Many environmental consulting firms use the term Days Sales Outstanding (DSO) to manage cash flow. In short, DSO represents the value in days that it takes to convert sales into cash. The calculation is simple:

$$DSO_{AR} = \frac{AR}{IS} \times D$$

Where,

- $DSO = Days Sales Outstanding, days$
- $AR = Accounts Receivable, \$$
- $IS = Invoiced Sales (for the period under consideration), \$
- $D = Days (in the period under consideration)$

While this approach may be reasonable for an organization that sells equipment or material, it doesn’t provide an accurate view for a service firm that provides effort over a period of time. Accordingly, many service firms calculate DSO using two different equations. The first approach includes only accounts receivable, as described above. The second approach adds unbilled effort to accounts receivable and is calculated using the following equation:

$$DSO_{AR+UE} = \frac{(AR + UE)}{IS} \times D$$

Where,

- $UE = Unbilled Effort, \$

The two approaches yield different types of information: The first approach provides information about the efficiency of the collection process, while the second approach provides additional information about work flow management.

Managing DSO

Let’s explore DSO values for a consulting firm that provides $1,200,000 in services annually using the following assumptions:

1. The typical project is valued at $25,000 with a life cycle of 120 calendar days.
2. The firm performs lump-sum projects consisting of four tasks, each task valued at $6,250:
   a) planning, performed during the first 30 days;
   b) mobilization, performed during the second 30 days;
   c) onsite work, performed during the third 30 days; and
   d) reporting, performed during the final 30 days.
3. The firm submits a single invoice upon submission of the report. Payment terms are 30
days net. Most clients pay in 45 days.

4. The firm relies on a line of credit with a 5% annual interest rate to manage cash flow.

Based on these assumptions—for any given 30-day period—the firm will be involved in 16 projects: four will be in the planning phase, four will be in the mobilization phase, four will be in the on-site work phase, and four will be in the reporting phase. Accordingly, during any 30-day period, the firm will invoice approximately $100,000 (i.e., 4 invoices at $25,000 each), hold accounts receivable of approximately $150,000, and have unbilled effort valued at approximately $75,000 (i.e., 12 tasks at $6,250 each).

DSO for our firm can be calculated as follows:

1. DSO_{AR}, based only on accounts receivable = \( \frac{150,000}{100,000} \times 30 = 45 \) days
2. DSO_{AR+UE}, plus unbilled effort = \( \frac{(150,000 + 75,000)}{100,000} \times 30 = 67.5 \) days

Based on these data, the firm has total credit sales of approximately $1,200,000 annually (i.e., 12 months at $100,000/month). The daily cost of financing these receivables is: \( \frac{(1,200,000 \times 0.05)}{365} = 164 \) per day

When DSO is based only on accounts receivable, the apparent cost of project financing over 45 days is approximately $7,380. When DSO includes unbilled effort, the real cost of project financing becomes clear, and for the full 67.5 days is approximately $11,070.

Both DSO calculations are important because the information guides management action. If the DSO based on accounts receivable begins to trend upward, management can focus on the invoicing and collection process. For example, management review may indicate that the firm’s invoices are not submitted to allow timely approval and payment by clients. In these cases, management can reduce DSO by changing invoicing processes.

Alternatively, DSO calculations that include unbilled effort inform management about operations that are under the direct control of firm management. In the case of our example firm, DSO could be reduced significantly by invoicing at the completion of each task. If the firm were to invoice at the completion of each task, the monthly invoicing would remain at $100,000 (i.e., 16 invoices at $6,250 each), the firm would still hold accounts receivables of approximately $150,000; however, unbilled effort would be eliminated. Under this model, DSO values would be calculated as follows:

1. DSO_{AR}, based only on accounts receivable = \( \frac{(150,000 + 0)}{100,000} \times 30 = 45 \)
2. DSO_{AR+UE}, plus unbilled effort = \( \frac{(150,000 + 0)}{100,000} \times 30 = 45 \)

Although there is no difference in the DSO values based only on accounts receivable, there is a significant difference in DSO values that include unbilled effort. While the example is flawed in that it assumes effort is incurred on the date the invoice is submitted, it still has value in illustrating the importance of invoicing effort as close as possible to the date it is incurred.

In our simple example, our firm has eliminated the cost of financing its project work by 22.5 days per billing period for a total of $44,280 per year, which is approximately $925 per project. Equally important, we have eliminated the risk associated with financing work by 22.5 days. Although quantifying financing risk is difficult and influenced by many factors, shorter periods—and periods in line with contractual payment term—are always better. Our savings in project financing costs can be used to improve competitiveness by reducing project cost or increasing profitability. Increased profitability, when properly managed, further improves competitiveness through investments in technology, training, and talent that lead to improved service.

Managing DSO is an important aspect of consulting firm management that can be controlled by project managers. When we work to reduce DSO, whether through collection processes or through improved invoicing schedules, we provide better value to our clients and our organizations.