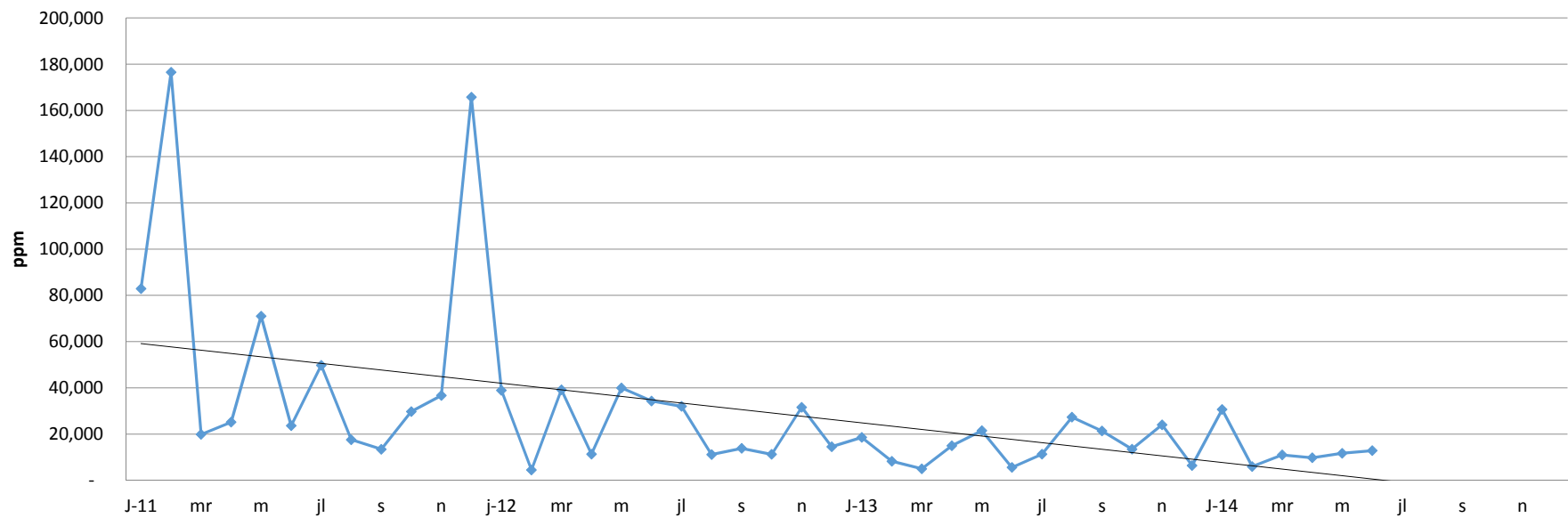
Monthly Delivery Data & Trend Line



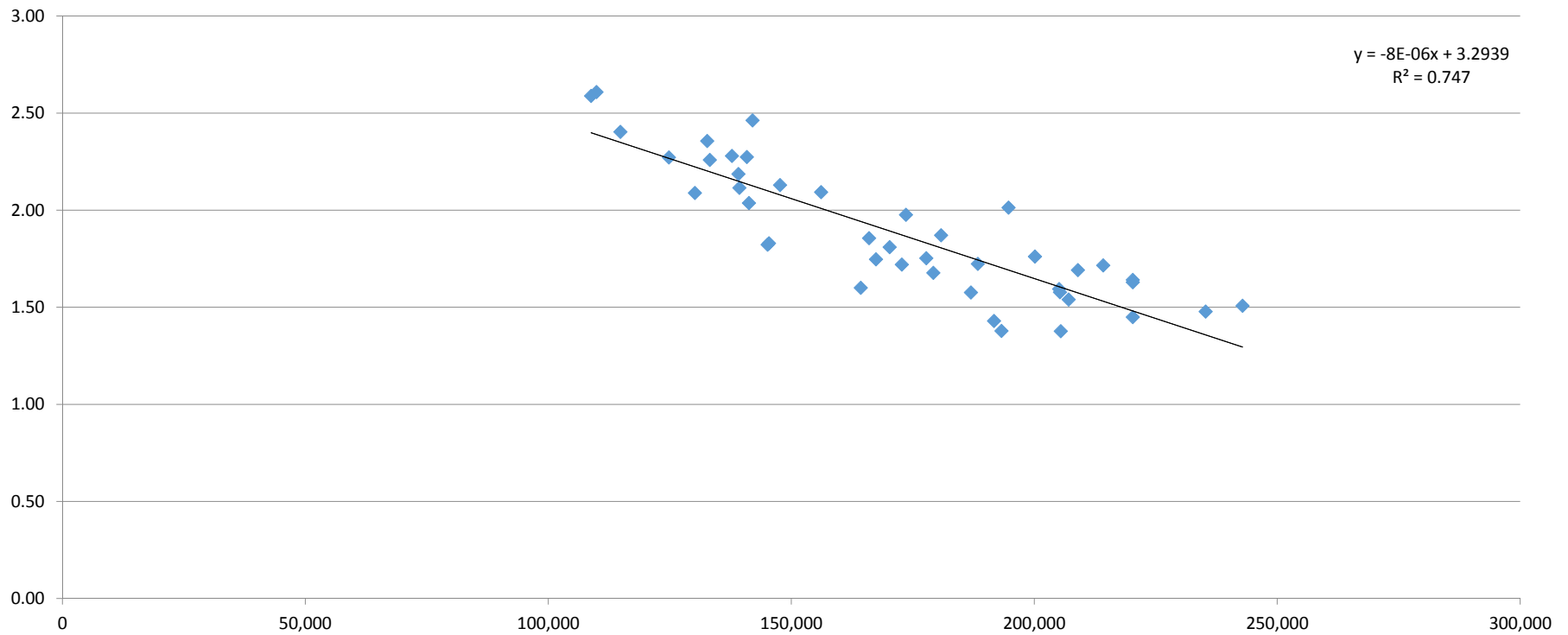
Monthly Rework of Defective parts



Internal defect reduction trend in ppm



Regression Analysis - On pricing elasticity



Some thoughts to consider on business operations.p1

- The building blocks of a company's strategy are not products and or markets but business processes.
- Competitive success depends on transforming key business processes into strategic capabilities.
- In this case the ability to cut the lead time led to an increase on sales
- It is well known that by cutting the lead time by half you can grow by 2x to 3x the market rate

Some thoughts on business operations. p2

- What is the pricing strategy?
- Do we chase volume thinking that we are growing sales?
- Can we grow sales on pricing reduction alone?
- Every market has a commodity and a value-added segment- in which one are we growing?

Some thoughts to consider on business operations. p3

- The time line approach:

From the PO  to the Invoice

- The idea is to keep on shrinking the time that it takes to go from the time we receive the P.O to the time that we invoice the customer.
- This has a tremendous impact on the cash flow of a company and
- Also on the ability to quickly respond to sudden market demands

Final Thoughts

- Clearly define what's important to the business
- Gather data to create a baseline
- Deploy methods & tools
- Track performance on a daily, weekly, monthly, uarterly & yearly basis
- Review & adjust as market conditions change