Chapter 11 Financial Management of Working Capital

Entrepreneurial Finance: Fundamentals of Financial Planning and Management for Small Business, First Edition. M. J. Alhabeeb.

IN THE PREVIOUS CHAPTER, we discussed working capital and its importance, and we defined working capital management. We would reiterate here that the immediate goal for the financial management of working capital is to efficiently handling its two components, current assets and current liabilities, in a way to maximize the value of assets and minimize the firm's liabilities. The ultimate goal would be to maximize profit, minimize risk, and achieve the highest possible value for the entire firm. In this part of the discussion, we will detail the management of the current assets first, and then move to the management of current liabilities.

Current Assets Management

Here, we will discuss the management of cash, marketable securities, account receivable, and inventory.

11.1 Cash Management

Cash includes both the ready currency and the bank demand deposits. It represents the ultimate form of liquidity to which all other assets might be reduced to, sooner or later. Needless to say that cash is the most liquid asset, there is an aspect that makes it the most efficient in honoring the financial obligations, paying the bills, and handling emergencies. Cash is like the blood of the operating business in general, but it is especially essential in the life of a small business. There are four cash balances that would justify the importance of cash utilization.

1. Transaction balances include the cash balances of all routine operating payments and receipts.
2. Precautionary balances include all the reserved cash balances for emergencies and unexpected needs.
3. Speculative balances are those cash balances that are held to be used for bargain deals and discount purchases.

4. Compensating balances are those balances kept as a minimum to compensate for the cost of rendering certain services such as the minimum balance required to be maintained by banks.

Because of the time value of money, it would be expensive for the firm to hold up cash, but would be rewarding to use it and earn interest on it. This is the reason that the goal should be to hold adequate but not excessive amount of cash. The general strategy for cash management can be summarized by

a. Depositing cash and processing checks as soon as possible.
b. Delay disbursement as late as possible.
c. Invest idle cash as much as possible.

Cash accounts would be used to accomplish the following objectives:

1. Paying the due bills through the account payable.
2. Collect the due payments through the account receivable.
3. Satisfy all the emergencies and the unexpected financial needs.

4. Turn over inventories.

Throughout all of these objectives, the firm's management needs to be familiar with the cash cycle and cash turnover. **Cash cycle** is the time span between paying for the production purchases and collecting revenues out of the final product sales. **Cash turnover** is how many times a year the firm would be able to turn cash into a product and to cash again through the sales of the product. This cash turnover is important to be known, for it would be a major factor for the firm to determine the minimum amount of cash to be held.

The Required Minimum Cash

Because cash is necessary to be held for the purposes mentioned above and because holding cash would also be expensive for the lost opportunity for earnings, the firm has to strike a good balance between the two conflicting ends. In other words, the firm's financial manager has to decide the minimum amount of cash necessary for operation, and no more than that. This **minimum operating cash (MOC)** can be obtained by dividing the firm's **total annual cash outlay (TACO)** by the firm's cash turnover (CT).

$$MOC = \frac{TACO}{CT}$$

Example

Let us suppose that a firm's financial manager went back to the firm's books of the last five years and calculated the average amount of total operating outlay at $65,000. If the firm's turnover is 4, then he would know that for a start, the

firm should not hold more than the calculated minimum operating cash.

$$MOC = \frac{TACO}{CT} = \frac{65{,}000}{4} = 16{,}250$$

This minimum amount of cash can be adjusted as needed for the next year and after.

A more common and simpler guideline to follow in deciding the minimum cash is to go back to the amounts of cash needed before and relate them as a percentage of total sale revenue (TSR). If the manager found out that the cash needed every year has been around 7% of the sale revenue, then that percentage or its modification would be applied to the expected total sales. Suppose that expected total revenue from selling the firm's products and services is $175,000, then the minimum cash that needs to be reserved would be

$$0.07(\$175{,}000) = \$12{,}250$$

Types of Cash and Floats

A. Cash

For an operating firm, cash comes in different formats, depending on the purpose it serves. The following are the most common types:

Cash on Hand

Cash on hand is the basic type of cash that is required for daily transactions and sales. Probably you have seen cashiers at the grocery stores bring their own drawers with stacks of bills and rolls of coins when they start receiving their cash register. That is the start amount of cash that would help facilitate daily transactions. Everything has to be recorded in and out. The firm usually deposits the cash at the end of the day in order to account for everything and avoid miscalculation and theft. The size of cash on hand grows with the volume of daily transactions. A hot dog stand may need to start with a $100 in change but a large department store would need several thousand distributed to all operating cash registers.

Petty Cash

Petty cash is a tiny fund reserved for all the small daily needs for cash such as the cash on delivery (COD) services and postage charges. These occasional needs for immediate cash should not be paid for from the cash register, and this is the major reason to have their own separated small fund. All petty cash expenditures must be backed up by receipts.

Cash in Checking and Saving Accounts

The checking account for a business is where bills and other obligations are paid from. The firm's management can minimize the number of checks written to minimize paying more charges. There are other ways to pay the bills such as by the trade credit which is a liability item. Cash deposited in the business savings account would earn interest, in addition to being important to maintain emergency funds and to hold sales taxes and employee taxes. Since both

checking and savings accounts deal with checks most of the time, and since checks need time to clear whether they are paid or received, financial managers can take advantage of this opportunity to manipulate the timing of check clearing in favor of the firm. This is when floats come into play.

B. Floats

A **float** is the time delay between writing or depositing a check and clearing it by the bank. It is because of the bank requirements to transport and process checks, a time gap would be created that would render the money unutilized temporarily. For the checks paid out and received, there are two types of floats.

Disbursement Float

Disbursement float is the period between the time of writing a check for payment and the time when the money is actually taken from the payer's account. Depending on many factors, this period could be extended for several days during which the money stays in the account and collects interest. In this sense, and for the interest of the firm paying by checks, the longer it takes for these checks to clear, the higher the interest the firm can still collect on that money that has not yet left the account. Considering that, some businesses write checks for thousands of dollars, and the interest that would be collected for several days can be a significant saving. So the rule here is the longer the disbursement float, the better for the business that pays by checks. Since the float makes the actual payment time blurred, it has been legally accepted that the postmark day would be considered the day of payment. Suppose that you pay your apartment rent by check that you mail out to the landlord headquarter in a city several hundreds of miles away. If the due date is no later than the 10th of each month and you mail your check on the 8^{th}, and it would arrive on the 12th, you would not be considered for late payment charges as long as your check envelope is postmarked before the 10th, say the 9th. This would legally mean that you fulfilled your obligation before the due date.

Collection Float

Collection float is the opposite of the disbursement float. It is the period between the time a business receives a check and the time the money is actually credited to the business account. In this case, the business would naturally want to shorten this time and get the money as quickly as possible so the money would start to be utilized sooner than later. So, for the business interest, the shorter the collection float, the better.

Nowadays, and as the check writing method is on decline because of the electronic fund transfer and the prevalent computerized system, the float manipulation is no longer a significant technique in financial management. However, it can still be utilized for those small businesses that still deal heavily with selling and buying by checks.

Float Techniques

Short of a heavy computerized system and instant transaction capability, small businesses can still follow some classic techniques to delay disbursement and speed up collection. To delay disbursement, these techniques may include

- **Controlled disbursement methods.** The controlled disbursement methods are basically about stretching the mail time and check clearing time such as mailing all checks from a remote place where there is no airport or major highway nearby, and choosing a bank with the longest clearing time.
- **Playing the float.** This can be done by limiting the fund in the firm's account on which the sent checks would be drawn. This needs a good estimation of the probable percentage of payers who would cash their checks within a certain time. For example, if the firm knows that historically about one-third of payees cash their checks within the first week of receiving them, then the firm would only leave a little more money in the bank to cover that one-third of payees. This technique can, of course, be risky in case of any miscalculation that may lead to having bounced checks and paying for their charges. To protect themselves from these possibilities, a firm usually will set up an overdraft account where it allows the bank to cover the overdrawn funds in case paying the checks requires more than the firm's balance. The bank would do this for a fee of course, but it would be worth it for the firm because it won't happen, but seldom.
- **Overdraft-zero balance account.** This is another way to avoid having bounced checks due to the limitation of the firm's balance. It is for the firm to establish what is called a zero balance account, which is designed to remain with no balance until checks have been paid against it. At that point, the firm would deposit money enough only to cover paying the checks. This would require a daily communication between the bank and firm so that any coming checks would find enough deposit to cover them.

As for speeding up collection, there are two common techniques.

1. The lockbox is the most popular method in this regard. A lockbox is a post office box that would receive checks and deposit them immediately in the firm's account at a designated bank. The big advantage of a lockbox is that it would allow checks to be deposited before, not after, clearing them making the firm to save a lot of time.
2. The concentration banking is similar to the lockbox but less effective. By this method, checks are sent to a collection center which deposits them in local banks and finally to the firm's account.
   Finally, and especially in the case of a small local business, a method of direct send may prove to be very effective. It is where checks paid to the firm are taken physically and directly to the bank where they are drawn, and have them cashed immediately.

Needless to say, the current Electronic Fund Transaction (EFT), the use of debt cards, online banking and purchasing, and generally all the digitally designed transaction eliminated

most of the need for the float manipulations. Funds are now, in the majority of cases, immediately discounted from the payee's account once they are paid, all by electronic transactions that automatically and instantly settle between accounts.

11.2 Marketable Securities Management

Marketable securities are short-term investments that are considered among the liquid assets for the firm. They include money market accounts, certificates of deposit, US treasury bills, and corporate and government stocks and bonds, although they are less liquid than the aforementioned securities. These securities should be marketable when they can be converted into cash without losing their principal value and have a market with certain depth and its breadth.

Marketable securities are usually held by a firm for one or any combination of the following motives:

1. **Transaction motive** is to earn money on funds that are scheduled to be paid at some point in the near future.
2. **Safety motive** is to form a safety net for the firm in cases when the firm is, for any reason, unable to fulfill its scheduled obligations.
3. **Speculative motive** is to use excess cash before it can find a more profitable way for it. It is considered the least common motive.

The logic of using money in a productive way would always dictate whether it is worth it to have marketable securities for any of the aforementioned motives. Purchasing these securities should yield at least equal or more rewards for the firm than the cost of employing the money in this way. Let us take an example for the third motive, the speculative motive.

Example

Suppose that the financial manager of a small firm found that there will be $12,000 that will sit idle for 48 days before it can be used to pay for a due purpose, and there is an opportunity to purchase some marketable securities yielding 9.5% but for brokerage fees of $50. Would it be wise to purchase those securities if the principal is assured to be back?

The fund will earn

$$0.095 \times \frac{48}{365} \times \$12{,}000 = \$150$$

$$\$150 - \$50 = \$100$$

The fund will earn $100 after paying the brokerage fees. So, yes it would be worth it, especially if there is no risk for any loss of the principal.

Common Marketable Securities

The most common and popular among the marketable securities that a firm could buy is the treasury bills and treasury notes. **Treasury bills** are short-term debt obligations issued by the U.S. Department of the Treasury. They are sold at auction for a minimum face value of $100 and with maturities of 28, 91, 182, and 364 days. They do not pay interest but they are sold at a discount of their face value. They are considered

risk-free investment since they are guaranteed by the US government. Naturally, their risk-free advantage comes with a relatively low yield.

Treasury notes are different from treasury bills in both maturities and interest. They come with maturities of 1, 3, 5, 7, and 10 years and they pay a stated interest semiannually. The third type of the **treasury instruments** is the **treasury bond**, which is also called "Long Bond." Its maturity is stretched to 20 or 30 years and for this prolonged maturity, its yield is usually higher than the two treasury instruments.

The other types of marketable securities are those issued by federal agencies other than the U.S. Department of the Treasury. They usually have short maturities and can be sold with discount or with a stated interest that is slightly higher than the yield of the treasury issues. Since they are associated with the federal government, these types of securities are also considered low risk investments. Marketable securities can also be issued by non-government parties such as banks and investment companies. The most common of these issues are the negotiable certificates of deposit (CDs), commercial papers, and bank acceptances.

11.3 Account Receivable

Account receivable basically refers to the firm's ability and willingness to extend credit to its customers. In other words, account receivable represents the debt owed to the firm due to selling its goods and services on credit basis. What determines this account is not only how much goods and services are sold on credit but also how long it would take the firm to collect the revenue of the sold product. Selling on credit may necessitate finding a way to finance the account receivable. While selling on credit makes it much easier for the firm to increase its sales and build a wide customer base, it would also mean putting a burden on the firm to organize and manage the process, and make sure it is able to collect the due amounts out of that sale. Some firms prefer to build their own credit department to take care of all of the credit issues, and some prefer to transfer the task to somebody else, a third party, who would take care of billing and collection. This basically means that the firm would immediately sell its account receivable with a discount. In this case, the firm has to assess what it has to give up as a charge or discount to the third party against the cost of building its own credit department. The process of selling the firm's account receivable to a third party at a discount off of the original selling price is called "**Factoring**."

Credit Control

If the firm decides to deal with credit internally, it must establish a credit policy and draw up credit standards. Controlling the process internally would basically mean that the firm establishes some standards, monitors their implementation, and corrects any deviation from them. One important factor to be established is the **collection period (CP)**, which sets the number of days during which the company would expect to collect the revenue of what was sold on credit. This would require knowing the **account receivable turnover** (ART), which is defined as the annual number of times

the firm can collect its account receivable. ART can be obtained by dividing the **total on-credit sales** (TCS) by the average account receivable (AAR),

$$\text{ART} = \frac{\text{TCS}}{\text{AAR}}$$

and then by simply dividing the number of days in a year (365) by the account receivable turnover, we obtain the CP.

$$\text{CP} = \frac{365}{\text{ART}}$$

Example

If a company sold a total of $407,000 on credit when its average account receivable is $50,000, what would be the firm's expected collection period?

$$\text{ART} = \frac{407{,}000}{50{,}000} = 8.14$$

$$\text{CP} = \frac{365}{8.14} = 44.8 = 45$$

The collection period would be 45 days.

Extending credit to customers would undoubtedly increase the sales, which in turn, would increase the firm's profits, and that is the ultimate goal. So, there is a certain benefit for any firm to establish an account receivable, but it has to be managed effectively, especially that there is a certain cost to the sales on credit in addition to its benefit. We can calculate the effect of credit policy on the change in profit by the following formula:

$$\Delta \text{Pr} = (1 - v\%)[\text{TS}_\text{n} - \text{TS}_\text{o}] - [k(\Delta\text{AR}) + \text{BC}\%(\text{TS}_\text{n})]$$

where Δ Pr is the change in profits, v% the percentage of variable cost to product selling price (v/P), TS_o the original total sales, TS_n the new total sales, k the cost of investment in account receivable, ΔAR the change in account receivable, and BC% the percentage of bad credit.

We can also obtain the change in account receivable (ΔAR) by the following formula:

$$\Delta\text{AR} = \frac{\text{TS}_\text{o}}{365}[CP_\text{n} - CP_\text{o}] + v\% \left[CP_\text{n}\left(\frac{\text{TS}_\text{n} - \text{TS}_\text{o}}{365}\right)\right]$$

where $\frac{TS_o}{365}$ is the daily original sale, CP_n the new collection period, CP_o the old collection period, and $\frac{TS_n - TS_o}{365}$ the daily change in sales.

Example

Company X has total sales of $150,000 and a collection period of 30 days. It is expected that the sales will increase to $200,000 if the collection period is extended to 45 days. Will this change in credit policy increase the profits, given that the cost of investment in account receivable is 8%, the market price of the product is $20 with a variable cost of $8, and the company expects a 7% uncollectable credit?

First, let us calculate the change in account receivable (ΔAR).

$$\begin{aligned}\Delta AR &= \frac{TS_o}{365}[CP_n - CP_o] + v\%\left[CP_n\left(\frac{TS_n - TS_o}{365}\right)\right] \\ &= \frac{150{,}000}{365}[45 - 30] + \frac{8}{20}\left[45\left(\frac{200{,}000 - 150{,}000}{365}\right)\right] \\ &= 8630\end{aligned}$$

Then, we can calculate the effect on profit (ΔPr).

$$\begin{aligned}\Delta \Pr &= (1 - v\%)[TS_n - TS_o] - [k(\Delta AR) + BC\%(TS_n)] \\ &= (1 - 0.4)[200{,}000 - 150{,}000] - [0.08(8{,}630) + 0.07(200{,}000)] \\ &= 15{,}310\end{aligned}$$

The profits would increase by $15,310 if the company extended the collection period to 45 days and if it actually achieved the expected sales of 200,000.

Credit Evaluation

In order for the firm to set up the proper credit standards and extend credit to its customers, it has to know to whom the credit would be extended and what the requirements would be. The **credit evaluation** is about estimating the likelihood that credit applicants will be able and willing to pay the bills and abide by the credit policy. It is also to help determine the line of credit that would be extended to any customer. The **line of credit** is the firm-determined maximum amount a customer can owe due to his purchases on credit. A good criterion is needed to be established in order for the firm to determine the consumer's credit worthiness and the general probability of defaulting on paying the bills. Such a general criteria has been well established and used for decades by businesses through their own work and the work of other external agencies specializing in credit evaluation.

The 5 C's

There are five constructs that have been traditionally known to constitute the extent of credit worthiness for individuals. They are known as the **Five Cs** because they all start with the letter C.

Character

Character of the applicant refers to the likelihood of paying the bills based on the applicants' records of paying past obligations and honoring their contractual and moral commitments. The character is assessed based on payment history with other creditors and if there is any dispute or legal judgment against the applicant. This is why most of the application forms contain questions on past creditors including landlord, utility companies, credit card companies, banks, and the like. Upon signing the application form, the applicants automatically give consent to the creditors to check their records.

Capacity

It is the applicants' ability to pay for their financial obligations. It is determined based on the applicants' income and resources, especially in connection

to their other obligations. Liquidity and debt to income ratio could play a major part in painting a picture of the capacity to pay.

Capital

Capital dimension would further look at other financial and economic factors and utilize more financial ratios to paint a more detailed picture of the applicants' economic stand.

Collateral

The applicants' collateral refers to their additional assets that would back them up in case they need a support to lean on. For the firm granting the credit, this collateral element can serve in the assessment of credit risk and in the firm's potential ability to recover its funds, should the applicants default on their obligations.

Condition

Condition refers to the general condition of the economy, especially the current state of economic and business activities, and any special circumstances that may affect both the applicant's ability to pay, and the creditor's ability and willingness to extend credit.

Credit evaluation can be and often is done based on the assessment of a third professional party such as Dun & Bradstreet or Cortera if the applicant is a business, and credit reporting agencies such as Experian, TransUnion, and Equifax if the applicant is an individual. Those last consumer credit agencies may have their own reporting services for businesses such as Equifax which has a small business financial exchange as a section specialized in credit rating for small businesses. Most of these credit reporting agencies utilize a measure of credit worthiness summed in a single score called FICO.

FICO Score

FICO stands for Fair, Isaac, and Company. Engineer Bill Fair and mathematician Earl Isaac pioneered devising a general credit measure back in 1956. They sold their product on a limited basis from 1958 up to 1987, when they went public amidst an explosion in the need for credit scoring. In 2003, their company was upgraded to a corporation and the name became formally FICO in 2009.

The major objective of FICO scoring is to condense the borrower's character with his/her actual credit history into a single quantitative index ranging between 300 and 850. It has become a universal criterion to assess a borrower's worthiness in the eyes of creditors. It has also been accepted as a measure by the Federal Trade Commission (FTC). There are generally five factors to determine the score. **Figure 11.1** shows that payment history takes the heaviest weight (35%) in determining the score. It is followed by the current debt (30%), length of credit history (15%), types of credit (10%), and the new credit (10%). There are of course many subfactors, positive and negative, which constitute these five factors. For example, the number of times payments were late, credit used versus credit available, information on employment and residence, and specifically negative factors such as charges off, collection, disputes, and court rulings.

Creditors may use a single score computed by one agency and could use an average of three scores computed by the three major credit evaluation agencies in the

United States, Experian, Trans Union, and Equifax. The following ranges have been considered the standard breakdown for most of the creditors:

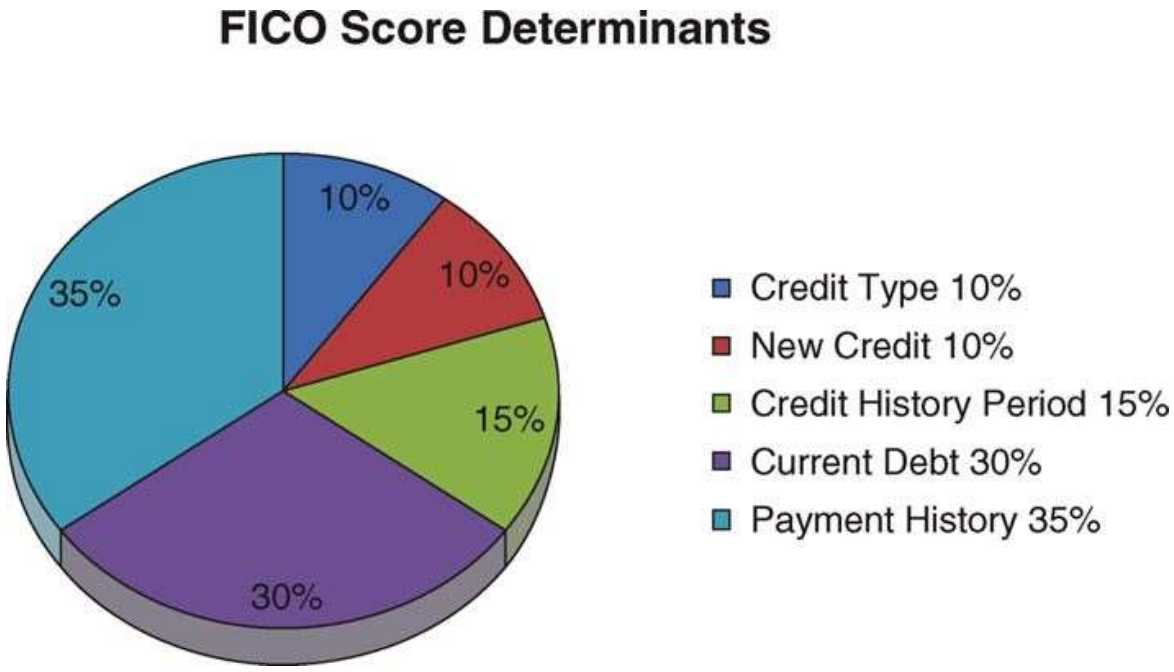

Figure 11.1 Determinants of FICO Score

300–619: Poor
620–659: Fair
660–749: Good
750–850: Excellent

Cash Discount to Speed Up Collection

Some firms offer a percent discount to its customers to encourage them to pay their bills earlier than the stated collection period. The terms of discount would written on the bill like **4/10 net 30**, or **4–10 n30**, which means that the customer would get 4% off of their bills if they pay them within the first 10 days of the collection period of 30 days, otherwise, if they do not take advantage of the discount, they would have to pay the full amount by the end of the normal collection period of 30 days.

The cash discount policy is designed to motivate and reward the customers who pay their bills early. This obviously would attract some customers who would take advantage of reducing their bill account. For the firm, it would collectively result in

1. reducing the volume of account receivable;

2. reducing the average of collection period;
3. attracting new customers who find the discount attractive, which may at the end, increase the sales.

The firm, of course, has to assess such benefits against the cost of the discount to its revenue, and as it is usual in the economic consideration, the firm would determine the optimum discount percent when the benefits of applying the discount equals the cost of it.

We can slightly modify the formula of the change in profit that we had in the credit control section to assess the effect of the discount policy on the firm profits:

$$\Delta P_r^d = (1 - v\%)[\Delta \text{TS}] + [D_o P_o \text{TS}_o - D_n P_n \text{TS}_n] - k(\Delta \text{AR})$$

where ΔP^d_r is the change in profit due to the discount policy, D_o the original cash discount, D_n the new cash discount, P_o the percentage of customers who utilize the original discount, P_n the percentage of customers who utilize the new discount, and ΔTS the change in total sale ($\text{TS}_n - \text{TS}_o$).

The rest of the variables are the same as before.

Example

Suppose that company X of the last example wanted to add a cash discount to its original credit policy that had a 30-day collection period. The cash discount would be 2/10 net 30, which the company expects that it would raise the sales up to $180,000, given that the company had no prior cash discount, but it would assume that their customers would be split 50/50 between those who take the discount and pay on the 10th day ($\text{CP}_n = 20$), and those who wait, as usual, until the 30th day ($\text{CP}_o = 30$).

Let us recognize the new variables.

$$D_o = 0 \text{ because the company has no prior discount}$$
$$D_n = 2\%$$
$$P_o = 50\%$$
$$P_n = 50\%$$
$$\Delta \text{TS} = \text{TS}_n - \text{TS}_o = 180{,}000 - 150{,}000 = 30{,}000$$

Before plugging these values into the formula, we need to bring the values of other variables from the last example:

$$v\% = 0.4$$
$$k = 0.08$$

and we need to calculate the change in account receivable(ΔAR)

$$\Delta AR = \frac{TS_o}{365}[CP_n - CP_o] + v\% \left[CP_n \left(\frac{TS_n - TS_o}{365}\right)\right]$$
$$= \frac{150{,}000}{365}[20 - 30] + 0.4 \left[20 \left(\frac{180{,}000 - 150{,}000}{365}\right)\right]$$
$$= -3452$$

Now, we calculate the change in profit.

$$\Delta P_r^d = (1 - v\%)[TS_n - TS_o] + [D_o P_o TS_o - D_n P_n TS_n] - k(\Delta AR)$$
$$= (1 - 0.4)[180{,}000 - 150{,}000] + [(0)(0)(150{,}000) - (0.02)(0.50)(180{,}000)]$$
$$- (0.08)(-3452)$$
$$= 16{,}476$$

Table 11.1 Account Receivable by the Number of Days Outstanding

Customer	Days Outstanding	Balance
1	17	14,000
2	25	11,000
3	45	10,500
4	51	17,000
5	60	20,000
6	70	7550
7	81	6700
8	88	19,500
9	102	12,500
10	133	6250
Total Account Receivable		125,000

So, this cash discount policy would result in increasing the profits by $16,476.

Account Receivable Aging

Account receivable aging is a method to tabulate and categorize all the account receivable amounts based on the days they remain outstanding. The purpose is purely managerial for identifying signs to pinpoint the reason some of the accounts are not paid on schedule. It is also a self-assessment process to correct any credit policy or collection procedure. Suppose that a firm has $125,000 in total of account receivable, distributed over 10 customers (for simplicity). Table 11.1 shows this account as it is tabulated based on each customer's debt and how long it has not been paid. Table 11.2 breaks the account into periods of 30, 60, 90, 120, and over 120 days. It also shows the percentage of each category out of the total account. The same information is

also depicted in Figure 11.2. The tables and graph show that 20% of total account receivable has been outstanding for less than 30 days. If this is the collection period for this firm, there would be no problem with customers 1 and 2. However, customers 3, 4, and 5 owe 38% of total account receivable and their balances have been outstanding for 45, 51, and 60 days, respectively, and all are beyond their due date, which spells a problem for the firm. The next problem is even bigger, involving customers 6, 7, and 8 whose total debt constitutes 27% of total account receivable, second to the debt of previous group of customers, 3, 4, and 5, which owe the largest amount. The next customers 9 and 10 have also been delinquent for a long time, 102 and 133 days, respectively. Their bills constitute 10% and 5% of total account receivable. Their problems are even more complicated than the rest.

Table 11.2 Account Receivable, Total and Proportion, by Period Categories

Customer	0–30	31–60	61–90	91–120	Over 120
1	14,000				
2	11,000				
3		10,500			
4		17,000			
5		20,000			
6			7550		
7			6700		
8			19,500		
9				12,500	
10					6250
Total (%)	25,000 (20)	47,500 (38)	33,750 (27)	12,500 (10)	6250 (5)

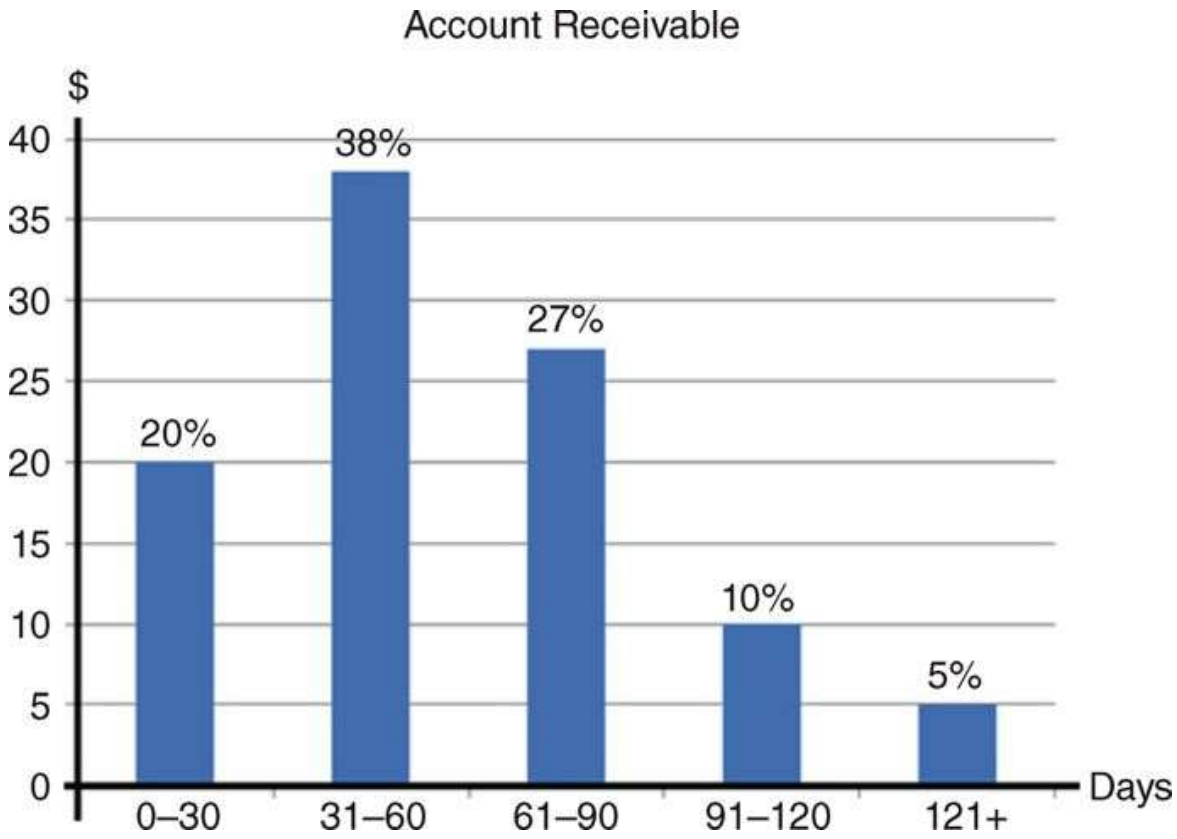

Figure 11.2 Account Receivable Aging

This tabulation of all account receivable should guide the financial manager to a better diagnosis of the problem, and hopefully for a better solution. The firm would do as much as it can to try and collect these outstanding debts. The firm's collection attempts range from writing letters to those customers to resorting to legal actions as the last attempt. In between these ends, the firm would continue to send further reminders, make calls, send representatives, and use collection agencies to get to the bottom of the matter before the step of taking a legal action. Collection efforts for the firm take a lot of expenses, time, and energy. Financial managers should know to what extent they try to collect, and how much to spend on collection. The major point is to avoid high losses for they can easily spend more on collection than what they actually try to collect. There would be a point when the cost of collection would equal the retrieved debt. That is where the firm should stop spending any more money on collection. It is the point where most debt has been collected, and what remains would be considered uncollectable bad debt. Figure 11.3 shows that the equality point *X* is what determines the maximum size of expenditures on collection (*Y*). Beyond this point, it would not be economical to keep spending in order to retrieve more debt. So, point *Y* is where spending on collection must be stopped. Area A would be

deemed uncollectable and may be declared as bad debt. Area B is the total cost of collection.

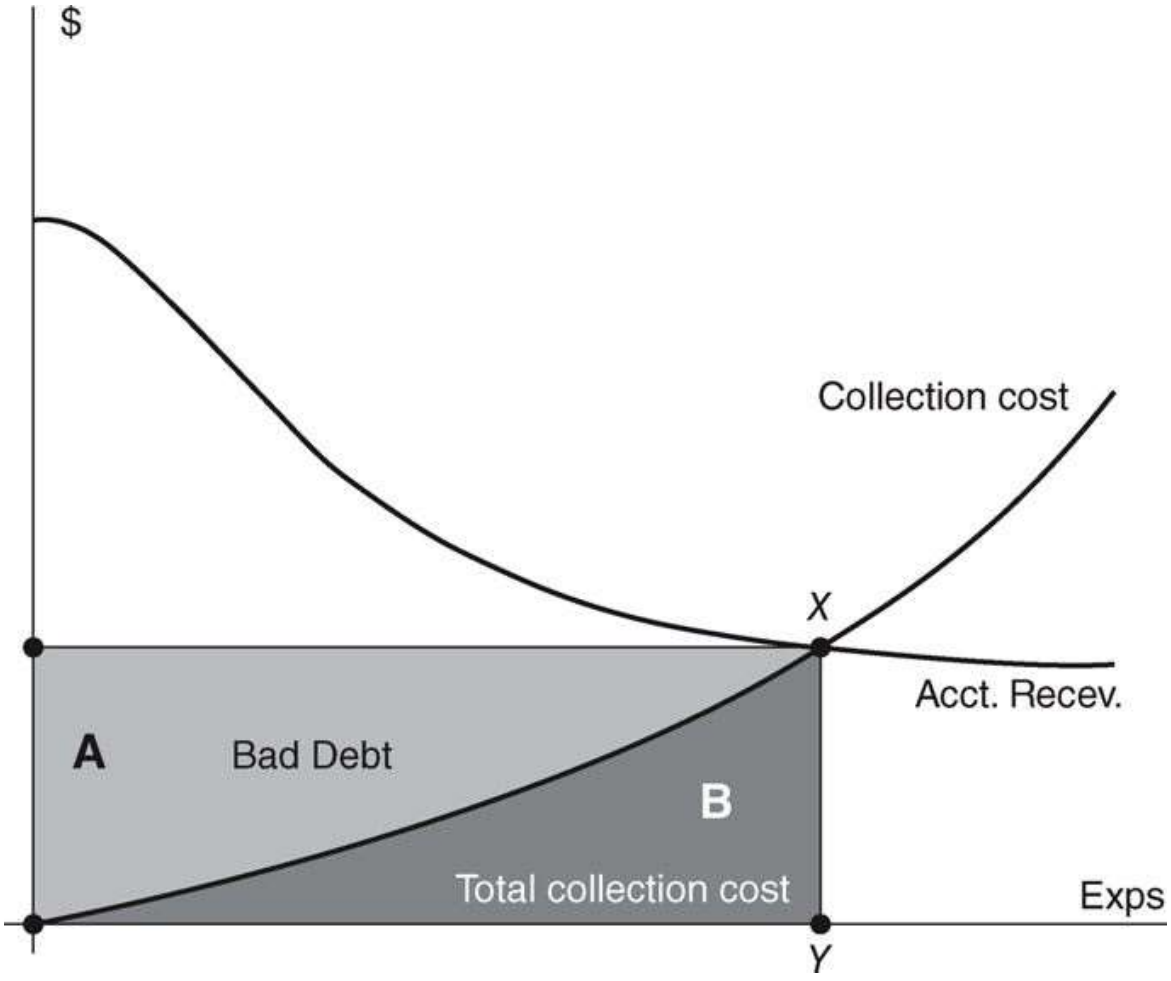

Figure 11.3 Collection Cost and Bad Debt

Current Liabilities Management

The major purpose of current liabilities management is to minimize the firm's obligations, especially its payments for short-term debt, accruals, and account payable. Current liabilities are any debt obligation and payments that have to be paid within a year. The sources of these obligations include the spontaneous, unsecured and secured sources, as well as commercial papers.

Spontaneous sources are directly related to the normal activities of business such as account payable, which includes all debts that are owed to suppliers, vendors, and services rendered to the firm. Another part of the spontaneous sources is the **accruals**, which are the obligations that accumulate during the normal course of operation and becomes due at the end of a certain term. The best examples of these accrued payments are the payroll wages

and benefits to employees, and the taxes due to government such as sales and property taxes.

Unsecured sources include the commercial banks' line of credit, revolving credit, and the single payment notes. **Secured sources** are those short-term loans that are backed by the **firm's collaterals**. Those collaterals can be the firm's account receivable, inventory, trust, and warehouse receipts. The last source of short-term debt that can be available to a firm would be the **commercial papers** which are unsecured promissory notes that are issued by firms with high credit standing, such as finance and insurance companies and pension funds.

11.4 Account Payable and Trade Discounts

Account payable is the largest and most important component of current liabilities. Most of this account is the inventory purchased on credit, in addition to other payments due for travel, maintenance, entertainment, and the like. The major purpose of account payable management is to minimize the cash paid and take advantage of any benefit that can be obtained by paying on credit. The most common and effective advantage to be taken here is utilizing the available credit discounts. Three types of discounts may benefit the firm: trade discount, cash discount, and quantity discount.

Trade discount is a certain deduction off of the list price of what the firm sells offered by the manufacturer to wholesalers and retailers for honoring certain contractual commitments. For example, an auto maker would grant a certain percentage discount to auto dealers if they do certain services to their customers such as delivery, granting service schedule, or local advertising. The trade discount can be specified by either a single percent such as 25% off the list price or as a chain of percents such as 20%, 15%, and 10%, where each percent is granted for honoring a certain obligation. The calculation of this type of multiple percent discount is important to be understood correctly. It is certainly not an additive discount nor is it an average. In other words, the 20%, 15%, and 10% would not lead to discounting a total of 45% off or 15% as an average. The correct way of calculating such a chain of trade discount is the **successive way**. Let us take an example to illustrate calculating the trade discount successively.

Example

A furniture store is offered a 25, 20, and 15 trade discount for one of the living room sets it carries. The list price of this set is $2800. The multiple discount would be granted as

25% the normal retailer's allowance;
20% for extending free delivery to customers;
15% for displaying the set in a nearby mall and making a local TV advertisement.

What would be the invoice price?

Invoice price is the cost to dealer or the discounted list price. Before we know how to work out the successive way of calculating the multiple trade discount and concluding the invoice price, we need to reiterate that the discount is not going to be adding the three

percentages as 60%, nor will it be an average as 20%. There are two ways to calculate what the furniture store actually pays for the set manufacturer:

1. The Traditional Method

In this way, we apply the three percentages in three successive steps, from the list price to invoice price, where the final figure would be the invoice price. In each step, we can use

$$\mathrm{DP}_i = \mathrm{LP}(1 - d_i)$$

where DP_i is the discounted price by discount i, LP is the list price, and d_i is any discount.

Step 1: $DP_1 = 2800(1 - 0.25) = 2100$
Step 2: $DP_2 = 2100\ (1 - 0.20) = 1680$
Step 3: $DP_3 = 1680\ (1 - 0.15) = 1428$

The last discount price is the invoice price ($1428). So, the store pays 51% of the list price (1428/2800) which means that the total trade discount is 49% of the list price (1 – 0.51 = 0.49).

2. The NCRF Method

The percent of list price that is paid by the store (the 51% above) is called the **Net Cost Rate Factor (NCRF)** which refers to how much the invoice price constitutes as a percentage of list price. By this method, we need to know the NCRF in order to multiply it by the list price (LP) to get the invoice price (IP).

$$IP = NCRF(LP)$$

The NCRF can be obtained as the mathematical product (Π) of the complements of all discount percentages in the chain (com_i).

$$NCRF = \Pi_{i=1}^{n}[com_i]$$
$$NCRF = (com\ 1)(com\ 2)(com\ 3)\ldots(com_n)$$

Since a complement is one minus the discount,

$$com_i = 1 - d_i$$
$$NCRF = (1 - d_1), (1 - d_2), (1 - d_3), \ldots (1 - d_n)$$

So, we can calculate the NCRF by multiplying the complements to the three discounts in the chain. That would be

$$\begin{aligned} NCRF &= (1 - 0.25)(1 - 0.20)(1 - 0.15) \\ &= 0.51 \\ IP &= NCRF(LP) \\ &= 0.51(2800) \\ &= 1{,}428 \end{aligned}$$

Looking at **Figure 11.4**, it would be worth noting that if the NCRF represents the percentage of the list price that is paid by the firm, the rest of the list price would be the portion that would be given up by the vendor or manufacturer. This discount portion is called the **Single Equivalent Discount (SED)**.

$$SED = 1 - NCRF$$

In our example, the firm would only pay 51% of the furniture set list price while the manufacturer bears the rest, 49%.

$$SED = 1 - 0.51$$
$$= 0.49$$

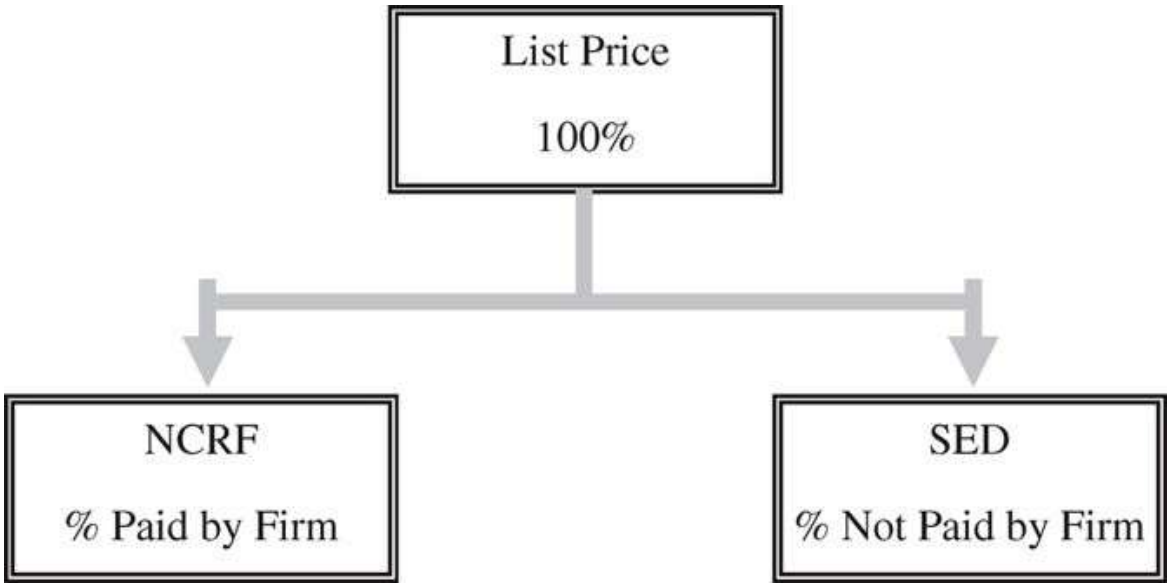

Figure 11.4 List Price Between the Manufacturer and Firm

Cash Discount for Prompt Payments

As a buyer, the firm also can benefit from cash discounts offered by vendors and suppliers to their credit customers who pay their bills early. An account payable manager can turn this into a saving opportunity for the firm. The manager needs to know and follow all the potential discounts and be quick to take advantage. Most of the vendors who offer these discounts inform their customers by printing the terms of discount on the due bills. As we have seen before in the trade discount, a common format would be something like this: 5/7; n/30. This means that there would be a 5% discount of the bill balance if the firm pays its bill within the first 7 days. Otherwise the full balance or net amount (*n*) must be paid within 30 days. However, if the payment occurs beyond the 30 days, a finance charge would be applied. Considering the large volume of purchases for the firms, this discount would be a great opportunity to save and at the same time it would be a big mistake if the opportunity is passed.

Example

Suppose that a firm has a credit account with a supplier of material, where the firm pays $20,000 monthly of what accumulate on the account of its purchases. Suppose also that the supplier offers a discount of 3/10; n/30. If the firm takes advantage of this discount and pay its bill within the first 10 days of the month, it would save $600 a month (20,000 × 0.03).

That is a little over 3% of what it actually pays ($19,400). So, it would be more prudent to take advantage of this discount even if the firm has to borrow and pay the $19,400 on time. Suppose that a local bank would lend the $19,400 at 8% annual interest, the firm would pay a monthly interest of $129 (19,400 × 0.08/12). So it would end up saving $471 a month (600–129).

It would, of course, depend on how high or low the cost of borrowing is in the market at the time. We just assumed a hypothetical rate of 8%, but it could be higher to the point that would diminish the gain, and it could be lower to the point of increasing the gain. The point is that a smart manager can actually in this case get two birds with one stone, paying the bills on time, and achieving some savings.

Cumulative and Quantity Discounts

Account payable management may also benefit from other types of discounts to minimize what is being paid regularly. A **cumulative discount** is offered by a vendor

or supplier for loyal customers who make frequent purchases throughout the year. It is usually given at the end of the year in a form of refund after all the purchases have been tallied. There are usually some items that any firm would have to purchase frequently. These are the items that would benefit most from the cumulative discount. Another discount would be the **quantity discount**, which is offered by vendors and suppliers for customers who buy large quantities. This discount could be progressive, in a sense that the larger the quantities purchased, the lower the price per unit. A wise manager should weigh the benefit of the quantity discount against the need of large quantities and their inventory cost as well as against the relative use or the opportunity cost of using the required extra fund to buy more than needed at that moment.

11.5 Summary

In this chapter, we turned to the financial management of working capital after it was introduced as a concept in **Chapter 10**. The core of the working capital financial management is to efficiently handle the current assets and current liabilities. In the financial management of the current assets, we discussed cash management and explained how a firm can determine the minimum amount of cash that is needed for the operation of business. Also discussed were the types of cash and types of floats, as well as the float techniques for better handling of what the firm has of cash. The second part of current assets was the marketable securities, and the third was the account receivable. A major topic in the account receivable management was how to deal with credit and how to control it. Also how to evaluate those customers who want to buy on credit. The traditional way of evaluation was discussed through the five Cs, character, capacity, capital, collateral, and conditioning, in addition to an explanation of the FICO score and its scale. Cash discount for speedy collection was addressed, and finally, account receivable aging was the last topic of account receivable management.

The second part of the financial management of working capital was the handling of the current liabilities. Account payable and the trade discount was discussed, where two methods of applying the multiple discount were explained with numerical examples. It was followed by a hypothetical example to illustrate that a wise manager cannot only pay the firm's bills on time but also can save some money through taking good advantage of the offered discounts.

Key Concepts

Cash Cash management Cash Cycle Cash turnover
Total Annual Cash Outlay (TACO) Cash on hand
Petty cash Float Disbursement float
Collection float Safety motive Speculative motive