2 Information Systems for the Job Costing Environment

Jump on an internet search engine, and look for "factory automation", "bar code scanners", or "RFID". Spend some time at the websites of companies like Oracle or SAP. It is an eye opening experience! There is a revolution in manufacturing technology, where robots and machines have resulted in quantum leaps in productivity and quality. What your tour of the internet will reveal is a similar revolution in the deployment of technology to enable job costing for those same environments.

2.1 Direct Material

Give some thought to the computer that you used to examine the suggested websites. It was likely produced as the direct result of someone's specific order. If you have ordered a computer, you know that you must choose components relating to memory, hard drives, monitors, sound systems, and on and on. Literally hundreds of combinations are possible. Therefore, each computer represents a unique job, and it will have a unique cost depending on the installed options. You may have seen a video of a computer factory where the units are zipping along an assembly line at an amazing rate. How can cost data be captured for each unit? It would be impractical to deploy the basic system introduced for Jack Castle. How many people would it take to track all of the components, and how could they avoid errors? The key is to utilize the logic within Jack's system, but deploy it in a cost-effective and accurate way. As a result, companies are increasingly reliant on devices that capture identification data for each significant part that goes into a manufactured product. If you were to open up the housing on your computer, you would quickly note that many of the expensive parts within have serial numbers, barcodes, or other unique identifiers attached to them. These ID's were probably mechanically scanned into a database that matches them with the serial number of the finished computer unit. As a result, a computer manufacturer can probably tell you exactly which memory chips, hard drives, etc. are installed in the computer you are using. This is helpful for warranty processing, product recalls, and other inventory management issues. But, that same data can be matched with raw materials purchase records to produce a listing of direct material cost for each unit produced. This is exactly what Donnie's material requisition process did earlier in this chapter, but at warp speed, with great precision, and little human intervention.

2.2 Direct Labor

Technology is also used to track and log time to specific jobs via various forms of "login clocks." Note that the information being tracked is essentially the same as what Donnie was providing to Jack via the daily time sheet, but with added efficiency, accuracy, and control. In addition to monitoring job cost, a manager must also safeguard corporate resources. Here, technology can play a key role. Newer systems require biometric validation (like finger print IDs and logging) of employees working on a project. These tools are used to make sure that employees who claim time working on a job are in fact present and working on the job! Such systems can also be used to limit access to direct material inventory. Rather than allowing free access to an inventory storage area, or providing a human "guard," technology can control who comes and goes, and what they take with them when they leave.

Some products are produced via an assembly line approach where each worker performs a specific task. Only a certain amount of time is available for each task, as the line keeps moving. Depending on the product, each employee might perform the same operation on 50, 100, or more units per hour. It would take more time to measure and record the labor for each job than it takes to perform the labor task itself. In this type of environment, cost is usually assigned to jobs based on the average or standard time for each activity. In essence, if an employee is expected to work on 60 units per hour, one minute of direct labor time/cost would be assigned to each unit for the employee's specific task. In a subsequent chapter, you will learn more about standards and managing variances from those standards.

2.3 Overhead and Cost Drivers

The application of overhead to specific jobs is mostly an exercise in algebra. Jack applied overhead at the rate of $20 for each hour of direct labor. A similar mathematical exercise is used to apply overhead in the highly automated factory environment. Some predetermined scheme is used to apply the overhead to production.

However, in a highly mechanized environment, one must give careful thought to the "cost driver." The cost driver is the factor that is viewed as causing costs to be incurred within an organization; it is best viewed only in an abstract context, as there are too many individual variables for any single factor to fully explain all cost incurrence. For Jack Castle's business, direct labor hours were viewed as the primary cost driver and the basis for assigning overhead. Labor hours may not be the most significant cost driver in a mechanized setting. Machine hours, number of direct material bar code scans, fuel consumption, spot-welds, or number of assembly steps could each provide a potentially logical base for allocating overhead. This choice must be logical, as it will govern the allocation of total overhead costs to individual products.

It is a bit frightening to consider that product pricing, CVP analysis, inventory values, decisions to discontinue a product, and so forth are dependent upon costing information that is driven by arbitrary overhead allocation choices. This underscores the importance of careful methodology in correctly identifying cost drivers. To do otherwise could result in costing some products too high and others too low. This might lead to overproduction of unprofitable products and discontinuance of profitable lines. How is this possible? Suppose a computer manufacturer allocated overhead based on the installation of RAM memory chips. As a result, a machine with 2 GB of memory would absorb twice as much overhead as a machine with 1 GB. This is probably not a good idea; there is little difference in the production process needed to manufacture the two machines (save and except the difference in direct material cost for memory chips). The faulty overhead allocation could cause management to conclude that the 2 GB machines were too costly to produce, while the 1 GB machines seem a relative bargain. In short, the amount of memory is probably not the leading cost driver.

Management accountants have long fretted about the overhead allocation problem. With so much at stake, quite a lot of thought has been put into ways to improve this effort. In the next chapter, you will discover "activity-based costing." ABC seeks to overcome some of the issues just described by dividing production into its component processes ("activities") and more closely associating overhead with each unique process. But, ABC has its own limitations, so do not be too quick to dismiss the merits of the overhead allocation approach introduced in this chapter.