Why is Wilkerson examining its costs now (what is the catalyst)?

- Its competitive environment:
  - Declining overall profitability, price pressures on one product line,
  - but apparent price inelasticity of demand for other product lines.

How many overhead cost pools does Wilkerson currently have?

- One. Allocation base is direct labor dollars. Rate is 300%.

Why do pumps have low profitability? They use more labor and machine hours, so this seems appropriate?
Under what circumstances is refining the costing system likely to be beneficial?

- Multiple products, including commodity and specialized products, with large differences in volume and resource consumption.
- Price pressures and declining margins.
- Mature product market with limited opportunities for innovation.
- Low entry barriers in product market.
- High overhead costs.

Wilkerson meets most of these criteria.
Activity-based costing (ABC) is one tool for refining a costing system.

- Overhead is allocated to *activities* that drive overhead costs.
- Overhead costs are separated by cost hierarchy, and then assigned to activity cost pools.

**Overhead cost hierarchy is:**

- **Unit-level costs**, that vary with production volume, e.g., energy costs, machine depreciation, machine repair;
- **Batch-level costs**, that vary with batches or production runs (not with the number of units in the batch), e.g., machine setup costs, materials handling and quality inspection.
- **Product-level costs**, that do not vary with the number of units or batches, e.g., design, R&D, engineering support.
- **Facility-sustaining costs**, that are not traceable to a particular product line.
What are the costly activities for Wilkerson?
- Machining, setup, receiving, shipping, engineering support.

Unit-level costs are
- machining

Batch-level costs are
- setup, receiving and shipping

Product-level costs are
- engineering

What are the cost drivers in each pool?
- Machine hours for machining; # of production runs for setup and receiving; # of shipments for shipping; engineering hours for engineering support.
Activity-Based Cost System

Activities

Activity Cost Drivers

Direct Materials
Direct Labor

Machine Components $336K
Set-Up Machines $40K
Receive/Schedule Components $180K
Pack & Ship $150K
Perform Engineering Services $100K
Data table removed due to copyright restrictions.
Exhibit K-1, Calculation of Product Costs. From the teaching note for:
HBS CASE
Wilkerson Co.
by Robert S. Kaplan
Source: Harvard Business School
Why were pumps the least profitable product according to the previous costing system?

- They are the highest volume product, and bore a disproportionate amount of the overhead burden because
  - a single allocation base was used for all overhead, and
  - the base was a unit-level cost driver.

Why are flow controllers the least profitable now?

- They are low volume products,
- made in small batches (large number of production runs and shipments), and
- requiring a lot of engineering support.
  - i.e., they are customized, low volume products consuming most of the resources.
Why is the demand for flow controllers price inelastic?
- Because flow controllers are underpriced!
  - Raising prices, while still staying below cost, will not affect demand.

If you pass a lot of cars driving in the opposite direction in the wrong lane,
- you are most likely in the wrong lane.

In a competitive product market, not losing market share in flow controllers following large price increases, and faced with declining prices for pumps, should have signaled costing errors to Wilkerson.

Misunderstanding the cost and profit estimates here could lead to a death spiral.
In a competitive product market, if you are presented with unexpectedly high (low) profit (cost) estimates, some skepticism is useful (i.e., place a burden of proof on the presenter).

- If some products are over-costed then others have to be under-costed.
  - The latter will seem abnormally profitable.
- Look for an economic rationale for abnormal profits – what market frictions allow the abnormal profits?
- In the absence of an economic rationale, miscosting is the likely diagnosis.
What actions are suggested by the ABC analysis?

- reduce setup times;
- work with customers to reduce the number of production runs by, for example, requiring a minimum order size;
- redesign products to reduce the number of unique components
  - E.g., Hewlett-Packard and Tektronix.
  - Each component in a product currently requires a separate production run.
The Kanthal case is different because

- Product costing refinement initiatives were not triggered by a crisis (rather, by a management change).
- It illustrates the application of ABC to the allocation of selling and administrative (SGA) expenses, rather than manufacturing expenses.
- It illustrates the use of ABC in determining customer, rather than product, profitability.

Why might ABC be of value in this case?

- High overhead costs.
- Extremely large number of products and customers, making cross-subsidization and other costing errors a virtual certainty.
The current system “distribute(s) resources equally across all products and customers.”

- This suggests customer cross-subsidization.
- Sophisticated customers will not tolerate this, e.g., Walmart.
  - Walmart makes advance product selections, buys in bulk and electronically links suppliers with inventory systems.
  - It makes this effort to extract cost savings from its suppliers, not to subsidize other customers of its suppliers.

A hidden loss (hidden profit) customer is one with low (high) profit characteristics.

- These characteristics are hidden when the customer base is treated as homogeneous.
What are the characteristics of low (high) profit customers?

- Small (large) order sizes.
- Order non-stocked or custom (standard) products.
- Order low (high) margin products.
- Receive large (negligible) discounts.
- Unpredictable (predictable) orders, in terms of both frequency and content.
- Require extensive (negligible) pre-sales support (technical advice, selling effort).
- Require extensive (negligible) post-sales support (field service, technical support).
- Require working capital to be tied up in dedicated inventory (no dedicated inventory), long (short) accounts receivable collection period.
What new features were added by the Kanthal 90 costing system?

- Two new cost drivers were identified:
  - Order costs; and
  - Manufacturing costs for non-stocked products.

Is this degree of refinement sufficient?

- More elaborate systems will be more costly in many ways – there is a cost benefit tradeoff that depends on the decision needs.
- Even the Kanthal 90 system a year to develop and to collect the requisite data.
In Exhibit 7, consider customers 33518 and 33537. What explains their difference in profitability?

- Both are high volume customers, but
- customer 33537 orders more frequently (higher order costs) and orders more non-stocked items.

All high volume customers are not profitable.
Kanthal

What should Kanthal do about unprofitable customers?

- Apply a surcharge for non-stocked items (making sure this is legal according to Robinson-Patman Act).
- Require a minimum order quantity, or offer volume discounts for large orders.
- Introduce an order charge, independent of volume.
- Trim the product line (20% of products account for 80% of sales).
- Form a distributor to stock and handle items not stocked by Kanthal.
- Share cost behavior information with customers, who might adjust their purchasing behavior accordingly.
Wilkerson

What are some limitations of ABC systems?
- They can require extensive data collection and record keeping to track activities;
- measurement error will increase with the number of activity cost pools;
- in the Wilkerson case, substantial SGA costs were not analyzed;
- getting employees to accept the new system can be difficult.
- It is easy to get carried away with the number of activity cost pools.

Nevertheless, ABC has been widely used, e.g., at
- American Airlines, Bank of America, American Express, Charles Schwab, Amtrak, US Postal Service, City of Indianapolis, etc.

The use of ABC may be sporadic (e.g., in response to a crisis) rather than sustained, due to its cost.
- This is still useful because it provides valuable insights into the production process and cost drivers.