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# 9

## Cash Budgeting



## Learning Objectives

After studying this chapter, you should be able to do the following:

- Identify the importance of planning and controlling cash flows
  - Prepare a cash budget for a simple organization
  - Understand the role of short-term and long-term credit on liquidity management
  - Understand the relationship between the internally produced cash budget and the externally published cash flow statement
  - Understand the relevance of working capital management
- 

### 9.1

#### Introduction

In order for an organization to succeed, it has to get a lot of things right. It has to market a product or service for which there is a demand. It has to offer that product at a price and quality that are acceptable to the target market. It has to produce the product or service at a cost that facilitates the market price and that includes a sufficient markup to satisfy financial obligations (such as interest) and provide an acceptable return to equity investors.

In order for an organization to fail, it only has to get one thing wrong. Whatever the underlying causes, if an organization does not have enough cash to pay its debts when those debts are due, creditors will force it into bankruptcy. That is what we have been seeing in the aftermath of the COVID-19 crisis, where businesses went into bankruptcy because the cash buffer was not high enough to sustain the severe business conditions. Managing the inflows and outflows of cash is therefore critical to an organization's survival. That is called liquidity management, or cash flow management.

### 9.2

#### Preparing the Cash Budget for a Simple Organization

##### 9.2.1

##### The Accruals Method and Cash Flows

Most of the information that goes into a cash budget arises directly from the organization's day-to-day operations: the ones that are reported in the income statement and the ones that appear in the operating budget for a future period. These will include the following:

- Sales of goods or services will result in cash inflows.
- Direct costs of goods bought for resale will cause cash outflows.

## **Exhibit 9.1: Operating Budget**

**Tizer Foods Inc.**  
**Operating Budget for Quarter 1 (\$ thousands)**

	<b>January</b>	<b>February</b>	<b>March</b>
Sales revenue	<u>\$ 6,800</u>	<u>\$ 7,600</u>	<u>\$ 8,200</u>
Raw materials (50% of sales)	\$ 3,400	\$ 3,800	\$ 4,100
Wages (10% of sales)	680	760	820
Fixed production costs	2,000	2,000	2,000
Selling & administrative expenses	<u>3,000</u>	<u>3,000</u>	<u>3,000</u>
Total expense	\$9,080	\$ 9,560	\$ 9,920
Operating income (loss)	<u>\$(2,280)</u>	<u>\$(1,960)</u>	<u>\$(1,720)</u>
Interest expense	<u>100</u>	<u>100</u>	<u>100</u>
Net income (loss)	<u><u>\$(2,380)</u></u>	<u><u>\$(2,060)</u></u>	<u><u>\$(1,820)</u></u>
Cumulative income (loss)	<u><u>\$(2,380)</u></u>	<u><u>\$(4,440)</u></u>	<u><u>\$(6,220)</u></u>

- Operating expenses incurred will cause cash outflows.
  - Financial charges, such as interest paid and taxes, will cause cash outflows.

Because we use the “accrual” method to prepare the income statement, we report the sales, purchases, expenses, etc., in a way that reflects their effect on the wealth of the organization. A sale is “recognized” (i.e., included in the income statement) when it is “realized” (i.e., when the property in the goods passes from the seller to the buyer). That is not necessarily the same as when the related cash flow occurs. We “recognize” expenses when their value has been used up, and, again, that is not necessarily when the related cash flow occurs. The process of preparing the operating budget (operating budgets were dealt with in the previous chapter) will give us a good estimate of the accrual-based sales, direct costs of sales, operating expenses, and financial charges. It is one of the tasks of cash budgeting to transform those into expected cash flows. That is what we do next by deriving the amount and timing of cash receipts and of cash payments.

To illustrate the preparation of a cash budget, we use the example of Tizer Foods Inc., which has prepared an operating budget for the first quarter of next year, and this is shown in Exhibit 9.1. As can be seen from the budget, Tizer Foods expects to show a loss in each month and to report a total loss of \$6.22 million for the quarter.

## 9.2.2

## **Cash Receipts**

Sales revenues are the main source of cash receipts. In a pure cash business, the sales revenue will be received immediately, and receipts and revenue will be identical. A business that sells on credit, however, will have to wait to receive its cash until the customer pays. For example, Rona, the American-owned Cana-

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dian retailer of home hardware and construction products, offers contractors invoice billing, meaning that contractors are not paying right away when they purchase their construction materials to change the client's roof but receive a bill to be paid within two weeks. Other Rona customers will not pay in cash for their purchases but use their credit card. Usually, after one to three business days, Rona will have received the sales amount on its bank account. To offer the credit card payment service, a credit card company, such as MasterCard or Visa, will further charge Rona with a transaction fee equal to a percentage of the sales amount (e.g., 2%). So, in the same way that inventory uncouples production and demand, allowing them each to happen at different rates, making credit sales uncouples the act of making a sale and the collection of the related cash.

Tizer Foods Inc. makes credit sales to some of its customers. The budgeted sales for the first quarter of the year are as follows:

January:	\$6.8 million
February:	\$7.6 million
March:	\$8.2 million

The company's expectation is that

- 25% of all sales will be cash sales, received immediately;
- 75% of all sales will be on 30 days' credit terms;
- 50% of all sales (i.e., two-thirds of the credit sales) will be collected by the end of the month following the sale;
- 25% of all sales (i.e., the remaining one-third of credit sales) will be collected during the second month after the sale.

During the month of March, the company would budget to collect the following:

25% of the March sales, received in cash:	
\$8,200,000 × 25%	\$2,050,000
50% of the February sales, collected in March:	
\$7,600,000 × 50%	\$3,800,000
25% of the January sales, collected in March	
\$6,800,000 × 25%	\$1,700,000
Total cash collections in March from sales	<u>\$7,550,000</u>

There may be other receipts of cash: from the sale of assets, from issuing shares, or from borrowing. Each of these would be carefully estimated as to its expected amount and its timing.

Together with whatever beginning balance of cash existed at the start of the period, these provide a pool of available cash out of which cash payments can be made.

### 9.2.3

#### Cash Payments

The biggest dollar item of outgoings on the income statement of most organizations will be the direct cost of sales — that is, goods bought for resale in a retail shop, raw materials and direct production costs of a manufacturer, and

## *Preparing the Cash Budget for a Simple Organization*

direct costs of service inputs in a service company. They translate into the biggest cash outflows too.

In the same way that credit sales “uncouple” the sale and its related cash flows, buying goods on credit uncouples the resources flow that appears in the income statement from the related cash flow. In addition, any change in inventory has to be recognized as influencing cash flows. If inventory is increased, it implies a related cash outflow to buy the additional inventory. By contrast, when inventory is reduced, sales can be made without replacing inventory, and the cash outflow will be less than it otherwise would have been.

Tizer Foods Inc. has budgeted to make the following sales:

November:	\$10.4 million
December:	\$12.5 million
January:	\$ 6.8 million
February:	\$ 7.6 million
March:	\$ 8.2 million

The direct cost of sales includes raw materials. Raw materials are budgeted to be 50% of the sales amount. The company’s plan is to have enough inventory at the start of every month to satisfy the sales for that month. Raw material purchases have to be paid for by the end of the second month following delivery.

Thus, at the beginning of January, the raw materials inventory should be half of \$6.8 million, which is \$3.4 million. Tizer Foods will therefore order and receive raw materials, worth \$3.4 million, in December so that it will have this amount readily available at the beginning of January. The invoice over \$3.4 million for the purchased raw materials has to be paid for by the end of February as the supplier granted Tizer Foods a generous payment term (pay end of second month). Likewise, the inventory bought in November for December sales was \$6.25 million (i.e., \$12.5 million December sales × 50%), and it has to be paid for by the end of January.

The direct cost of sales also includes production wages. These are budgeted to be 10% of the sales amount. Production wages are paid in the same month that they are incurred, so the resource flow shown in the income statement is the same as the cash flow. Tizer Foods pays out \$680,000 in January and \$760,000 in February for wages.

Fixed production costs amount to \$2 million per month. Half of these (\$1 million per month) are represented by cash payments that are made in the same month as the expense is incurred. The other \$1 million of these expenses is depreciation of fixed plant assets. In a current income statement, depreciation is the recognition of the gradual expiry over time of an investment in assets made some years earlier. Depreciation does not affect current cash flows, so it must be deducted from the expense amount of \$2 million to get the net amount of \$1 actually paid in the month. It is very important to remember that depreciation is not a cash item; thus, it does not trigger cash outflows. Instead, the cash outflow occurs when the depreciable assets was initially acquired.

Selling and administrative expenses are \$3 million per month, all paid during the month when it was incurred.

Interest payments amount to \$100,000 each month, and these are paid monthly, so the resource flow and the cash flow are the same.

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Tizer Foods Inc. plans to pay investors a dividend of \$4 million in March, and it also plans to pay \$5 million in February to purchase some new equipment. The equipment vendor will expect a cash payment of \$1 million and will advance a loan of \$4 million.

### 9.2.4

#### Cash Budget: Combining Cash Receipts and Payments

Based on the information on the company's beginning cash balance; the source, amount, and timing of its cash receipts; as well as payments, we can now prepare the cash budget. For the Tizer Foods example, the cash budget is shown in Exhibit 9.2.

Although Tizer Foods decided to prepare monthly cash budgets, other companies would choose smaller time intervals. In particular, companies in which

#### Exhibit 9.2: Cash Budget

##### Tizer Foods Inc. Cash Budget for First Quarter (\$ thousands)

	November	December	January	February	March
Sales revenue	\$10,400	\$12,500	\$ 6,800	\$ 7,600	\$ 8,200
Receipts:					
Cash sales: 25%	\$2,600	\$3,125	\$ 1,700	\$ 1,900	\$ 2,050
Previous month: 50%	?	5,200	6,250	3,400	3,800
2 months back: 25%	?	?	2,600	3,125	1,700
Total cash from sales		\$10,550	\$ 8,425	\$ 7,550	
Other receipts: loan		nil	4,000	nil	
Total receipts		\$10,550	\$12,425	\$ 7,550	
Payments:					
Raw materials (50% × previous month's sales)		\$ 6,250	\$ 3,400	\$ 3,800	
Wages (10% × current month's sales)		680	760	820	
Fixed production costs		2,000	2,000	2,000	
Selling & administrative expenses		3,000	3,000	3,000	
Less: Depreciation expenses (not paid in cash)		(1,000)	(1,000)	(1,000)	
Total operating payments		\$10,930	\$ 8,160	\$ 8,620	
Other payments:					
Interest	\$ 100	\$ 100	\$ 100		
Dividend	nil	nil	4,000		
Equipment purchase	nil	5,000	nil		
Total	\$ 100	\$ 5,100	\$ 4,100		
Total payments		\$11,030	\$13,260	\$12,720	
Net cash increase/(decrease) in month		\$ (480)	\$ (835)	\$ (5,170)	
Beginning cash balance		200	(280)	(1,115)	
Ending cash balance		\$ (280)	\$ (1,115)	\$ (6,285)	

## *Preparing the Cash Budget for a Simple Organization*

the velocity of transactions is high, such as wholesalers or retailers, or companies that are in a financial distress and operate on a rather tight cash buffer would prepare cash budgets in shorter time intervals, such as weeks or even daily. But also for start-ups, which are at risk of running out of funds, it is worth preparing cash budgets in smaller time intervals than months. Other companies see in the available cash balance opportunities to earn some interests. Hence, they would invest its daily excess cash on the short-term money market. To do so, they have to accurately plan ahead how much cash must be available each day. And, of course, not to forget banks, whose business is to supply and invest financial resources (i.e., cash) and who have sophisticated systems in place to plan and forecast their daily cash position.

At the beginning of January, Tizer Foods Inc. expects to have a cash balance of \$200,000 on hand.

In January, sales revenues amounted to \$6.8 million. Cash collections were actually much higher than this as part of the sales of November and December are collected in January. January cash collections total \$10.55 million. Cash payments in January are budgeted to be \$11.03 million.

Cash inflow of \$10.55 million less cash payments of \$11.03 million means that cash resources are planned to be reduced by \$480,000 in the month. As the opening cash balance is only \$200,000, we can see that Tizer Foods Inc. has a problem! Tizer Foods has a negative ending cash balance, meaning that it anticipates that it will not be able to pay all its bills in January.

In February, the problem gets worse. Cash inflows total \$12.425 million, and cash outflows total \$13.26 million. The net cash outflow for the month is \$835,000. According to this budget, a cash shortage of \$280,000 is brought forward from January, so a cash shortage of \$1.115 million is carried forward to March.

In March, expected cash inflows total \$7.55 million, and expected cash outflows total \$12.72 million. The net cash outflow for the month is \$5.17 million. A cash shortage of \$1.115 million is brought forward from February, so a cash shortage of \$6.285 million is expected at the end of March.

A negative cash balance is clearly unacceptable. The implication is that some payments that were due to be made would not get made, and the outcome would probably be that the creditors who were owed money would seek redress in the legal system and have Tizer Inc. declared bankrupt. As we shall see in the next section, though, this initial cash budget has put Tizer Foods Inc. in a good position to manage its way out of the problem.

Although there are different ways to layout the cash budget, a common structure of the cash budget is as follows:

1. Beginning cash balance
2. + Cash receipts
3. = Total cash available (1 + 2)
4. - Cash payments
5. = Ending cash balance (3 - 4)

Note that the ending cash balance will be the beginning cash balance of the next timer period.

## 9.3 Liquidity Management

According to the cash budget in Exhibit 9.2, Tizer Foods Inc. has a net cash outflow for each month and an expected net cash deficit at the end of each month for the first three months of the year. The company faces a liquidity crisis. The question that Tizer Foods Inc. should now address is how the company is going to deal with this situation. Can it make the problem go away? If it can, then it may survive to more profitable times (which should, eventually, solve its liquidity crisis). If the company cannot resolve the current liquidity problem, it must accept that bankruptcy is the likely outcome; and however profitable the company might expect to be in the future, it is not going to survive to enjoy that.

Probably the first issue is to think twice about paying the dividend to the shareholders. A company that is currently expecting to have a deficit of over \$6 million over the next three months is in no position to pay \$4 million out as dividend. Dividends are always under the control of the company directors, so they have discretion to cancel it.

The second issue is to consider the proposed payment of \$5 million (\$1 million net of the vendor's loan) for new equipment in February. Possibly this could be deferred until the company is in better shape to pay for it. Possibly the company could lease the equipment instead of buying it outright. Leasing turns the one-time \$5 million cash outflow for the purchase of the equipment into smaller, recurring amounts of cash outflows.

Even if Tizer Foods can eliminate the payment of the dividend and the payment for the equipment, the company is still not out of the hole it was in. Even in January, the cash outflow exceeds the total of cash inflows and available cash balances. At this point, the company would have to consider financing options.

To the above layout we can add the so-called financing section of the cash budget (see items 6 and 7 in the list below), which shows our short-term debt borrowings in case we have a cash shortfall and our short-term debt repayments and interests payments in case we have excess cash. Alternatively, we can also invest (some of) our excess cash in the short-term money market to earn some interest. With the financing section, the cash budget is structured as follows:

1. Beginning cash balance
2. + Cash receipts
3. = Total cash available ( $1 + 2$ )
4. - Cash payments
5. = Cash surplus or deficit [before financing and short-term investing activities] ( $3 - 4$ )
6. + Borrowings
7. - Repayment of debt and interests
8. - Short-term money market investments
9. = Ending cash balance [after financing and short-term investing activities]

If Tizer Foods Inc. believes that this is a short-term problem, then it needs a short-term solution. The company may expect that the rest of the year will be very profitable and that the profitability translates into high cash inflows so that its liquidity problem will be automatically solved. If that is the case, the company should approach its bank, show the bank the full year's cash budget, and negotiate a short-term loan to tide it over.

If Tizer Foods Inc. believes that this is a long-term problem, then it needs a long-term solution. The company may expect that this liquidity crisis is going to happen every year due to, for example, seasonal variations in the trade. If that is the case, the company should approach its bank and convince the bank to grant it a long-term loan, or it should approach its shareholders and ask them to inject more permanent capital into the business by buying additional shares.

The point of the exercise is this: if Tizer Foods Inc. fails to prepare a cash budget, then the liquidity crisis will hit the company unexpectedly, and it will not have the luxury of time to seek an appropriate solution. By preparing the cash budget, the company puts itself in a position to seek an appropriate solution and the time to put the solution into effect. It is part of good planning and good management. Exhibit 9.3 discusses how the cash budget helps troubled businesses throughout the COVID-19 crisis stay afloat.

## 9.4

### **Working Capital Management**

Making sure that sufficient cash is available to sustain the operation is one important managerial task. It is the task of liquidity management, and the cash budget helps carry out this task. Another important managerial task is to optimize the amount and timing of cash receipts and payments to lower the overall required financial resources to operate the business. This is the task of working capital management, and the cash conversion cycle (CCC) provides the metric to inform this task.

Remember from Chapter 6 that working capital is defined as current assets less current liabilities. The major components of working capital are usually cash and cash equivalents, accounts receivable, inventories, and accounts payable. By managing inventory levels, accounts receivable, and accounts payable — in addition to the cash management discussed above — working capital management helps companies free up cash, thereby either lowering the risk of liquidity shortages and/or providing new financial means to invest in the future growth of the company (without requiring an additional loan or issuance of equity). Overall, working capital management helps companies optimize their cash requirements to maintain its operating activities, such as producing and selling electric cars, as Tesla does, or offering the streaming of films and series, as Netflix does.

The metric of interest in this context is the CCC. It informs managers about how long the company needs to finance its operating activity in advance before cash comes in from selling its goods or delivering its services. For example, the Japanese car manufacturer Toyota first needs to assemble its popular model “Corolla” and then deliver it to its dealership network and promote it to potential customers before it gets sold. These production and sales processes for the

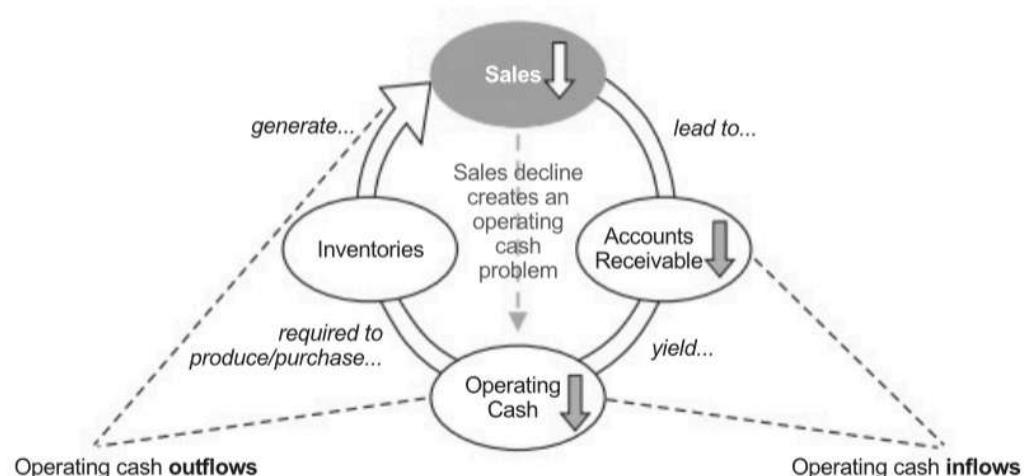
**Exhibit 9.3: COVID-19 and Company's Cash Crisis**

The COVID-19 pandemic recalled dramatically the importance of cash budgeting and liquidity management for businesses. Although not all businesses were impacted similarly and some businesses, such as wholesalers, food delivery companies, health care suppliers, or streaming service providers, experienced increased sales, many companies experienced substantial declines or complete halt in sales. At the outbreak of the COVID-19 crisis in March 2020, the Canadian Federation of Independent Business (CFIB) surveyed its members of small, private companies, reporting that more than a third experienced reduction in sales above 75%. The survey was taken before provincial governments ordered the complete suspension of operations that were classified as non-essential. Companies that were hit hard by the COVID-19 pandemic faced an immediate cash flow insolvency threat.

**What was the immediate problem?**

Let us turn to what managerial accountants call the cash flow cycle or cash wheel to illustrate the immediate problem that these businesses faced: sales generate accounts receivables; once collected, available operating cash results, which we can use to pay our bills to produce inventory that we sell or offer to our customers, leading to sales. So the cash flow cycle is complete, or the cash wheel keeps turning.

**Operating cash flow cycle**



During the COVID-19 crisis, sales abruptly dropped or even stopped. The more they dropped, the more the major source of operating cash inflow dried out; as a result, the cash wheel, whose function is to generate the required liquidity to operate the business, slowed down or even came to a complete standstill. If companies could not slow down cash outflows, such as payments for salaries, raw materials or merchandise, supplies, or rent, at a similar speed as sales dropped, available cash reserves and subsequently credit lines would eventually be used up. A cash flow insolvency arrives!

But why do expenses and cash outflows not automatically follow the drop in sales?

Managers know well: there are no sales without costs, and putting non-cash items, such as depreciation, aside, there are no sales without cash outflows. A retailer needs merchandise to sell it. A service provider pays salaries to the employees, offering the service. And a manufacturer needs input

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**Exhibit 9.3 (continued)**

factors to produce the goods to sell. All of this costs money and leads to cash outflows. But, unfortunately, the inverse “no costs without sales” usually does not hold. Why? Because of fixed costs and a time delay.

As we will discuss in Chapter 11, there are variable and fixed costs. If sales drop, variable costs drop because lower sales volumes require, in total, fewer materials and labour and therefore fewer payments. Yet fixed costs remain in place and are more difficult to alter in the short term. Companies still need to pay rent, even for a closed store. Depending on the company’s cost structure, it will therefore have more or fewer possibilities to reduce cash outflows immediately. The effect of a company’s cost structure will be discussed in more detail in Chapter 11 under the concept of operating leverage.

Nonetheless, even variable costs will not disappear. Impacted companies experienced a sharp and rapid sales decline. But to offer goods for sale today, they must already have them in stock. There is a time lag: with payment terms, such as 30 days, last month’s bills must still be paid now and in the next few weeks. Another large cost factor is labour costs. Wages need to be paid. Even with tough decisions to lay off employees quickly, two weeks of salary might still be owed. And at the end of the month or quarter, more bills come in for rent, utilities, insurance, taxes, and so forth. As payments neither automatically nor immediately stop when sales stop, instant actions are necessary to prevent cash flow insolvencies.

#### **How liquidity management helps? Running a cash flow diagnosis!**

The financial statement analysis from Chapter 7 introduced key liquidity ratios, such as the current and quick ratio. However, during this crisis, it is about knowing one thing: How much cash buffer does the company have!? The cash survival ratio — also called cash buffer days — answers this question as it informs how many days the business can survive without the injection of new cash. To compute it, divide the average daily cash balance by the average daily cash outflows from operations:

$$\text{Cash Survival Ratio} = \frac{\text{Average Daily Cash Balance}}{\text{Average Daily Cash Outflows from Operations}}$$

$$\text{Example: Cash Survival Ratio} = \frac{\$10,000}{\$500} = 20 \text{ Days}$$

For example, the German airline Lufthansa reported in April 2020 that it was losing about one million Euro every hour — day and night — due to the severe flight restrictions around the globe. Their liquidity reserves were above 4 billion Euro, resulting in a cash survival ratio of about 5 and a half months (= EUR 4,000 million ÷ 24 million per day = 167 days). Many small- and medium-sized enterprises (SMEs) have a much shorter cash survival ratio. The study of 590,000 small businesses in the United States by JPMorgan Chase Institute in 2016 shows that half of the analyzed companies hold only 27 days in cash buffer. In addition, 25% of the studied small businesses hold less than 13 days in cash buffer. In particular, restaurants (median: 16 days), repair (median: 18 days), retail (median: 19 days), and construction (median: 20 days) show small cash buffers and are thereby more at risk when hit by a sales-side crisis. A survey of small Canadian companies during the COVID-19 crisis by CFIB found that, in March 2020, 30% anticipated that they won’t be able to keep their businesses afloat for more than a month if conditions remained.

Of course, cash payouts are not evenly distributed from day to day. That is why the cash budget is so important to indicate proactively cash bottlenecks before it is too late. In the crisis context, modifying the cash budget’s structure, as shown below, indicates how much cash buffer is left day after day and week after week and makes improvements to increase the cash balance immediately visible. The

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### Exhibit 9.3 (continued)

cash budget is a simple but not simplistic tool to help companies navigate through the cash crisis by identifying, planning, and forecasting their company's immediate cash situation.

#### Modified cash budget layout for cash buffer diagnosis in times of a sales-side crisis

	Week 1	Week 2	Week 3	...
Beginning cash balance				
- Cash outflows before measures				
= Remaining cash buffer before measures				
+ Reduction measures of cash outflows				
= Remaining cash buffer after measures				
+ Cash inflows				
= Increased cash buffer				

#### What can be done? Increasing cash inflows and reducing or deferring cash outflows!

Of course, the best scenario for companies would be if sales return. Why? Because sales are the fuel for the cash flow cycle and lead to cash inflows. Wherever possible, companies were looking into creative ways to compensate for sales decline during the COVID-19 pandemic by finding alternative sales channels, such as online or door delivery. Retailers added online shops and phone ordering. Yoga, language, and music classes were hosted virtually and much more.

Other ways to increase cash inflows is through collecting the outstanding accounts receivable faster, retrieving financial resources from banks or other debtholders in the form of loans or line of credits, restocking the cash balance through proprietary capital, obtaining government cash aids through interest-free loans, or securing government-loan guarantees that facilitate access to credit.

During the COVID-19 crisis, several cash emergency funds were launched for businesses by the federal, provincial, and local governments. The federal government increased the initial payroll subsidy for SMEs from 10% to 75%, retrospective from March 15 on. In addition, more time was granted to pay income taxes, and the remittance of sales tax payments and the payment of customs duty were deferred to June. The city of Montreal delayed the collection of the second instalment of property taxes by a month to relieve homeowners and businesses from this cash outflow. Those measures helped to leave the scarce resource "cash" in companies' bank accounts by reducing and/or deferring cash outflows. Yet remember that deferring does not mean that cash outflows are gone. They are shifted from today to a future date, hopefully shifting the cash flow pressure into times when the company is more liquid; however, shifting can potentially encourage procrastination in actually removing the cash flow pressure.

Other ways to reduce the cash outflows includes postponing the payment of bills, renegotiating the payment terms with suppliers, asking for deferrals in rents and loan payments, cancelling contracts, halting discretionary spending, downsizing, and closing the business temporary.

Also, airlines, travel agencies, and other companies in the travel sector started to provide coupons and vouchers valid for 24 months instead of reimbursing in cash for cancellations. Although this

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**Exhibit 9.3 (continued)**

voucher practice received critique from consumers, it lowered their cash outflows. Furthermore, business owners can take a supply chain finance approach. What does this mean? Maybe the supplier or supplier's supplier is in a stronger cash position than a company down the supply chain. Or it might be the reverse case. Hence, companies can get in contact with their suppliers or business clients to find a way to help each other out according to their cash flow strengths.

These are some examples of how companies can reduce through liquidity management the cash flow deficit arising from a sales decline. Although having a relatively high cash balance is usually regarded as an unproductive use of available resources in normal times, in times of crisis having slack cash buffers serves as a safety cushion that helps companies stay afloat. It becomes an airbag for the abrupt sales crash.

**Source:** The content of this exhibit is based on the discussion paper, prepared by the co-author of this textbook, Matthäus Tekathen, for business owners on cash management during the COVID-19 pandemic and was published in a shortened version under the title "Flattening another coronavirus curve: The cash-flow gap" on *The Conversation* on March 30, 2020, online: <<https://theconversation.com/flattening-another-coronavirus-curve-the-cash-flow-gap-134516>>.

Corolla tie up financial resources for Toyota before they are converted into cash received from the car sale. The CCC tells Toyota how many days it takes to convert its investment in inventories into cash received.

It is referred to as a cycle because it captures the process of purchasing raw materials and other supplies to produce inventory, then selling the inventory on credit as accounts receivable, and then collecting accounts receivable from customers, thus finally converting the process that started from purchasing supplies into cash for the company. As we can see from this cycle, there are three components to the cash conversion process: (1) accounts payable, resulting from the company's purchases of materials and other supplies; (2) inventory, resulting from the production process; and (3) accounts receivable, resulting from the sale of inventories. To account for these three components, the CCC is computed as follows:

$$\begin{aligned} \text{CCC} \\ = & \text{ Days' inventory outstanding (DIO)} \\ & + \text{ Days' sales outstanding in receivables (DSO)} \\ & - \text{ Days' payables outstanding (DPO)} \end{aligned}$$

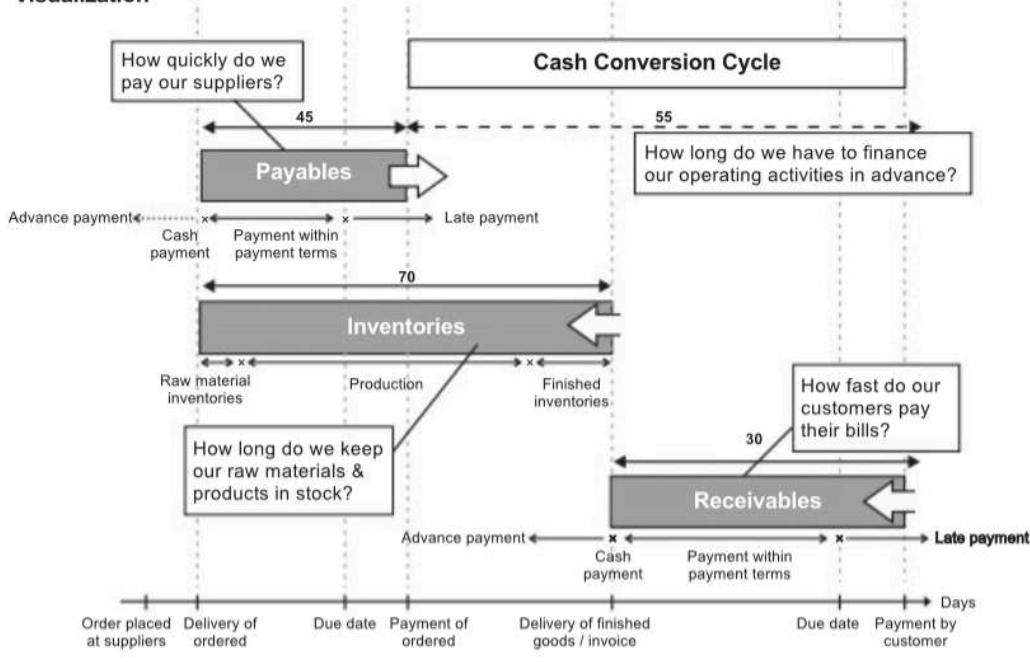
DIO measures how much time the company needs to sell its inventory, and DSO measures how much time it takes to collect receivables. We already know DIO and DSO from Chapters 4 and 7 on financial statement analysis (see sections 7.5.2 and 7.5.3). Note that DIO is also referred to as days' sales in inventory or days' inventory held (DIH) and DSO is also referred to as receivables collection period or days' receivables outstanding (DRO).

The third ratio is new: DPO. It measures how much time the company has to pay its bills. Exhibit 9.4 visualizes the CCC and calculates the CCC of Toyota

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### Exhibit 9.4: Cash Conversion Cycle

#### Visualization



#### Examples

Definition	Toyota (Annual Report 2019)	Walmart (Annual Report 2019)
DIO = $(\text{Inventory} \div \text{Cost of Goods}) \times 365 \text{ days}$	41.5 days	41.0 days
+ DSO = $(\text{Accounts Receivable} \div \text{Sales}) \times 365 \text{ days}$	+ 30.8 days	+ 4.4 days
- DPO = $(\text{Accounts Payable} \div \text{Sales}) \times 365 \text{ days}$	- 41.3 days	- 43.5 days
= CCC	= 31.0 days	= 1.9 days

and Walmart. As noted in Chapter 7, some analysts prefer to calculate DIO by dividing it by sales and others by COGS. As COGS is more accurate, we use it in Exhibit 9.4.

Toyota's CCC is 31 days, meaning that it takes the car manufacturer a month to convert production inputs into cash. Known for its close collaborations with suppliers to receive production components just in time and for its lean and agile assembly line set-up to reduce the amount of idle time and other inefficiencies in the production process, it can reduce its average inventory for 41.5 days. The matching DPO of 41.3 days means that Toyota manages to

finance its inventories through its suppliers. The ways to improve the DPO is to negotiate longer payment terms with suppliers, and the way to improve the DSO is to incentivize customers to pay their bill earlier (e.g., offer discounts, loyalty bonus points, payment plans, etc.). Some companies choose to outsource the collection of accounts receivable (and not solely when bills are past the due date) to collection companies.

In comparison with Toyota, Walmart has a very low CCC of 1.9 days. This is typical for wholesalers, retailers, and restaurant chains such as Costco, McDonald's, Metro, or Tim Hortons, which have a low(er) CCC because their customers are paying instantly at the cashier. But it has not always been the case that Walmart had such a low CCC. In the 1970s, its CCCs were in the range of 70 days. But nowadays, with its strong purchasing power, Walmart can negotiate payment terms with its suppliers for over a month. Its DPO of 43.5 days is even longer than its DIO of 41 days. This effectively means that Walmart's suppliers are financing the merchandise held in the shelves of its stores. After the purchase, Walmart collects the accounts receivable either directly in cash or when customers pay with a debit or credit card within the next couple of business days, resulting in this very low DPO. From the comparison of Toyota and Walmart, we can see that CCC depends to a large extent on the specific industry and the rest depends on the company's efforts to optimize working capital.

To conclude, working capital management helps companies manage and optimize their liquidity requirements to operate by managing cash levels, inventory levels, accounts receivable, and accounts payable.

## 9.5

### **Cash Budgeting and the Cash Flow Statement**

The cash flow statement (dealt with in Chapter 6 of this book) is provided to outside parties (such as investors and creditors). It summarizes the inflows and outflows of cash for a past period under three headings:

1. Cash flow from operations (also called cash flow from operating activities or occasionally cash used in operations): This is more or less the cash flow effect of all the items that go through the income statement.
2. Cash flow from investing activities: This is more or less the cash used in the acquisition or received from the disposal of long-term assets.
3. Cash flow from financing activities: This is the net financing from issuing or repaying debt and the net financing from issuing or repaying equity.

The net total of the above three headings is the increase or decrease in the cash for the period, and it is added to or subtracted from the opening balance of cash in order to come up with the closing balance of cash. It is one way of understanding how an organization has managed its cash for that period.

The cash budget that is demonstrated in this chapter tells a similar story, but

1. it deals with a future period rather than a past period;
2. its format is generally closer to the format of the income statement rather than the headings used in the cash flow statement; and

## Chapter 9 Cash Budgeting

3. it is prepared for use within the organization by managers who are responsible for monitoring and planning liquidity and corporate finance.

Both the cash flow statement and the cash budget, if prepared for the same time period, would tell the same story:

1. How much cash inflow was generated, and where did it come from?
2. How much cash outflow was there, and where did it go to?
3. What was the effect on the cash balance?

## 9.6

### Cash Budgeting and the Functional Manager

External analysts will try to get a handle on how liquid a company is by calculating liquidity ratios, such as the current ratio and the quick ratio, and by examining the contents of the cash flow statement. These, however, are all going to be based on data from published financial statements that refer to the past. Although these may be a guide to what will happen after the balance sheet date, they are an imperfect way of forecasting future cash flows and future liquidity.

Internally, the managers of the organization will have access to information that is both more current and more relevant than the information available to external analysts. They will be able to use this information to prepare detailed cash budgets. These will show the sources, amounts, and timing of cash inflows and cash outflows and their effects on cash balances and cash availability.

Managers of functional areas (production, marketing, human resources, etc.) will not normally be expected to be managing organizational liquidity as such, but they should be thinking about the effects of their decisions and actions when they plan and execute their normal work activities. For example, the marketing manager may have identified an opportunity for a major new customer that would increase sales by 25% next year. Clearly, this is going to make the company more profitable, but the additional production will have to be financed; and if the sales are on credit, the increased receivables will have to be financed. She should discuss the effect on the company's liquidity with the treasurer or controller before committing to the new business.

Treasurers or controllers will normally prepare the cash budget on the basis of information given to them by other managers. Then, when they are informed by the cash budget, they will be in a good position to manage cash availability through access to short- or long-term financing or by planning to put available surplus funds into appropriate investments.

## 9.7

### Summary

Cash flows are critical to an understanding of liquidity. Managing liquidity is a critical task in ensuring that the organization can survive in the short term. Cash flows are budgeted by forecasting how much cash will be generated from sales

## *Summary*

revenue and when those cash inflows will arrive and by forecasting when cash outflows will occur. Cash inflows and outflows, when combined with expected beginning cash balances, enable the forecast of ending cash balances. Once the organization knows what to expect in respect of ending cash balances, it is in a good position to manage the situation, for example, by negotiating short-term loans or additional long-term financing.



## Chapter 9 Cash Budgeting

### Self-Study Problem

1. You are the manager of Excellent Trading Inc. On November 1, 2020, you will have the following balances of current assets:

Cash on hand	\$ 10,000
Accounts receivable	120,000 (25% of October's sales)
Inventory	175,000

You will owe \$240,000 to trade creditors (50% of October's sales). Actual sales revenues were as follows:

September 2020	\$360,000
October 2020	480,000

Budgeted sales revenues were as follows:

November 2020	\$600,000
December 2020	720,000
January 2021	240,000

Experience has shown that 75% of the sales will be collected within the month of purchase, and the other 25% will be collected within the month following the purchase.

Goods for resale are marked up by 100% on cost to get the selling price. This means that a product that cost \$5 would be sold for \$10. The goods purchased are paid for the month after they are sold (goods sold in October will be paid for in November).

Selling and marketing expenses are 10% of the sales revenue each month and are paid during that same month. General and administrative expenses are \$100,000 per month, including \$20,000 per month of depreciation expense.

#### Required

- (a) Prepare a cash budget for the months of November and December 2020.
- (b) Is there a cash flow problem for November and December (and if so, what should you do about it)?

**Solution**

1. (a) Cash on hand November 1, 2020 \$ 10,000

**Budgeted receipts: November**

Collection of 25% of October's sales	\$120,000
Collection of 75% of November's sales (\$600,000 × 75%)	<u>450,000</u> <u>570,000</u>
Total cash available	\$580,000

**Budgeted payments: November**

Suppliers: (beginning accounts payable)	\$240,000
Sales and marketing expenses (10% × \$600,000)	60,000
General and administrative expenses (\$100,000 – \$20,000 depreciation)	<u>80,000</u> <u>380,000</u>
Cash balance as at November 30, 2020	\$200,000

**Budgeted receipts: December**

Collection of 25% of November's sales (= accounts receivable at December 1)	\$150,000
Collection of 75% of December's sales*	<u>540,000</u> <u>690,000</u>
Total cash available	\$890,000

**Budgeted payments: December**

Suppliers (\$600,000 × 50%)	\$300,000
Sales and marketing expenses (10% × \$720,000)	72,000
General and administrative expenses (\$100,000 – \$20,000 depreciation)	<u>80,000</u> <u>452,000</u>
Cash balance as at December 31, 2020	\$438,000

\* \$720,000 × 25% receivable in January 2021

- (b) Yes, there is a problem: the company has too much cash. The company should investigate useful ways to deploy the surplus funds, such as the following:

- Loan repayments
- Purchase of new equipment
- Dividends to shareholders
- Temporary investments

## Discussion Questions and Problems

### **Discussion Questions**

1. What is the objective of cash budgeting?
2. Which managers are responsible for preparing cash budgets?
3. When should cash budgets be prepared?
4. Why does a cash budget start with a forecast of the collection of cash from sales?
5. In a company that makes all its sales as cash sales, is the dollar amount of cash that is forecast to be collected a certain or an uncertain amount?
6. In a company that makes some or all of its sales as credit sales, is the dollar amount of cash that is forecast to be collected a certain or an uncertain amount?
7. What would a company do if the cash budget revealed a cash deficiency?
8. What would a company do if the cash budget revealed a cash surplus?
9. If the cash budget revealed a temporary cash deficiency, what type of financing would be suitable to use as a remedy?
10. If the cash budget revealed a long-term cash deficiency, what type of financing would be suitable to use as a remedy?
11. What measures can a company take to improve its days' payables outstanding?
12. What measures can a company take to improve its days' inventory outstanding?
13. What measures can a company take to improve its days' sales outstanding?
14. Unlike consumers, why did airlines, tour operators, or ticket sales agencies prefer to reimburse customers for cancelled flights, tours, or concerts with vouchers instead of in cash?

### **Problems**

1. You are the marketing manager of Tizer Pharma Co. Expected sales revenues for the second six months of next year are as follows:

	\$ millions
July	\$ 700
August	700
September	750
October	750
November	800
December	<u>800</u>
Total	<u>\$4,500</u>

Due to a recession, customers are taking longer to pay their bills. From July 1 onwards, you expect the collection pattern to be as follows:

- 20% of sales are cash sales and are received in the month of sale.
- 50% of sales are on one month's credit and paid within their credit terms.

### Discussion Questions and Problems

- 20% of sales are on one month's credit but are paid in the second month following sale.
- 10% of customers will go broke and not pay ever.

There was \$675 million of accounts receivable on July 1.

**Required**

Prepare a schedule of cash received from sales for the second half of the year.

2. You are the manager of Forest Products Inc. On January 1, you expect the following balances.

Cash on hand	\$ 9,000
Accounts receivable	100,000 (\$75,000 from December, \$25,000 from November)
Inventory	40,000
Prepayments & deposits	<u>1,000</u>
Total current assets	\$150,000

Current trade liabilities	\$ 75,000
Expected sales revenue for January	\$180,000
Expected cost of goods sold for January	\$120,000
Expected expenses for January	\$ 10,000

During January, you expect to receive:

- All the \$25,000 outstanding from November
- \$50,000 of the amount outstanding from December
- 50% of January's sales revenue (the remainder being sold on credit)

During January, you expect to pay:

- \$75,000 current trade liabilities
- All the expenses, except \$1,000 of depreciation and \$200 expiration of prepayments

Inventory bought in January will be paid for in February.

**Required**

Prepare a cash budget for January.

3. You are the marketing manager of Tizer Pharma Co. Expected sales revenues for the first six months of next year are as follows:

	\$ millions
January	\$ 700
February	800
March	800
April	820
May	820
June	<u>900</u>
Total	<u><u>\$4,840</u></u>

There was \$400 million of accounts receivable on January 1.

## Chapter 9 Cash Budgeting

The normal pattern for collection of sales revenue is as follows:

- 25% of sales are cash sales and are received in the month of sale.
- 75% of sales are on one month's credit, and all credit customers pay within their credit terms.

### Required

Prepare a schedule of cash received from sales for the first half of the year.

4. The cash budget for Harry's Hotels for the first three months of next year is as follows:

Harry's Hotels Cash Budget (\$ millions)				
	January	February	March	Total
Beginning balance	\$ 5			\$ 5
Receipts				
Collections from sales	\$40	\$45	\$50	\$135
Issue of debenture			25	25
Total receipts	<u>\$40</u>	<u>\$45</u>	<u>\$75</u>	<u>\$160</u>
Payments				
Trade suppliers	\$20	\$25	\$40	\$ 85
Wage & benefits	10	12	15	37
Repairs			10	10
New furniture	15			15
Dividend to shareholders	10			10
Income taxes	5	5	5	15
Total payments	<u>\$60</u>	<u>\$52</u>	<u>\$60</u>	<u>\$172</u>

### Required

- (a) Is there a problem?  
(b) If there is a problem, suggest ways to fix it.

5. Wood Products Inc. expects to have a cash balance of \$25,000 on January 1. Relevant information is as follows:

Details	January	February	March
Cash collections from customers	\$500,000	\$600,000	\$750,000
Cash payments:			
Suppliers	200,000	250,000	300,000
Direct labour & related costs	100,000	125,000	150,000
Production overhead	50,000	50,000	50,000
Selling & administrative expenses	50,000	75,000	80,000

### Required

- (a) Prepare a cash budget for January, February, and March.  
(b) Is there a problem?  
(c) If there is a problem, how can it be fixed?

### *Discussion Questions and Problems*

6. Spicer Inc. manufactures sports equipment. In June last year, the company borrowed \$500,000 from the Pegler Bank at 6% per annum interest. Repayment is to be in five equal annual instalments each on June 30 of the year. The interest for the year would also be paid at that time. The company prepares its financial statements to December 31 each year.

**Required**

- (a) How much interest expense would be reported last year, this year, and next year?
- (b) Calculate the cash outflows associated with the loan, last year, this year, and next year.

7. Biggar Co.'s sales in December last year were \$500,000. January sales are expected to be \$600,000 and February's \$900,000. All sales are on credit. Credit sales are normally collected in the following pattern:

- 50% of customers pay within the month of sale, and they get a 5% cash discount.
- 40% of customers pay within 30 days of the month.
- 10% of customers pay the month after that.

**Required**

Calculate the cash collections for February.

8. Minim Co. wants a cash budget for March.

On March 31, a \$100,000 note payable will become due, together with \$250 of accumulated interest. Accounts payable on March 1 were \$400,000, and accounts receivable were \$600,000.

All accounts payable are paid after 30 days. Typically, 60% of customers are cash customers or debit transactions, which are effectively cash sales, and 40% are credit sales. Of the credit sales, half are with credit cards, and the company receives the money about a week after the sale; the other half are on the Minim Co.'s own card, which are all collected after one month.

The company sells jeans and similar leisurewear. The cost of the products is marked up by 75% to get the selling price. Each month Minim Co. plans to have enough inventory to cope with the following month's sales demand. One month's credit is taken on all goods purchased.

Expenses are all fixed and amount to \$70,000 per month, of which \$10,000 is depreciation.

Sales are expected to be \$500,000 per month for January, February, and March.

The owner of the company will withdraw \$5,000 per month for living expenses. In February, the company expects to purchase a new delivery van for \$100,000.

The cash balance at the beginning of March will be \$2,500.

**Required**

Prepare a cash budget for March.

## Chapter 9 Cash Budgeting

9. As the manager of a new retail outlet in the Jane-Finch Mall, you have been asked to prepare a cash budget for the first three months of the year. The store is expected to open on January 1.

Sales revenue is budgeted to be \$500,000 in January, \$600,000 in February, \$750,000 in March, and \$400,000 in April. All sales are for cash or debit (which is almost the same as cash).

Selling price is calculated by adding 100% to the cost of goods. The plan is to buy enough goods initially to provide for January sales and have enough inventory on hand at the end of January for February's sales, and so on.

Goods are paid for in cash when bought. Wages of \$10,000 are paid each month, plus 10% of sales as commission. Rent of \$10,000 per month is paid monthly, with "first and last" being paid on January 1.

### Required

- Prepare a cash budget for the first three months of the year.
- Identify the point of maximum cash demand and the amount of cash required at that time.

10. Beadle Inc. manufactures heating, ventilating, and air-conditioning (HVAC) units for sale to builders and hardware stores. The sales agent for Elliot Lake has been negotiating to provide HVAC units to a major new subdivision. Expected sales would be about \$5 million, spread over a two-year build period.

Times in the building trade are difficult, and the contractor has asked for three months' credit.

### Required

As chief financial officer of Beadle Inc., explain to the marketing manager the advantages and disadvantages of accepting this order.

11. Below you find selected financial information from several airline companies:

	Air Canada Dec-19 in CAD millions	Cathay Pacific Dec-19 in HKD millions	China Southern Airlines Dec-19* in HKD millions	Delta Air Lines Dec-19 in USD millions	Lufthansa Dec-19 in EUR millions	WestJet Dec-18** in CAD millions
Sales	19,131	106,970	174,990	47,006	36,424	4,728
Cost of Goods/ Sales	13,869	97,770	152,890	36,584	32,156	3,937
Average Accounts Receivable	861	6,337	12,475	2,584	5,857	138
Average Inventories	216	1,820	2,027	1,153	974	41
Average Accounts Payable	2,080	7,624	2,612	3,121	3,817	494

\* preliminary available data used.

\*\* 2018 data used because of availability.

## *Discussion Questions and Problems*

### **Required**

- (a) Calculate the cash conversion cycle in days for the airline companies listed above.
- (b) Based on the results, how successful is Air Canada's working capital management compared to its competitors?
- (c) How did the COVID-19 pandemic affect airline's liquidity? What measures were taken to avoid bankruptcy?
12. Companies influence the cash conversion cycle (CCC) by assessing three questions:
- i. How quickly do we pay our suppliers?
  - ii. How long do we keep our inventories on stock?
  - iii. How fast do our customers pay their bills?
- Companies to categorize:
- (a) Boeing (U.S. aerospace company)
  - (b) Costco (U.S. retailer)
  - (c) Saputo (Canadian food-processing company)
  - (d) Telus (Canadian telecommunications company)
  - (e) Suncor Energy (Canadian integrated oil and gas company)
  - (f) Merck (U.S. pharmaceutical company)
  - (g) Tim Hortons (Canadian fast-food chain, since 2014 part of Restaurant Brands International)
  - (h) SNC-Lavalin (Canadian construction and engineering company)

Companies to categorize:

Very Low	Low	Medium	High	Very High

### **Required**

- (a) Categorize the above-listed companies into the CCC rubric above. Explain your reasoning with the help of the above three questions.
- (b) Which of the above-listed companies will have the lowest CCC in days? Explain your reasoning.
- (c) Do you think your company selected under (b) will have a negative CCC in days?
- (d) Which of the above-listed companies will have the highest CCC in days? Explain your reasoning.

## Comprehensive Case

### **Stella's Office Supply Business**

Stella is planning to buy an office supply business. The purchase price is \$100,000, for which she will get the existing inventory (worth \$15,000 at cost), all the fixtures and fittings (worth about \$10,000), and the goodwill of the store (valued at \$75,000).

You have made the following estimates of activities for the first three months.

	<b>Month 1</b>	<b>Month 2</b>	<b>Month 3</b>	<b>Total</b>
Sales revenue	\$ 25,000	\$ 40,000	\$ 50,000	\$ 115,000
Cost of goods sold (60% of sales revenue)	<u>15,000</u>	<u>24,000</u>	<u>30,000</u>	<u>69,000</u>
Gross margin	<u>\$ 10,000</u>	<u>\$ 16,000</u>	<u>\$ 20,000</u>	<u>\$ 46,000</u>
Sales commissions	\$ 2,500	\$ 4,000	\$ 5,000	\$ 11,500
Salaries	5,000	5,000	5,000	15,000
Rent	2,000	2,000	2,000	6,000
Utilities	500	500	500	1,500
Cleaning	200	200	200	600
Depreciation	200	200	200	600
Insurance	<u>100</u>	<u>100</u>	<u>100</u>	<u>300</u>
Total expenses	<u>\$ 10,500</u>	<u>\$ 12,000</u>	<u>\$ 13,000</u>	<u>\$ 35,500</u>
Operating profit	\$ (500)	\$ 4,000	\$ 7,000	\$ 10,500
Income tax	<u>nil</u>	<u>1,000</u>	<u>2,000</u>	<u>3,000</u>
Net income	<u>\$ (500)</u>	<u>\$ 3,000</u>	<u>\$ 5,000</u>	<u>\$ 7,500</u>
Owner's withdrawals	\$ (2,500)	\$ (2,500)	\$ (2,500)	\$ (7,500)
Change in owner's equity	\$ (3,000)	\$ 500	\$ 2,500	nil

Stella figures that she has \$112,500, which will be enough to buy the business and give her a \$12,500 working capital. As she is expecting a small loss in Month 1 and is only planning to take out what the business earns in profit, she should be okay in respect of cash management and liquidity.

She will be able to get one month's credit on her purchases, but she will need to carry inventory at the end of each month sufficient to meet the following month's sales. Half the customers will pay cash for the goods they buy; the other half will take one month's credit.

Rent is paid monthly in advance, with first and last rent due on the first day of Month 1. Insurance is paid annually in advance. Utilities are paid monthly one month in arrears.

All other cash expenses are paid in the month they are incurred.

#### **Required**

Advise Stella on whether her business will prosper or not.