

Perkins Industrial Cabinet Co.

(Caso Práctico)

A: Alumnos de IN75S

Ref: Problemas con implementación de células en *Perkins Cabinets*

En el documento adjunto encontrarán una descripción de los problemas que ha experimentado el presidente de Perkins Industrial Cabinets Company (PICC).

Luego de leer y analizar los comentarios del presidente, prepare un memo explicando los hechos/datos que dejaron perplejo a Roger y luego proponga recomendaciones específicas sobre la forma en que PICC debería operar para lograr los objetivos de reducción de lead times.

El memo debe contener **como máximo 500 palabras**. Sin embargo, puede adjuntar algunos diagramas si cree que ellos sean necesarios para clarificar sus argumentos.

Nota: Además de los tópicos tratados durante las cátedras, es recomendable que revise los temas tratados en los capítulos 11 y 12 de *QRM: A Companywide Approach to Reducing Lead Times* de Rajan Suri (disponible en biblioteca del DII).

Perkins Industrial Cabinet Co.*

Roger Perkins, President of Perkins Industrial Cabinet Co. (PICC), was perplexed. He had devoted two months to reading about Quick Response Manufacturing (QRM) and attending a half-day seminar on the subject. Excited by the prospect of increased market share, he had created a task force to look into reducing the pre-manufacturing lead time in his organization. Now he was reviewing their initial recommendations. Everything that Roger had read about QRM led him to believe that PICC could cut its up front lead time by at least 75%. Yet the task force indicated that PICC's present practices lent themselves to only a 30% reduction in lead time.

The Market and The Company

Roger Perkins had founded PICC in 1981. Roger had worked in the sheet metal industry for ten years before that. As someone who needed cabinetry in the factory where he worked, he had noted a market niche that was not being served. Many factories needed specialized cabinets to house tooling, electrical boxes, etc. The large industrial furniture suppliers such as Marvel, Invincible or Steelcase, focused on their standard products which they made in large volume, and had no interest in the custom market. On the other hand, small manufacturers often did not have the equipment or expertise to design and work with the heavy gauges of sheet metal or aluminum that were required for the cabinets. Roger and two other partners felt there was an opportunity for custom-designed industrial cabinets that catered to special needs. They were right. In 14 years they had grown the company to over 200 people with sales of over \$30 million.

The market that they focused on had its basis in the current trend for factory revitalizations. With the advent of JIT (just-in-time), SMED (single minute exchange of dies) and other new practices, manufacturers were rethinking their shop floor layouts. The cabinetry they needed had to be retrofitted into existing buildings with many constraints. Over the years PICC's sales force and engineering staff had developed a reputation for working with the customer to design cabinets that would satisfy complex needs without violating the physical constraints.

In addition, PICC had expanded to the defense market. Battleships, submarines, aircraft, and military facilities, all had needs for specialized cabinets, and PICC had developed a firm footing in this market in a short time.

In recent years, however, Roger's vision for the company had met several challenges. First and foremost, with the growth of the company and the need for better planning and coordination across departments, delivery times had bloated up to 10-14 weeks. Second, the large manufacturers had evolved their product line to where their catalogs contained a wide variety of products, typically available within 6-8 weeks. PICC's customers were increasingly turning to satisfying their needs through more standard, catalog products. "That isn't the best solution for us," one of PICC's customers remarked to Roger at a trade show, "but we can't afford to wait 14 weeks to get our SMED program off the ground."

* The original version of this case study was prepared by R. Suri, F. Rath and R. Keshav in 1995. This version was revised by R. Suri in 1998. The characters and names in this case are fictitious.

Third, changes in technology had made it possible for smaller companies to buy used NC (numerically controlled) machines, capable of sophisticated sheet metal work, at inexpensive prices. These smaller firms were serving customers with lead times as short as 3-6 weeks. Thus PICC was facing competition from both ends of the industry.

Finally, to make matters worse, with cuts in defense spending, PICC was seeing one of its markets shrink substantially.

The Sales and Ordering Cycle: (i) Quoting

PICC's Field Sales force identified opportunities through a well-developed network that was plugged in to which factory was undergoing change. After initial discussions with the customer, the field sales representative would call in some specifications to the Inside Sales department. Inside Sales created an order folder, added other information about the customer (from previous sales, if known) and sent the folder to the Design Engineering department. This is where PICC had an edge over the competition. PICC's designers did an excellent job of understanding the customer's needs. What would the cabinet house? How would it be used on a typical day? What special considerations were needed? The designers also knew that with retrofit jobs it was important to know about all the physical constraints. Were there corners or obstructions around it? What kind of flooring and wall materials were at the site? Would there be plumbing or electrical outlets in the cabinet?

These considerations required detailed information from the customer. PICC's designers were good at noticing that some critical information was lacking and they would route the folder back to Inside Sales with questions. It then fell to the Field Salesperson to determine the answers from the customer. Just the previous week a

designer had complained at a meeting: "I was 90% through finishing a quote when I thought I'd better ask the field rep about what was along the wall near the cabinet. I'm sure glad I did. He hadn't thought to mention that a 4" diameter water pipe went up the wall one foot away from the cabinet. The drawers I was quoting would never have opened more than a few inches!" Other instances were not that simple. Designers had to consider weight and materials to find the most economical solution (e.g. heavy duty hinges and drawer slides or regular ones?). They had knowledge of safety considerations and OSHA regulations. They had a good grasp of ergonomics issues arising from the pattern of use. All these combined to give PICC a good reputation with its customers.

However, this meant that the quoting process was quite involved. Changing the specifications -- from normal to heavy duty hinges, or to thicker sheet metal, or fitting a difficult corner -- any of these could impact cost by 50% or more. The designer needed to get a good handle on such issues during the quote.

After a designer had reviewed the folder and created a rough specification for the cabinet, the folder would go to the Estimating department. Here materials, manufacturing and tooling considerations would be used to estimate the cost. After this there would be a review by the Manufacturing department, to make sure that the envisioned product was within the scope of its capabilities. Finally, the folder would go to a senior employee in Inside Sales who would determine the mark-up based on customer history and her experience of "what the market would bear." Her input was often critical to getting a sale. "Two months ago they sent me a design whose cost was way too high. I knew from past experience that the customer would keep coming back to us for a less expensive solution. Instead of

wasting our time with this quote, I went back to the designers and had them use a lower quality of hardware and finish on the cabinet, and they also took away some of the features. I was right -- for the first time ever that customer accepted the quote without any negotiation.” After the mark-up was determined, the quote would be written up by a clerk, signed by one of the Inside Sales managers, and sent to the customer.

The Sales and Ordering Cycle: (ii) Order Processing

If the customer accepted the quote, the folder would be retrieved, information (such as purchase order number, delivery date) would be entered into the computer, and then the folder was sent to Accounting to verify the customer’s credit. PICC’s finance department felt this was the best time to remind customers that they had overdue payments. “We get the best response from people who have just placed an order with us,” joked the manager of Accounts Receivable. “They usually pay up within a week to ten days because they know their order is being held up with us.” Once Accounting gave the green light, PICC sent a Field Sales person on a “site measure”: not only did the Field Rep get a detailed measurement of the site, but he or she also verified the details of the requirements and all the physical constraints. This information was communicated to Inside Sales. The folder was then sent to Design Engineering who would engage in a detailed design to fit all the requirements. The thoroughness with which they did their job was noted by PICC’s customers. “We get more calls from PICC’s Inside Sales department than from any other cabinet maker,” said one factory supervisor. “It makes us feel really good that they are thinking so hard about our requirements.”

When the design was complete it was sent to Estimating who would ensure that the

cost of the detailed design was within the scope of the original quote. Often additional considerations surfaced between the quoting and accepting of an order. Additional tools were envisioned in the cabinet, or some electrical functions had been added, or its desired position had been moved slightly. If the enhanced design cost substantially exceeded the cost of the original design, a negotiation would ensue. First, Estimating would send the folder back to Design with some questions about the increased cost. If the two departments couldn’t work it out, the Sales department would try to work out a price increase directly with the customer.

After Estimating, the folder went to Manufacturing Engineering. Here a detailed process plan would be drawn up identifying the steps for shop floor production. Simultaneously, a bill of materials was released to the Materials department. In Materials, an analyst noted which components were being fabricated in-house, which were in stock and which needed to be ordered from a vendor. If Manufacturing Engineering saw the need for special tooling (e.g. a die to punch unusually shaped holes in a cabinet) the folder would go to Tooling. Otherwise it was sent to Quality where appropriate quality checks were added to the process plan. Finally it went to Routing where a clerk would enter the process plan into a computer. Once a day the process plans for new orders would be punched up as job tickets. These job tickets were matched with their order folders and given to the Production Supervisor. Here the order processing cycle ended and “the ball was now in manufacturing’s court.”

Why Roger was Perplexed

Given the complex nature of the sales and ordering cycle, Roger thought it was an excellent candidate for application of QRM. Although Manufacturing was constantly getting the blame for late

deliveries, Roger felt that half the lead time for an order was spent before any tickets ever hit the shop floor. So he had put together a taskforce to study the pre-manufacturing processes. The taskforce had started by looking at the Quote process. They had red-tagged every fifth order by putting a form on the front of the folder. Each time the folder was handled, the person doing so had to enter the time the task was begun and the time it was completed. Also added was a brief comment on what was done and any special situations that might have occurred.

After two months of doing this, the taskforce analyzed the data from about 50 orders (see Exhibit 1 for a sample "Time Sheet" for one order). There were several surprises. First, it seemed the quote process took less time than Roger thought -- the average was just over two weeks, not the 4-5 weeks Roger was expecting. Second, the taskforce measured the non-value added times such as waiting in in-baskets or inter-departmental move times. They also found some obvious non-value added times like incorrect information being entered by the order entry clerk which caused some rework later in the process. But the non-value added time added up to only 30% of the total time -- a far cry from the 80-95% that the articles on QRM mentioned. An evaluation by the taskforce of the individual activities performed on each order showed that most

of the activities were necessary. A typical example was getting installation instructions on special hinges for use in a hazardous chemicals environment. This consumed four days of time but was clearly essential to generating correct process plans for the order. There were many such instances, all equally important. In the custom business that was PICC's bread and butter, Roger couldn't see how they could reduce the time for these important tasks. "We'll do three jobs that look straightforward. But every fourth job or so we see the importance of our special skills and processes," he had explained to a recent hire. "We would've lost money on that fourth job in the past, but now we have it down to a science what questions we need to be asking and what steps we need to take to ensure that all the exceptions are uncovered."

As Roger finished reviewing the task force's initial recommendations, he began to ask himself if he had not been misled about QRM: Where was the 75% benefit of QRM for PICC? Did PICC's business not lend itself to the textbook approach for QRM? Instead of QRM, should PICC's strategy be to specialize even more, and make money by raising its prices for customers who could live with the long deliveries? Or should PICC just try to get the 30% improvement by reducing the time in in-baskets and moves, and hope that this would be enough?

Exhibit 1 Sample Time Sheet for Quote Process

Customer	Smith Manufacturing
Order Date	1 June 1998 (Monday)
Order Number	KD167543
Scheduled Delivery Date	6 August 1998

Person/Dept.	In		Out		Comments
	Date	Time	Date	Time	
John/Inside sales	1-Jun	9:05	1-Jun	4:10	Created order folder
Bob/Engr.	2-Jun	10:20	3-Jun	3:55	Info. review and part design
John/Inside sales	4-Jun	10:55	5-Jun	1:15	Got Info. from field sales rep
Bob/Engr.	8-Jun	9:05	9-Jun	2:05	Info. review and part design
Steve/Est.	10-Jun	11:30	11-Jun	1:20	Estimated cost
Jerry/Mfg.	12-Jun	10:45	15-Jun	9:00	Manufacturing review
Eric/Inside sales	15-Jun	11:15	16-Jun	9:30	Determined mark up
Beth/Clerical	16-Jun	11:45	18-Jun	10:00	Created Quote Document
Carl/Inside sales	18-Jun	3:30	18-Jun	4:30	Quote approval

All orders were assumed to be processed during normal business operating hours of Monday through Friday from 9:00 a.m. to 5:00 p.m. A one hour lunch break between Noon and 1:00 p.m. was considered a neutral time when no orders were processed.

Departmental processing time is the difference between each department's In and Out time. For example, departmental processing time for Steve in Estimating would be 7 hours and 50 minutes as illustrated below:

10-Jun	11:30 to 12:00	=	0:30
	1:00 to 5:00	=	4:00
11-Jun	9:00 to 12:00	=	3:00
	1:00 to 1:20	=	0:20
			<u>7:50</u>

Similarly, queue time can be calculated as the difference between out time of one department and the corresponding in time of the next department in the processing sequence. In this case, we find queue time is approximately 30% of the total quote lead time. This is representative of the whole sample of time sheets and explains how the taskforce arrived at its conclusion that the lead time can be reduced by a maximum of 30%.