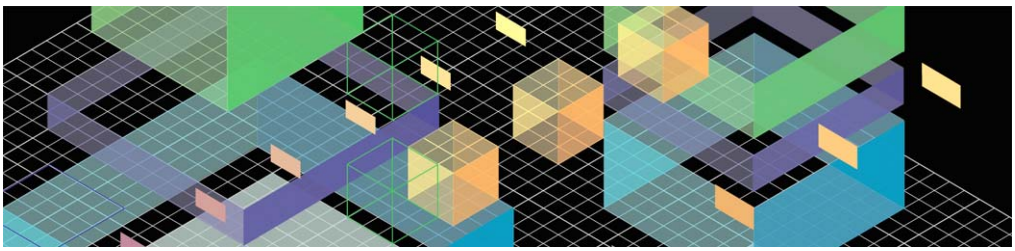
Lean Accounting: Applying Lean to the Accounting Process Case Study—Accounts Payable Jake Brake Division of Danaher Corporation

Danaher's Jake Brake division was an old line New England manufacturing company. It was wrought with inefficiencies: high inventory turns, poor quality, delivery and productivity. Profitability was declining, and the company's patent on its product opened the door to competition, many of whom were Jake's angry customers. Senior management needed drastic action in order to right the ship. In 1988, the principles of the Toyota Production System (TPS) were adopted in its manufacturing operations. Over the course of two years, drastic improvements were made to the operations, greatly improving Jake's quality, delivery and cost position. Profitability was on the rise, and this traditional manufacturing company had a shot at survival.

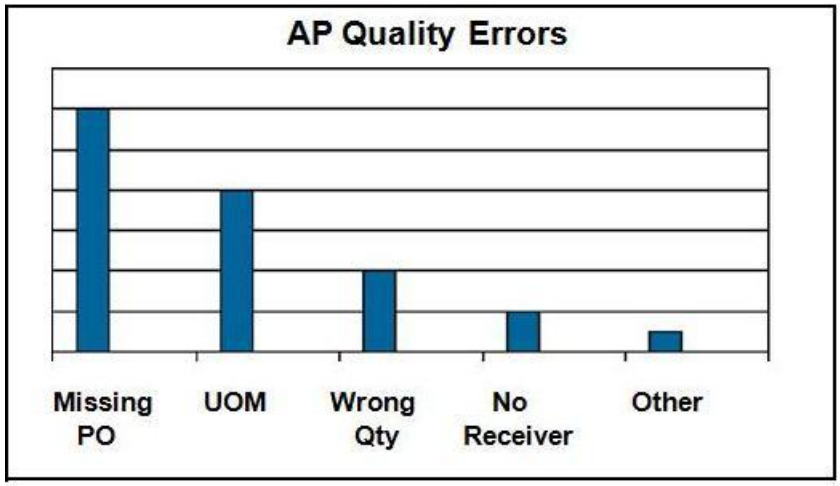
The company's senior management soon realized that by solely focusing TPS on the shop floor, there were many opportunities that were being left on the table. In fact, many of the inefficiencies on the shop floor resonated from other areas, particularly in administration. For example, Jake Brake had a commitment to deliver product within five days from receipt of order, however in some cases it took seven days for the order entry department to process a standard customer order. So the Lean focus was expanded to the entire enterprise, including the accounting function.

This chapter will deal with the Lean changes made to Jake's Accounts Payable (AP) process. The AP process was operated by three AP clerks. The department in 1988 was unorganized, cluttered, and wrought with inaccuracies and inefficiencies. Note the following data from the AP process before Lean was applied:



Item	Before Kaizen
Headcount	**3**
Productivity (Vouchers/Hour/Person	**8.3**
1st Pass Defects	**650,000 PPM**
Duplicate Payments	**25 per month**

Productivity was extremely low due to the fact that the AP clerks were dealing with quality issues, primarily 1st pass defects. First pass defects are defined as any voucher that cannot pass through the AP system the first time entered without some sort of manual intervention. As indicated above, 65% of the vouchers were deemed defective given this definition. A Pareto analysis of the defects is shown in the following exhibit:



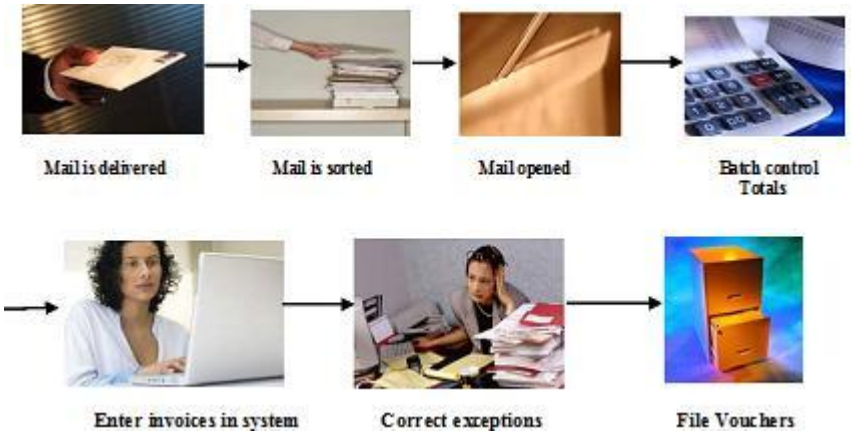
As the data suggests, a majority of the quality errors were due to two primary reasons: (1) missing purchase orders and (2) incorrect units of measures on the purchase order vs. the invoice. For example, the purchase order may have indicated that an item was to be ordered in gallons, but is invoiced in pounds. It was determined that if these top two quality defect modes were addressed, a significant impact could be made to headcount and productivity, duplicate payments and overall efficiency.

Kaizen Process

A cross functional kaizen team was assembled to begin to look at the overall process. The team consisted of representatives from accounting, purchasing, receiving, manufacturing, engineering and marketing. It was important to get as many cross functional representatives involved in this process; otherwise this would be viewed as an accounting exercise. So, the team members represented both suppliers and customers of the process. The team also thought it might be a good idea to bring in some of their key suppliers; however, this decision was

tabled until the team first looked at the problem and had a better understanding of the current situation.

Before diving into the data, it was first decided that the AP process needed to be stabilized. All three AP clerks utilized different processes and procedures when processing a voucher. A look at the pre-kaizen process is described in the following diagram:



A look at some of these processes revealed the following:

Mail Sorted: The responsibilities of the three AP clerks were divided based on the letters of the alphabet. For example, clerk #1 handled suppliers beginning with the letters A-H, while clerk #2 handled suppliers I-P and clerk #3 handled suppliers Q-Z. This sorting was deemed non-value added, as it did nothing to contribute toward the processing of the invoice.

Mail Opened: Various methodologies were used to open the mail. One clerk used a manual letter opener while another used an electric mail opener. One used a ball point pen! Even though these are minor variations, it represented the mindset that existed within the department. Once the AP personnel embarked on the kaizen process, the value of standardization became clear to all.

Batch Control Totals: The computer system was a batch oriented system which required invoices to be grouped into batches and batch control totals were tabulated.

Enter Invoices in System: The AP system was complicated and required duplicate data entry into multiple screens.

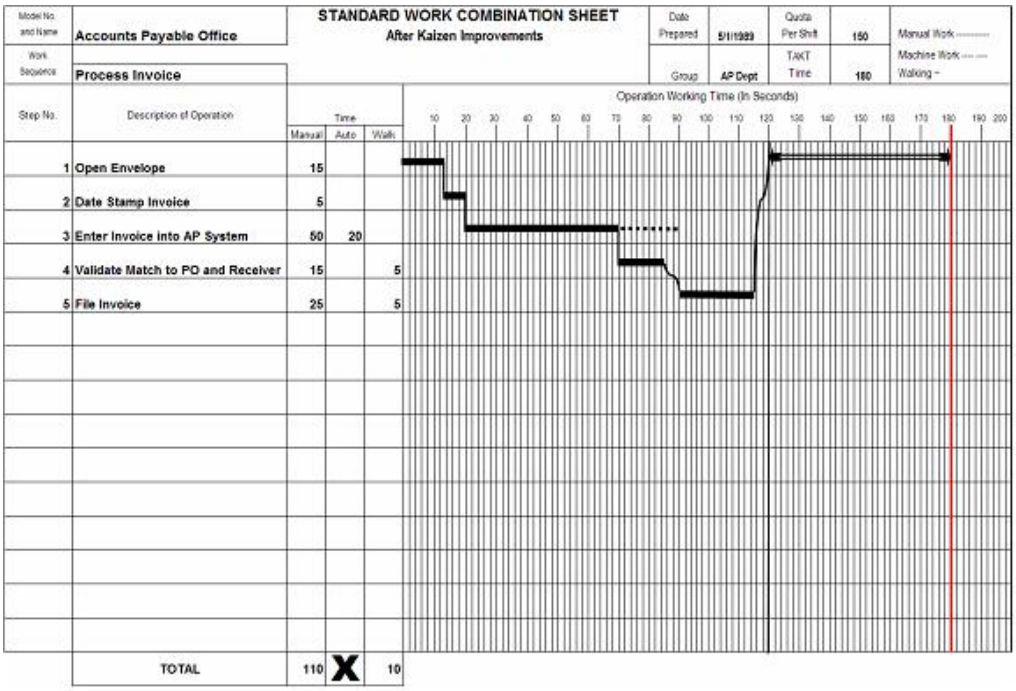
Correct Exceptions: The analysis showed that 65% of vouchers entered required manual intervention of some sort. The majority of the AP clerks' time was spent fixing problems due to invoices that could not be processed correctly on the first attempt. (See Pareto analysis.)

File Vouchers: It was discovered that duplicate filing systems existed. For example, the receiving department, purchasing department and accounting department all kept a manual file for all purchase orders. The AP department also matched a copy of the purchase order to all processed vouchers.

Actions Taken

Develop Standard Work: The processing of vouchers was standardized for all AP clerks. The standard work allowed for "one best way" to process invoices. This reduced variation and eliminated errors from the AP department. By utilizing standard work, we calculated a TAKT

time in order to accurately access manning requirements. The standard work combination sheet appears as follows:



STANDARD WORK COMBINATION SHEET
After Kaizen Improvements

Model No. and Name	Accounts Payable Office				Date Prepared	5/1/1999	Quota Per Shift	150	Manual Work ----------
Work Sequence	Process Invoice				Group	AP Dept	TAKT Time	180	Machine Work ---- ----
									Walking ~
Step No.	Description of Operation	Time			Operation Working Time (In Seconds)				
		Manual	Auto	Walk					
1	Open Envelope	15							
2	Date Stamp Invoice	5							
3	Enter Invoice into AP System	50	20						
4	Validate Match to PO and Receiver	15		5					
5	File Invoice	25		5					
	TOTAL	110	X	10					

As you can see from the standard work analysis, it only takes 120 seconds to process a voucher with a TAKT time of 180 seconds. By using the manning formula based on TAKT time, only 2/3 of a person should be required to process all of the daily vouchers for the entire company:

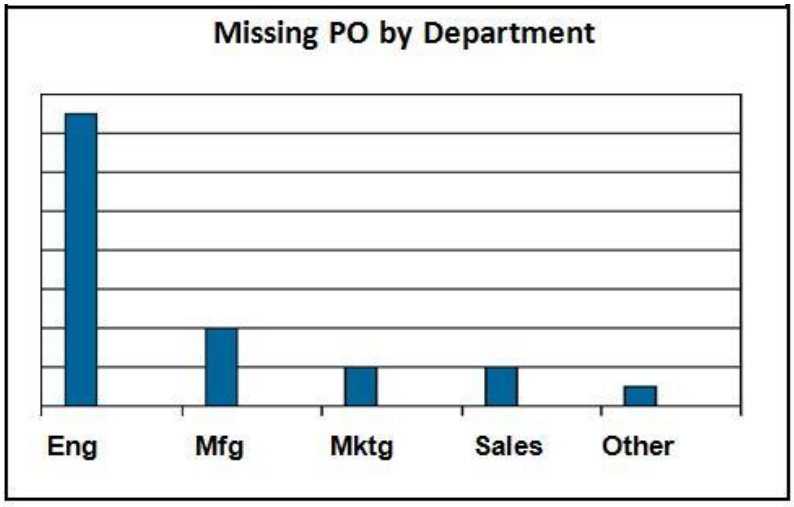
$$\text{\# People Required} = \frac{\text{Sum of Cycle Time}}{\text{TAKT Time}} = \frac{\text{120 Seconds}}{\text{180 Seconds}} = .67 \text{ People}$$

Eliminated Sorting of Mail: It was determined that the sorting of mail was non-value added to the activity of processing a voucher. This was eliminated.

Data Entry: The data entry process was greatly enhanced by eliminating the need for duplicate entry of the same data and the elimination of multiple screens. This was done with an interface tool called Crosstalk®. Additionally, data entry errors were eliminated by developing mistake proofing (poka yoke) to the data fields. For example, vendor numbers were automatically cross referenced to a database to assure data integrity.

Filing: The need to file purchase orders in receiving, purchasing and accounting was eliminated. It was determined that an electronic copy of the purchase order exists within the system, and paper copies were redundant.

Correction of Exceptions: The top two error defects, missing PO and wrong unit of measure were addressed. A Pareto analysis showed that the majority of invoices missing POs were originated from the Engineering department. (See Pareto below).



It was determined that 80% of the invoices missing POs were for amounts under $100. The costs and time associated with establishing POs for such small dollar amounts was determined to be prohibitive. Therefore, a special ordering system was created called a "Special Purchase Order" or SPO. If an engineer was to procure anything under $100, a simple SPO was filled out and sent to the accounting department. The SPO number was required to be on all submitted invoices. The engineering group was told that without an SPO, the invoice would not be paid, and that all calls from the vendor associated with non-payment will be directed to the engineering department for resolution. The same process was instituted for all other departments. This one change alone cut down number of vouchers with missing POs by 80%.

Wrong units of measure were addressed by establishing a master list of UOMs by commodity (example: steel, chemicals, etc.) and assuring that all purchasing personnel were trained and aware of the new procedure. In some cases, this also required some coordination with suppliers. This master list virtually eliminated the UOM defect mode.

Results

The changes that are discussed within this chapter took place over a period of approximately 60 days. Results are summarized below:

Item	Before Kaizen	After Kaizen
Headcount	**3**	**.67**
Productivity (Vouchers/Hour/Person)	**8.3**	**30**
1st Pass Defects	**650,000 PPM**	**50,000 PPM**
Duplicate Payments	**25 per month**	**Eliminated**

The two extra people were assigned to different roles. The remaining person was not fully utilized by the accounts payable process, so she was also assigned the responsibility to handle accounts receivable. By virtue of the SPO process, duplicate payments were virtually eliminated from the system. Quality was greatly improved, realizing a 92% improvement in 60 days, while improving productivity by 261%.

Summary—Lessons Learned

1. By focusing on the critical few, dramatic improvements can be made in a short period of time.

2. It was critical not to view this as an accounting problem alone. Therefore, getting multifunctional participation on the kaizen team was essential.

3. Principles used on the shop floor (i.e., standard work and basic problem solving) can be adapted to the office environment.

4. By focusing on quality first, improvements were made in productivity and cost.

5. *Don't let perfect get in the way of better.* The team knew that there were many more improvements to be made, but the greatest impact items needed to be addressed first.

It is important to note that the team did not think their work was done after the initial kaizen activity. There were many more improvements to be made. For example, 50,000 PPM defects is not world-class. So follow-up kaizen events were held to eliminate remaining defect modes. Additional work was done to further improve the standard work cycle time. For example, elimination of walk time and improving the data entry time were the focus of future kaizen events.

In conclusion: Making kaizen improvements to all aspects of the accounting function allows accountants to work "on" the business rather than "in" the business. That is, accountants can spend more time being an active part of the management team working on Accounting for Lean activities such as Value Stream accounting, target costing, lean capital budgeting, etc. Accountants can become navigators rather than historians.

About the author

Mark DeLuzio, President & CEO
Directly mentored by the architects of the Toyota Production System (TPS), Mark DeLuzio is the founding partner & chief executive of Lean Horizons Consulting and is recognized as one of the country's foremost experts on enterprise-wide transformation though strategic deployment and Lean disciplines. The former Vice President and Corporate Officer of Danaher Corporation, Mark is the architect of the widely acclaimed Danaher Business System.

About Lean Horizons Consulting

Lean Horizons Consulting offers integrated competencies for achieving enterprise-wide performance transformation to global firms in the manufacturing, energy, consumer products, financial services, pharmaceutical, bio-technology and healthcare sectors. Lean Horizons further serves investment firms regarding acquisition integration and rapid value creation. Lean Horizons aligns Lean and Six Sigma capabilities with the deployment of enterprise strategy to deliver unique, end-to-end solutions that incorporate the organization's business model, core processes, functions and information systems. Lean Horizons' field force of internationally experienced industry professionals bear direct lineage to the Toyota Production System, lending a unique combination of explicit and tacit knowledge to Lean performance transformations.

Strategically Creating Value through the Elimination of Waste

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