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Business and Economics/ Business Statistics

Traditional Account versus Lean Accounting in an Emerging business trend

Objectives

At the end of this course the student will become knowledgeable in 1) Day to day operational accounting practices / measurements 2) analyze trends and establish counter measures to drive operation improvements.3) economic trends on business today

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## Outline

1 – Introduction	Page 3
2 – Background	Page 4
3 – General Analysis	Page 7
4 – Traditional versus Lean methods	Page 8
5 – SQDC	Page 12
6 – SOFP	Page 13
7 - Conclusion	Page 15
8 – Definitions	Page 16
9 – References	Page 17

## 1. Introduction:

When you look at the economy we see many trends, the most significant is the customers wanting high quality products “cheaper, quicker, with better service” driving companies like Apple, UPS, plus the top three automotive company to re-look at how they do business today. Just take surf on the Internet Google “Lean versus Traditional Business Practice” and read hundreds of testimonials, plus white papers on their lean journey high points and low point. Toyota has turn the automotive business and manufacturing world towards a continuous improvement trend not only in the manufacturing environment, plus how they focus on business trends and forecasting business trends over time

In a recent articles found on one these goggled pages ‘LEAN Executive Blog – current thinking about lean leadership, June 2006, the article name is ‘Change or Die’ this article explains Fords introspective look into themselves and how they miss the approaching train “Toyota”.

It hard to believe Ford General Motors and Chrysler missed the economic trends and business leverage Toyota has put on this industry over these past few years. As quoted from this article “*Ford, GM and all traditional manufacturers manage with n infrastructure that is fundamentally different from the management and infrastructure at Toyota, Honda and the truly lean companies.*”

*“No matter how these traditional companies care, how hard they work to solve there problems they cannot continue to manage themselves by the old DuPont ROI model with MRP/ERP systems, Labor focus performance metrics, functional organizational structures, standard cost and*

*investment decisions by the same old accounting practices and hope to compete with Lean organizations.”*

## 2. Background

One of the largest Business and Economic trends in the industry today is based on many companies lean transformation efforts and it's impact on the economics of these industries. With the removal of waste, small lot sizes and quicker process time, Traditional methods for accounting and business measurement need to change in order to sustain these efforts.

Accounting change from traditional accounting practices to “Lean accounting” has both negative and positive condemnation as with any change from the norm.

Lean accounting;

- Provides information for better lean decision-making. This leads to better and improved revenue and profitability.
- Reduces time, cost and waste by eliminating wasteful transactions and systems.
- Identifies the potential financial benefits of Lean improvement initiative and focus on stratifies required to realize those benefits
- Motivates long-term lean improvements by providing lean focused information and statistics.
- Address Customer value directly by linking performance measurements to drivers of value creation and driving changes to maximize this value.

Traditional accounting systems are not wrong, they are best suited for mass production and when used in lean environmental are mostly counter productive in

meeting and measuring improvement. Some of the short coming when using traditional methods are such;

- Motivate people to use non lean methods, such as running large batches and building inventory
- Traditional systems are wasteful they require huge amounts of unnecessary work, gathering and analyzing data, producing un helpful report only a few look adding un-useful task to an already waste burdened process.
- Standard cost can harm lean companies because the based on premises grounded in mass production methods. (Taylor's Scientific Management) Lean violates all of the assumptions of mass production. Where as mass production is based on achieving economies of scale though long production runs, lean focuses on making product base on customer requirements on short production run if possible in one day

It is no wonder that traditional methods lead people to make bad decisions, such as out sourcing items that should be in sourced. The method are complex and confusing to generate. They provide misleading information which drives management to make wrong decision on important factor within their business from all aspects, such as make buy, profitability of sales orders, rationality on products or customer.

A example of this found in Practical Lean Accounting Chapter One, Why is Lean Accounting Important, By Brian Maskell and Bruce Baggaley, Productivity Press, 2004 is the bases for majority of this paper.

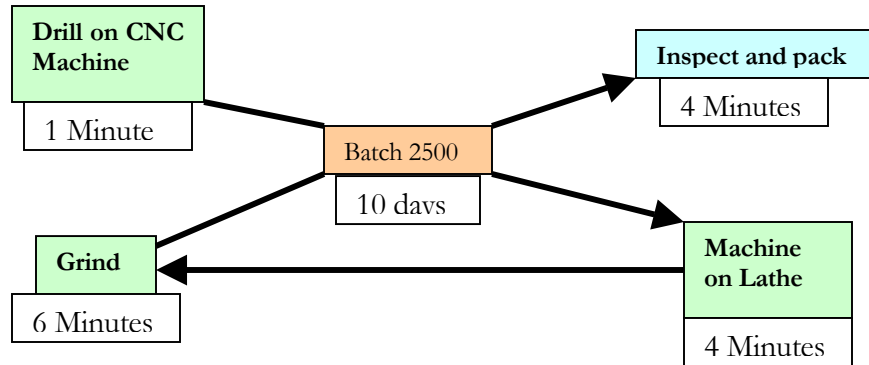
## **Company A – traditional manufacturing process**

Inventory 25 days

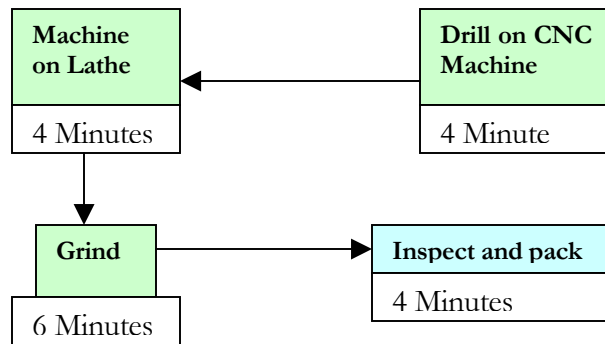
On time delivery 82%

Lead time 6 wks

**Total cost per unit \$21.50 (Standard Cost) = labor cost \$5.00 +  
over head cost \$15 .00 + \$1.50 Material**



**After making a lean work cell:**



**Company A – lean work cell process**

Inventory 5 days

On time delivery 98%

Lead time 2 Day

**Total cost per unit \$251.50 (Standard Cost) = labor cost \$6.00 +  
over head cost \$18 .00 + \$1.50 Material**

Results; Company A reduce lead time by 28 days, increased On time delivery by 16%, plus reduce WIP inventory by 20 days.

### **Great work!! Or was it?**

Unfortunately in this example due to traditional decision making and traditional accounting practices the company decide to can the lean cell effort based on increased in production cost. Even though they improved cash dollars by reducing inventory and improved customer satisfaction by improving on time delivery and lead time to market, which improves market shares.

### **3. General Analysis –Additional rational about the subject**

After research from many article and many books to try and address this course in a objective manor. The above example is what see in real life with most of the companies I have had the pleasure to work with along in my current career path with Cooper Power Systems. What are the measurements that move the needle so we can measure improvement in our lean effort? Is it dollars, customer satisfaction, on time delivery? All of these are issues facing companies moving toward “Lean” plus competing in today’s world. What drives our business decisions and our economic? We need to Learn from Ford and the industries position lost due to this traditional method of Toyota’s Business and Economies. We need to be sure that once we pull the waste from our transaction based process we have the metric in place to measure were we are going.

### **4. Traditional versus Lean Accounting methods**

Since lean accounting is a fairly new and not fully accepted concept with the industry as of yet. The book “Practical Lean Accounting” A proven system for measuring and managing the lean enterprise, by Brain Maskell and Bruce Baggaley. Define this subject the clearest in all of my research. As you journey from traditional accounting to Lean accounting you have to look at you current state.

There are five major categories:

- Financial Accounting
- Operational Accounting
- Management Accounting
- Support for the Lean Transformation
- Business Management

To best understand your current state value your first need to survey or analyze the status your value stream. Baggaley and Maskell develop and analytical method of survey of your current state. The survey below is an example out of their book that demonstrates how an organization could analyze the value stream. Understanding the value stream cost structure capacity, which format a bias for change in organization to reach its future state. Base on the maturity step to a lean enterprise. Please see Table below:

Example of survey

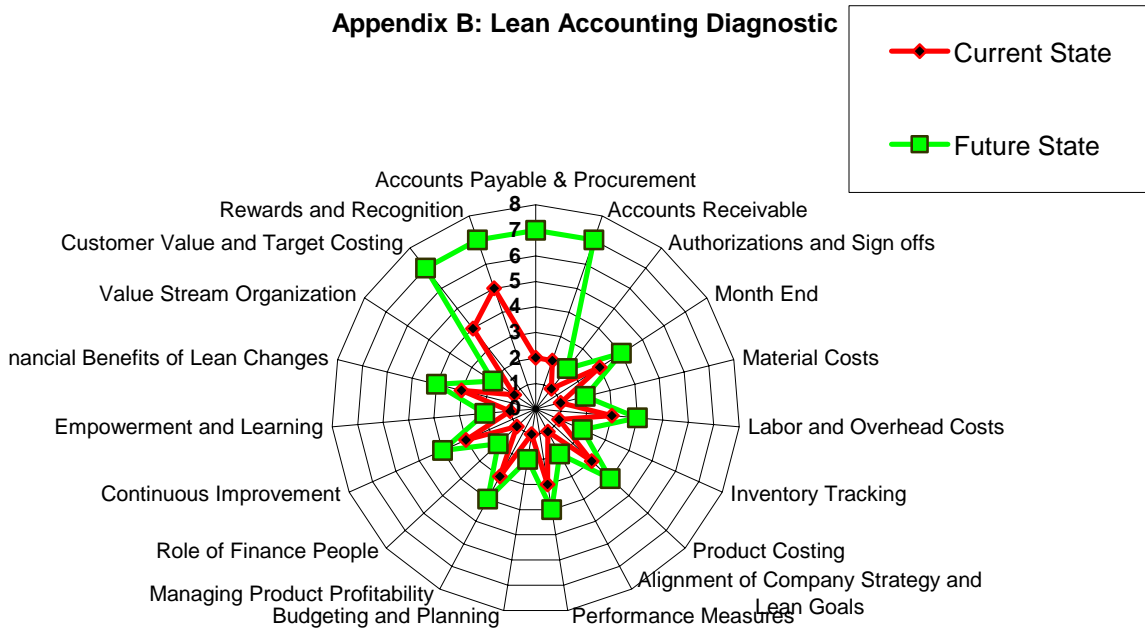
<b>CATEGORY: Financial Accounting</b>										
<b>Subcategory/ Goal</b>	<b>Piloting Lean Cells</b>		<b>Developing a Framework</b>		<b>Managing by Value Stream</b>		<b>Lean Enterprise</b>			
<b>Accounts Payable &amp; Procurement</b>  Shift from high volume and procedurally complex processes to minimum transactions with built in controls	All orders of materials and supplies are documented with a requisition and a purchase order. All materials and supplies received are checked and documented. We perform a 3-way match to ensure the accuracy of invoices prior to payment authorization. High value purchases require senior management authorization. AP is controlled within the finance department.		We have made great strides in simplifying accounts payable. AP credit cards are widely in use for all small purchases, eliminating most of our P.O.s and invoices. We have issued blanket purchase orders for key materials and have started to identify and certify strategic suppliers. We have begun to voucher for payment on receipt of materials.		Most of our key suppliers deliver directly to the production line based on kanban orders from the line. Suppliers deliver daily and are paid on receipt, and we have completely eliminated the three way match in accounts payable. AP has been relocated from accounting to the value stream. Many of our suppliers are being paid when we use materials.		Materials that are delivered directly to the line are paid for upon shipment to the customer, which is within a matter of days, by backflushing the usage and wiring funds directly into the supplier's bank account. Consequently we have been able to eliminate most of the invoices from our accounts payable system.		<b>Current</b>	
	<b>2</b>								<b>7</b>	
	<b>7</b>								<b>8</b>	
	<b>Current</b>	<b>1</b>	<b>X</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	
	<b>Future</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>o</b>	<b>8</b>	
<b>Accounts Receivable</b>	We mail order acknowledgments to customers on receipt of a purchase order.		We have greatly simplified our accounts receivable and order fulfillment processes by		We have made steps toward eliminating the need for invoicing our key customers by		We have eliminated all regular accounts receivable processes. Customers wire payments into			



**Appendix B: Questionnaire Results Summary**

		<i>CURRENT</i>	<i>FUTURE</i>
<b><i>Financial Accounting</i></b>	Accounts Payable & Procurement	2	7
	Accounts Receivable	2	7
	Authorizations and Sign offs	1	2
	Month End	3	4
<b><i>Operational Accounting</i></b>	Material Costs	1	2
	Labor and Overhead Costs	3	4
	Inventory Tracking	1	2
	Product Costing	3	4
<b><i>Management Accounting</i></b>	Alignment of Company Strategy and Lean Goals	1	2
	Performance Measures	3	4
	Budgeting and Planning	1	2
	Managing Product Profitability	3	4
<b><i>Support for the Lean Transformation</i></b>	Role of Finance People	1	2
	Continuous Improvement	3	4
	Empowerment and Learning	1	2
	Financial Benefits of Lean Changes	3	4
<b><i>Business Management</i></b>	Value Stream Organization	1	2
	Customer Value and Target Costing	4	7
	Rewards and Recognition	5	7
<b>Average</b>		2.21	3.79

### Appendix B: Lean Accounting Diagnostic



The graphical summary above demonstrates a comparison of where we are today and where we need to improve to follow and enhance long-term future state vision for the organization's journey into lean Six Sigma. From this quick summary analysis you can then start breaking the value stream down by process step, capacity utilization and all of the transactional process steps supporting their value stream while understanding their non-productive and productive value.

Step 1 Data VALUE STREAM COST ANALYSIS BY PROCESS													
	Totals	SMT	Hand Load/Wave Post	Test and Rework	Assemble and Burn-In	Shipping	Customer Service	Purchasing	Quality Assurance	Accounting	Design Engineering	Information Systems	Maintenance
Material Cost	\$ 512,160	\$ 358,512	\$ 25,608	\$ -	\$ 128,040	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Outside Cost	\$ 7,760	-	-	-	-	-	-	-	-	-	7,760	-	-
Employee Cost	\$ 141,625	\$ 17,080	\$ 23,485	\$ 17,080	\$ 10,675	\$ 2,669	\$ 12,109	\$ 16,145	\$ 8,073	\$ 8,073	\$ 4,036	\$ 4,036	\$ 8,073
Machine Cost	\$ 22,502	\$ 16,958	\$ 2,016	\$ 3,528	-	-	-	-	-	-	-	-	-
Other Cost	\$ 20,000	20,000	-	-	-	-	-	-	-	-	-	-	-
<b>TOTAL COST</b>	<b>\$ 704,047</b>	<b>\$ 412,550</b>	<b>\$ 51,109</b>	<b>\$ 20,608</b>	<b>\$ 138,715</b>	<b>\$ 2,669</b>	<b>\$ 12,109</b>	<b>\$ 16,145</b>	<b>\$ 8,073</b>	<b>\$ 8,073</b>	<b>\$ 11,796</b>	<b>\$ 4,036</b>	<b>\$ 8,073</b>
Average Cost	\$ 329.92	\$ 193.32	\$ 23.95	\$ 9.66	\$ 65.00	\$ 1.25	\$ 5.67	\$ 7.57	\$ 3.78	\$ 3.78	\$ 5.53	\$ 1.89	\$ 3.78
Conversion Cost	\$ 191,887	\$ 54,038	\$ 25,501	\$ 20,608	\$ 10,675	\$ 2,669	\$ 12,109	\$ 16,145	\$ 8,073	\$ 8,073	\$ 11,796	\$ 4,036	\$ 8,073
Average Conversion Cost	\$ 89.92	\$ 25.32	\$ 11.95	\$ 9.66	\$ 5.00	\$ 1.25	\$ 5.67	\$ 7.57	\$ 3.78	\$ 3.78	\$ 5.53	\$ 1.89	\$ 3.78
Material Cost	\$ 512,160	\$ 358,512	\$ 25,608	\$ -	\$ 128,040	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Average Material Cost	\$ 240.00	\$ 168.00	\$ 12.00	\$ -	\$ 60.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

## Capacity Summary in Hours

Value Stream:

Electronic Controllers

	Current State			Long Term Future State			Freed-Up Capacity
	Non Productive	Productive	Available	Non Productive	Productive	Available	
<b>Surface Mount Technology</b>							
Employees	738.6	0	461.4	408.77	0	191.2	-270.169
Machine	214.8	79.9	25.3	50.97	106.09	2.94	0
<b>Hand Load/Wave Post</b>							
Employees	840.2	853.6	-43.8	296.3	874.02	480	523.4833
Machine	4	93.4	62.6	4	119.6	36.4	-26.1764
<b>Test and Rework</b>							
Employees	839.1	0	360.9	575.1	0	624.9	264
Machine	127.5	0	32.5	158.2	0	1.8	-30.6583
Assemble and Burn In	501.8	213.4	34.8	226.2	496	27.8	-6.98333
Shipping	0	133.3	54.2	0	118	42	-12.2
Customer Service	537.4	0	62.6	59.03	0	541	478
Purchasing	187.2	360	202.8	7.4	144	202.8	0
Quality Assurance	296	0	4	296	0	4	0
Accounting	211.7	0	88.3	153.4	0	88.3	0
Design Engineering	120	0	30	120	0	30	0
Information Systems	135.8	0	14.2	135.8	0	14.2	0
Manufacturing Engineering	191.3	0	108.7	191.3	0	108.7	0
Technical Support Engineering	375	0	75	375	0	75	0
<b>Total</b>	<b>5320.4</b>	<b>1733.6</b>	<b>1573.5</b>	<b>3057.377222</b>	<b>1857.681944</b>	<b>2470.841</b>	<b>919.6964</b>
	62%	20%	18%	41%	25%	33%	

CURRENT STATE		VALUE STREAM COST ANALYSIS BY CAPACITY CATEGORY													
EMPLOYEES		Totals	SMT	Hand Load/Wave Post	Test and Rework	Assemble and Burn-In	Shipping	Customer Service	Purchasing	Quality Assurance	Accounting	Design Engineering	Information Systems	Manufacturing Engineering	Technical Support
Cost	\$ 139,624	\$ 16,704	\$ 22,968	\$ 16,704	\$ 10,440	\$ 2,088	\$ 11,928	\$ 14,902	\$ 7,978	\$ 7,978	\$ 3,989	\$ 3,989	\$ 7,989	\$ 11,967	
Productive	0%	52%	0%	28%	71%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Non-Productive	62%	51%	70%	67%	0%	90%	25%	99%	71%	80%	91%	64%	83%		
Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
Available Capacity		38%	-3%	30%	5%	29%	10%	27%	1%	29%	20%	10%	36%	17%	
MACHINES		Totals	SMT	Hand Load/Wave Post	Test and Rework	Assemble and Burn-In	Shipping	Customer Service	Purchasing	Quality Assurance	Accounting	Design Engineering	Information Systems	Manufacturing Engineering	Technical Support
Cost	\$ 22,502	\$ 16,958	\$ 2,016	\$ 3,528	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Productive	25%	58%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
Non-Productive	67%	3%	80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
Available Capacity	0%	8%	39%	20%	0%	0%	0%	0%	0%	0%	0%	0%	0%		

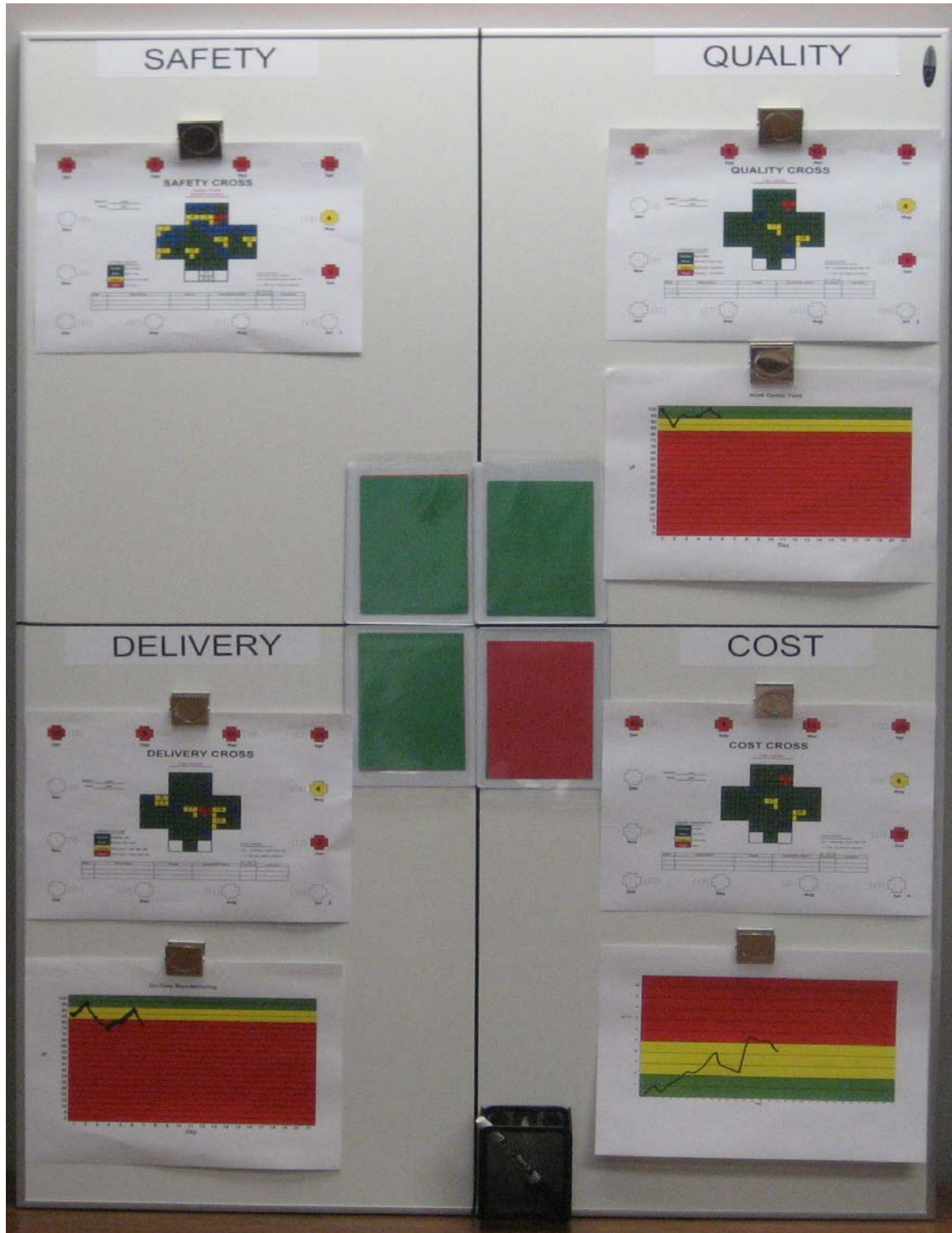
Long Term Future State		VALUE STREAM COST ANALYSIS BY CAPACITY CATEGORY													
EMPLOYEES		Totals	SMT	Hand Load/Wave Post	Test and Rework	Assemble and Burn-In	Shipping	Customer Service	Purchasing	Quality Assurance	Accounting	Design Engineering	Information Systems	Manufacturing Engineering	Technical Support
Cost	\$ 139,624	\$ 16,704	\$ 22,968	\$ 16,704	\$ 10,440	\$ 2,088	\$ 11,928	\$ 14,902	\$ 7,978	\$ 7,978	\$ 3,989	\$ 3,989	\$ 7,989	\$ 11,967	
Productive	0%	53%	0%	66%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
Non-Productive	34%	18%	48%	30%	71%	90%	1%	99%	71%	80%	91%	64%	83%		
Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
Available Capacity		66%	29%	52%	4%	29%	10%	80%	1%	29%	20%	10%	36%	17%	
MACHINES		Totals	SMT	Hand Load/Wave Post	Test and Rework	Assemble and Burn-In	Shipping	Customer Service	Purchasing	Quality Assurance	Accounting	Design Engineering	Information Systems	Manufacturing Engineering	Technical Support
Cost	\$ 22,500	\$ 16,956	\$ 2,016	\$ 3,528	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Productive	66%	75%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
Non-Productive	32%	3%	99%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
Available Capacity	0%	2%	23%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%		

With these tools we get a quick view of our current state compared to the vision we have to drive future state this again give us sound decision process to drive improvement and understand cost plus capacity

## 5. SQDC – Safety, Quality, Delivery, Cost

Visual factories drive improvement with in the lean cell level. The 5-second review is part of this visual management system being able to see in 5 second your S safety, Q quality, D delivery, C cost performance of the Lean cell or transactional process steps. Below is an example of this visual management systems, which will tell lean practitioners quickly, and effectively which metric they quickly need to

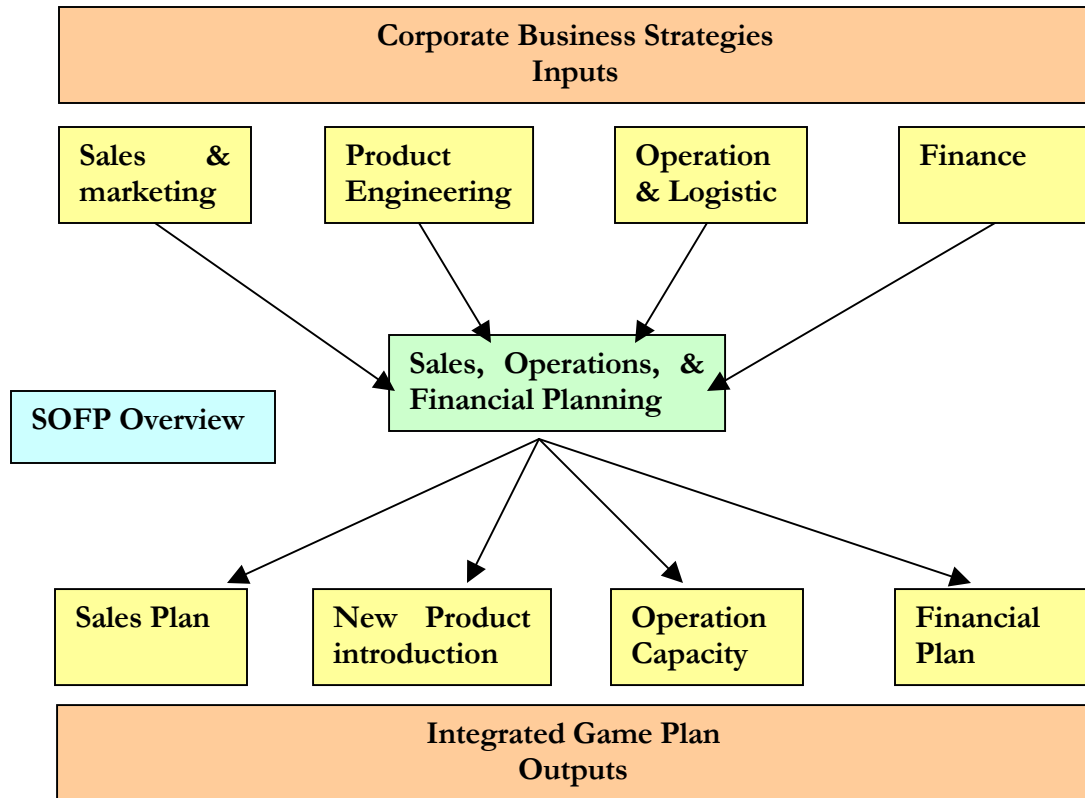
response to on a daily bases instead of waiting for month end report or weekly reports which are to late to react to effectively.



## 6. SOFP - Sales, Operational and Financial Planning

For year traditional forecast planning has had this enigma of being only 60% accurate at best driving companies to drive inventory and overtime for month end shipments, excess labor, not to mention decline in customer satisfaction.

The SOFP process is a cross functional approach in 12 month windows to plan the value stream activities short term to manage bottle necks and constraints base on the value stream Takt times and long term driving capacity, level loaded schedules for the next month, manning levels for each value stream. This method of looking at the facility allows for sound statistical decision making for manpower, make buy decisions capital expenditures. The below graph demonstrates this process.



Day 1-5	Day 6-10	Day 12	Day 13-15	Day 15
<b>Value Stream Demand Planning</b>	<b>Value Stream Operational Meeting</b>	<b>SOFP Planning Meeting</b>	<b>Value Stream Financial planning</b>	<b>Executive SOFP Meeting</b>
<b>Input</b> 1) Month End data 2) Customer forecast 3) New product plans  <b>Out put</b> 1) VS Product Family Forecast in units 2) New SOFP Spread sheet.  <b>Who</b> 1) Sales and marketing 2) New product development	<b>Input</b> 1) Demand Forecast 2) Value Stream Cost analysis 3) Lean improvement Plan 4) Value stream changes  <b>Out put</b> 1) VS Capacity Forecast 2) Updated SOFP sheet  <b>Who</b> 1) Operations team	<b>Input</b> 1) SOFP spread sheet  <b>Output</b> 1) Decision to balance Demand & capacity 2) VS improvement plan 3) New product Introduction plan 4) Month end Financials 5) Agenda for executive SOFP meeting  <b>Who</b> 1) Value stream mangers 2) Sales and marketing 3) New Product development 4) VS Finance 5) Other key Operational people	<b>Input</b> 1) SOFP spreadsheet  <b>Output</b> 1) Updated rolling Budget for next 18 months 2) Major budget Issues list 3) Major new Expenditure  <b>Who</b> 1) VS Finance 2) Plant or Division controllers	<b>Input</b> 1) SOFP spreadsheet 2) Exec SOFP Meeting agenda 3) Update budgets 4) Major budget Issue 5) Major New expenditure  <b>Output</b> 1) Operational Decision 2) Authorized business “Game plan” 3) Financial Decisions  <b>Who</b> 1) President 2) SR Managers 3) Value Stream managers 4) Sales and Marketing 5) New Products 6) Other Key People

The SOFP process is cross-functional process, which brings statistical creditability to the term “Planning or Forecast Planning” a process, which drives the variability out of customer demand, instead of focus on the marketing variable demand. The Economies of the organization is now based on sound statistical planning and performance.

## 7. Conclusion

Traditional business methods have been in place since Henry Ford and Taylor’s Scientific Management principles. Companies like Ford and the other use to be top three automotive Manufacturers, plus any company these days trying to use the lean principle to be more competitive in their selective industry. Companies will need to address the waste in the transactional process to improve their

organization to drive sound decision on growth. Visual Measurement metric for SQDC will drive metric with in the organization on a daily bases so operations mangers and supervisors can drive sound decision daily.

With two main process the SOFP and visual management metrics, plus lean accounting methods will support the lean journey of any organization that support sound lean thinking.

## 8. **Definitions – Business and Economics**

**Business** - “ the Merriam – Webster ‘s collegiate dictionary defines – 1) Purpose full activities; 3a) Commercial or mercantile activity engaged in as a livelihood; 3b) A commercial or sometimes industrial enterprises; 3c) Dealings or transactions

**Economics** – “ the Merriam – Webster ‘s collegiate dictionary defines Economics as; 3a) of or relating to economics 3b) or based on distribution, and consumption of goods and services; 3c) of or relating to an economy; 4) having practical or industrial significance or uses affecting material resources.

**Lean** – “All we are doing is looking at a time line from the moment the customer gives us an order to the point when we collect the cash. And we are reducing the that time line by removing the non value added waste or Muda” - Chapter 3, page 33, The Toyota Way Field Book Jeffery K liker and David Meier, McGraw - Hill 2006

**Six Sigma** –“is a rigorous, focused and highly effective implementation of proven Quality principles and techniques. Incorporating elements form the work of many quality pioneers, six sigma aims for virtually error free business performances. Sigma is a Greek letter used by statisticians to measure variability in any process”.



9. Reference Material

**THE TOYOTA WAY, 14 MANAGEMENT  
PRINCIPLES FROM THE WORLDS  
GREATEST MANUFACTURER,**

BY JEFFERY K LINKER; MCGRAW –HILL  
2004

**THE TOYOTA WAY, FIELD BOOK  
PRACTICAL GUIDE FOR  
IMPLEMENTING TOYOTA’S 4PS**

BY JEFFERY K LINKER AND DAVID MEIER;  
MCGRAW-HILL 2006

**PRACTICAL LEAN ACCOUNTING  
A PROVEN SYSTEM FOR MEASURING AND MANAGING THE LEAN  
ENTERPRISE**

BY BRIAN MASKELL AND BRUCE BAGGALEY

PRODUCTIVITY PRESS - 2004