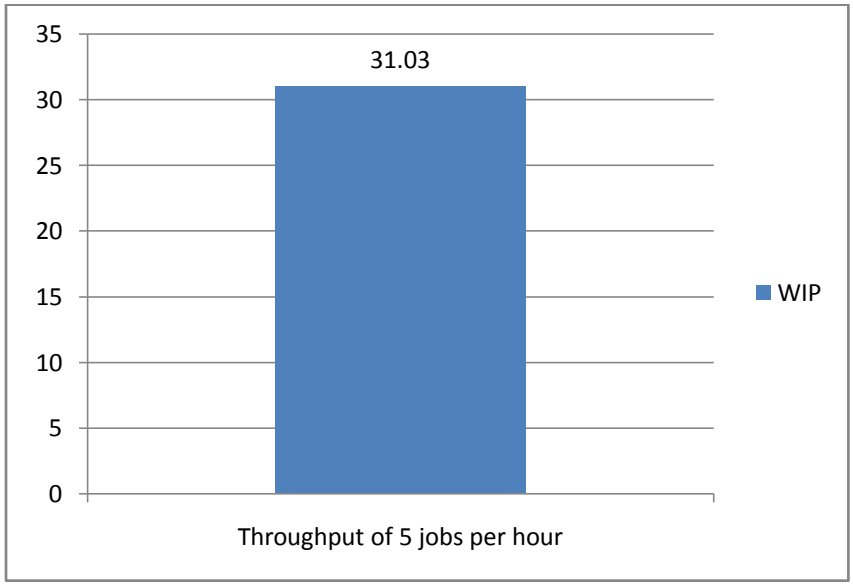
ROADMAP FOR DISCRETE MANUFACTURING

The As-Is State Of The Factory:



I also provide figures on:

1. Cycle time:
   CT = 6.206 hours
2. Workloads at workstations:

Workstation	Utilization
1	81.25%
2	86.67%
3	93.33%
4	80%

The resulting utilization rates are in the range of 80-90% which allows us to compute steady state system characteristics.

Impact on the balance sheet:

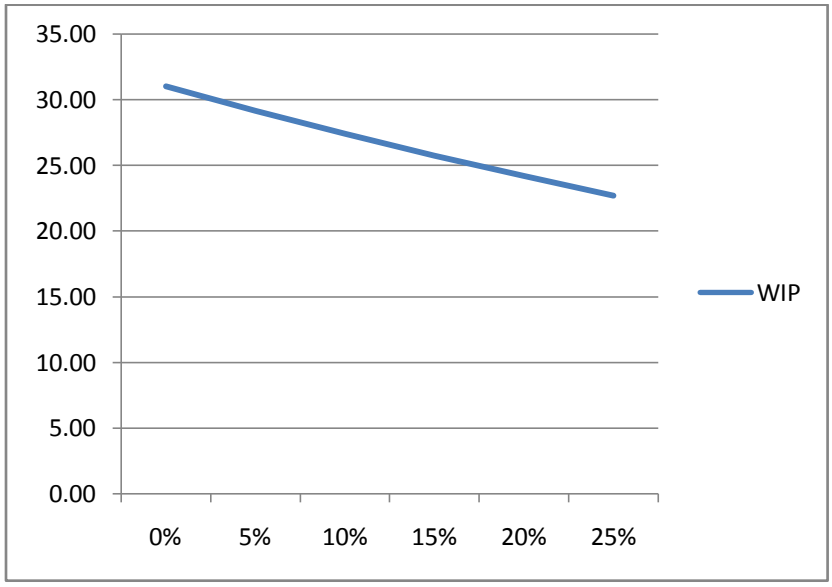
1. Creditworthiness: By reducing WIP the percentage of current assets as WIP goes down. This improves your creditworthiness evaluation by financial institutions.
2. Higher retained earnings: Reducing WIP increases your retained earnings.
3. Increase Throughput: Avoid stock-outs, improve customer service levels, unit cost goes down. Throughput this way is really multipronged and gives you the right set of tools to gain a strong competitive advantage.
   a. Return on assets improves.
   b. You can quickly expand by negotiating cheaper Capex financing solutions.
   c. A model made popular by BCG.

Competitive advantage:

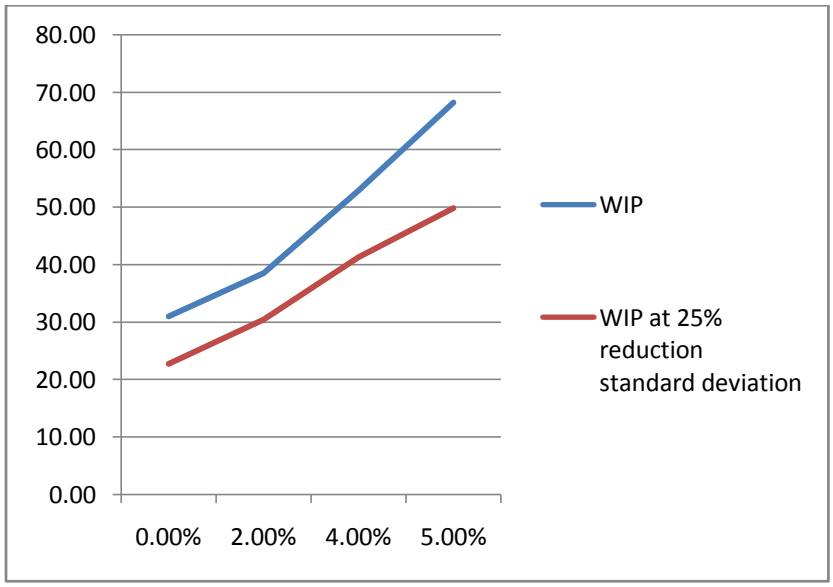
1. With better creditworthiness we dominate our competitors who are at our increased throughput levels.
2. With Improved customer service levels we blank out and eat into our competitors' (the ones who are at our current throughput levels) market share.

This is illustrative of a real live project.
Reducing process variability:
- The International Society of Automation isa.org
- - https://ww2.isa.org/standards-and-publications/isa-publications/intech-magazine/2010/september/web-exclusive-reducing-process-variability/

With Capex Expenditure Across All Workstations:



Standard Deviation Reductions Across All Workstations



Throughput Increases

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This Is What I Do:

1. Deploy Little's Law
2. Solve systems of linear equations
3. Mathematical approximations for a general server queuing system
4. Decomposition of the production system into workstation level micro-systems
5. Apportion WIP in the proportion of products manufactured
6. I use a non proprietary model developed by BCG
7. The abstract modeling framework is developed at the Texas A&M University, USA

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