

Accounting and Accountability

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*AMANDA WHITE; MITCHELL FRANKLIN; PATTY GRAYBEAL;
DIXON COOPER; AND CDU BUSINESS SCHOOL*

*AMANDA WHITE; MITCHELL FRANKLIN; PATTY GRAYBEAL;
DIXON COOPER; CDU BUSINESS SCHOOL; AND TERRY WICKEY*

UNIVERSITY OF TECHNOLOGY SYDNEY



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Preface

AMANDA WHITE; MITCHELL FRANKLIN; PATTY GRAYBEAL; AND DIXON COOPER

Welcome to *Accounting and Accountability* – an open textbook provided through the University of Technology Sydney. This textbook was created using material from a range of open sources including Principles of Accounting Volume 1 and Principles of Accounting Volume 2 – both edited by Franklin, Greybeal and Cooper and distributed through OpenStax – under the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA) license.

Please note that this book is being used in DRAFT format in Autumn session, 2022 and is yet to be peer reviewed, finalised and issued an ISBN.

About Accounting and Accountability

This textbook was designed to support Accounting students at UTS in the subject 22108 Accounting and Accountability. Why make a textbook and distribute it free to students and the general public? It all comes back to who UTS is as an institution:

“UTS is a public university of technology defined by our support for the economic, social and cultural prosperity of our communities.” (UTS website, accessed 13 January 2022)

And in addition:

“As public purpose institutions, universities have a critical responsibility to contribute to the community through research, education and practice. At UTS, the concept of social justice is key to our core and purpose – we are committed to driving social change in the world beyond our campus.” (UTS Social Impact Framework, accessed 13 January 2022)

One way that we can support the success of our student community is to reduce the barriers to attending university by providing this free text.

Acknowledgement of country

We gratefully acknowledge the Gadigal people of the Eora nation – the traditional custodians of the land on which the University of Technology of Sydney stands. The Gadigal people have cared for their community, land and waters for thousands of generations, based on their deep knowledge of their country. We pay our respects to their Ancestors, their Elders and acknowledge their ongoing status as the First Peoples of this land – land that was never ceded.

I (Amanda) would also like to gratefully acknowledge the Dharug people, on whose lands this book was edited and parts written by me.

Coverage and scope

This textbook covers the basics of accounting without getting into the gritty details of debits and credits. It is therefore suitable for anyone wishing to understand the fundamentals of accounting without becoming an accountant. A chapter outline is as follows:

- Chapter 1: Accounting and Accountability
- Chapter 2: Processing Economic Events
- Chapter 3: Refining the Recording Process
- Chapter 4: Internal Control Systems and Reducing Fraud
- Chapter 5: Financial Reporting for External Users
- Chapter 6: Analysing Financial Reports
- Chapter 7: Accountability and Management Decision Making
- Chapter 8: Planning For the Future Using Budgets
- Chapter 9: Decision Making in the Short Term: Cost-Volume-Profit Analysis
- Chapter 10: Longer Term Decision Making Using Relevant Costs
- Chapter 11: Evaluating Performance Using Variance Analysis
- Chapter 12: Accounting, Accountability and Social Responsibility

Accounting and Accountability will be followed by *Accounting, Business and Society* in the second half of 2022.

About the authors

This open textbook has many contributors and you can find the attributions to the various open resources used throughout the text.

The primary author and editor for *Accounting and Accountability* is Dr Amanda White. Amanda is a highly regarded academic having taught for over two decades in the Australian higher education system. Combining her previous practical experience as an auditor and consultant at PricewaterhouseCoopers, a love of educational technology and social media – Amanda received the national Teaching Excellence Award for Law, Business, Economics and related disciplines in 2020 through the Australian Awards for University Teaching (press release). This ranks Amanda as one of the premiere Business/Commerce academics in the country. She is frequently invited to provide keynote presentations at both domestic and international conferences and symposiums. Amanda contributes to the profession of accounting as a member of the Education Board of Chartered Accountants Australia and New Zealand, guiding the professional certification of accountants.

You can find out more about Amanda on her university profile, personal website and social media pages (Facebook, Instagram).

Accessing this book from a country with internet restrictions?

UTS has students enrolled in its programs from all around the globe. Videos provided in this book are hosted on YouTube. For those who are unable to access YouTube due to government internet restrictions in their country (such as China) – please contact Amanda for an alternative link to the videos.

Customisation

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Errata

Accounting and Accountability is currently in its draft format. The authors welcome any comments on this draft. The book will undergo peer review in 2022 before being officially published and registered with an ISBN.

Format

You can access this textbook for free in web view on Pressbooks or as a PDF download. You can also select a PDF option that you can take to a printing company to create a professionally bound book.

CHAPTER 1. ACCOUNTING AND ACCOUNTABILITY

Introduction

Welcome to *Accounting and Accountability*! Chapter 1 will provide some context for this practice called “accounting” and examine how we as a society have arrived at the current conceptions of accounting. Most textbooks take a very western-centric view of accounting, however in Chapter 1, we introduce other perspectives – for surely as long as cultures around the world have used concepts like ownership and custodianship – there must have been some form of accounting.

Chapter outline

In this chapter, we will cover

1. Defining accountability and accounting
2. The history of accounting and accountability across the world
3. How accounting supports the concept of accountability
4. Different types of accounting
5. Indigenous perspectives on accounting

Listen to the audiobook for this chapter on Soundcloud – [Chapter 1 audiobook \[25 minutes\]](#) (opens link in new tab)

Defining accountability and accounting

AMANDA WHITE

What is accountability?

Accountability is a word that we often hear, but may not understand the meaning of. It is often used in terms of politicians and businesses in terms of the consequences of their decision making, or the idea that people must be accountable for their actions. But what exactly does this mean? When faced with an unfamiliar word, a first place to start is often the dictionary:

ACCOUNTABILITY: The quality of being accountable; liability to account for and answer for one's conduct, performance of duties, etc. (in modern use often with regard to parliamentary, corporate, or financial liability to the public, shareholders, etc.); responsibility (Oxford English Dictionary, n.d.)

Therefore, accountability is about owning and being responsible for your decisions. Why is that important when studying business? No matter what your role in a business – whether that be as an owner, manager, or in marketing, human resources, production, sales, logistics – the decisions we make every day affect a business's (or organisation's) performance. Accountability is about ensuring that decision makers think carefully about their choices, using all available information – financial and non-financial – to help the business (or organisation) achieve its objectives.

A note about the terms business and organisation

This textbook will primarily use the term *business* – meaning entities that operate with the goal of making a profit. There are also not for profit entities (NFPs) and other types of organisations. All organisations around the world generally conduct accounting in the same way, so while this book most commonly uses the term *business*, the principles of accounting just as easily apply to other types of organisations. In my (Amanda's) experience – students are best able to learn to understand the fundamentals of accounting when imagining businesses, the word *organisation* can create some confusion.

What is accounting?

The definition of accounting has changed over time. Definitions of accounting can be purely about the technical nature – that accounting is a method by which we record the transactions that a business (or entity) engages in. This might mean that if you were describing an accountant – you'd be describing someone whose role it is to practically implement this recording method.

Fifty years ago – you would have been correct. However, advancements in computing technology means that accountants don't do much of the nuts and bolts of technical accounting. As a result, the role of accountants has changed and in this textbook, we will use a broad definition of accounting:

Accounting is a technical, social and moral practice concerned with the sustainable utilisation

of resources and proper **accountability** to stakeholders to enable the flourishing of organisations, people and nature. (Carnegie, Parker and Tsahuridu 2021) *emphasis added*

Accounting and accountability

As we can see from the definition above, accounting helps businesses ensure accountability because accounting helps us describe how a business has allocated its scarce resources – its cash and its assets. As a decision maker (in any part of a business) understanding accounting is going to be critical to help you make the best decisions for the business, and also potentially people and the environment affected by the business's activities.

Making good decisions will see you rewarded well, making poor decisions may result in you being shown the door!

Real life examples

WINNERS

David M. Solomon – CEO of investment bank Goldman Sachs in the USA – had his pay increased to US\$35m in November 2021 after guiding the business to record profits in 2021 (Nguyen 2022).

LOSERS

Brian Hartzer was the CEO of one of Australia's largest financial institutions – Westpac. He was fired because while in charge, the bank failed to detect 23 million breaches of anti-money laundering laws in the form of illegal transactions. Some of those transactions were related to child exploitation. As the person in charge of all bank operations, the concept of accountability meant that with such a significant breach of the law – he had to be fired.

Accountability is also different depending on the type of business structure that you have. Below is a summary of the main business structures seen in modern business.

Types of business structures

There are several common types of legal business structures and the varying business structures having differing types of accountability. While the accounting concepts for the various types of businesses are essentially the same regardless of the legal structure, the terminology will change slightly depending on the organisation's legal structure, and it is important to understand the differences.

There are three broad categories for the legal structure of an organisation: sole proprietorship, partnership, and corporation. A sole proprietorship is a legal business structure consisting of a single individual. Benefits of this type of structure include ease of formation, favourable tax treatment, and a high level of control over the business. The risks involved with sole proprietorships include unlimited personal liability and a limited life for the business. Unless the business is sold, the business ends when the owner retires or passes away. In addition,

sole proprietorships have a fairly limited ability to raise capital (funding), and often sole proprietors have limited expertise—they are excellent at what they do but may have limited expertise in other important areas of business, such as accounting or marketing.

A partnership is a legal business structure consisting of an association of two or more people who contribute money, property, or services to operate as co-owners of a business. Benefits of this type of structure include favourable tax treatment, ease of formation of the business, and better access to capital and expertise. The downsides to a partnership include unlimited personal liability (although there are other legal structures—a limited liability partnership, for example—to help mitigate the risk); limited life of the partnership, similar to sole proprietorships; and increased complexity to form the venture (decision-making authority, profit-sharing arrangement, and other important issues need to be formally articulated in a written partnership agreement).

A corporation is a legal business structure involving one or more individuals (owners) who are legally distinct (separate) from the business. A primary benefit of a corporate legal structure is the owners of the organisation have limited liability. That is, a corporation is “stand alone,” conducting business as an entity separate from its owners. Under the corporate structure, owners delegate to others (called agents) the responsibility to make day-to-day decisions regarding the operations of the business. Other benefits of the corporate legal structure include relatively easy access to large amounts of capital by obtaining loans or selling ownership (shares), and since the shares are easily sold or transferred to others, the business operates beyond the life of the shareholders.

Types of Business Structures

	Sole Proprietorship	Partnership	Corporation
Number of Owners	Single individual	Two or more individuals	One or more owners
Ease of Formation	Easier to form	Harder to form	Difficult to form
Ability to Raise Capital	Difficult to raise capital	Harder to raise capital	Easier to raise capital
Liability Risk	Unlimited liability	Unlimited liability	Limited liability

Accountability of different business structures

In terms of direct accountability because of a financial relationship – a sole proprietor is likely only accountable to themselves as the sole owner of the business – but a partner is accountable to other partners. Managers of a corporation are accountable to the shareholders. In large publicly listed corporations, those shareholders may number into the millions and are represented by a Board of Directors.

However, with an expanded definition of accountability than just a direct financial relationship, businesses may also be accountable to customers, employees, regulators and numerous other external stakeholders – and not just for accounting or business related issues – but other social issues as well. That is, businesses are being asked to be socially responsible. A contemporary example is social media influencers – they are becoming more and more accountable to their fans and followers for not only their businesses, but also personal behaviour. We'll cover more on social responsibility and reporting in the final chapter of this book.

References

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Nguyen, L. (2022). Goldman Sachs awards its C.E.O. a raise to \$35 million after a record year. *The New York Times*, [online] Available at: <https://www.nytimes.com/2022/01/28/business/david-solomon-goldman-sachs-pay.html> [Accessed 8 February 2022].

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The history of counting and accounting across the world

AMANDA WHITE

How old is the practice of accounting?

Luca Pacioli who lived from 1446 to 1517 is considered the father of modern accounting – that is, he devised the recording system of accounting that is still used today. However, think back – what civilisations came before the Italian renaissance? The Egyptians? Ancient China? Mesopotamia?

Mahmoud Ezzamel in 1997 published an academic research paper that describes how ancient Egyptians used accounting to track their redistributive economic system (Ezzamel 1997). A redistributive economic system is one where all wealth flows in to a central authority and then redistributed. This wouldn't have been possible without some form of accounting.

It has been theorised by researchers that accounting came first in terms of recording, then supplemented by writing to explain that accounting. And even that money came into existence because it was a way to represent value in a standardised manner (Ezzamel and Hoskin 2002).

No matter what ancient civilisation – China, Greece, Persia, India, Rome (to name a few) – they all had some method of accounting so that accountability could be ensured.

Important comment

As a non-Indigenous writer, there is no way in which I can or would ever dream of *speaking for* Indigenous Australians. In the following commentary I am speaking *of* Indigenous cultures. I welcome Indigenous scholars to get in touch with me to contribute to this section of the text.

The world's oldest continuous civilisation

Indigenous Australians (both Aboriginal and Torres Strait Islander) are part of the world's oldest continuous civilisation. Did they have a system of accounting and accountability? Was a system of accounting and accountability required?

Bruce Pascoe in his book *Dark Emu* builds the argument that pre-colonial Indigenous Australians were more than the nomadic hunter-gatherers taught in Australian high schools. That Aboriginal Australians engaged in agriculture, farming and constructed permanent dwellings. There were regular gatherings in which tribes stockpiled food and supplies in advance. All of this implies that there was some sort of system related to counting, budgeting and planning – but was it accounting?

Greer and Patel (2000) put forward the following in their abstract:

Utilising an alternative yin/yang framework developed for accounting by Hines, we argue that the core indigenous yin values of sharing, relatedness and kinship obligations inherent in indigenous conceptions of work and land, are incompatible with the yang values of quantification, objectivity, efficiency, productivity, reason and logic imposed by accounting and accountability systems

The views of Greer and Patel are quite controversial with the idea that core values of Indigenous Australians are not compatible with accounting and accountability. However, their paper was published in 2000 – over 20 years ago. If we think back to the definition of accounting in the previous section:

Accounting is a technical, social and moral practice concerned with the sustainable utilisation of resources and proper **accountability** to stakeholders to enable the flourishing of organisations, people and nature. (Carnegie, Parker and Tsahuridu 2021) *emphasis added*

Perhaps there are ways to combine the perspectives of the traditional custodians of the lands of Australia with broader definitions of accounting to be a force for good not only for an individual business or organisation, but people and our environment.

The impact of cultural norms on accounting practices

While accounting is considered universal, how accountants implement accounting principles and practices have been shown to differ with cultural and societal norms. For example, Gao and Handley-Schachler (2003) report on how feng shui, Confucianism and Buddhism have affected the developing of accounting practices in China.

Cultural norms can be seen in the simplest of numerical traditions. Think about how we quickly tally numbers – artist Siyu Cao from Tiny Eyes Comics produced this example.

TALLY MARKS

U.S.A.	I II III IIII
CHINA	一 丁 下 卅 正
FRANCE	I 𐀀 𐀁 𐀂 𐀃

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tinyeyescomics How do you count ongoing scores? I find it amusing that there are several types of tally marks but they are all based on “fives”. In China, we use the character “正”(zhèng) which has five strokes. The Chinese numerals for one through three (一 二 三) were derived from tally marks, so were Roman numerals. Although starting from number four, people somehow decided to stop following the same logic 🤔 #tallymarks #counting #culturaldifferences #chineseculture #sliceoflife #tinyeyescomics

122 w

3,537 likes

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Another example is the use of payments to government or regulatory officials to speed up the processing of

an approval or to increase the chance of receiving an approval. In many cultures this is clearly considered an illegal bribe. In others, it is considered simply a regular and usual cost of doing business because graft/bribes are a culturally accepted norm. The globalisation of business and the increasing power of the ordinary person, however, has resulted in this type of practice being condemned by many as inappropriate. I once was contacted by a former student who had returned to her home country and asked me for advice on how to convince the managers of a large construction company that bribes were not permitted to be recorded as a legitimate business expense!

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How Accounting supports the concept of Accountability

AMANDA WHITE; MITCHELL FRANKLIN; PATTY GRAYBEAL; AND DIXON COOPER

How accounting supports the concept of accountability

Accounting is the process by which a business (or organisation) records its inflows and outflows of resources. Accounting information is used to create financial statements – documents containing text and numerical information that describe the financial performance of a business (or other organisation) over time (such as how much money has been earned from sales over a year), or at a specific point in time (such as how much cash a business has in the bank).

We will dig into the composition of financial statements in more detail in later chapters – but it is sufficient to know for now, that the financial statements help stakeholders of a business to assess whether that business has met their expectations.

Who are stakeholders? Stakeholders are those affected by the operation of a business, organisation or entity. The stakeholder that most frequently comes to mind when starting to learn about accounting are shareholders – owners of the business. However stakeholders can also be employees (including management), suppliers, customers, government regulators, people who live in a place or environment affected by that business.

Stakeholders will use accounting information in the financial statements, along with other non-financial information (of varying sorts) to help them make assessments and decisions about the business and their interaction with it.

Examples

Residents of a town close to a mining operation are considered stakeholders. They have noticed an increase in medical conditions associated with mining pollutants. A few residents who understand accounting could analyse the financial statements to understand how much the mining company is spending on environmental protection for the area surrounding the town.

Often many small business owners do not have a strong understanding of accounting and therefore may be unable to analyse the performance of their business adequately – instead going by “gut feel”. An understanding of accounting could help owners identify problems before they become insurmountable.

The complete set of financial statements acts as an X-ray of a business's financial health. By evaluating all of the financial statements together, someone with financial knowledge can determine the overall health of a business. The accountant can use this information to advise outside (and inside) stakeholders, and management can use this information as one tool to make strategic short- and long-term decisions.

Utilitarian View of Accounting Decisions and Stakeholder Well-Being

Utilitarianism is a well-known and influential moral theory commonly used as a framework to evaluate business decisions. Utilitarianism suggests that an ethical action is one whose consequence achieves the greatest good for

the greatest number of people. So, if we want to make an ethical decision, we should ask ourselves who is helped and who is harmed by it. Focusing on consequences in this way generally does not require us to take into account the means of achieving that particular end, however. Put simply, the utilitarian view is an ethical theory that the best action of a business is the one that maximises utility of all stakeholders to the decision. This view assumes that all individuals with an interest in the business are considered within the decision.

Financial statements are used to understand the financial performance of companies and to make long- and short-term decisions. A utilitarian approach considers all stakeholders, and both the long- and short-term effects of a business decision. This allows business decision makers to choose business actions with the potential to produce the best outcomes for the majority of all stakeholders, not just shareholders, and therefore maximise stakeholder happiness.

Accounting decisions can change the approach a stakeholder has in relation to a business. If a business focuses on modifying operations and financial reporting to maximise short-term shareholder value, this could indicate the prioritisation of certain stakeholder interests above others. When a business pursues only short-term profit for shareholders, it neglects the well-being of other stakeholders. Accountants and those involved in business should be aware of the interdependent relationship between all stakeholders and consider whether the results of their decisions are good for the majority of stakeholder interests.

Different types of accounting

AMANDA WHITE

Branches of accounting

Accounting is such a broad discipline and it covers many different aspects – these include

- Financial accounting – preparing accounting information in accordance with regulated accounting standards
- Management accounting – preparing information for internal decision making
- Audit and assurance – providing a level of assurance over information presented by a third party using regulated auditing standards
- Taxation – providing advice interpreting the tax regulations for businesses and individuals
- Business advisory – providing advice to clients – individuals or businesses

Types of accounting firms

You may have already heard of some large accounting firms – within the business community they are nicknamed the “Big 4” – Deloitte, EY, KPMG and PwC. There are a range of second tier firms that have a national presence, and then firms that could be as small as just one person. These accounting firms are classified as “public” accounting firms because they provide accounting services to the public.

What are the different sorts of accountants?

When you ask someone about their job and they say “accountant” – what does that mean to you? Someone who prepares tax returns? Someone who helps a business manage their finances?

What most people don't know is that there are many different types of accountants. Common types of accountants include

Type of accountant	Description of their work
Financial accountants	Prepare accounting information for presentation to external stakeholders including shareholders, regulators and the government.
Management accountants	Prepare accounting information for presentation to internal stakeholders such as management for use in business decision making.
Auditors	Independent accountants who audit the financial statements of (mostly) publicly listed companies to determine whether management are telling the truth in their numbers and disclosures.
Business advisors	Prepare and use accounting information to provide advice to businesses. Sometimes smaller businesses will hire a business advisor on an as-needs basis rather than have a team of financial and management accountants in-house.
Tax accountants	Prepare accounting information for tax related purposes. This may be for individual income tax, or corporate tax issues. Tax accountants may work in public accounting firms, or within one specific business.

Accountants work across all industries and sizes of businesses. Some work in public accounting practices with multiple clients, others work within organisations – from small businesses right through to multinational

companies. Some work in corporate offices, others remotely. It may be a full-time job for some people, a part-time or freelance role for others.

Indigenous business perspectives

AMANDA WHITE AND TERRY WICKEY

As mentioned in the section on The history of counting and accounting across the world, as a non-Indigenous person, I can only speak OF Indigenous cultures and issues, however, one of the beauties of creating an open textbook is to show case other authors.

We are unable to import the work of the following Indigenous author into this book, however, we are proud to share the words of Terry Wickey. Please click on the image to link through to his words providing an Indigenous business perspective.

CULTURAL KNOWLEDGES AND WORK INTEGRATED LEARNING

6. Indigenous Business Perspectives

Terry Wickey has generously shared his work and story with us to provide a strong Indigenous perspective on inter-cultural intelligence and capability, lifelong learning, business and success.

CHAPTER 2: PROCESSING ECONOMIC EVENTS

Introduction

To be able to later read and understand accounting information – either in an accounting-specific role, or in any business role – it is important to understand the fundamentals of how that accounting information was generated. You may have heard many talk about accounting in terms of 'debits' and 'credits'. These are terms used in the technical recording of accounting transactions and have their origins in the work of Luca Pacioli (Pacioli 1494). If you'd like to read more about father of accounting – The Life and Works of Luca Pacioli (1446/7 – 1517), Humanist Educator by Professor Alan Sangster is recommended.

Just the mention of debits and credits can instill fear in the hearts of many accounting students – so in this textbook, we don't use them. Instead we take a more of an overview approach to understanding accounting – you'll be able to understand the financial statements of a business and use accounting information to conduct analysis for decision making, however this book is not teaching you the technical intricacies of accounting. The book Accounting, Business and Society comes AFTER this one and will introduce debits, credits and some more technical aspects of accounting.

Chapter outline

In this chapter, we will cover

1. Accounting summarised in the financial statements
2. The process of accounting
3. Methods for measuring value in accounting
4. The assumptions and principles used in accounting
5. The accounting equation
6. Expanding the accounting equation
7. Analysing and recording business transactions

Listen to the audiobook for this chapter on Soundcloud – Chapter 2 audiobook [57 minutes] ([opens link in new tab](#))

Accounting summarised in the financial statements

AMANDA WHITE; MITCHELL FRANKLIN; PATTY GRAYBEAL; AND DIXON COOPER

To be able to understand a business, a common recommendation is to read the financial statements of that business. It is a summary of the accounting transactions during the year and gives you a summary or snapshot of the business at a glance (or in a few pages).

Before we dig into the HOW of accounting, this section will discuss the OUTPUT of accounting processes – the financial statements. Coverage here is somewhat basic since these topics are accorded much greater detail in future chapters and the subsequent book to this one (Accounting, Business and Society – forthcoming).

The four financial statements

Are you a fan of books, movies, or sports? If so, chances are you have heard or said the phrase “spoiler alert.” It is used to forewarn readers, viewers, or fans that the ending of a movie or book or outcome of a game is about to be revealed. Some people prefer knowing the end and skipping all of the details in the middle, while others prefer to fully immerse themselves and then discover the outcome. People often do not know or understand what accountants produce or provide. That is, they are not familiar with the “ending” of the accounting process, but that is the best place to begin the study of accounting.

Accountants create what are known as **financial statements**. Financial statements are reports that communicate the financial performance and financial position of the organisation. In Australia, the Australian Accounting Standards Board prescribe the financial statements that most businesses must prepare. They are listed in AASB 101. The table below sets out the name of the financial statement as prescribed by the standard, common alternative names and a plain English description.

#	Financial statement name from AASB 101	Common names (if applicable)	Plain English description
1	Statement of profit and loss and other comprehensive income for the period	Profit and loss statement Income statement	A summary of the revenues and expenses of a business over the financial period (usually a year)
2	Statement of financial position	Balance Sheet	A snapshot of the assets, liabilities and equities of the business at a specific date in time.
3	Statement of changes in equity		A summary of the change in the value of equity in the business. Equity is essentially the value of the business after debts are paid.
4	Statement of cash flows		A summary of the cash coming into and going out of the business over the financial period (usually a year).

In addition to the 4 financial statements, entities must also provide”

- notes, comprising significant accounting policies and other explanatory information;
- comparative information in respect of the preceding period – that is, they must show this year’s information, plus last year. This allows users to evaluate changes between years without having to find the financial statements from the previous year.

We will delve into what exactly are revenues, expenses, assets, liabilities and equity in future sections of this chapter.

In essence, the overall purpose of financial statements is to evaluate the performance of a company, governmental entity, or not-for-profit entity. Each financial statement listed has a unique function, and together they provide information to determine whether a company generated a profit or loss for a given period (such as a month, quarter, or year); the assets, which are resources of the company, and accompanying liabilities, which are obligations of the company, that are used to generate the profit or loss; owner interest in profits or losses; and the cash position of the company at the end of the period.

Purpose of financial statements

Before exploring the specific financial statements, it is important to know why these are important documents. To understand this, you must first understand who the users of financial statements are. Users of the information found in financial statements are called **stakeholders**. A stakeholder is someone affected by decisions made by a company; this can include groups or individuals affected by the actions or policies of a business or organisation, including investors, creditors, employees, managers, regulators, customers, and suppliers. The stakeholder's interest sometimes is not directly related to the entity's financial performance. Examples of stakeholders include lenders, investors/owners, vendors, employees and management, governmental agencies, and the communities in which the businesses operate. Stakeholders are interested in the performance of an organisation for various reasons, but the common goal of using the financial statements is to understand the information each contains that is useful for making financial decisions. For example, a banker may be interested in the financial statements to decide whether or not to lend a business money.

Likewise, small business owners may make decisions based on their familiarity with the business – they know if the business is doing well or not based on their “gut feeling.” By preparing the financial statements, accountants can help owners by providing clarity of the business's financial performance. In current times, businesses are recording most of their transactions in real time and can access accounting information without their accountant with clever accounting systems that integrate seamlessly into their everyday business processes.

It is important to understand that, in the long term, every activity of the business has a financial impact, and financial statements are a way that accountants report the activities of the business. Stakeholders must make many decisions, and the financial statements provide information that is helpful in the decision-making process.

Business owners as decision makers

Think of a business owner in your family or community. Schedule some time to talk with the business owner, and find out how they use financial information to make decisions.

Solution

Business owners will use financial information for many decisions, such as comparing sales from one period to another, determining trends in costs and other expenses, and identifying areas in which to reduce or reallocate expenses. This information will be used to determine, for example, staffing and inventory levels, streamlining of operations, and advertising or other investment decisions.

Not for profit organisations

There are many organisations who we class as not-for-profit (NFPs) – making a profit may be a goal (they certainly don't want to make a loss) but it might not be the primary objective of the organisation. Are financial statements still useful for decision making for these entities? Absolutely! They still need to understand how much money is flowing in (revenue) from government grants and donations, and how much is flowing out from expenditure. They also need to keep track of their assets, liabilities (debts) and equity. The information is the same, but the way it might be used, or combined with non-financial measures is likely to be different in NFPs than in for-profit businesses.

The process of accounting

CDU BUSINESS SCHOOL AND AMANDA WHITE

Accounting can be defined as the process of **identifying, measuring and communicating** economic information about an entity to a variety of users for decision-making purposes

There are 4 steps in the process of accounting:

1. Identifying
2. Measuring
3. Communicating
4. Decision making

1. Identifying

Identifying business transactions

A business transaction is an event that affects the financial position of an entity and can be reliably measured and recorded.

Business transactions can include such events as:

- withdrawals of cash by the owner
- payment of wages and salaries
- earning of fees revenue
- purchase of an office photocopier or stationery
- capital contribution by owners
- incurring of interest on a bank loan

2. Measuring

Measuring refers to the analysis, recording and classifying of business transactions.

This component identifies how transactions will affect the entity's position, and groups together similar items such as expenses and income.

Throughout the accounting period, individual assets, expenses, income, equity and liabilities will be grouped (classified) together to summarise the information.

For example, land, buildings, machinery, equipment and vehicles will be grouped together under the subheading 'property, plant and equipment'.

3. Communicating

Communicating relevant information through accounting reports, such as the income statement and the balance sheet, for decision-making purposes. We covered the types of accounting statements in Accounting summarised in the financial statements.

This component of the Process of Accounting requires extensive training, experience and judgement.

4. Decision making

The information reported in the entity's financial statements should be relevant and reliable for users of accounting information to make sound business decisions.

The different users require accounting information for making important decisions such as:

- whether to invest in a business
- whether the entity should continue to manufacture a product or outsource this process
- whether the business has the resources to pay debts on time

All of these decisions involve making the most of the scarce resource within the business – money!

Test your knowledge



An interactive H5P element has been excluded from this version of the text. You can view it online here:

<https://oer.pressbooks.pub/utsaccounting1/?p=57#h5p-5>

Methods for measuring value in accounting

CDU BUSINESS SCHOOL AND AMANDA WHITE

Most people consider accounting quite daunting because of the many rules and theoretical foundations in place. In The process of accounting, we learned that accounting is a process of measurement – however the term measurement is open to many interpretations. When we measure transactions, we are assigning each one a value – and there are five methods for determining value:

Historical cost

Assets of a company are recorded at the price for which they were originally acquired. For example, if a business bought a machine for \$250,000, this asset would be entered into the accounts at its purchase price of \$250,000.

Fair value

A measure of an item's market price on a particular date in the normal course of business, hence it is sometimes called "market value". Fair value can be objectively determined at any time. It is just an estimate, upon which people may have differing views. The global accounting standards (International Financial Reporting Standards or IFRS) and Australian accounting standards (AASBs) do require some items in the financial statements to be recorded at fair value, though there are strict rules to follow. In this introductory text, we won't go any further into fair value – but if you choose to study accounting in more detail in your major or specialisation – then fair value is a topic you will cover at a later date.

Replacement cost

The cost to a business of acquiring an asset identical to, or with the same functions, as an existing asset. It is a type of present value, because at the time of purchase, the replacement cost is equivalent to the original cost. This value will change with time as prices for that item fluctuate. For example, pre-COVID19, a computer monitor may have cost \$250. However, due to computer chip shortages and subsequent price rises, the replacement cost for that monitor may now be \$350.

Net realisable value

The value of a product after subtracting the expected costs of production, transaction costs and taxes related to the sale of the item, or the value of some other asset after taking account usage, wear and tear. It can commonly be calculated as the historical cost less depreciation. Depreciation is a process used by accountants to recognise that assets get used up over time. For example, the further distance you drive your car, the less it is likely to be worth when you sell it. Depreciation is something we will get into in much more detail in Chapter 3 and in greater detail again in Accounting, Business and Society.

Present value

The value at the present time of a payment or cash flow occurring in the past or future. Measuring present value

involves taking future cash flows and discounting them at an appropriate rate. It is a measurement that takes into account the changing value of money over time. Students often learn more about present value in finance-related subjects.

Which method of value do we use in our measurement?

Soon we'll be learning more about historical cost, but in a nutshell, our global accounting standards (IFRS) require us to mostly use the historical cost measurement method. There are some parts of accounting standards that do require fair value (such as an intangible asset like a patent), but that isn't something to worry about at the introductory level.

Assumptions and principles used in accounting

AMANDA WHITE; CDU BUSINESS SCHOOL; MITCHELL FRANKLIN; PATTY GRAYBEAL; AND DIXON COOPER

The people and entities interacting with businesses all around the world use accounting information to make decisions every single day. But how can businesses be compared and evaluated against each other with any level of reliability? That comes from having a common set of accounting principles, assumptions and concepts that are the same worldwide.

The International Accounting Standards Board (IASB) is the global body responsible for setting consistent standards and requirements to allow users of accounting information to make decisions with confidence in that information. That is, revenue in Country A means the same thing in Country B. The IASB documents these standards in the International Financial Reporting Standards – usually referred to as IFRS. In Australia, the Australian Accounting Standards Board (AASB) implements the IFRS with a few small tweaks for Australian regulatory requirements – but overall it can be said that we are following IFRS.

The majority of the world's accounting is conducted in accordance IFRS with the main exception being the USA. The United States has the Financial Accounting Standards Board which acts in a similar role as the IASB and they issue the GAAP – General Accepted Accounting Principles. At the introductory level, the main principles, assumptions and concepts of accounting are very similar between IFRS and GAAP.

Want more details on the difference between IFRS and GAAP? Check out this piece from Harvard Business School.

In the following paragraphs we will discuss the assumptions and principles of accounting. These are the same regardless of whether you are following IFRS or US GAAP – things do get more complicated when you get into some specific accounting transactions – but that is something to worry about only if you head into an accounting major or specialisation 😊

Assumptions of accounting

In some textbooks and online sources you may see references to accounting concepts. Accounting concepts is an interchangeable term for the assumptions of accounting. These assumptions are made by accountants and users of accounting information. Accountants make four assumptions in the preparation of financial statements

The economic entity

The financial statements are prepared under the economic entity assumption, meaning that the business itself (or 'entity') is separate from the owners of the business and any other businesses. The entity may only report activities on financial statements that are specifically related to their operations.

For example, Felix's Fancy Flowers (FFF) is a business that sells blooms. When preparing their financial information, Felix only includes transactions related to FFF and not any personal transactions like the holiday he took to Japan.

Monetary measurement or measurability

The financial statements only include transactions that can be measured reliably in accurately using a monetary unit of measurement. In Australia, that monetary unit of measurement is the Australian dollar and every country will have central bank that determines the monetary unit of measurement. Something within a business that cannot be accurately and reliably measured (such as the value of Instagram influencers who promote a business's

products) cannot be included in the financial statements. However, if an influencer is given products in exchange for a social media post – the retail value of those products can be used as the value of that transaction when preparing the accounting records.

Accrual basis

The financial statements are prepared under the accrual basis, which is a method of financial reporting that measures all business transactions in accordance with when they occur, whether that may involve cash or not. Recording business transactions when only cash enters or leaves the business is called the 'cash basis'. The majority of businesses are required to use the accrual basis of accounting.

Going concern

The going concern assumption assumes a business will continue to operate as normal in the foreseeable future. 'Operate as normal' means that the business will have sufficient funds from revenue to pay their expenses and debts as they fall due. The 'foreseeable future' is quite an uncertain time period, but in most countries – this is prescribed to be twelve months.

A company that is failing to repay bank loans and experiencing declining sales is likely to NOT be a going concern. This can be worded in the business press in many different ways that can cause confusion – examples include 'the business is experiencing difficulties in continuing as a going concern', the business is 'not a going concern'.

The period assumption

This assumption describes the time interval between financial statement reports. The period assumption states that a company can present useful information in shorter time periods, such as years, quarters, or months. The information is broken into time frames to make comparisons and evaluations easier. The information will be timely and current and will give a meaningful picture of how the company is operating. In Australia, readers of the annual financial statements for publicly listed companies can assume that the information contained within that statement pertain just to that specific financial year, and no other. Australian listed companies also produce half-year financial statements. In the USA, publicly listed firms are required to produce quarterly and annual financial statements.

The period concept also means that businesses cannot arbitrarily choose their own reporting period – for example, you can't choose to make your financial year 13 months in one year, and then 9 months in another.

Finally – the period concept also means that businesses should only include transactions from that period when preparing the financial statements. You can't include any transactions from a future period, or one in the past that has already been reported on (otherwise you'd have double counting).

Principles of accounting

The following principles of accounting are used by accountants to help guide their recording of business transactions.

Revenue recognition principle

The revenue recognition principle directs a company to recognise revenue in the period in which it is earned; revenue is not considered earned until a product or service has been provided. This means the period of time in which you performed the service or gave the customer the product is the period in which revenue is recognised.

There also does not have to be a correlation between when cash is collected and when revenue is recognised. A customer may not pay for the service on the day it was provided. Even though the customer has not yet paid cash, there is a reasonable expectation that the customer will pay in the future. Since the company has provided the service, it would recognise the revenue as earned, even though cash has yet to be collected.

Try the drag and drop exercise below to test your understanding.



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<https://oer.pressbooks.pub/utsaccounting1/?p=185#h5p-17>

Matching principle

The expense recognition principle (also referred to as the matching principle) states that we must match expenses with associated revenues in the period in which the revenues were earned. A mismatch in expenses and revenues could be an understated net income in one period with an overstated net income in another period. There would be no reliability in statements if expenses were recorded separately from the revenues generated.

For example, if Lynn earned printing revenue in April, then any associated expenses to the revenue generation (such as paying an employee) should be recorded on the same income statement. The employee worked for Lynn in April, helping her earn revenue in April, so Lynn must match the expense with the revenue by showing both on the April income statement.

Test your understanding with this short multiple choice question.



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Historical cost principle

The historical cost principle states that virtually everything the company owns or controls (assets) must be recorded at its value at the date of acquisition. For most assets, this value is easy to determine as it is the price agreed to when buying the asset from the vendor. There are some exceptions to this rule, but always apply the cost principle unless the IFRS has specifically stated that a different valuation method should be used in a given circumstance.

The primary exceptions to this historical cost treatment, at this time, are financial instruments, such as stocks and bonds, which might be recorded at their fair market value. This is called mark-to-market accounting or fair value accounting and is more advanced than the general basic concepts underlying the introduction to basic accounting concepts; therefore, it is addressed in more advanced accounting courses.



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<https://oer.pressbooks.pub/utsaccounting1/?p=185#h5p-19>

Conservatism principle

This concept is important when valuing a transaction for which the dollar value cannot be as clearly determined, as when using the cost principle. Conservatism states that if there is uncertainty in a potential financial estimate, a company should err on the side of caution and report the most conservative amount. This would mean that any uncertain or estimated expenses/losses should be recorded, but uncertain or estimated revenues/gains should not. This understates net income, therefore reducing profit. This gives stakeholders a more reliable view of the company's financial position and does not overstate income.

Test your understanding



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The accounting equation

AMANDA WHITE; MITCHELL FRANKLIN; PATTY GRAYBEAL; AND DIXON COOPER

Introduction to the accounting equation

The accounting equation is the foundation of accounting – it guides accountants on how to record transactions and how to report a summary of those transactions in the financial statements. It shows what the organisation owns and the sources of (or claims against) those resources.

$$\text{Assets} = \text{Liabilities} + \text{Owner's Equity}$$

The accounting equation can be thought of from a “sources and claims” perspective; that is, the assets (items owned by the business) were obtained by incurring liabilities or were provided by owners. Stated differently, everything a company owns must equal everything the company owes to creditors (lenders) and owners (individuals for sole proprietors or shareholders for companies or corporations).

Components of the accounting equation

Assets

An asset is a resource that the entity owns or controls that provides it with current or future economic benefit. That economic benefit might be from selling that asset – such as goods held as inventory in a retail business; or from using the asset – such as using a computer and software to create social media marketing images for a client.

Liabilities

A liability is an obligation or debt that the entity holds that must be repaid in the future. The entity will need to use some of its assets to repay the obligation.

Owners' equity (or Equity)

The owners equity represents the net value of the business – that is, the value of assets once all liabilities are settled. An entity that has more liabilities than assets it owns is not in a great financial position – this is called negative equity! This happens quite often when there is a significant change in the business environment such as a sharp decline in customers or increase in debt. Once a business has negative equity, it may not be long until they are insolvent and no longer a going concern (and under Australian laws, are not permitted to continue in business). If you're interested in reading more – check out this piece in the Small Business Chronicle.

Rearranging the accounting equation

You may recall from mathematics courses that an equation must always be in balance. Therefore, we must ensure

that the two sides of the accounting equation are always equal. We explore the components of the accounting equation in more detail shortly.

The accounting equation can therefore be re-arranged using simple algebra.

$$\text{Assets} = \text{Liabilities} + \text{Owner's Equity}$$

$$\text{Assets} - \text{Liabilities} = \text{Owner's Equity}$$

$$\text{Liabilities} = \text{Assets} - \text{Owner's Equity}$$

Practical example of the accounting equation

Felix's Fresh Flowers (FFF) has assets of \$250,000. These assets include equipment, cash and inventory used to make floral arrangements. FFF also owes the bank a loan of \$50,000.

What is the Owner's Equity for FFF?

$$\text{Assets} = \text{Liabilities} + \text{Owner's Equity}$$

$$\$250,000 = \$50,000 + \text{Owner's Equity}$$

$$\text{Owner's Equity} = \$250,000 - \$50,000$$

$$\text{Owner's Equity} = \$200,000$$

Double-entry bookkeeping

Accounting is based on what we call a double-entry accounting system, which requires the following:

- Each time we record a transaction, we must record a change in at least two different accounts. Having two or more accounts change will allow us to keep the accounting equation in balance.
- Thus assets, liabilities and/or equity will increase or decrease with every accounting transaction
- The increases and decreases must be equal to each other

In real life, accountants record transactions in journal entries to various accounts using a recording system that involves Debits and Credits. The transactions in the accounts are then summarised to create summary values for each account. This data will then be used to construct the financial statements.

In Accounting, Business and Society – we will delve into using Debits and Credits to record these transactions as accountants would. However, this introductory textbook focuses on developing a general understanding of accounting. We will discuss changes in our assets, liabilities and owner's equity as increases or decreases to those accounts.

Test your understanding



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Expanding the accounting equation

MITCHELL FRANKLIN; PATTY GRAYBEAL; DIXON COOPER; AND AMANDA WHITE

Before we explore how to analyse transactions, we first need to understand what governs the way transactions are recorded.

As you have learned, the accounting equation represents the idea that a business needs assets to operate, and there are two major sources that contribute to operations: liabilities and equity. The business borrows the funds, creating liabilities, or the business can take the funds provided by the profits generated in the current or past periods, creating retained earnings or some other form of equity. Recall the accounting equation's basic form.

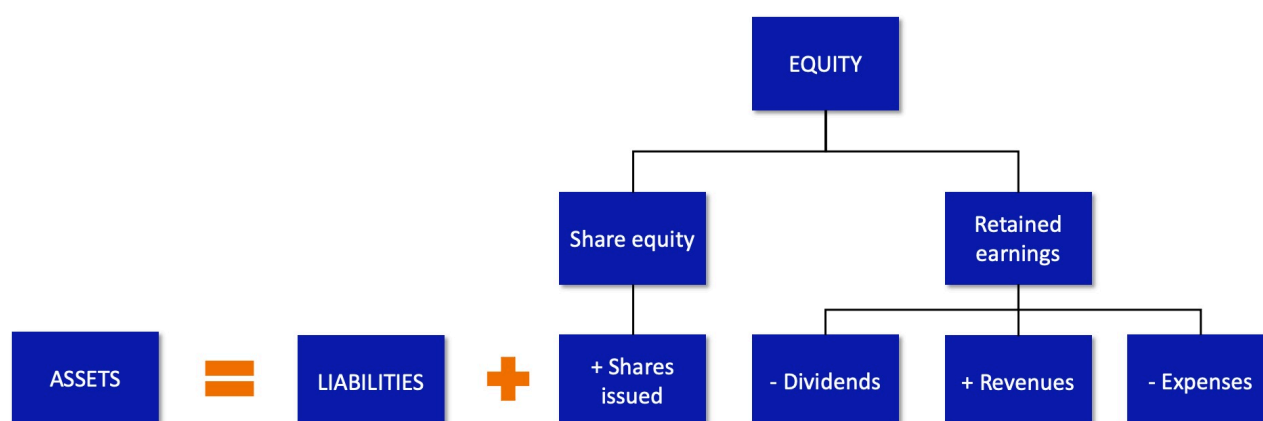
$$\text{Assets} = \text{Liabilities} + \text{Equity}$$

Expanded Accounting Equation

The expanded accounting equation breaks down the equity portion of the accounting equation into more detail. This expansion of the equity section allows a business to see the impact to equity from changes to revenues and expenses, and to owner investments and payouts. It is important to have more detail in this equity category to understand the effect on financial statements from period to period. For example, an increase to revenue can increase net income on the income statement, increase retained earnings on the statement of retained earnings, and change the distribution of shareholder's equity on the balance sheet. This may be difficult to understand where these changes have occurred without revenue recognised individually in this expanded equation.

The expanded accounting equation is shown here.

Expanded Accounting Equation. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license) – updated for Australian terminology by Amanda White, UTS



Note that this expanded accounting equation breaks down Equity into four categories: shares issued, dividends, revenues, and expenses. This considers each element of share equity and retained earnings individually to better illustrate each one's impact on changes in equity.

A business can now use this equation to analyse transactions in more detail. But first, it may help to examine the many accounts that can fall under each of the main categories of Assets, Liabilities, and Equity, in terms of their relationship to the expanded accounting equation. We can begin this discussion by looking at the *chart of accounts*.

Breaking down the expanded accounting equation

Refer to the expanded accounting equation above. We begin with the left side of the equation, the assets, and work toward the right side of the equation to liabilities and equity.

Assets and the expanded accounting equation

On the left side of the equation are assets. Assets are resources a business owns that have an economic value. Assets are represented on the balance sheet financial statement. Some common examples of assets are cash, accounts receivable, inventory, supplies, prepaid expenses, notes receivable, equipment, buildings, machinery, and land.

Cash includes paper currency as well as coins, cheques, bank accounts, PayPal accounts. Anything that can be quickly liquidated into cash is considered cash. Cash activities are a large part of any business, and the flow of cash in and out of the business is reported on the statement of cash flows. Note that cryptocurrencies are not considered cash. For accounting purposes, any form of cryptocurrency is considered an asset in the same way as a Renaissance painting.

Accounts receivable is money that is owed to the business, usually from a customer. The customer has not yet paid with cash for the provided good or service but will do so in the future. Common phrasing to describe this situation is that a customer purchased something “on account,” meaning that the customer has asked to be billed and will pay at a later date: “Account” because a customer has not paid us yet but instead has asked to be billed; “Receivable” because we will receive the money in the future.

Inventory refers to the goods available for sale. Service companies do not have goods for sale and would thus not have inventory. Merchandising and manufacturing businesses do have inventory.

Examples of supplies (office supplies) include pens, paper, and pencils. Supplies are considered assets until an employee uses them. At the point they are used, they no longer have an economic value to the business, and their cost is now an expense to the business.

Prepaid expenses are items paid for in advance of their use. They are considered assets until used. Some examples can include insurance and rent. Insurance, for example, is usually purchased for more than one month at a time (six months typically). The business does not use all six months of the insurance at once, it uses it one month at a time. However, the business prepays for all of it up front. As each month passes, the business will adjust its records to reflect the cost of one month of insurance usage.

Notes receivable is similar to accounts receivable in that it is money owed to the business by a customer or other entity. The difference here is that a note typically includes interest and specific contract terms, and the amount may be due in more than one accounting period.

Equipment examples include desks, chairs, and computers; anything that has a long-term value to the business that is used in the office. Equipment is considered a long-term asset, meaning you can use it for more than one accounting period (a year for example). Equipment will lose value over time, in a process called *depreciation*. You will learn more about this topic in Chapter 3, and Accounting, Business and Society.

Buildings, machinery, and land are all considered long-term assets. Machinery is usually specific to a manufacturing business that has a factory producing goods. Machinery and buildings are often called PPE – Property Plant and Equipment. Machinery and buildings are also depreciated. Unlike other long-term assets such as machinery, buildings, and equipment, land is not depreciated. The process to calculate the loss on land value could be very cumbersome, speculative, and unreliable; therefore, the treatment in accounting is for land to *not* be depreciated over time. It remains recorded at its historical (purchase) cost.

Assets. Cash, buildings, inventory, and equipment are all types of assets. (credit clockwise from top left: modification of “Cash money! 140606-A-CA521-021” by Sgt. Michael Selvage/Wikimedia Commons, Public Domain; modification of “41 Cherry Orchard Road” by “Pafcool2”/Wikimedia Commons, Public Domain; modification of “ASM-e1516805109201” by Jeff Green, Rethink Robotics/ Wikimedia Commons, CC BY 4.0; modification of “Gfp-inventory-space” by Yinan Chen/Wikimedia Commons, CC0)



Liabilities and the expanded accounting equation

The accounting equation emphasises a basic idea in business; that is, businesses need assets in order to operate. There are two ways a business can finance the purchase of assets. First, it can sell shares of its stock to the public to raise money to purchase the assets, or it can use profits earned by the business to finance its activities. Second, it can borrow the money from a lender such as a financial institution. You will learn about other assets as you progress through the book. Let's now take a look at the right side of the accounting equation.

Liabilities are obligations to pay an amount owed to a lender (creditor) based on a past transaction. Liabilities are reported on the balance sheet. It is important to understand that when we talk about liabilities, we are not just talking about loans. Money collected for gift cards, subscriptions, or as advance deposits from customers could also be liabilities. Essentially, anything a business owes and has yet to pay within a period is considered a liability, such as salaries, utilities, and taxes.

For example, a business uses \$400 worth of utilities in May but is not billed for the usage, or asked to pay for the usage, until June. Even though the business does not have to pay the bill until June, the business owed money for the usage that occurred in May. Therefore, the business must record the usage of electricity, as well as the liability to pay the utility bill, in May.

Eventually that debt must be repaid by performing the service, fulfilling the subscription, or providing an asset such as merchandise or cash. Some common examples of liabilities include accounts payable, notes payable, and unearned revenue.

Accounts payable recognises that the business owes money and has not paid. Remember, when a customer purchases something "on account" it means the customer has asked to be billed and will pay at a later date. In the case of accounts payables, the business is the "customer" and will have to pay the money owed in the future, so we use the word "payable." The debt owed is usually paid off in less than one accounting period (less than a year typically) if it is classified as an account payable.

A notes payable is similar to accounts payable in that the business owes money and has not yet paid. Some key

differences are that the contract terms are usually longer than one accounting period, interest is included, and there is typically a more formalised contract that dictates the terms of the transaction.

Unearned revenue represents a customer's advanced payment for a product or service that has yet to be provided by the business. Since the business has not yet provided the product or service, it cannot recognise the customer's payment as revenue, according to the revenue recognition principle. Thus, the account is called unearned revenue. The business owing the product or service creates the liability to the customer.

Equity and the expanded accounting equation

Shareholders' equity refers to the owners' (shareholders) investments in the business and earnings. These two components are contributed capital and retained earnings.

The owners' investments in the business typically come in the form of issued shares and are called contributed capital. Owners/shareholders can invest by contributing cash or some other asset.

Another component of shareholders' equity is the business's earnings. These retained earnings are what the business holds onto at the end of a period to reinvest in the business, after any distributions to ownership occur. Stated more technically, retained earnings are a business's cumulative earnings since the creation of the business minus any dividends that it has declared or paid since its creation. One tricky point to remember is that retained earnings are not classified as assets. Instead, they are a component of the shareholders' equity account, placing it on the right side of the accounting equation.

Distribution of earnings to ownership (shareholders) is called a dividend. The dividend could be paid with cash or be a distribution of more business shares to current shareholders. Either way, dividends will decrease retained earnings.

Also affecting retained earnings are revenues and expenses, by way of net income or net loss. Revenues are earnings from the sale of goods and services. An increase in revenues will also contribute toward an increase in retained earnings. Expenses are the cost of resources associated with earning revenues. An increase to expenses will contribute toward a decrease in retained earnings. Recall that this concept of recognising expenses associated with revenues is the expense recognition or matching principle. Some examples of expenses include bill payments for utilities, employee salaries, and loan interest expense. A business does not have an expense until it is "incurred." Incurred means the resource is used or consumed. For example, you will not recognise utilities as an expense until you have used the utilities. The difference between revenues earned and expenses incurred is called net income (loss) and can be found on the income statement. Net income is also commonly called "profit".

Net income reported on the income statement flows into the statement of retained earnings. If a business has net income (earnings) for the period, then this will increase its retained earnings for the period. This means that revenues exceeded expenses for the period, thus increasing retained earnings. If a business has net loss for the period, this decreases retained earnings for the period. This means that the expenses exceeded the revenues for the period, thus decreasing retained earnings.

You will notice that shareholders' equity increases as new shares in the business are issued and as revenues grow; and decreases from dividend payouts and expenses. Shareholders' equity is reported on the balance sheet in the form of share equity and retained earnings. The statement of retained earnings computes the retained earnings balance at the beginning of the period, adds net income or subtracts net loss from the income statement, and subtracts dividends declared, to result in an ending retained earnings balance reported on the balance sheet.

Now that you have a basic understanding of the accounting equation, and examples of assets, liabilities, and shareholders' equity, you will be able to analyse the many transactions a business may encounter and determine how each transaction affects the accounting equation and corresponding financial statements.

The first step to do so is to learn how to identify and analyse business events or transactions. Then it will be a matter of identifying the accounting components and recording the transaction. That will be covered in the next section.

Test your understanding



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Analysing and recording business transactions

AMANDA WHITE; MITCHELL FRANKLIN; PATTY GRAYBEAL; AND DIXON COOPER

In the previous section, we gained a basic understanding of both the basic and expanded accounting equations, and looked at examples of assets, liabilities, and shareholders' equity. Now, we can consider some of the transactions a business may encounter. We can review how each transaction would affect the basic accounting equation.

The first step in the accounting cycle is to identify and analyse transactions. Each original source transaction must be evaluated for financial implications. Meaning, will the information contained on this original source affect the financial statements? If the answer is yes, the business will then analyse the information for *how* it affects the financial statements. For example, if a business receives a cash payment from a customer, the business needs to know how to record the cash payment in a meaningful way to keep its financial statements up to date.

Here is a reminder of the common account names that we covered in the previous section

Account name	Class of account	Description	Word hints*
Sales revenue	Revenue	When a business sells a good or service to a customer	Makes a sale, sells
Cost of sales	Expense	The cost of the goods sold to a customer or services provided	The inventory cost ...
Investment income	Revenue	When a business earns revenue from its investments (such as shares owned in another business)	Received interest, received dividends
Distribution expense	Expense	Ship/deliver goods to customers	Shipping cost
Marketing expense	Expense	To convince customers to purchase your good or service	Advertising fees, social media marketing bill
Occupancy expense	Expense	Anything associated with the business' main premise – rent or lease, utilities, council rates	
Depreciation expense	Expense	Recognition of the use of some part of a non-current asset like a machine	
Income tax expense	Expense	Taxes paid to government	
Wages expense	Expense	Remunerating employees for their work in the business	
Dividends	Expense	The reward due to shareholders for their investment in the business	Dividends paid
Cash	Asset	Cash held by the business in a bank account or in physical cash on the business premise	
Accounts receivable	Asset	The payment a customer has promised to made for goods or services already received	The customer purchased items and were billed. The customer purchased "on credit"
Inventory	Asset	Items the business holds that they will sell in the future (to generate revenue and they will receive payment for)	
Prepayments	Asset	When a business has paid an expense in advance such as insurance.	A twelve month policy was purchased and paid for at the beginning of the year
Property, plant and equipment	Asset	Historically called "fixed assets" because they were fixed into place on the warehouse floor. Items that help manufacture or support the manufacture of inventory or the provision of a good or service. This includes items like a bottling machine at a beverage business right through to office computers and printers.	The business purchased a XYZ
Accounts payable	Liability	When the business purchases a good or service and promises to pay the supplier later	The purchase was made "on credit" The business was billed for the item and will pay in 30 days
Unearned revenue	Liability	When a customer pays the business in advance for services or goods to be rendered in the future.	paid "in advance" or "payment upfront"
Borrowings	Liability	The business engages in a contract to borrow funds and repay those funds over time.	The business took out a bank loan.
Share capital – contributed capital	Equity	The net value of the firm attributed to its owners (shareholders)	The business issued shares to admit a new shareholder
Retained earnings	Equity	A place to hold the profits (or losses) the business made during the year	Retained earnings is not normally used in journal entries at the introductory level of accounting!

In practice, there are many variations and sub-definitions under these main account names – so if you've look at some accounting information in your employment or volunteering experience – it may look similar but not identical. That is absolutely normal. The 'Word hints' are phrases you may see in the description of a transaction that will give you a hint to use this account. Not all accounts have word hints because many accounts are self-explanatory.

Example 1

You are the accountant for a startup mobile app developer, Kids Learn Online (KLO). Here are the business transactions from the current month:

1. Issues \$20,000 of share equity in exchange for cash.
2. Purchases computer equipment on account (to be paid for later) for \$3,500, payment due within the month.
3. Receives \$4,000 cash in advance from a customer for an app not yet developed (we will offer these services at a later date).
4. Provides \$5,500 in app development services to a customer on credit (the customer will pay the business at a later date)
5. Pays a \$300 electricity bill with cash.
6. Distributed \$100 cash in dividends to shareholders.

We now analyse each of these transactions, paying attention to how they impact the accounting equation and corresponding financial statements.

Transaction 1:

Issues \$20,000 of share equity for cash.

Analysis: The business has received cash resulting in an increase in the assets. In exchange for the cash, the business has issued shares, thereby increasing equity (and the overall value of the business).

Assets	=	Liabilities	+	Equity
Cash + \$20,000				Share equity + \$20,000

Transaction 2:

Purchases computer equipment on account (to be paid for later) for \$3,500, payment due within the month.

Analysis: We know that the business purchased computer equipment, which is an asset. We also know that the business purchased the equipment on account, meaning it did not pay for the equipment immediately and asked for payment to be billed instead and paid later. Since the business owes money and has not yet paid, this is a liability, specifically labeled as *accounts payable*. There is an increase to assets because the business has equipment it did not have before. There is also an increase to liabilities because the business now owes money. The more money the business owes, the more that liability will increase.

Assets	=	Liabilities	+	Equity
Equipment + \$3,500		Accounts payable \$3,500		

The accounting equation remains balanced because there is a \$3,500 increase on the asset side, and a \$3,500 increase on the liability and equity side.

Transaction 3:

Receives \$4,000 cash in advance from a customer for an app not yet developed

Analysis: We know that the business collected cash, which is an asset. This collection of \$4,000 increases assets because money is coming into the business.

Assets	=	Liabilities	+	Equity
Cash + \$4,000		Unearned revenue \$4,000		

The business has yet to provide the app development service. According to the revenue recognition principle, the business cannot recognise that revenue until it provides the service. Therefore, the business has a liability to the customer to provide the service and must record the liability as unearned revenue. The liability of \$4,000 worth of services increases because the business has more unearned revenue than previously.

The equation remains balanced, as assets and liabilities increase. The balance sheet would experience an increase in assets and an increase in liabilities.

Transaction 4:

Provides \$5,500 in app development services to a customer who asks to be billed for the services.

Assets	=	Liabilities	+	Equity
Accounts Receivable + \$5,500				Revenue \$5,500

Analysis: The customer asked to be billed for the service, meaning the customer did not pay with cash immediately. The customer owes money and has not yet paid, signaling an accounts receivable. Accounts receivable is an asset that is increasing in this case. This customer obligation of \$5,500 adds to the balance in accounts receivable.

The business did provide the services. As a result, the revenue recognition principle requires recognition as revenue, which increases equity for \$5,500. The increase to assets would be reflected on the balance sheet. The increase to equity would affect three statements. The income statement would see an increase to revenues, changing net income (loss). Net income (loss) is computed into retained earnings on the statement of retained earnings. This change to retained earnings is shown on the balance sheet under shareholders' equity.

Transaction 5:

Pays a \$300 electricity (utility) bill with cash.

Assets	=	Liabilities	+	Equity
Cash -\$300				Expense -\$300

Analysis: The business paid with cash, an asset. Assets are decreasing by \$300 since cash was used to pay for this utility bill. The business no longer has that money.

Utility payments are generated from bills for services that were used and paid for within the accounting period, thus recognised as an expense. The expense decreases equity by \$300. The decrease to assets, specifically cash, affects the balance sheet and statement of cash flows. The decrease to equity as a result of the expense affects three statements. The income statement would see a change to expenses, changing net income (loss). Net income (loss) is computed into retained earnings on the statement of retained earnings. This change to retained earnings is shown on the balance sheet under shareholders' equity.

Transaction 6:

Distributed \$100 cash in dividends to shareholders.

Assets	=	Liabilities	+	Equity
Cash -\$100				Dividends -\$100

Analysis: The business paid the distribution with cash, an asset. Assets decrease by \$100 as a result. Dividends affect equity and, in this case, decrease equity by \$100. The decrease to assets, specifically cash, affects the balance sheet and statement of cash flows. The decrease to equity because of the dividend payout affects the statement of retained earnings by reducing ending retained earnings, and the balance sheet by reducing shareholders' equity.

Let's summarise the transactions and make sure the accounting equation has remained balanced. Shown are each of the transactions.

	Assets			=	Liabilities		+	Equity			
	Cash	Accounts Receivable	Equipment		Accounts Payable	Unearned Revenue		Share equity	Dividends	Revenues	Expenses
1	+20,000							+20,000			
2			+3,500		+3,500						
3	+4,000					+4,000					
4		+5,500								+5,500	
5	-300										-300
6	-100								-100		
Total	23,600	+ 5,500	+ 3,500		3,500	+ 4,000		+ 20,000	- 100	+ 5,500	- 300

\$32,600

Balanced!

\$32,600

As you can see, assets total \$32,600, while liabilities added to equity also equal \$32,600. Our accounting equation remains balanced.

Are all business events recorded as transactions?

To determine which business events are to be recorded – always think back to the idea of inflows and outflows – is something flowing into the business? It could be cash, or some other asset. Or are there any outflows from the business to another party?

Let's work through an example with Tiny Holidays – a relatively new business owned by Hazel Nguyen – that specialises in short breaks in tiny homes – ultra small accomodation – in remote rural locations. She has a collection of 6 tiny homes across 2 rural properties in New South Wales. An example of one of her tiny homes is in the photograph below.



Tiny Holidays had the following transactions:

- A. Hazel ordered shelving worth \$750.
- B. Hazel sells her accommodation service in her tiny homes for \$199 per night, however, after checking out listings for other tiny homes, changes the nightly charge on her website to \$250 per night.
- C. A customer pays for a weekend tiny home rental upon arrival at the rural location.
- D. The shelving is delivered with an invoice for \$750.

Which events will be recorded in the accounting system?

Solution

- A. Hazel did not yet receive the shelving—it has only been ordered. As of now there is no new asset owned by the business. Since the shelving has not yet been delivered, Hazel does not owe any money to the other business. Hazel will not record the transaction.
- B. Changing prices does not have an impact on the business at the time the price is changed. No transaction is recorded
- C. Hazel now has a transaction to record. She has received cash in exchange for a weekend rental. She has an increase in one asset (cash) and an increase in her revenue (equity).
- D. Hazel has taken possession of the shelving and is the legal owner. She also has an increase in her liabilities as she accepted delivery of the shelving but has not paid for it. Hazel will record this transaction.

Test yourself

The following questions are adapted from the Principles of Accounting 1 into H5P format.



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CHAPTER 3: REFINING THE RECORDING PROCESS

Now that we understand the fundamentals around recording transactions using the expanded accounting equation, in this chapter, we will be learning how to apply these fundamentals to a range of different scenarios including selling goods to customers to pay later, purchasing and later selling inventory, managing bank loans and rewarding shareholders for their investment.

Each section in this chapter will follow the structure below:

- Understanding the business event/transaction
- Translate the business transaction into accounting terminology
- Record the accounting transaction.

for all of the types of business transactions and events that we will describe.

Listen to the audiobook for this chapter on Soundcloud – Chapter 3 audiobook [42 minutes] – link opens in new tab.

Breaking down assets and liabilities further

MITCHELL FRANKLIN; PATTY GRAYBEAL; DIXON COOPER; AND AMANDA WHITE

In addition to what you've already learned about assets and liabilities, and their potential categories, there are a couple of other points to understand about both of these balance sheet items.

Assets and classifications as current or non-current

In thinking back to assets, some items like inventory and office supplies are likely to be used to generate revenue quite quickly (either by being sold as inventory is, or used as office supplies are). And others like manufacturing equipment will hold value for the business over a longer period of time. In accounting, we classify assets based on whether or not the asset will be used or consumed within a certain period of time, generally one year. If the asset will be used or consumed in one year or less, we classify the asset as a current asset. If the asset will be used or consumed over more than one year, we classify the asset as a noncurrent asset.

Assets and classifications as tangible or intangible

Most assets that we've discussed so far are tangible – items that we can touch or move – office printers, inventory, machinery. However, not all assets are tangible. An asset could be an intangible asset, meaning the item lacks physical substance—it cannot be touched or moved. Think about pharmaceutical companies and a patent that they hold to manufacture a particular drug. That patent is an intangible asset – it provides value to the firm, but we cannot touch it. Other examples can include trademarks or something called goodwill – when you purchase another business and pay more than the value of its net assets because you think there is other value (such as the value of a brand name or reputation).

What about liabilities?

Similar to the accounting for assets, liabilities are classified based on the time frame in which the liabilities are expected to be settled or paid. A liability that will be settled in one year or less (generally) is classified as a current liability, while a liability that is expected to be settled in more than one year is classified as a noncurrent liability.

Some examples of current vs non-current assets and liabilities

Examples of current assets include accounts receivable, which is the outstanding customer debt on a credit sale; inventory, which is the value of products to be sold or items to be converted into sellable products; and sometimes a notes receivable, which is the value of amounts loaned that will be received in the future with interest, assuming that it will be paid within a year.

Examples of current liabilities include accounts payable, which is the value of goods or services purchased that will be paid for at a later date, and notes payable, which is the value of amounts borrowed (usually not inventory purchases) that will be paid in the future with interest.

Examples of noncurrent assets include notes receivable (where a customer agrees to pay over a year or longer in

instalments), land, buildings, equipment, and vehicles. An example of a noncurrent liability is a bank loan (which are usually repaid over a number of years).

Why does current versus non-current matter?

At this point, let's take a break and explore why the distinction between current and non-current assets and liabilities matters. It is a good question because, on the surface, it does not seem to be important to make such a distinction. After all, assets are things owned or controlled by the business, and liabilities are amounts owed by the business; listing those amounts in the financial statements provides valuable information to shareholders. But we have to dig a little deeper and remind ourselves that shareholders are using this information to make decisions.

Providing the amounts of the assets and liabilities answers the “what” question for shareholders (that is, it tells shareholders the value of assets), but it does not answer the “when” question for shareholders. For example, knowing that an organization has \$1,000,000 worth of assets is valuable information, but knowing that \$250,000 of those assets are current and will be used or consumed within one year is more valuable to shareholders. Likewise, it is helpful to know the company owes \$750,000 worth of liabilities, but knowing that \$125,000 of those liabilities will be paid within one year is even more valuable. In short, the *timing* of events is of particular interest to shareholders. Why? Because they may be using this information to predict future performance and make decisions about whether to continue investing, or sell their shares and get out.

Not all transactions affect equity

As we continue to develop our understanding of accounting, we will encounter many types of transactions involving different elements of the financial statements. The previous examples highlighted elements that change the equity of a business. Not all transactions, however, ultimately impact equity. For example, the following do not impact the equity or net worth of the business:¹

- Exchanges of assets for assets
- Exchanges of liabilities for liabilities
- Acquisitions of assets by incurring liabilities
- Settlements of liabilities by transferring assets

However, they do still need to be recorded as accounting transactions to ensure that records are complete. In addition, you may exchange non-current assets for current assets – this alters the balance of assets, but not assets overall. This shift in balance within accounts can be useful information for shareholders and decision makers.

It is important to understand the inseparable connection between the elements of the financial statements and the possible impact on business value (equity). We explore this connection in greater detail in later chapters when we explore the financial statements in more detail and begin learning how to analyse the financial statements for decision making.

Glossary

accounting equation

assets = liabilities + owner's equity

accounts payable

value of goods or services purchased that will be paid for at a later date

accounts receivable

outstanding customer debt on a credit sale, typically receivable within a short time period

current asset

asset that will be used or consumed in one year or less

current liability

debt or obligation due within one year or, in rare cases, a company's standard operating cycle, whichever is greater

inventory

value of products to be sold or items to be converted into sellable products

non-current asset

asset that will be used or consumed over more than one year

non-current liability

liability that is expected to be settled in more than one year

notes payable

value of amounts borrowed that will be paid in the future with interest

notes receivable

value of amounts loaned that will be received in the future with interest

retained earnings

cumulative, undistributed net income or net loss for the business since its inception

Recording the sales process

AMANDA WHITE

How to record transactions in the sales process

Generating sales is the lifeblood of any business – without revenue, a business will not be able to pay their debts as they fall due and will not remain a going concern. In talking about the sales process, we refer to not only making the sale, but also receiving payment from the customer.

In this section we will examine a number of different sales-related processes including:

1. Sales for cash (quick recap)
2. Sales made on credit
3. Customer repayments for sales on credit
4. Sales made in advance
5. Completing the job for sales made in advance

1. Sales for cash

For most retail businesses, this is the most common form of revenue generation. And whether you receive physical or electronic cash, it is all the same Cash account in our transaction recording. If \$350 worth of goods are sold for cash, the transaction would be recorded as follows:

Assets		=	Liabilities	+	Equity			
Cash	Accounts Receivable		Unearned revenue		+ Share cap	- Dividends	+ Revenues	- Expenses
+ 350							+ 350	

The accounting equation balances because it is increasing by \$350 on both sides.

2. Sales made on credit

For many wholesale businesses, sales are made on credit. That is, the business has regular customers that it trusts to sell goods and receive payment at a later date. That later date is usually within 30 days, though in some industries it can be up to 90 days.

If \$500 worth of goods are sold on credit, the transaction would be recorded as follows:

Assets		=	Liabilities	+	Equity			
Cash	Accounts Receivable		Unearned revenue		+ Share cap	- Dividends	+ Revenues	- Expenses
	+ 500						+ 500	

The asset of accounts receivable increases – future value will be gained when the accounts receivable is exchanged for cash – and revenue increases, therefore the equation is balanced.

3. Customer repayments for sales on credit

Customers who purchase goods on credit will (hopefully) make their repayments within the timeframe set by the business. We'll get into what happens when businesses do not pay for sales on credit in our 2nd text, Accounting, Business and Society.

For the previous example, when the customer pays their accounts receivable of \$500 in full, the transaction would be recorded as follows:

Assets		=	Liabilities	+	Equity			
Cash	Accounts Receivable		Unearned revenue		+ Share cap	- Dividends	+ Revenues	- Expenses
+ 500	- 500							

Note that there is no change in Revenue. It has already been recorded. Now all that is happening in the business is that we are transforming one asset (Accounts Receivable) into another (Cash). The equation is balanced because the total change in assets is \$0 and the change in liabilities and equity is also \$0.

4. Sales made in advance

It can be common for a popular business to ask customers to pay in advance. This may be for a custom order, or for a good that is in high demand.

A customer orders a \$2,000 item that will be delivered in 2 months time. The transaction would be recorded as follows:

Assets		=	Liabilities	+	Equity			
Cash	Accounts Receivable		Unearned revenue		+ Share cap	- Dividends	+ Revenues	- Expenses
+ 2000			+ 2000					

We've increased our assets by receiving cash, but we've also generated an obligation (unearned revenue liability) to provide the item to the customer in the future.

Technically, when you purchase goods through an online store – you pay for those goods in advance. It takes time for the business to get your order ready and then ship your order to you. If you want to be really accounting nerdy – the business doesn't technically earn the revenue until your order is delivered to you!

5. Completing the job for sales made in advance

Imagine it is now 2 months later and we now have the item that the customer paid in advance for and we deliver it to them. The transaction would be recorded as follows:

Assets		=	Liabilities	+	Equity			
Cash	Accounts Receivable		Unearned revenue		+ Share cap	- Dividends	+ Revenues	- Expenses
			- 2000				+ 2000	

Note that there is no change to our assets. The cash is still in our bank account and nothing has changed. When we deliver the item to the customer, we are fulfilling our obligation (hence the decrease of \$2000 in unearned revenue) and can now recognise the revenue of \$2000. The equation balances because the liabilities and equity side comes to a sum of \$0 and the change in assets is also \$0.

Recording the purchasing process

AMANDA WHITE

How to record transactions related to the purchasing process

To be able to generate revenue, a business will almost certainly need to purchase supplies. This could include office stationery, oil for manufacturing equipment or tea and coffee for the kitchen. If they are selling a good – items such as raw materials for manufacturing, or finished goods from a manufacturer – will also need to be purchased. In this section we will examine the purchasing process which will cover purchasing items, but also making payments to suppliers.

In this section we will examine a number of different purchase-related accounting processes including:

1. Purchases for cash (quick recap)
2. Purchases made on credit
3. Making repayments for purchases on credit
4. Prepayment of expenses
5. Using up prepaid expenses
6. Recognising when we use inventory

1. Purchases for cash

The easiest accounting transaction related to purchases is buying items for cash. We have a cash outflow, decreasing our cash asset, but an inflow of whatever we've purchased (supplies, inventory or a service). If we purchased \$450 worth of paper for the printer, the transaction would be recorded as follows:

Assets				=	Liabilities	+	Equity			
Cash	Inventory	Supplies	Prepaid expense		Accounts Payable		+ Share cap	- Dividends	+ Revenues	- Expenses
- 450		+ 450								

You can easily change the name of the account depending on what is purchased – it could be inventory, office supplies, packaging for goods or social media advertising. As you can see – the equation balances because the net change in assets is \$0, which matches the \$0 change in liabilities and equity.

A note on recording purchases of office supplies and other consumable items

In the above example, the business has purchased paper and recorded it as an asset. Theoretically, this is correct – the paper is an asset. The business will only use that asset when it prints something on the paper. However, the accountants – in most businesses has better things to do that count how many pieces of paper were used out of a 240 sheet ream to ensure accurate accounting.

So what happens in real life? In practice?

Businesses record purchases for items that are almost certainly going to be used up in the next 12 months as

expenses. There is a decrease/outflow in cash and an increase in the expense (a decrease on both sides of the equation).

But what happens if at the end of the year, some paper or pens or toilet paper haven't been used? This is where an additional concept called "materiality" comes into play. For a business that makes \$100,000 in revenue a year (or \$5 million) – the appropriate accounting over a \$5 ream of printer paper or a \$3 packet of pens is deemed "immaterial". That means the amount is relatively small and accounting for it in a technically correct manner would have very little impact on the overall profit and financial position/performance of the business.

Assets				=	Liabilities	+	Equity			
Cash	Inventory	Supplies	Prepaid expense		Accounts Payable		+ Share cap	- Dividends	+ Revenues	- Expenses
- 450		+ 450								- 450

Given the more practical approach to accounting being used in this textbook – we will be overriding the "technical" correctness of accounting and recording purchases of supplies such as toilet paper, printer paper, toner, stationery, tea, coffee, biscuits etc as EXPENSES, rather than as assets.

2. Purchases made on credit

For established businesses that have been operating for some time, it can be common for their suppliers to allow them to purchase items on credit. That is, they order and receive the goods now, and pay for them later. When are they paid for? It could be the end of the week, the end of the month, or a certain number of days (like 30) after the goods were delivered to the business. The contract between the business and the supplier will determine the payment terms. If we purchased \$5000 worth of inventory on credit from our supplier, the transaction would be recorded as follows:

Assets				=	Liabilities	+	Equity			
Cash	Inventory	Supplies	Prepaid expense		Accounts Payable		+ Share cap	- Dividends	+ Revenues	- Expenses
	+ 5000				+ 5000					

As you can see, we increase our assets (inventory) but also increase our liabilities (accounts payable). The transaction balances because both sides of the equation have an increase of the same amount.

3. Making repayments for purchases on credit

Regardless of the terms of the contract between a business and its supplier, repayments must eventually be made. In the previous example, we are going to pay the supplier for the \$5000 worth of inventory we received. The transaction would be recorded as follows:

Assets				=	Liabilities	+	Equity			
Cash	Inventory	Supplies	Prepaid expense		Accounts Payable		+ Share cap	- Dividends	+ Revenues	- Expenses
- 5000					- 5000					

We have reduced our liabilities by \$5000 and also decreased the cash in our bank account by \$5000. Again, the equation balances as both sides have a decrease of the same amount.

4. Prepayment of expenses

Some business expenses will need to be paid in advance. The most common type of prepayment is purchasing a year's worth of insurance at one point in time. If a business had to pay a \$12,000 insurance policy at the beginning of the year, the transaction would be recorded as follows:

Assets				=	Liabilities	+	Equity			
Cash	Inventory	Supplies	Prepaid expense		Accounts Payable		+ Share cap	- Dividends	+ Revenues	- Expenses
- 12000			+ 12000							

Another might be a business that is required to pay rent quarterly. These have been labelled "prepaid expense" in our recording sheet, but you can customise it to be Prepaid Insurance, Prepaid Rent, Prepaid Social Media Marketing – whatever best suits the transaction. This transaction balances because both asset flows come to a sum of \$0, and there are \$0 transactions on the liabilities and equity side.

5. Using up prepaid expenses

At the end of the month, a business should recognise that part of the prepaid insurance policy has actually been consumed or used during the month. Assuming that the \$12,000 insurance policy covers 12 months, the transaction would be recorded as follows:

Assets				=	Liabilities	+	Equity			
Cash	Inventory	Supplies	Prepaid expense		Accounts Payable		+ Share cap	- Dividends	+ Revenues	- Expenses
			- 1000							- 1000

We have reduced our prepaid asset and increased our expenses (remember that expenses are naturally a

negative account). The business would record this transaction at the end of every month until the prepaid asset is reduced to a balance of \$0.

6. Recognising when we use inventory

When a business makes a sale that involves providing goods to a customer, it is similar to using a prepaid asset. However, there will be two transactions involved – the first is to recognise that the business has earned revenue and the second to recognise the use of the inventory asset. We have already covered how to record the Sales/Revenue part of the transaction – but not the inventory part of the transaction. In addition, you may have noticed that most of our prior examples are related to businesses that provide services rather than goods.

If a business makes a sale of goods for \$700, and the inventory was purchased for \$500, the transaction would be recorded as follows:

Assets				=	Liabilities	+	Equity			
Cash	Inventory	Supplies	Prepaid expense		Accounts Payable		+ Share cap	- Dividends	+ Revenues	- Cost of Sales
+ 700									+ 700	
	- 500									- 500

We have increased our cash and revenue, and also recognised that to generate that revenue – the business had to use some resources. That resource was inventory – we converted our inventory asset into an expense (remember that expenses are naturally a negative account, so we are increasing our expense – I have re-named the Expense column to be more specific – Cost of Sales).

Do service businesses have Cost of Sales?

This is a tricky question! Service businesses certainly do use resources to provide that service to customers – for example, an accounting practice will likely use office supplies like pens, printer toner and paper. However, it is difficult to figure out how much printer toner or paper was used to provide a specific service – so these costs are usually just recognised as Expenses rather than in Cost of Sales.

Other costs like wages for staff are also recognised as expenses rather than in Cost of Sales.

Recording transactions related to non-current assets

AMANDA WHITE

Non-current assets are those assets we think will have a life and provide economic value to the business for longer than a 12 month period. Inventory is a current asset because we expect to sell that inventory within the next 12 months (things like wine and art are a little more complicated but we don't delve into those!). Non-current assets include property, plant and equipment (often shortened to PPE) or an intangible asset like a patent for a new form of medication. Non-current assets also include items like land.

Purchase of non-current assets

In essence, we purchase non-current assets like we purchase other items – they are an increase in the asset, and either:

- a decrease in the cash asset
- an increase in a liability because of a loan taken out for purchase

There is some more complex accounting related to how we record the purchase of non-current assets, especially PPE, but we will not cover that in this introductory text. You'll learn more about this in Accounting, Business and Society.

Below is an example where the business has purchased a motor vehicle for \$20,000 in cash. We decrease our cash asset and increase our motor vehicle asset.

Assets				=	Liabilities	+	Equity			
Cash	Inventory	Supplies	Motor vehicle		Accounts Payable		+ Share cap	- Dividends	+ Revenues	- Expenses
- 20,000			+ 20,000							

Since both transactions are on the assets side of the equation, we need a positive and negative amount that will sum to zero because the liabilities plus equities side of the transaction is also zero.

Recognising the use of property, plant and equipment (PPE)

Imagine the business has purchased a delivery truck. Every day that you use that truck, you use up some of the truck's useful life until one day, the truck is too old to run. How do we recognise that over a longer period of time, we slowly use up our PPE? There is an accounting accrual concept called "**depreciation**".

There are both simple and complex formulas to calculate how much depreciation should be recognised each month or year – you'll learn this in Accounting, Business and Society. However at the introductory level, it is sufficient to know that depreciation exists and to understand the basic process to record depreciation.

The process to record depreciation looks like this:

Assets				=	Liabilities	+	Equity			
Cash	Inventory	Supplies	Motor vehicle		Accounts Payable		+ Share cap	- Dividends	+ Revenues	- Expenses
			- 1,000							- 1,000

Simplified process to record depreciation

If you've already studied some accounting – the transaction above might not look correct. And you'd be technically right – in practice, accountants create a sub-account under motor vehicle called accumulated depreciation for the asset. It acts like a tally of all depreciation over the life of the asset – allowing us to keep the original value of the asset recorded, and then a sub-tally of all of the depreciation recorded over time.

Recording using the accumulated depreciation process looks like this:

Assets			=	Liabilities	+	Equity			
Cash	Motor vehicle	Motor vehicle – accum dep'n		Accounts Payable		+ Share cap	- Dividends	+ Revenues	- Expenses
		- 1,000							- 1,000

Technically accurate, but more complex, method to record depreciation

When we report the value of the asset in our financial statements – we report the NET value – the original asset amount minus the accumulated depreciation.

So what method should we use to record depreciation?

At the introductory level – we'll stick with the simplified method. This is because the impact on the financial statements at the introductory level is exactly the same, no matter which method you use.

If you continue to further accounting subjects, you will consider the sale of non-current assets. This is where you'll be required to use the more complex method so that you can calculate whether the business has made a gain or a loss on selling that non-current asset.

Recording bank loans and long term borrowings

AMANDA WHITE

How to record transactions related to long term loans process

To start a business, the owners may already have cash or assets to contribute (and become Equity). Sometimes a business may require more cash than they can currently generate. The business may wish to buy a new manufacturing machine to allow them to increase the inventory they can create and then sell. Or to open a new sales office in another state or country, to again, help them generate more sales. A bank loan is one way to obtain the funds to achieve these objectives (another is to slowly save the cash a business has left over after paying suppliers over time and then purchase or spend what is required, but a bank loan gets businesses the funds faster!).

Associated with having a loan from a bank or other non-bank lender is the requirement to make repayments on that loan. Accounting for long term loans (which are classified as non-current liabilities) can be complicated – but in this introductory textbook, we will take a more simplified approach.

In this section we will examine a number of different loan-related transaction flows including:

1. Receiving the funds from a bank loan
2. Making loan repayments
3. Making interest-only repayments
4. Repaying an interest-only loan at the end of the loan term

In reality, loan repayments are often made up of interest and principal (reducing the amount owed to the lender) and require more complicated accounting and the use of something called **adjusting entries**. That is beyond the scope of introductory accounting, however if you do become an accountant, these accounting transactions are relatively easy to learn.

1. Receiving the funds from a bank loan

The process of applying for a bank loan and all of the administrative work that goes with it is not recorded in our accounting records. This is because there is no FLOW of resources within or into or out of the business. The first point at which we will record a transaction is when the funds for the loan are deposited in our bank account. If a business borrows \$50,000 from the bank, the transaction would be recorded as follows:

Assets				=	Liabilities	+	Equity			
Cash	Inventory	Supplies	Prepaid expense		Bank loan payable		+ Share cap	- Dividends	+ Revenues	- Expenses
+ 50,000					+ 50,000					

The transaction balances because there is an increase of \$50,000 on both sides of the equation.

2. Making loan repayments

The contract between the business and the bank will set the conditions of the loan – the total length of the loan (often called the term, such as 5 years), how often repayments are made and how much the minimum repayment should be each period. The most common period of time is monthly repayments. If the business is required to make repayments of \$4,000 per month on the loan of \$50,000. However, it isn't as simple as paying creditors (decrease cash, decrease accounts payable) because technically, the repayments a business makes will often be repaying both loan principal and interest.

In real life, accounting for interest and splitting a payment into interest and principal can be quite complicated. However, in this introductory text – we will simplify this process and assume that the interest is given to you each time.

For our example of a \$4,000 repayment, assume \$250 is interest and the remainder comes off the balance of the loan. The transaction would be recorded as follows:

Assets				=	Liabilities	+	Equity			
Cash	Inventory	Supplies	Prepaid expense		Bank loan payable		+ Share cap	- Dividends	+ Revenues	- Expenses
- 4,000					- 3,750					- 250

Even though the right-hand side of the equation has two entries and the left-hand side only one, the transaction balances because the bank loan and interest expense transactions add up to -\$4000 which matches the asset side of the transaction.

3. Making interest-only repayments

There are some bank loans where the business will make repayments that are interest-only. This means at the end of the term (or life) of the loan, the entire original sum borrowed must be repaid. Each month, if a business had a \$20,000 interest- only loan for a term of 4 years and was required to make interest-only payments of \$350 per month, the transaction would be recorded as follows:

Assets				=	Liabilities	+	Equity			
Cash	Inventory	Supplies	Prepaid expense		Bank loan payable		+ Share cap	- Dividends	+ Revenues	- Expenses
- 350										- 350

The transaction balances because there is a negative on both sides of \$350. Remember that increases in expenses are negative transactions.

4. Repaying an interest only loan at the end of the loan term

In the prior example, at the end of the loan term (after 4 years), the business would need to repay the entire loan, the transaction would be recorded as follows:

Assets				=	Liabilities	+	Equity			
Cash	Inventory	Supplies	Prepaid expense		Bank loan payable		+ Share cap	- Dividends	+ Revenues	- Expenses
- 20,000					- 20,000					

The transaction balances because there is a negative \$20,000 on both sides of the transaction.

Recording employee wages and salaries

AMANDA WHITE

How to record transactions related to paying employees

Every business needs employees in some way – whether that is to liaise with customers, contact suppliers or oversee operations. It is rare to find a business that runs without employees!

Employees can be remunerated (or paid) in one of two ways:

1. Wages – payment based on (usually) an hourly rate (but it could also be per delivery or per item manufactured)
2. Salary – a fixed amount is agreed upon for the entire year

In this section we will examine a number of different employee remuneration-related transaction flows including:

1. Paying wage-earning employees
2. Paying salaried employees
3. Recognising employee work at the end of the year
4. Paying employees after recognising prior work

1. Paying wage-earning employees

Employees who are paid an hourly rate will either have a business-wide agreement (called an Enterprise Agreement) or will rely on a government-mandated minimum hourly rate. Most businesses will pay their employees on a fortnightly basis. If employees at a business work 27 hours over a fortnight and the agreed pay rate is \$25 an hour, the transaction will be recorded as follows:

Assets				=	Liabilities	+	Equity			
Cash	Inventory	Supplies	Prepaid expense		Wages payable		+ Share cap	- Dividends	+ Revenues	- Wages expense
- 675 (27 x \$25)										- 675 (27 x \$25)

We have a cash outflow of \$675 and an increase in the expense of \$675 (remember that the expense account is normally a negative). We have balanced the accounting equation because it is -\$675 on both sides.

2. Paying salaried employees

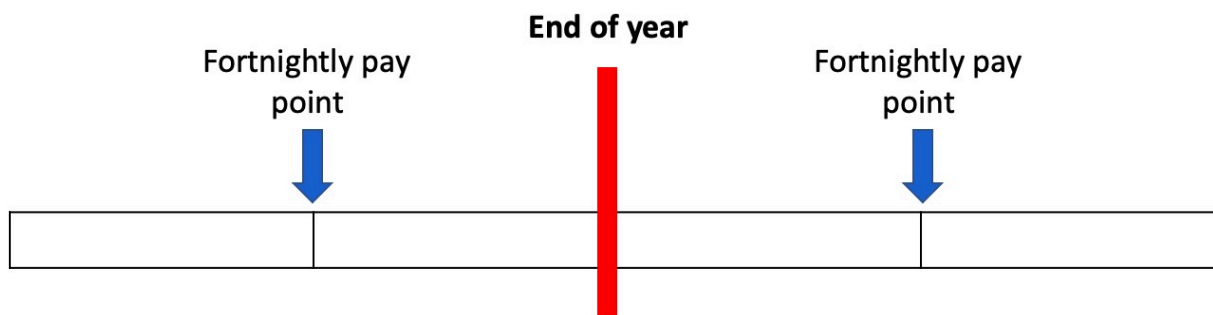
Salaried employees earn the same amount no matter how many hours they work (though their contract will include a minimum number of hours expected). Salaries are usually quoted per annum – or the amount expected to be paid over the entire year. However, these employees receive payments on a monthly or fortnightly basis. If a business has a manager who is on a salary of \$60,000 per annum, if payments are made monthly, the transaction would be recorded as follows:

Assets				=	Liabilities	+	Equity			
Cash	Inventory	Supplies	Prepaid expense		Wages payable		+ Share cap	- Dividends	+ Revenues	- Wages expense
- 5,000										- 5,000

What if the payment was made fortnightly? We would take our \$60,000 salary and divide it by 26.

3. Recognising employee work at the end of the year

At some point, the business will reach the end of its financial year. In Australia, for most businesses that is 30 June. But what happens if the pay period doesn't neatly align with the end of the financial year? In the diagram below, the fortnight of work is split by the end of the financial year.



The period concept requires that we have the same financial period of time for every year so that comparisons can be made. Therefore, we can't move the end of the financial period (or year) to meet up with the pay points.

What should be done in this situation? We treat it just like if a business received goods from a supplier and you agree to pay them at a later date (you purchase goods on credit). Thus employees have worked and we must recognise that we owe them for their efforts.

If a business had employees that worked 15 hours at a wage rate of \$24 per hour by the time we reached the end of the financial year, then a transaction would be recorded as follows:

Assets				=	Liabilities	+	Equity			
Cash	Inventory	Supplies	Prepaid expense		Wages payable		+ Share cap	- Dividends	+ Revenues	- Wages expense
					+ 360 (15 x \$24)					- 360 (15 x \$24)

Note that we've increased our liability (wages payable) and increased our expense (wage expense). There has been NO cash outflow as a result of this transaction. You'll notice that +360 (wages payable) and -360 (wages expense) add up to 0, balancing the equation and the fact there is 0 cash outflow on the asset side.

4. Paying employees after recognising prior work

Once we get to the 2nd pay period from our timeline diagram – employees will have worked more hours and the business will need to pay them for the work they did prior to the end of the financial year and after. If the employees in the business worked 16 hours at a wage rate of \$24 AFTER the end of the year, the transaction would be recorded as follows:

Assets				=	Liabilities	+	Equity			
Cash	Inventory	Supplies	Prepaid expense		Wages payable		+ Share cap	- Dividends	+ Revenues	- Wages expense
- 744 (31 x \$24)					- 360 (15 x \$24)					- 384 (16 x \$24)

Note that the cash outflow is for the full fortnight worth of work (15 hours plus 16 hours = 31 hours). However, on the right hand side of the equation, we need to reduce the wages payable to 0 and increase the wages expense for the 16 hours worked AFTER the end of the year. The entire transaction balances since both sides add up to \$744.

What about taxes and superannuation?

Every business is required to withhold income tax and superannuation from employee pay. Income tax is paid to the government and superannuation is transferred to an account in the employee's name at a superannuation fund. In this introductory textbook, we will not delve into the accounting related to taxes and superannuation.

Recording transactions related to shareholders

AMANDA WHITE

How to record transactions related to shareholders

Investors would not invest their money into businesses without some form of reward or return. That return could be in the form of capital growth – the underlying value of the company grows, and so the value of the shares the shareholder owns increases. They can unlock this value when they sell their shares and convert them to cash.

Another form of reward is the payment of dividends to shareholders. This can happen at any time, but is usually announced after a business releases its end of year financial statements. Dividends can be paid with cash, or with more shares in the company.

In this section we will examine a number of different shareholder-related transaction flows including:

1. Issuing shares (simplified)
2. Paying dividends to shareholders using cash
3. Paying dividends to shareholders using shares

1. Issuing shares (simplified)

Issuing shares is a way that a business can receive an influx of cash (the other method is a bank loan which we covered earlier). The benefit of issuing shares over a bank loan is that no repayments are necessary and interest is not charged. However, shareholders do expect that the business will increase in value and if profits are made, that they should be rewarded for their investment through dividends.

If a business issues 20,000 shares at \$1 each, they should receive \$20,000 from investors. The transaction would be recorded as follows:

Assets		=	Liabilities	+	Equity			
Cash	Accounts Receivable		Accounts Payables		+ Share capital	- Dividends	+ Revenues	- Expenses
+ 20,000					\$20,000			

2. Paying dividends using cash

There is a complex process where businesses “declare” a dividend (creating a payable / liability) and then a few weeks later, make a cash payment to shareholders. In this textbook, we will be using a simplified process where dividends are simply paid without the “declaration” component.

Dividends are paid per share, not per shareholders. Continuing our prior example, with 20,000 shares issued, if a business pays a dividend of \$0.05 per share, the transaction to pay \$1,000 in dividends would be recorded as follows:

Assets		=	Liabilities	+	Equity			
Cash	Accounts Receivable		Accounts Payables		+ Share capital	- Dividends	+ Revenues	- Expenses
- 1,000						- 1,000		

There is a cash outflow of \$1,000 and an increase in the dividend expense of \$1,000. The equation balances because both sides are -\$1,000.

3. Paying dividends using shares

If a company wishes to reward shareholders but not spend its cash, the other way to pay for a dividend is with more shares. Thinking back to our company with 20,000 shares and dividend of \$0.05 per share, worth \$1000 in cash. If we wish to pay using shares, the transaction would be recorded as follows:

Assets		=	Liabilities	+	Equity			
Cash	Accounts Receivable		Accounts Payables		+ Share capital	- Dividends	+ Revenues	- Expenses
					+ 1,000	- 1,000		

Notice that there is no cash movement on the left hand side, however we are increasing our share capital and increasing our dividend expense. The equation balances because the equity transactions add up to \$0, which matches the assets side which has had \$0 movement.

What happens when a shareholder sells their shares?

Absolutely nothing is recorded in the accounting systems when a shareholder sells their shares to someone else. Yes, in the system that contains shareholder details (called a Share Registry), changes are made – but the shares are still recorded at the same \$1 because of the historical cost principle, even if the person selling the shares sold them for \$10 each! That \$9 profit they made is owed to the individual and does not go to the business.

Recording transactions - pulling it all together

AMANDA WHITE

Now that we've examined how to record individual transactions of various types, how do we pull this altogether?

We have provided an Excel template for you to download and use (yes, it is tiny writing – I don't expect anyone to read from this image – just download the template!).

Accounting template - basic accounting equation																								
Transaction	Assets								=	Liabilities					+	Equity								
	Current				Non-current					Current		Non-current				Share capital		Retained earnings						
	Cash	Accounts Receivable	Inventory	Supplies	Prepaid Expense	Property, Plant, Equip	Land	Buildings		Accounts Payable	Unearned Revenue	Other liability	Bank loan	Other NC liability			- Dividends	+ Revenues	- Expense 1	- Expense 2	- Expense 3	- Expense 4	- Expense 5	
1																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
	0									0						0	0	0	0	0	0	0	0	Total equity 0
Does your Liabilities + Equity balance with your assets?																								
Liabilities + Equity =																0								

Here is a practice set of transactions to try:

1. Purchase inventory for \$10,000 on credit
2. Sold goods for \$500, paid for in cash. The inventory has a value \$150.
3. Issued shares – 1,000 shares at \$5 each.
4. Sold goods to a long term customer for \$2,000. They will pay at the end of the month. Inventory is valued at 30% of the sales price.
5. Purchased office supplies for \$700 on credit.
6. A new insurance policy is required for the office building – it is \$6000 for 12 months.
7. The long term customer has paid for half of their purchase.
8. Employees were paid cash for 43 hours of work at a rate of \$17 per hour.
9. The long term customer paid for the remainder of their purchase
10. An Electronic Funds Transfer was made to pay for the office supplies.

When you're ready to check your work – watch the solution video below. Be sure to select 'full screen' and if your internet speed allows, set it to 1080p resolution.



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://oer.pressbooks.pub/utsaccounting1/?p=1689#oembed-1>

CHAPTER 4: SYSTEMS OF INTERNAL CONTROL AND REDUCING FRAUD

Imagine that you are travelling on holidays. It is your dream trip! Where are you going? What are you doing and seeing? Think about your assets on your trip – your cash, your supplies (clothing, phone, toiletries) and prepaid assets like tours and hotels you booked and paid for before you left home. While you're travelling, it is really important to keep your assets safe – from accidental loss and damage, and from theft and you want to avoid getting caught in a tourist scam! What do you do?

Perhaps only take a certain amount of cash out with you every day, or wear a special pouch under your clothing to store more money. You might wear your backpack on your front to decrease the risk of a pickpocket stealing from your bag. You could check the Australian Government SmartTraveller website before you leave so that you are aware of common tourist scams.

Just like you, as an individual, want to protect your assets – businesses need to do exactly the same. For a business it can be more complicated – more staff, different locations – the business owner can't keep an eye on everything at the same time, the larger the business, the greater the risk to its assets.

This is where understanding internal controls and the risks of fraud come into play. Fraud is defined within Australian Auditing Standard ASA 240 as:

“An intentional act by one or more individuals among management, those charged with governance, employees, or third parties, involving the use of deception to obtain an unjust or illegal advantage.” (ASA240.12(a))

If we can identify WHERE there is a higher risk of fraud, we can implement CONTROLS to minimise that risk occurring. Thus protecting the assets of the business and the equity of shareholders/owners.

In this chapter, you will learn how to:

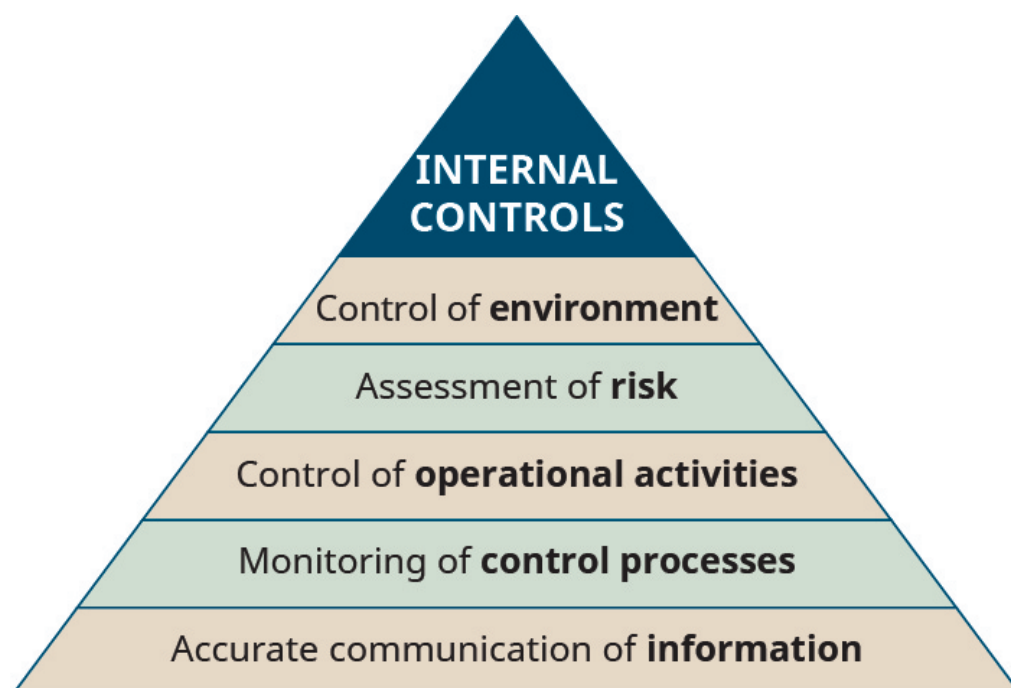
1. Understand the framework for systems of internal controls
2. Identify risks to a business using the fraud triangle
3. Identify who is responsible for implementing internal controls
4. Understand the role of accounting and accounting systems in internal controls
5. Identify common components of internal controls
6. Design internal controls
7. Understand internal controls over cash

Listen to the audiobook for this chapter on Soundcloud – Chapter 4 audiobook [69 minutes] (opens link in new tab)

Understand the framework for systems of internal controls

AMANDA WHITE; MITCHELL FRANKLIN; PATTY GRAYBEAL; AND DIXON COOPER

Internal controls are the systems used by a business to manage risk and diminish the occurrence of fraud. The internal control structure is made up of the control environment, the accounting system, and procedures called *internal control activities*. Several years ago, the Committee of Sponsoring Organizations (COSO), which is an independent, private-sector group whose five sponsoring organisations periodically identify and address specific accounting issues or projects, convened to address the issue of internal control deficiencies in the operations and accounting systems of organisations. They subsequently published a report that is known as COSO's *Internal Control-Integrated Framework*. The five components that they determined were necessary in an effective internal control system make up the components in the internal controls triangle shown below:



The above diagram is the official worldwide depiction of internal controls – but I find the diagram below a bit more understandable as it better represents how all of the components fits together. This diagram is one you'll see in auditing and assurance textbooks across the world.



Understanding the components of a system of internal controls

Control environment

The **control environment** is the environment in which the business and its employees operate – it is the culture that management create, the business's operating philosophy, how it hires and remunerates employees. It can be difficult to measure in a quantifiable way – but the control environment strongly influences employee attitudes in relation to fraud. For example, if you've ever worked for a tyrannical manager or boss, you're unlikely to work hard to help the business achieve its goals – you may even work as slow as is acceptable because management does not inspire you to do well and follow the policies and procedures of the business. The reason it is the base of the triangle is that it forms the foundation of the business.

Risk assessment

The reason risk assessment is placed on top of the control environment, is that risk assessments are conducted on the business and its environment. Every business should conduct regular **risk assessments** – an assessment of their operating environment to identify any potential risks (or threats) to the business and their ability to achieve their goals. Risks may arise from the structure of the business itself, the nature of the industry, a change in government regulation, the actions of employees or the actions of competitors. For example, many hospitality businesses faced changing restrictions during COVID-19 lockdowns – resulting in the need to pivot to takeaway only during a lockdown, then needing to try and hire more staff when they were able to resume more regular trade. A business should engage in regular risk assessments, in some industries more frequently than others.

In some circumstances such as during the COVID-19 pandemic, many businesses are likely to conduct more frequent risk assessments than in non-pandemic times.

Internal control activities

In response to risks, a business should implement internal controls. Internal controls are policies, procedures, systems and processes to ensure that all employees engage in a manner that helps the business achieve its objectives. Internal controls aim to prevent, detect, or insure that risks do not create significant business disruption. A business cannot implement controls to prevent or detect every single risk to the business, that would be prohibitively expensive. Instead the business must conduct a cost-benefit analysis to determine where controls are most necessary, that is where there is greatest risk of loss or fraud, and where they may decide not to implement controls – that is the business accepts the possibility of some loss as a result of that risk. The reason that internal controls sit on top of the risk assessments is the recognition that internal controls don't cover risk entirely – but a sub-set that we think are at greatest risk of occurring.

An example is the supermarket industry. A supermarket cannot prevent absolutely all theft of inventory by customers, instead they implement some controls to try and prevent and detect theft. This includes security cameras and supervisors at self-service checkouts. However they accept that some theft will occur, especially for small items like chewing gum or small tins of tuna. For higher value inventory such as expensive cuts of meat, supermarkets have started adding RFID tags to these items. This will alert the business if a customer attempts to remove one of these items from the store without making payment.

Fun fact: the retail industry actually created an accounting estimate for theft of inventory that is called “shrinkage”.

Internal control activities are typically embedded within business processes and systems. For example, to reduce the risk that a supermarket checkout operator or cashier may steal cash from the register, a count of cash before and after the operator's shift may be conducted. The register will record sales and which sales were paid for electronically, and those that used physical cash. The cash in the register at the start of the shift, plus any cash received from customer payments should equal the cash in the register at the end of the shift. This checking of the cash is called a reconciliation and acts as an internal control to detect any cash that might be missing from the register. The cashier must count their cash, and usually a shift supervisor or store manager will check their work and sign off on the reconciliation.

We will delve into internal control activities in greater detail in the next section of this chapter.

Communication and information systems

It is important for businesses to gather data about their business processes. This data may be collected in accounting systems, point of sale systems, ordering systems, timesheet systems and many others. The business will be collecting financial (accounting) and non-financial data. In today's businesses, these systems are likely to be highly integrated to allow businesses to use all of this data to help them make optimal decisions in their day to day operations. For small to medium sized businesses, Xero is one of the most popular accounting software products that connects to apps of every type imaginable.

Information systems can also be used to alert business management when an internal control is attempting to be breached – examples include notifying bank management when an incorrect passcode or PIN for an account is used multiple times, or access of a secured system from an un-registered IP address. Hence communication and information systems on the diagram spans the entire side of the triangle as it collects data on the environment, risk assessments and control activities.

Monitoring of internal controls

It is critical that businesses monitor the performance of their internal controls and it sits at the top of the triangle because it oversees all of the other components. It is important that an internal control is operating, but it is also important for management of a business to know when that control STOPS operating as it should – that is, the control begins to fail. This is because a failing control increases the opportunity for fraud, or unintentional

error. Imagine if the self-service checkout machine at the supermarket stops weighing the items customers are scanning and putting into their shopping bag and no longer provides the “unexpected item in bagging area” message. Customers could engage in theft by simply adding un-scanned items and the staff member supervising the area would have no idea that theft is occurring.

Note that monitoring and information systems are adjacent to each other – this is because to engage in monitoring – the business will rely on its information systems to gather the data required and summarise or collate it so that management can monitor. It could be argued that if a business does not monitor internal controls, then there may not be much point in having them.

Overall goals of a system of internal controls

What are the goals of a system of internal controls? The primary goal is to protect the equity of shareholders – the value of the business. That can be broken down further into the following aspects:

- ensure assets are properly used
- ensure that the accounting system is functioning properly
- monitor operations of the business to ensure maximum efficiency
- ensure that assets are kept secure
- ensure that employees are in compliance with business policies and procedures and government regulations

Our system of internal controls is not just about accounting – but across all facets of the business.

Different businesses face different types of risk, but when internal control systems are lacking, the opportunity arises for fraud, misuse of the business's assets, and employee or workplace corruption. Accountants, managers and owners all have a role to play in understanding the risks faced by businesses and implementing and maintaining a system of internal controls to protect the business.

In future chapters we will use some of the information collected within financial and non-financial systems to be able to evaluate business performance and identify areas for improvement.

Identifying risks to a business using the fraud triangle

AMANDA WHITE; MITCHELL FRANKLIN; PATTY GRAYBEAL; AND DIXON COOPER

What is fraud?

A reminder about the definition of fraud that we will be applying:

“An **intentional** act by one or more individuals among management, those charged with governance, employees, or third parties, involving the use of **deception** to obtain an unjust or illegal **advantage**.” (ASA240.12(a) emphasis added)

We have added emphasis on certain words because of their importance. Fraud is **intentional** – someone plans to engage in fraud, and it doesn't happen by accident. Of course, someone may engage in fraud accidentally one time, but continuing to engage in that behaviour is intentional.

Deception is a key word because it means that the individual (or group of individuals) engaging in the fraud are trying to get the business to believe something that is not correct or not true. And finally the words unjust or illegal **advantage** are emphasised because it represents the outcome of the fraud – notice that it doesn't focus just on cash being stolen, but any type of advantage. You might fraudulently over-state how many items you sold as a sales person in a business to be recognised as the top performer for the year. Top performers across the country might receive an overseas conference trip. Or additional annual leave.

Some recent examples of fraud

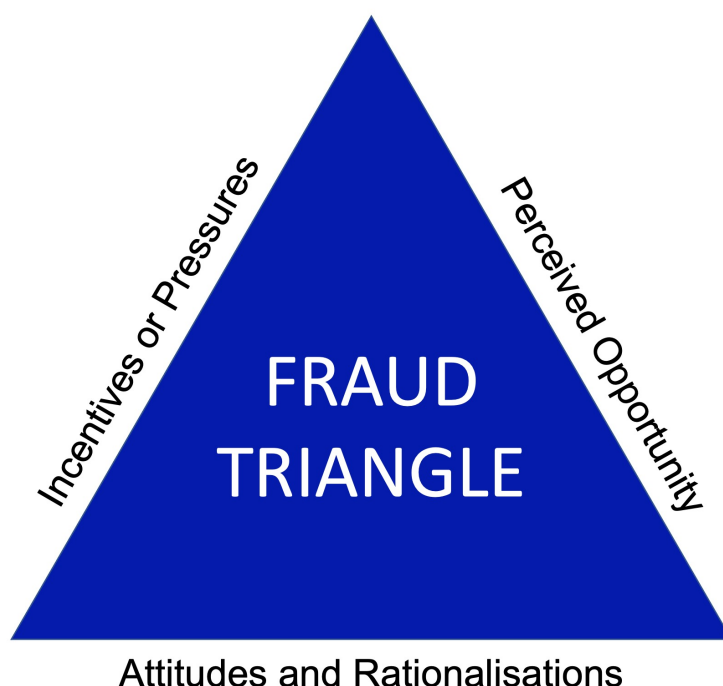
\$4 million worth of salmon (yes – the fish!) was stolen from a Sydney processing plant by employees in December 2020 (Carreon, 2021).

It is alleged that Bill Pappas stole over \$500m by setting up a fraudulent scheme involving fake equipment leases. (Chau, 2021)

Detecting fraud in the workplace

Fraud is not easy to detect and is often identified by anonymous tips or by accident, so many companies use the fraud triangle to help in the analysis of workplace fraud. Donald Cressey, an American criminologist and sociologist, developed the fraud triangle to help explain why law-abiding citizens sometimes commit serious workplace-related crimes. He determined that people who embezzled money from banks were typically otherwise law-abiding citizens who came into a “non-shareable financial problem.” A non-shareable financial problem is when a trusted individual has a financial issue or problem that he or she feels can't be shared. However, it is felt that the problem can be alleviated by surreptitiously violating the position of trust through some type of illegal response, such as embezzlement or other forms of misappropriation. The guilty party is typically able to rationalise the illegal action. Although they committed serious financial crimes, for many of them, it was their first offence.

The fraud triangle consists of three elements: incentive or pressure, opportunity, and rationalisation and attitudes. Each of the elements needs to be present for workplace fraud to occur.



People have both financial and non-financial **incentives** to engage in fraud, and there may also be **pressures**. These could be external (such as financial hardship) or internal (such as wanting to appear to be successful amongst peers). **Perceived opportunities** may arise in business processes where there is a lack of oversight, checking, confirmation or some other internal control to ensure employees act in the best interest of the business and its owners/shareholders. Opportunities arise because of something called control weaknesses – a lack of a control in a part of the business process where there is a risk of fraud. We'll get into processes and weaknesses later in this chapter because those working in accounting and accounting information has an important role to play in identifying control weaknesses.

The final component is attitudes and rationalisations. **Attitudes** are related to our beliefs related to fraud. For example, is an intentional failure to scan an item on purpose at a self-service checkout at the supermarket considered theft or stealing? A **rationalisation** is an argument someone uses to convince themselves that their fraud is not really fraud at all, that it is acceptable behaviour. An example is an employee who steals cash from a business after they did not receive a promotion, with the claim that they'd "earned" the stolen funds and "deserved" the promotion.

Typically, all three elements of the triangle must be in place for an employee to commit fraud, but companies usually focus on the opportunity aspect of mitigating fraud because, they can develop internal controls to manage the risk. The rationalisation and pressure to commit fraud are harder to understand and identify. Many businesses may recognise that an employee may be under pressure, but many times the signs of pressure are missed.

Virtually all types of businesses can fall victim to fraudulent behavior. For example, chemists desperately searching for Rapid Antigen Tests may purchase fake tests, sports teams requiring players and staff to show COVID-19 vaccination certificates have found fakes, Elizabeth Holmes from Theranos raised and lost a multi billion dollar company based on blood testing technology that actually didn't work.

Real life example – Theranos

One of the most compelling frauds of recent times is that of Elizabeth Holmes and Theranos. Theranos was hailed as life changing medical technology – testing people for a raft of diseases and health issues with a few drops of

blood, instead of multiple vials. Theranos had signed deals with major pharmacy chains to install their machines in stores and trained up thousands of staff. However, the small blood testing machine never worked. How did Holmes get away with taking the investments of big names like Rupert Murdoch? The board of directors trusted their charismatic and charming CEO and her covers on Forbes magazines and others as the next Steve Jobs. As a private company, no audits of their financial statements were ever conducted – the company published figures for revenues and profits that were never checked and ended up being pure fiction. Things only started unravelling when the regulator for companies in the USA (the Securities Exchange Commission) started investigating claims of fraudulent behaviour.

Interested to read more? Jordan Hayne has a comprehensive article on ABC News.

Real life example – UltraColour’s accounts drained by employees

Greg, a small business owner from Sydney’s western suburbs, had \$3.7 million stolen from his business over its lifetime by a trusted employee. He had hired the daughter of a friend, Vicki, to manage administration and the accounting in his business. Vicki had access to the bank accounts and accounting system and hid her theft through various accounting transactions. Why did she do it? Vicki claims she was addicted to poker machines and had stolen the money and spent it all. In this case there was a significant opportunity for Vicki to engage in fraud and she had incentive / pressure because of her gambling addiction.

You can read the full story by Steven Cannane on ABC News.

Unfortunately, this is one of many examples that occur on a daily basis. In almost any city on almost any day, there are articles in local newspapers about a theft from a company by its employees. Although these thefts can involve assets such as inventory, most often, employee theft involves cash that the employee has access to as part of his, her or their day-to-day job.

Small businesses have few employees, but often they have certain employees who are trusted with responsibilities that may not have complete internal control systems. This situation makes small businesses especially vulnerable to fraud. The article “Small Business Fraud and the Trusted Employee” from the Association of Certified Fraud Examiners describes how a trusted employee may come to commit fraud, and how a small business can prevent it from happening.

Accountants, and other members of the management team, are in a good position to control the perceived opportunity side of the fraud triangle through good internal controls, which are policies and procedures used by management and accountants of a company to protect assets and maintain proper and efficient operations within a company with the intent to minimise fraud. An internal auditor is an employee of an organisation whose job is to provide an independent and objective evaluation of the company’s accounting and operational activities. Management typically reviews the recommendations and implements stronger internal controls.

Another important role is that of an external auditor, who generally works for an outside public accounting firm that conducts audits and other assignments, such as reviews. Importantly, the external auditor is not an employee of the client. The external auditor prepares reports and then provides opinions as to whether or not the financial statements accurately reflect the financial conditions of the company, subject to the Australian Accounting Standards (AASBs). Professionally certified accountants and external auditors must also comply with a Code of Ethics. The International Ethics Standards Board for Accountants (IESBA) issues an internationally recognised and adopted Code of Ethics. This makes accounting a truly global profession where the standards for accountants are the same in Australia as Zimbabwe or Brazil or Germany or South Korea.

One of the issues faced by any business is that internal control systems can be overridden and can be ineffective if not followed by management or employees. The use of internal controls in both accounting and operations can reduce the risk of fraud. In the unfortunate event that an business is a victim of fraud, the internal controls should provide tools that can be used to identify who is responsible for the fraud and provide evidence that can be used to prosecute the individual responsible for the fraud. This chapter discusses internal controls in the context of accounting and controlling for cash in a typical business setting. These examples are applicable to the other ways in which an business may protect its assets and protect itself against fraud.

Practice question



An interactive H5P element has been excluded from this version of the text. You can view it online here:

<https://oer.pressbooks.pub/utsaccounting1/?p=781#h5p-10>

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Carreon, B. (2021), *Five charged in multimillion-dollar salmon theft scheme*. Seafood Source. website link accessed 28 January 2022.

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Glossary

external auditor

generally works for an outside public accounting firm and conducts audits and other assignments, such as reviews

fraud

“an intentional act by one or more individuals among management, those charged with governance, employees, or third parties, involving the use of deception to obtain an unjust or illegal advantage.” (ASA240.12(a))

fraud triangle

concept explaining the reasoning behind a person's decision to commit fraud; the three elements are perceived opportunity, attitudes and rationalisation, and incentive and/or pressure

internal auditor

employee of an organisation whose job is to provide an independent and objective evaluation of the company's accounting and operational activities

Who is responsible for implementing internal controls?

AMANDA WHITE

In most government regulations, the people responsible for implementing internal controls within a business are usually stated as “those charged with governance” – a term that you’ve likely never heard before! Let’s start with what is corporate governance.

Concept of corporate governance

There is no legal definition of corporate governance in Australia’s corporations law, but the most commonly cited definition is one provided by Justice Owen at the HIH Royal Commission

the framework of rules, relationships, systems and processes within and by which authority is exercised and controlled within corporations. It encompasses the mechanisms by which companies, and those in control, are held to account

(Justice Owen in the HIH Royal Commission, The Failure of HIH Insurance Volume 1: A Corporate Collapse and Its Lessons, Commonwealth of Australia, April 2003 at page xxxiv.)

It sounds very much like a description of the systems of internal controls that we have previously discussed. It also includes that there are mechanisms by which those who are in control are held accountability. Essentially – those in charge should develop strong systems of internal control, and should be held accountable when those systems are shown to be poor.

An excellent example is from Chapter 1 where you will have read about the CEO of Westpac Bank who lost his job because the internal controls at the bank failed to detect extremely high levels of money laundering.

A question commonly asked by students, however, is who is actually responsible for corporate governance and implementing internal controls?

Those charged with governance

For those of you who may choose to go into the accounting field, the phrase ‘those charged with governance’ is one you’ll become familiar with (accountants even shorten it to TCWG).

Those charged with governance varies depending on firm size. In a sole proprietorship, the owner and only employee is responsible for internal controls over their own actions. In a larger business with owners and employed managers – both owners and managers are responsible for ensuring adequate systems of internal control are implemented.

Shifting to publicly listed corporations – then those charged with governance includes Directors of the Board (who are the representatives of owners/shareholders) and Management – the Chief Executive Officer, Chief Financial Officer and however many other “chief” officers there are. A board of directors for a publicly listed company will also have smaller sub-boards called “Committees” – common committees include the Audit Committee (responsible for external reporting and liaising with the external auditor) and a Risk and Governance Committee (responsible explicitly for overseeing internal controls).

Because internal controls do protect the integrity of financial statements, large companies have become highly regulated in their implementation. Some industries also more than others – for example, financial institutions

in Australia (banks, superannuation funds) are required by their regulator (APRA – the Australian Prudential Regulation Authority) to have internal controls to ensure that the financial system in Australia is strong and stable.

Are there any reports produced on a business's internal controls?

The short answer is No. Within Australia, our regulation does not require businesses to report on the quality of their internal controls. Auditors and regulators do investigate the quality of internal controls for other purposes (such as verifying or auditing the financial statements and information of a business) – but there is no regular formal reporting about businesses and their internal controls.

Within businesses, large firms will have internal audit teams who assess the design and test the operating effectiveness of internal controls and report to the audit committee (a sub-committee of the Board of Directors). However, these reports are not made public.

The matter is slightly different in the USA where the Sarbanes-Oxley Act of 2002 (brought in after the corporate collapses of Enron and WorldCom) and specifically section 404(b) requires the auditors of publicly-listed companies to report on the quality of internal controls. What does that mean for Australian businesses? For those whose shares are publicly traded on the ASX and also on a US exchange (such as the NYSE or NASDAQ) – they will need to engage their auditor to evaluate their internal controls and report to US regulators – the Securities Exchange Commission. This also applies to Australian businesses that are subsidiaries of a US corporation.

Has the increased accountability in the USA made a difference?

Those charged with governance over US publicly-listed companies have had increased accountability imposed on them with the implementation of section 404(b) of the Sarbanes-Oxley Act of 2002 (commonly known as SOX 404). This resulted in an increased focus on internal controls to prevent and detect fraud. However, this piece of legislation is also incredibly expensive with auditors required to conduct many more hours of work to produce the additional reporting on internal controls. The big question is “did this legislation make a difference?”

A review by Schroeder and Shepardson (2016) is the most recent review of the research on the impact of SOX 404 and found that by having auditors regularly review and report on internal controls, the internal controls by managers were likely to be of higher quality. And Nagy (2010) found that firms with good internal controls and no material weaknesses were more likely to have higher quality financial information presented to shareholders.

Would Australian regulations ever change to require reporting on internal controls?

There appears to be no appetite within the Australian regulatory landscape to adopt legislation similar to the Sarbanes Oxley Act of 2002. This is likely due to a number of factors:

- The Australian audit landscape is very different – our audit firms are unlikely to have the human capital required to conduct such additional work
- Australia has experienced less massive corporate failures and therefore regulators may see the risk of large companies having very poor internal controls as low
- The massive corporate collapses in the USA that drove the creation of the Sarbanes Oxley Act of 2002 were partially caused by poor auditor independence and low quality audit work. The research into the quality of Australian audits indicates that Australian auditors are conducting high quality work and their independence is not impaired (Ruddock, Taylor and Taylor, 2006)

In summary

It is owners (or their representatives) and management who are responsible for implementing internal controls. This includes identifying risks, designing controls, implementing those controls and monitoring them to ensure that employees are following all of the policies, procedures and processes.

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The role of accounting as part of a system of internal control

AMANDA WHITE; MITCHELL FRANKLIN; PATTY GRAYBEAL; AND DIXON COOPER

Accounting transactions and associated information are recorded in accounting systems (you may have heard of common ones for small businesses like MYOB, Quickbooks and Xero) or enterprise wide information systems (such as SAP). The accounting system is the backbone of any business entity, whether it is profit-seeking, a government organisation or a not for profit.

It is the responsibility of management to link the accounting system with other functional areas of the business and ensure that there is communication among employees, managers, customers, suppliers, and all other internal and external users of financial information. With a proper understanding of internal controls, management can design an internal control system that promotes a positive business environment that can most effectively serve its customers.

For example, a customer enters a retail store to purchase a pair of jeans. As the salesperson enters the jeans into the point-of-sale system, the following events occur internally:

1. A sale is recorded in the company's accounting records, which increases revenue. If the transaction occurred by credit card, the bank typically transfers the funds into the store's bank account in a timely manner.
2. The pair of jeans is removed from the inventory of the store where the purchase was made.
3. A new pair of jeans is ordered from the distribution center to replace what was purchased from the store's inventory.
4. The distribution center orders a new pair of jeans from the factory to replace its inventory.
5. Marketing professionals can monitor over time the trend and volume of jeans sold in a specific size. If an increase or decrease in sales volume of a specific size is noted, store inventory levels can be adjusted.
6. The company can see in real-time the exact inventory levels of all products in all stores at all times, and this can ensure the best customer access to products.

Because many systems are linked through technology that drives decisions made by many stakeholders inside and outside of the business, internal controls are needed to protect the integrity and ensure the flow of information. An internal control system also assists all stakeholders of a business to develop an understanding of the business and provide assurance that all assets are being used efficiently and accurately. It supports owners and shareholders in their desire to keep management accountable for their actions.

Identifying common components of internal controls

AMANDA WHITE; MITCHELL FRANKLIN; PATTY GRAYBEAL; AND DIXON COOPER

We know theoretically what a control is – it prevents or detects an error in a business process – but in reality – what sort of characteristics or components do internal controls have?

Elements of internal control

A strong internal control system is based on the same consistent elements:

- establishment of clear responsibilities
- proper documentation
- adequate insurance
- separation of duties
- use of technology

Establishment of clear responsibilities

A properly designed system of internal control clearly dictates responsibility for certain roles within a business. When there is a clear statement of responsibility, issues that are uncovered can be easily traced and responsibility placed where it belongs.

As an example, imagine that you are the manager of the Galaxy's Best Yogurt. On any shift, you have three employees working in the store. One employee is designated as the shift supervisor who oversees the operations of the other two employees on the shift and ensures that the store is presented/displayed/organised and functioning properly. Of the other two employees, one may be solely responsible for management of the cash register, while the others serve the customers. When only one employee has access to an individual cash register, if at the end of the day the cash register is short of funds (money is missing) or has too much cash, it can be traced to the one employee who is in charge of the cash register.

Where there are not clear descriptions of job responsibilities, an important task may end up not being performed by anyone, thus increasing the risk of fraud.

Proper documentation

An effective system of internal controls maintains proper documentation, including backups, to trace all transactions. The documentation can be paper copies, or documents that are computer generated and stored, on flash drives or in the cloud, for example. Given the possibility of some type of natural (tornado or flood) or man-made (arson) disasters, even the most basic of businesses should create backup copies of documentation that are stored off-site. With current technology, most businesses use software that is Software as a Service (SaaS) where the software provider ensures that the system captures the information required and stores this data in the cloud. However, a business must also ensure that access to this data is by authorised persons only. The data stored by many business can be a valuable commodity to those looking to use credit card details or personal information for fraud.

Any documentation generated by daily operations should be managed according to business procedures in terms of storage. For example, when the Galaxy's Best Yogurt closes each day, one employee should close out and reconcile the cash drawer using prenumbered forms in pen to ensure that no forms can be altered or changed

by another employee who may have access to the cash. In case of an error, the employee responsible for making the change should initial any changes on the form. If there are special orders for cakes or other products, the order forms should be prenumbered. The use of prenumbered documents provides assurance that all sales are recorded. If a form is not prenumbered, an order can be prepared, and the employee can then take the money without ringing the order into the cash register, leaving no record of the sale. If the owner wishes to review the orders and notices a number missing from the sequence – they can enquire as to what happened to that order (did an employee sell an item to a customer and then keep the cash and remove the order from the list?).

Adequate insurance

Insurance may be a significant cost to a business (especially liability coverage), but it is necessary. With adequate insurance on an asset, if it is lost or destroyed, an outside party will recoup the company for the loss. If assets are lost to fraud or theft, an insurance company will investigate the loss and then refer the case to law enforcement authorities so that criminal charges can be filed. Most business owners and managers are not experts in the area of fraud investigation, so having insurance allows them to utilise the expertise of the insurance provider. If your inventory was destroyed in a fire and you did not have insurance – then all the asset is completely lost – with insurance, you would receive money from the insurer to purchase more inventory.

Separation of duties

To minimise the risk of fraud, staff members who have the authorisation power for transactions should not have access to those assets, and also should not have access to the accounting records. This prevents me from authorising the purchase of a fancy sports car, taking delivery and then hiding the payment under a random business expense.

A properly designed internal control system assures that at least two (if not more) people are involved with most transactions. The purpose of separating duties is to ensure that there is a check and balance in place. Imagine a busy cafe. At the end of the day, the chef will place an order for fresh produce required for the next day's menu. The business owner will receive that order from the supplier and be required to sign as proof of delivery. This will prevent the chef from ordering excessive produce and taking some home because the owner is monitoring the deliveries. The owner will also be required to pay the supplier for these deliveries – thus (hopefully) monitoring the purchases closely.

In a larger business, such as a university, an order for a new laptop may need to be requested by the Head of the Department and approved by the Faculty Manager. A Purchasing Department will then place the order. The loading dock staff will receive the laptop delivery and confirm in an online system that the goods have been received. They will arrange delivery of the computer to the staff member's office. The invoice for the computer will be sent straight to accounting, who will check that the invoice matches what was ordered by Purchasing. Someone else with the right level of authority will approve the electronic funds transfer to the computer supplier. In large organisations or for large transactions, two people may be required to approve the electronic funds transfer.

The number of different steps and separations of duties will depend on the size of the business. The larger the business, the greater the number of steps of approval and separation of duties.

The role of technology in internal controls

Technology has made the process of internal control simpler and more approachable to all businesses. There are two reasons that the use of technology has become more prevalent. The first is the development of more user-friendly equipment, and the second is the reduction in costs of security resources. In the past, if a company wanted a security system, it often had to go to an outside security firm, and the costs of providing and monitoring the system were prohibitive for many small businesses. Currently, security systems have become relatively inexpensive, businesses as well as individuals are likely to have security cameras with automatic cloud recording

and event notification (for example motion sensor activated cameras). Popular options in Australia include Ring and Google Nest.

In terms of the application of security resources, some businesses use surveillance cameras focused on key areas of the business, such as the cash register and areas where a majority of work is performed. Technology also allows businesses to use password protection on their data or systems so that employees cannot access systems and change data without authorisation. Most business software applications allow them to set up specific security profiles for employees that state what the staff member can and cannot do. For example, a store sales person may be able to make a sale to a customer, but cannot provide a discount greater than 15%. If a customer is attempting to negotiate a larger discount, a manager may be required to authorise the transaction. Often refunds can only be processed by certain staff.

Even if a business uses all of the elements of a strong system of internal controls, the system is only as good as the oversight – remember the need to monitor the controls? As responsibilities, staffing, and even technology change, the system of internal controls need to be constantly reviewed and refined. Internal control reviews are typically not conducted by inside management but by internal auditors who provide an impartial perspective of where controls are working and where they can be improved. If a business is large enough to require an external audit (for example, a publicly listed company) – the auditor will often also provide a list of control deficiencies or weaknesses that the business should attempt to remedy in the future.

Importance of internal controls to government entities and departments

Internal controls apply not only to public and private businesses but also to governmental entities. Often, a government controls one of the most important assets of modern times: data. Unprotected financial information, including tax data, social security, and governmental identifications, could lead to identity theft and could even provide rogue nations access to data that could compromise the security of our country. Two factor authentication (where to log in to a system, you're required to provide a time-limited access code in addition to your username and password, or some similar system) to access government systems is one example of additional controls in place.

Not-for-profit organisations also have a need for internal controls

Not-for-profit (NFP) organisations have the same needs for internal control as many traditional for-profit entities. At the same time, there are unique challenges that these entities face. Based on the objectives and charters of NFP organisations, in many cases, those who run the organisations are volunteers. As volunteers, leaders of NFPs may not have the same training background and qualifications as those in a similar for-profit position. Additionally, a volunteer leader often splits time between the organisation and a full-time career. For these reasons, internal controls in an NFP often are not properly implemented, and there may be a greater risk of a deviation from an internal control. A deviation occurs when there is a departure from standard control protocol or procedure that leads to a failure in the internal control and/or fraud prevention processes or systems. A failure occurs in a situation when results did not achieve predetermined goals or meet expectations.

Size matters

The use of internal controls differs significantly across businesses of different sizes. In the case of small businesses, implementation of internal controls can be a challenge, due to cost constraints, or because a small staff may mean that one manager or owner will have full control over the business and its operations. An owner in charge of all functions has enough knowledge to keep a close eye on all aspects of the business and can track all assets

appropriately. In slightly larger businesses in which responsibilities are delegated to other employees, procedures and processes need to be developed in order to ensure that assets are tracked and used properly.

When an owner cannot have full oversight and control over a business, systems of internal control need to be developed. When an appropriate system of internal control is in place, it is interlinked to all aspects of the business's operations. An appropriate internal control system links the accounting, finance, operations, human resources, marketing, and sales departments within a business. It is important that the management team, as well as employees, recognise the importance of internal controls and their role in preventing losses, monitoring performance, and planning for the future.

What happens when a control is missing?

It is critical that businesses implement internal controls, but sometimes implementation or design of controls doesn't go to plan and you may have a gap – weakness in your internal controls system that might result in an error or more dangerously, intentional fraud. Another possibility is that you have a control, but it doesn't operate as it was designed – staff can work around the control, or the control might be broken. In this instance – you have a control failure.

To minimise control weaknesses, businesses should **evaluate and test their internal controls regularly**. They should also **conduct their risk assessments frequently** in case a new risk arises that requires a new control. For example, pre-pandemic – Zoom allowed all participants to share screen, change their names, mute and un-mute the microphones of other meeting attendees. Teaching online during the pandemic resulted in additional risks associated with using Zoom like Zoom-bombing of meetings and inappropriate behaviour by students in classes. The pandemic highlighted a risk in using Zoom, and in response, additional controls were implemented – such as only the host can mute another participant. Hosts can control who can share screen. Even automatic recording of all Zoom meetings might be a control.

It is critical that any business **monitor** its internal controls – we want to know that they are operating correctly, but more important we want to know when some controls STOP operating correctly. Consider a bank ATM – there are a multitude of systems and internal controls built into these machines. Of course, we want to know when the ATM correctly dispenses cash to a customer. However, more importantly – we want to know when the bank starts incorrectly dispensing cash! This happened in real-life where a customer discovered a glitch in an ATM and proceeded to withdraw US\$1.6m undetected by the bank! You can read more in Business Insider.

Designing internal controls

AMANDA WHITE

We know what internal controls are meant to do, but what process do staff within businesses follow to design internal controls?

Thinking back to the triangle diagram of internal controls – it starts with a risk assessment.

Risk assessment

Look at the business process that you're going to develop internal controls for and think about the risks. How could a transaction be mis-recorded? Are any assets at risk of theft? What are the opportunities for fraud? To be able to identify these risks, you're going to need to understand the business and the types of transactions it engages in.

My tip here is to conduct this risk assessment in separate transaction processes of the business – the sales revenue and cash receipts process/cycle; the purchasing, accounts payable and cash payments process; the wages process. This will make it much simpler to consider the potential areas that need a control.

When conducting a risk assessment, you also need to consider the potential implication if there was an error or fraud – conduct a cost-benefit analysis. Would a specific error or fraud have a big impact on a business and its operations? Or a small one? Remember the example about supermarkets and how they expect some people to steal small items? This is an example where the business has decided the cost of implementing controls to protect every piece of inventory in a supermarket is not worth the cost.

Design of an internal control

This links back to our section Identifying common components of internal controls – should we have separate people doing parts of a job in a process? What tools or technology could we use?

Designing internal controls requires an understanding of the technological tools available, the risk, the business processes and some creativity. The way to become competent at designing internal controls is to practice and build a collection of internal controls you could draw from.

How do you build this collection though? Look around – everywhere, anywhere – internal controls are everywhere you look.

For example, consider this envelope – how could it be used as a form of internal control?

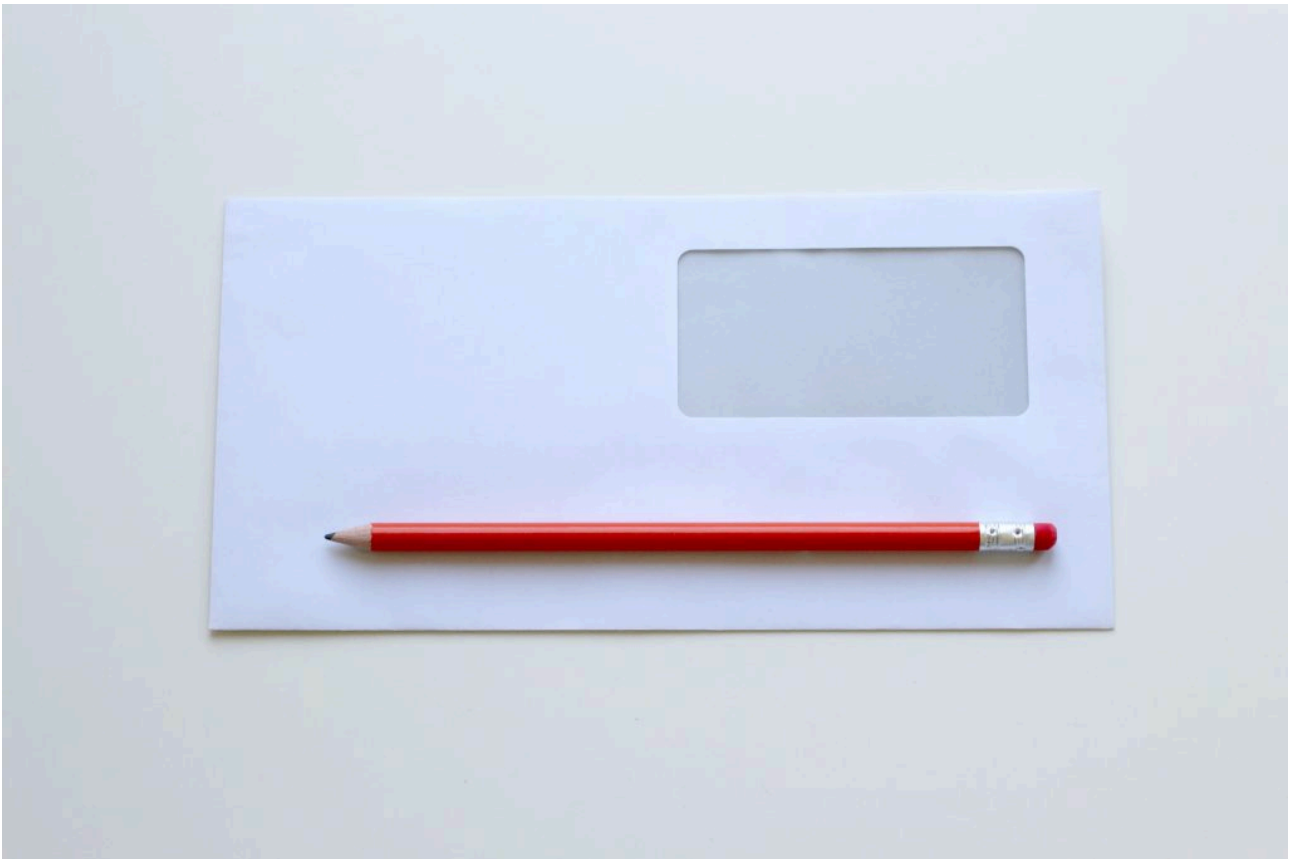


Photo credit: Photo by Pixabay from Pexels

Consider if you had to send letters to many customers. If each customer's letter is different, using an envelope without a window means that you would have to write the address by hand, or print a sticker with the name and address and affix it to the envelope. The risk here is that you might put the wrong sticker on the envelope and a customer might not receive the correct letter.

A window-faced envelope, however allows you to print the name and address on the letter and then fold the letter to have the address appear in the window – reducing any risk of mis-direction of mail.

CommonwealthBank
Commonwealth Bank of Australia
ABN 48 123 123 124
Australian credit licence 234945

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MR JOHN CITIZEN
10 SAMPLE STREET
SUBURBIA NSW 2000

Your Statement

Low Fee Gold Mastercard®

0000 0000 0000 0000

Page 1 of 2

Statement Period	21 Sep 2018 - 22 Oct 2018
Credit limit	\$6,000.00
Available credit	\$2,414.36

Lock, Block, Limit® controls* Off

1

Your payment options

Pay one of the following options by due date

1. Main balance plus instalment/s	\$1,591.06
2. Instalment payment	\$403.29
3. Minimum payment	\$71.00

Payment due by 16 Nov 2018

Opening balance at 21 Sep	\$3,668.26
New transactions and charges	\$67.38
Payments/refunds	-\$150.00
Closing balance at 22 Oct	\$3,585.64
Main balance	\$1,212.77

Source: Commbank website – <https://www.commbank.com.au/content/dam/commbank-assets/credit-cards/2019-03/sample-statement.pdf>

As you go to the movies, the supermarket, catch public transport, pay your bills, engage in online shopping – internal controls are everywhere and you can identify them by simply thinking about business processes and whether something may be a control (it is a bit like becoming Neo in The Matrix – once you can understand internal controls, you'll see them everywhere!)

So to design an internal control – you have to understand the risk you want to minimise and figure out how you can PREVENT or DETECT it. You can design it using the common components that we've previously discussed as well as your own imagination.

Example – Tiny Holidays

Remember our example case Tiny Holidays owned by Hazel Nguyen? The business offers short term rentals of tiny homes on rural properties. There is a risk that customers may steal items from the holiday rental that they are staying in. What sort of controls might Hazel implement?

1. Some items may be securely affixed – for example, a TV might be wall mounted and plugs and cables hidden out of sight.
2. For movable items like plates and cutlery – the welcome packet might include a list of all these items and clearly state any missing items will be charged to the customer's credit card.

This is an example of controls related to the general business. But what about controls related to accounting? For example, Hazel has an employee Anna who does the cleaning of the properties after customers have gone home. Anna has access to the company credit card to purchase supplies. What sort of controls might Hazel put in place to minimise the risk of mis-use of the credit card? Some examples include:

1. Setting up alerts to her mobile phone banking app every time the card is used.
2. Requiring Anna to provide receipts for every transaction – an invoice or receipt from the store as well as the credit card slip.
3. Hazel conducts a reconciliation at the end of each month – matching each credit card transaction to a receipt provided by Anna or her own receipts for transactions she has engaged in.

Internal controls over cash

AMANDA WHITE; MITCHELL FRANKLIN; PATTY GRAYBEAL; AND DIXON COOPER

Why managing cash is important

Cash is the lifeblood of any business – without receiving cash from sales, a business would not be able to pay their suppliers or employees. Therefore, one area where businesses should have strong internal controls is around the handling of cash – both coming into the business and going out.

How businesses manage cash

There are many types of internal controls that a business may implement to protect cash including:

1. Payments for goods and services can only be made electronically – this stops employees from stealing physical cash – it can be much harder to steal cash electronically from a bank account.
2. Cash registers – that record all transactions, Electronic Funds Transfer (EFT) payments by debit or credit card, and physical cash transactions.
3. Security cameras – that are placed over areas where cash is handled in a business – such as the register and in a back office.
4. Regular checks of the bank statements by owners of the business to identify any transactions that look unusual or potentially fraudulent.

In almost all accounting textbooks, you'll find two other internal controls around cash – the use of a petty cash fund and the creation of a bank reconciliation. Both of these controls are falling out of use as businesses move away from physical cash and electronic funds transfers are becoming instantaneous with improvements in the banking system. You may have seen OSKO as a payment option within your online banking – it is an instant funds transfer – no need to wait 2-3 days for the funds to transfer between institutions. There are also improvements such as PayID which allows you to use a mobile phone number, email address or ABN to transfer funds instead of the BSB and Account number.

The original form of electronic transfer to businesses was via BPay – a method that took days and transactions had to be submitted by certain processing cut-off times. OSKO is being increasingly used because transfers occur within minutes at any time of the day or night.

Applying internal controls to the handling of cash in a business – both receipts from customers and payments

Cash can be a major part of many business operations. When it comes to large organisations like supermarket chains such as Woolworths, Coles and Aldi, or fast food outlets like McDonalds and KFC, millions of dollars in cash can change hands within a matter of minutes, and it can pass through the hands of thousands of employees spread across many stores. Internal controls ensure that all of this cash reaches the bank account of the business entity. What are some of these controls?

The first control is monitoring. Not only are cameras strategically placed throughout the store to prevent shoplifting and crime by customers, but cameras are also located over all areas where cash changes hands, such as over every cash register. These cameras may be monitored and footage is recorded. This close monitoring makes it more difficult for misuse of cash to occur.

The second control is around the access to cash – cash is the area in any business where there are likely to be more controls because it is easy to steal physical cash. Within a supermarket, each employee has his, her or their

own cash drawer with a set amount of cash. At any time, any employee can reconcile the sales recorded within the system to the cash balance that should be in the drawer. This reconciliation or “closing out” process is often done at the end of every shift. If access to the drawer is restricted to one employee, that employee is responsible when cash is missing. If one specific employee is consistently short on cash, the company can investigate and monitor the employee closely to determine if the shortages are due to theft or if they are accidental, such as if they resulted from errors in counting change.

A third control implemented in many businesses is the use of electronic payments through debit cards, credit cards and Apple and Android pay. Using electronic payment methods, no physical cash is ever handled by the employee and this significantly reduces the risk of employee theft of cash. It also reduces the risk of accidentally giving customers the wrong change, because the electronic payment is always for the correct amount.

Technology plays a major role in the maintenance of internal controls, but other principles are also important. If an employee makes a mistake involving cash, such as making an error in a transaction on a cash register, the employee who made the mistake typically cannot correct the mistake. In most cases, a manager must review the mistake and clear it before any adjustments are made. These changes are logged to ensure that managers are not clearing mistakes for specific employees in a pattern that could signify collusion, which is considered to be a private cooperation or agreement primarily for a deceitful, illegal, or immoral cause or purpose. Duties are also separated to count cash on hand and ensure records are accurate. Often, at the end of the shift, a manager or employee other than the person responsible for the cash is responsible for counting cash on hand within the cash drawer. For example, at a supermarket, it is common for an employee who has been checking out customers for a shift to then count the money in the register and prepare a document providing the counts for the shift. This is compared to the point of sale system that records exactly how much cash should be in each register. Store managers will compare counts of cash registers to sale systems and investigate any discrepancies.

The ultimate goal is to determine if the cash and credit/debit card transactions equal the amount of sales for the shift. For example, if the shift's register had sales of \$800, then the documentation of counted physical cash plus electronic credit/debit card payments should also add up to \$800.

Will we ever go entirely cash-less?

In countries like the USA, cash and cheques (which they call “checks” in the US spelling) are still widely used. Here in Australia, it is virtually impossible to find a bank or financial institution that offers accounts with a traditional chequebook. COVID-19 has seen an immense speed up in the adoption of electronic payment methods in Australia – there was the fear COVID-19 could be spread in our plastic notes and coins. Chau (2021) reports that ATM usage has been declining since 2008, and coupled with more competition in the electronic payments sector – the fees merchants pay for electronic transactions has lowered and become more transparent. In the past, high fees for credit/debit card transactions meant that many businesses didn't offer credit cards for transactions under \$20. Now these fees are a common cost of doing business and consumers have shown a preference for businesses that accept electronic payments for even the smallest of items.

It is forecasted that 98% of Australia's transactions will be cash-less by 2024.

Also leading the way on a cash-less society is China. In my own travels there in 2019 (on a trip with UTS) – I was wandering the streets looking for breakfast. I found a stall that had a long line and I ordered by just pointing. When I tried to hand over money to pay – the old lady who ran the stall kept pointing to a QR code for WeChat pay – in the end – someone in the line who understood English took my money and paid for my breakfast and theirs using their WeChat wallet payment app.



I had taken out plenty of cash to spend in China, not realising that most payments were electronic. In many places, credit cards like my American Express and Mastercard were not accepted, only WeChat Pay and Alipay. Thank goodness our UTS Beijing office staff were travelling with us to take care of paying for lunches, snacks and drinks! Banks in China are also starting to go fully electronic, with news that some smaller banks will no longer deal in bank notes and coins.

With the move to a more cash-less society – the questions around controls shift towards who has access to the bank account? How many people are required to authorise bank transactions? What about cards attached to that bank account? I regularly give my eldest son who is 9 years old, my credit card to order our hot dogs and fries at Costco while I'm waiting in line to pay – so imagine if a business had a debit or credit card that staff could access! How does a business ensure that the card is used for only valid and appropriate business-related transactions?

Regardless of whether our transactions are using physical cash or electronic cash – internal controls over cash still need to be strong.

Other methods to control cash

Petty cash

Prior to electronic funds transfers, to try and minimise employees stealing cash, businesses often had an internal control that required all payments to be made by cheque. If you've never heard of a cheque, that's quite alright. Australian financial institutions have been phasing out cheques for the last decade.

A cheque is essentially a pre-numbered slip of paper that allows the owner of the account to authorise transfer of funds to the recipient of said physical paper slip. It would take banks anywhere from 3 to 10 days to process the funds transfer from a cheque.

But if you're a cafe and you run out of avocados – you don't want to have to write a cheque to give to the local fruit and vegetable store for avocados (even more critical – Australian businesses don't accept payment by cheque because it is very easy to create fraudulent cheques!). So instead, you have a small amount of cash (typically in a small metal box called a petty cash tin) that you give to a staff member to buy these items. They bring back the receipt and any change. At the end of the week – you check how much physical cash is left in the petty cash tin, add in the value of the receipts – and it should match the cash you put in there originally.

I conducted a survey of small businesses around my area – cafes, a dance school, local restaurants – not one business used petty cash tins any more! They are being phased out of existence as our cash becomes more of an electronic item instead of a physical item.

What are businesses doing instead?

Businesses are likely to give staff cash out of the cash register, and then use the cash register system (which is often linked to the point of sale system and accounting system) to record that supplies were purchased with cash and attach a digital photo of the receipt.

Another alternative is a business debit or credit card that has a maximum spend limit that the employee can use at a local supplier – tap and go – and return the receipt to the business owner or manager. The receipt is then input into the accounting system as an expense.

It is important to evolve our business processes and internal controls as the environment around the business changes.

Bank reconciliations

The bank is a very important partner to all businesses. The bank provides somewhere for businesses to store their cash, and it processes electronic transactions – whether that be payments by customers (recorded as revenue) using debit or credit cards, or the business paying its suppliers. A business may also take out a loan from its bank and make regular repayments on that loan.

Bank accounts for businesses can involve thousands of transactions per month. Most transactions in Australia now happen within minutes, with some taking one or two days.

A bank reconciliation (or 'bank rec' as the accountants say) is an internal control that has the business compare the transactions it has recorded for their cash account in their accounting records, with the transactions the bank has recorded. There may be some discrepancies. For example, your bank may charge a regular account keeping fee that you haven't recorded as an outflow of cash. Or you receive interest on a savings account that has not been recorded as an inflow of cash. In some circumstances, an electronic funds transfer may be delayed – you record the outflow of cash in your records, but it takes some days for the bank to withdraw the funds and transfer them to the intended recipient.

Bank reconciliations are a more critical control in countries that still have a high usage of physical cheques like in North America. They are still an important control here in Australia, but there are less discrepancies between the accounting records and the bank's records of transactions because we have a more highly developed electronic funds transfer system.

The bank reconciliation is prepared by the business's accountant (not the bank) on a regular basis – usually monthly for large businesses with high transaction volumes, sometimes quarterly for smaller businesses. For those businesses using a cloud-based software such as Xero, a bank reconciliation can be conducted by the business owner – no accountant needed! (If you're curious – you can see how easy it is to conduct the bank reconciliation in Xero) Once a business has identified transactions that are recorded in the bank's list of transactions, but not their accounting records – they are then recorded.

In Accounting and Accountability we will not be going through the detailed process to conduct a bank reconciliation, as we don't believe it is necessary at this introductory level of accounting. However, if you're going for a job as an accountant in a business – this is the first thing you should brush up on!

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In summary about internal controls and fraud

To protect the equity of shareholders and owners, it is critical that businesses implement internal controls over their processes. Businesses should evaluate their control environment and conduct a regular risk assessments so that they understand where controls need to be implemented. Once implemented, those charged with governance should monitor these internal controls because any break down or circumvention of controls increases the risk of fraud.

As part of the risk assessment process, businesses do need to consider the risk of fraud, as well as the risk of accidental error in recording business transactions. To evaluate the risk of fraud, those charged with governance need to evaluate the incentives/pressures faced by employees to engage in fraud, opportunities caused by gaps in internal controls or break downs in control activities and the attitudes of employees towards fraud. The attitudes of employees towards fraud will likely be evident your evaluation of the control environment. Gaps in internal controls may become evident when conducting your risk assessment or from monitoring for failures of controls. It can be hard to identify external pressures faced by employees – but incentives (such as those related to pay and performance) are easily evaluated and modified by the business to minimise the risk of fraud.

Regardless of whether you want to be an accountant, whatever your role in a business – you will likely have a role to play in internal controls – whether that be evaluating risk, designing a control or implementing a control as part of a process. Therefore an understanding of internal controls and fraud is critical for any career in business.

CHAPTER 5: CREATING FINANCIAL REPORTS FOR EXTERNAL USERS

Now that we have a basic understanding around the recording of transactions – in this chapter, we will learn how to construct financial reports for external users. However, before we get to the final output of financial statements, there are some other things we need to learn along the way.

In this chapter, we will learn how to

1. Incorporate opening balances into transaction recording
2. Creating a profit and loss statement
3. Creating a statement of changes in equity
4. Creating a balance sheet
5. Understand a statement of cash flows
6. Understanding financial reporting requirements in Australia for different types of businesses

Incorporate opening balances into transaction recording

AMANDA WHITE

In recording transactions, it is entirely possible to end up with unusual balances like negative cash or negative liabilities balances after processing transactions. A business may have a month where there is more expenditure than revenue. But does that mean the business is in financial difficulty?

Without any idea of the context for transactions – it is impossible for us to know the real financial health of a business. Opening balances for accounts like cash, inventory, liabilities and equity help provide context for the transactions that we are observing in a business.

The question then becomes, how do we get opening balances? Where do they come from and how do we incorporate them?

Opening balances

The opening balance of any set of accounts is the state of the accounting equation at the beginning of the period. The period could be the month, the quarter or the year. So the opening balance is where we start before any transactions are recorded.

Opening balances are stored in an accounting system for its assets, liabilities and equity. Where do they come from? The opening balances for one period, are the closing balances from the previous period. For example – consider an Australian company with a 30 June end of financial year. The closing balances are the values for assets, liabilities and equity at the 30th of June. The next financial year starts on the 1st of July – the opening balances on the 1st of July are the closing balances from the 30th of June.

There should be no difference between the closing balance of one financial year and the opening balance of the next financial year. The numbers should be exactly the same.

We know that revenues and expenses are contained WITHIN equity – however, their balances do not forward when we close a financial period at the end, before the new one starts. This is because the revenues and expenses are transactions, rather than a permanent asset, liability or equity. At the end of each period, we take the net value of revenue less expenses and that amount becomes part of a new account called “Retained earnings”, that forms part of equity. We will dig into this more in other sections of this chapter. But for now, all you need to remember is that every asset (cash, inventory, equipment, accounts receivable etc), liability (accounts payable, unearned revenue, bank loans etc) and equity (share capital and the new account I’ve just introduced called retained earnings) will have an opening balance.

Incorporating opening balances into transaction recording

To incorporate an opening balance – all that is required in any accounting transaction spreadsheet or table is to add one additional line – in the table below, it is the text in blue. This is the balance of cash, accounts receivables, equipment, accounts payable, unearned revenue and share equity from the last day of the prior financial period. These balances are then carried forward to become the opening balance for this reporting period.

To calculate the closing balance for the reporting period – we add the opening balance to the transactions.

Assets			=	Liabilities		+	Equity				
	Cash	Accounts Receivable	Equipment		Accounts Payable	Unearned Revenue		Share equity	Dividends	Revenues	Expenses
Opening balances	15,000	2,000	5,500		2,000	2,000		18,500			
1	+20,000							+20,000			
2			+3,500		+3,500						
3	+4,000					+4,000					
4		+5,500								+5,500	
5	-300										-300
6	-100								-100		
Total	23,600	+5,500	+3,500		3,500	+4,000		+20,000	-100	+5,500	-300
New total	38,600	7,500	9,000		5,500	6,000		35,500	-100	5,500	-300



Creating a trial balance

Once we've incorporated the opening balance for each account that we use when recording transactions – accountants create something called a Trial Balance (often called a 'TB' in the accounting/business world). The accounting equation spreadsheet above has been re-formatted to create a trial balance as shown below. In the next section, we will learn how to use the trial balance to create three of the financial statements.

The trial balance contains the closing balance for every single account used by the company – whether it be a permanent account like an asset, liability or equity, or a temporary holding account like revenues, expenses or dividends. When accountants construct a set of financial statements for a client (if their accounting software doesn't already do so) – the first thing they will ask for is the trial balance.

Account name	Balance
Cash	38,600
Accounts Receivable	7,500
Equipment	9,000
Accounts Payable	5,500
Unearned Revenue	6,000
Share equity	35,500
Dividends	-100
Revenue	5,500
Expenses	-300

Creating a profit and loss statement

AMANDA WHITE

Back in Chapter 2, we discussed the four financial statements. The table from that chapter is replicated below. It shows what the Australian accounting standards require from businesses in terms of their financial statements.

#	Financial statement name from AASB 101	Common names (if applicable)	Plain English description
1	Statement of profit and loss and other comprehensive income for the period	Profit and loss statement Income statement	A summary of the revenues and expenses of a business over the financial period (usually a year)
2	Statement of financial position	Balance Sheet	A snapshot of the assets, liabilities and equities of the business at a specific date in time.
3	Statement of changes in equity		A summary of the change in the value of equity in the business. Equity is essentially the value of the business after debts are paid.
4	Statement of cash flows		A summary of the cash coming into and going out of the business over the financial period (usually a year).

In this section, we will examine how to construct the “Statement of profit and loss and other comprehensive income for the period” – but let’s simplify things and call it the Profit and Loss Statement (or P&L if we are going even shorter!). We create this statement first – we can’t create any of the others without knowing how much profit or loss the business made. As you work through this chapter, you’ll notice that we do not create the financial statements in the same order as the table above! You start with #1, then #3, followed by #2 and finally #4.

What is the profit and loss statement?

You may have figured out by now that Revenues minus Expenses will give you Profit. Alternatively, if Expenses are larger than Revenues, you will have a Loss. This is demonstrated in the table below.

	Scenario 1	Scenario 2
Revenue	\$1,500	\$2,000
Expenses	– \$500	– \$2,500
	+ \$1,000 [PROFIT]	– \$500 [LOSS]

This represents a business’ financial performance over a specific period of time. That period of time could be a month, a quarter, 6 months or a full year. In Australia, the financial year for most businesses is 1 July to 30 June. Accrual accounting, the revenue recognition principle and the matching principle all come together in the profit and loss statement.

Creating the profit and loss statement

For those who really want to geek out on how to present the financial statements – you can check out the Australian Accounting Standards Board’s requirements in AASB 101 Presentation of Financial Statements. Warning

– it is pretty hard to read for the average introductory student. If that doesn't sound like your jam, skip it and read on!

To create our profit and loss statement, we need our Trial Balance. To better illustrate how to do this – we've expanded the previous Trial Balance to include some additional accounts that will allow us to create a more realistic set of financial statements. The Trial Balance lists the accounts in the order of Assets, Liabilities, Equity, Revenues and Expenses and is for a specific period.

This trial balance below is for the fictional business Saanvi's Chic Celebrations (SCC) – a business that specialises in the booming area of high end fashion for south asian weddings. This includes events like Mehendi and Sangeet ceremonies. The Mehendi is where henna is applied to the bride and other female members of the wedding party and the Sangeet is a music night that involves singing and dancing. The company is a small private business – so we will denote this with the words Pty Ltd after the company name. Public companies (those listed on the stock exchange) are denoted by the words Ltd after the company name. For example Woolworths Ltd, Qantas Airways Ltd. The Trial Balance captures everything from 1 July 2021 to 30 June 2022. It is important that we start adding information about the financial period because soon we'll be starting to compare financial information from various periods (months or years) – so they need to be clearly labelled.

Trial balance for Saanvi's Chic Celebrations Pty Ltd for the period 1 July 2021 to 30 June 2022

ACCOUNT NAME	BALANCE
Cash	8,000
Accounts receivable	13,000
Inventory	8,500
Prepaid expenses	2,000
Property, plant and equipment	35,000
Land	80,000
Accounts payable	18,000
Unearned revenue	10,000
Wages payable	3,000
Bank loan	65,000
Share capital	50,000
Dividends	-2,000
Revenue	18,000
Cost of sales	-5,500
Marketing expense	-2,500
Rent expense	-3,500
Wages expense	-2,800
Utilities expense	-1,200

AASB 101 provides guidance to most Australian businesses on how to construct the profit and loss statement. Essentially the structure is as follows:

Company Name	
Profit and Loss Statement for the Period Ending 30 June 202X	
Revenue	
<u>Less Cost of Sales</u>	
= GROSS PROFIT	
Less expenses:	
Administrative expenses	
Interest expense	
= Net profit before tax (NPBT)	
Less income tax	
= Net profit after tax (NPAT)	

You may have heard the term EBITDA in the financial press. It stands for Earnings Before Interest, Tax, Depreciation and Amortisation. We haven't yet covered Depreciation and Amortisation in detail – but in essence, they are expenses to recognise the use of non-current tangible and intangible assets to generate revenue or value for the business.

Taking our Trial Balance from above – if we wanted to create a profit and loss statement – it would look like this:

Profit and Loss Statement for Saanvi's Chic Celebrations Pty Ltd	
For the period ending 30 June 2022	
Revenue	18,000
Less Cost of sales	(5,500)
Gross profit	12,500
Less expenses	
Marketing expense	(2,500)
Rent expense	(3,500)
Wages expense	(2,800)
Utilities expense	(1,200)
Net profit before tax	2,500

You may notice that negative numbers are denoted by a bracket – this is international convention because it is possible that the small negative symbol e.g. -\$5000 might be missed – whereas (\$5000) has more clarity.

Analysing the profit and loss statement

In Chapter 6 we will go into more detail about analysing the financial statements, but with what we know now, we can see that SSC makes both a gross profit and a net profit – all positive signs for a business.

Where to next?

The profit and loss statement is the first statement that we must create in the financial statements because it provides us with the profit (or loss) that the business has earned over the financial period (whether it be a month, quarter, 6 months or one year). Who does this profit (or loss) belong to? It belongs to the owners of the business – the shareholders. So we need a way to incorporate this profit (or loss) into their holdings or ownership of the firm. In accounting, we incorporate our profits (or losses) into an account called Retained Earnings – this will contain a sum of all the profits and losses of the business over its lifetime. Hence our next financial statement that we will need to create is the Statement of Changes in Equity.

Creating a statement of changes in equity

AMANDA WHITE

What is the Statement of Changes in Equity? (SoCiE)

The SoCiE is a reconciliation between the opening balance of Equity and any transactions related to equity, to provide the closing balance for equity. We already know from our understanding of the accounting equation that transactions related to equity include

- Issuing shares to shareholders
- Payments of dividends to shareholders (in the form of cash or more shares)

We also know that the profit (or loss) from the period does technically belong to shareholders/owners of the business. However, revenue and expense accounts are re-set at the beginning of each period. So where do profits (or losses) go? Technically they are transferred from revenues and expenses into an account called **retained earnings**. The account's purpose is exactly as it describes – it retains the earnings (revenues minus expenses) of the business. However,

A business can use its retained earnings to reward shareholders or reinvest in the firm by using the cash generated by those earnings to grow the business. This could be purchasing new equipment or investing in product development.

Creating a Statement of Changes in Equity

If we think about Saanvi's Chic Celebrations (SCC) – the profit of \$2500 is an increase in the overall value of the business (the business's Equity) and we record this by adding it to retained earnings.

Profit and Loss Statement for Saanvi's Chic Celebrations Pty Ltd

For the period ending 30 June 2022

Revenue	18,000
Less Cost of sales	(5,500)
Gross profit	12,500
Less expenses	
Marketing expense	(2,500)
Rent expense	(3,500)
Wages expense	(2,800)
Utilities expense	(1,200)
Net profit before tax	2,500

Therefore the SCC Statement of Changes in Equity looks like this (assuming that the business started with no equity):

Statement of Changes in Equity for Saanvi's Chic Celebrations Pty Ltd

For the period ending 30 June 2022

Opening balance for Equity at 1 July 2021	0
Retained earnings	0
Add Profits	2,500
Add Issue of share capital/equity	50,000
Less Dividends	(2,000)
Closing balance for Equity at 30 June 2022	50,500

Why prepare the SoCiE as the second financial statement? It is because the closing balance for Equity is required to create the Balance Sheet.

Note about complications in the SoCiE

If you look at the financial statements for any publicly listed firm, you will notice that their Statements of Changes in Equity look a LOT more complex than what we've described above. You'll likely see transactions related to purchasing back shares from shareholders and transfers from profits into accounts called Reserves. A reserve is an account where the business can transfer funds from Retained Earnings into a reserve for a specific future purpose.

What happens if the business's Retained Earnings goes into the negative? That is, past profits accumulated are wiped out by significant losses? During the COVID19 pandemic, this occurred to many large publicly listed companies, including Qantas Airways Ltd. It is recorded on the Balance Sheet as "Accumulated Losses" (you can check this out for yourself in the Qantas 2021 annual financial statements on page 68).

Creating a balance sheet

AMANDA WHITE

What is the Balance Sheet?

According to our accounting standards – our balance sheet is technically called a Statement of Financial Position. Why? This is because it shows the position of the company at a single point in time – a snapshot of the balances of our assets, liabilities and equity (hence the more understandable name of Balance Sheet!). The Profit and Loss Statement shows us the accumulation of transactions over a period of time (such as a year) and we know that those transactions impact our assets, liabilities and equity.

Do people call it the Statement of Financial Position in every day business life? Not really – if you read business media publications like the Australian Financial Review or watch financial journalists David Chau or Alan Kohler on the ABC – you'll notice they don't use this term at all. Instead they use the more common term "Balance Sheet" and that is what we will use in this textbook. Of course, if you wish to become an accountant, you will use the terms Statement of Financial Performance (the P&L statement) and Statement of Financial Position (the Balance Sheet) when preparing these documents, but in daily conversation with your colleagues, you are likely to use the shorthand term Balance Sheet.

Constructing the balance sheet

Around the world, international accounting standards mean that balances sheets look the same everywhere! This allows us to compare various businesses – a handy tool if you're deciding where to invest. It also allows businesses to compare themselves against each other – who holds more inventory? Who has a large amount of cash?

<div> <div>Sample Company Ltd</div> <div>Balance Sheet</div> <div>as at 30 June 2022</div> </div>	
ASSETS	
Current assets	
Non-current assets	
Total assets	
LIABILITIES	
Current liabilities	
Non-current liabilities	
Total liabilities	
NET ASSETS (Total assets – Total liabilities)	
EQUITY	
Share capital	
Reserves	
Retained earnings (or Accumulated losses)	
Total equity	

Now let's construct the balance sheet for Saanvi's business that we encountered in the previous section. First we need to go back to the trial balance for SCC and check off the accounts that we have already used. I've placed a green tick symbol next to the accounts we've already utilised in another financial statement. You can't use an item from the trial balance in more than one financial statement – otherwise you may double count or double report and potentially overstate or understate the business's financial position or performance.

Trial balance for Saanvi's Chic Celebrations Pty Ltd
for the period 1 July 2021 to 30 June 2022

ACCOUNT NAME	BALANCE
Cash	8,000
Accounts receivable	13,000
Inventory	8,500
Prepaid expenses	2,000
Property, plant and equipment	35,000
Land	80,000
Accounts payable	18,000
Unearned revenue	10,000
Wages payable	3,000
Bank loan	65,000
Share capital ✓	50,000
Dividends ✓	-2,000
Revenue ✓	18,000
Cost of sales ✓	-5,500
Marketing expense ✓	-2,500
Rent expense ✓	-3,500
Wages expense ✓	-2,800
Utilities expense ✓	-1,200

I've placed a green tick on all of the accounts that we've already used. Now we have to construct our balance sheet using the remaining items.

Saanvi's Chic Celebrations Balance Sheet as at 30 June 2022	
ASSETS	
Current assets	
Cash	8,000
Accounts receivable	13,000
Inventory	8,500
Prepaid expenses	2,000
Non-current assets	
Property plant and equipment	35,000
Non-current assets	80,000
Total assets	146,500
LIABILITIES	
Current liabilities	
Accounts payable	18,000
Unearned revenue	10,000
Wages payable	3,000
Non-current liabilities	
Bank loan	65,000
Total liabilities	96,000
NET ASSETS	50,500
EQUITY	
Share capital	50,000
Reserves	0
Retained earnings (or Accumulated losses)	500

TOTAL EQUITY	50,500
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Notice that our share capital is taken from our Statement of Changes in Equity, and our Retained earnings is the net profit (\$2,500) less the dividends paid to shareholders (\$2,000).

Should we be matching Net Assets to Equity? Or Assets to Liabilities plus Equity?

The accounting equation is phrased:

$$\text{Assets} = \text{Liabilities} + \text{Equity}$$

And we've been using this format in recording our transactions in Excel. However, upon review of many Australian listed firms you'll see they report Net Assets (Assets minus Liabilities) and Total Equity. They are still presenting the accounting equation but in a different way – re-arranging the components of accounting equation using simple algebra.

What should you do? In this textbook we will follow the Australian reporting convention of Assets, Liabilities, then Net Assets and Total Equity.

Understanding the statement of cash flows

AMANDA WHITE

What is the Statement of Cash Flows?

The statement of cash flows is a much more complicated financial statement to prepare. While the P&L contains the summary of business transactions recorded using the accrual method – we know that cash is not always exchanged in transactions. For example, you purchase items from a supplier and you'll pay in 60 days.

However real cash is required from your customers to be able to pay your suppliers, employees and any lenders you might have. It is possible that a business may appear to have profits, but actually not have sufficient cash to pay their debts. If this is the case – the business has a Going Concern issue – they may be trading while INSOLVENT – that is, insufficient cash to meet their obligations.

In essence, the statement of cash flows shows the cash inflows and outflows in 3 main categories:

1. Cash flow from operations (daily business)
2. Cash flow from investing activities (such as purchasing a new machine for the factory)
3. Cash flow from financing activities (such as inflows of cash from new shareholders or loans, paying dividends or loan repayments)

You take the opening balance of cash (the balance at the beginning of the financial period), then add/subtract the flows from the three main categories and that will give you the closing balance of cash. This closing balance should match the value of Cash that you have recorded in your Balance Sheet.

How to construct a Statement of Cash Flows

In Accounting and Accountability, we won't be covering this as part of the introductory content as it requires some components of more advanced accounting we haven't yet encountered. The follow on textbook, Accounting Business and Society will include this information.

For now – it is sufficient to understand what the Statement of Cash Flows is and the general construction ideas, without being able to actually create one.

Understanding financial reporting requirements in Australia for different types of businesses

AMANDA WHITE

We now have an understanding of the four financial statements and we know how to construct three of them. Do all businesses have to produce these reports? What are their legal obligations?

Depending on the size and structure of your business, there are varying reporting requirements in Australia. The table below provides a summary:

Business type	Liability	Keep accounting records	Submit financial statements to regulator	Have financial statements audited
<i>Sole trader</i> Business owned and operated by a single person	Unlimited liability – any debts of the business are debts of the owner	Yes – for 5 years	No	No
<i>Partnership</i> Business owned by two or more people	Unlimited liability – debt incurred by any one partner is owed by all partners	Yes – for 5 years	No	No
<i>Proprietary company (Pty Ltd)</i> Incorporated entity owned by shareholders	Limited liability – debts of the business belong to the business alone	Yes – for 7 years	No	At the request of shareholders
<i>Public Company (Ltd)</i> Incorporated entity owned by shareholders and shares are traded on a public exchange	Limited liability – debts of the business belong to the business alone	Yes – for 7 years	Yes	Yes

Sole traders and partnerships are not governed by Australia's main market regulator – the Australian Securities and Investment Commission (ASIC). They are fast and easy to set up, and dissolve, but there are significant risks related to liability in both business structures.

Just because the sole trader, partnerships and proprietary companies are not required to prepare financial statements to the regulator, doesn't mean that they don't use them. Our financial statements are critical pieces of information that help businesses of all sizes make decisions – that could be related to customers, suppliers, employees, investment or any other multitude of business-related decisions.

A study at the University of South Australia published in 2018 found that 14% of small to medium enterprises failed because they did not understand finance and accounting. A basic understanding of the fundamentals of accounting is critical no matter what your business-related career path may be.

Companies are incorporated entities under the governance and oversight of ASIC. The increased legal protection afforded to companies means that it does take more time, paperwork and cost to set up these business structures. The biggest legal protection provided to companies is that they have limited liability – the business exists as a separate entity and any debts that are incurred by the business belong to the business – shareholders are not liable if the business goes under and there are debts left unpaid. In a sole trader or partnership, the business owners are liable – meaning that a lender may take possession of an owner's family home or other assets to pay outstanding debts.

Shareholders of public companies

Shareholders of public entities are required to be provided with financial statements every six months in the format of a half-year set of statements and a full year set of statements. They must comply with the AASB rules related to how to account for various transactions as well as the layout or format of the information (which is what we've learned in this chapter). The Corporations Act of 2001 sets out these requirements including that these companies must have their annual financial statements audited – that is, whether the economic reality depicted by the business in their four financial statements is a true and fair view.

The use of standardised financial statements (not just in Australia but around the world, everywhere except North Korea and the USA) allows shareholders to then compare companies and make decisions about how they are going to allocate their scarce resources (investment funds) across various businesses.

In the next chapter, we will be learning how to conduct this analysis to analyse the performance of a single firm within a year and over time, and also how to compare firms within a specific year and also over time.

CHAPTER 6: ANALYSING FINANCIAL REPORTS

In this chapter, we will explore how users of financial statements can analyse that information to gain insights into the business. Specifically, we will cover:

1. What is financial statement analysis and why is it used
2. How to conduct horizontal and vertical analysis
3. How to conduct ratio analysis
4. Understand what our analysis can be compared to

Listen to the audiobook for this chapter on Soundcloud – Chapter 6 audiobook [37 minutes] ([opens link in new tab](#))

Financial statement analysis

AMANDA WHITE; MITCHELL FRANKLIN; PATTY GRAYBEAL; AND DIXON COOPER

What is financial statement analysis and why perform it?

Financial statement analysis reviews financial information found on financial statements to make informed decisions about the business. The income statement, statement of changes to equity, balance sheet, and statement of cash flows, among other financial information, can be analysed. The information obtained from this analysis can benefit decision-making for internal and external stakeholders and can give a business valuable information on overall performance and specific areas for improvement. The analysis can help them with budgeting, deciding where to cut costs, how to increase revenues, and future capital investments opportunities.

When considering the outcomes from analysis, it is important for a business to understand that data produced needs to be compared to others within industry and close competitors. The business should also consider their past experience and how it corresponds to current and future performance expectations. Three common analysis tools are used for decision-making; horizontal analysis, vertical analysis, and financial ratios.

For our discussion of financial statement analysis, we will use Mistborn Trading. Mistborn Trading is a business that sells a variety of products related to steam punk fancy dress. The figure below shows the Comparative P&L/Income Statements and Balance Sheets for Mistborn Trading last 2 years of operations.

Mistborn Trading Comparative year-end P&L			Mistborn Trading Comparative year-end Balance Sheets		
	Prior year	Current year		Prior year	Current year
Revenue	100,000	120,000	Assets		
Cost of sales	50,000	60,000	<i>Current assets</i>		
Gross profit	50,000	60,000	Cash	90,000	110,000
			Accounts receivable	20,000	30,000
Rent expense	5,000	5,500	Inventory	35,000	40,000
Depreciation expense	2,500	3,600	<i>Non-current assets</i>		
Wages expense	3,000	5,400	Property plant and equipment	40,000	50,000
Utilities expense	1,500	2,500	Land	15,000	20,000
Net profit	38,000	43,000	Total assets	200,000	250,000
Interest expense	3,000	5,400	Liabilities		
Income tax	5,000	6,000	<i>Current liabilities</i>		
Net profit after interest and tax	30,000	31,600	Accounts payable	60,000	75,000
			Unearned revenue	10,000	25,000
			<i>Non-current liabilities</i>		
			Bank loan	40,000	50,000
			Total liabilities	110,000	150,000
			NET ASSETS	90,000	100,000
			Equity		
			Share capital	75,000	80,000
			Retained earnings	15,000	20,000
			Total equity	90,000	100,000

So that you can follow along with our analysis in the textbook – download this excel file of the table above.

Chapter-6-Mistborn-Trading-financial-statements

Keep in mind that the comparative income statements and balance sheets for Mistborn Trading are simplified for our calculations and do not fully represent all the accounts a business could maintain.

Advantages and disadvantages of financial statement analysis

There are several advantages and disadvantages to financial statement analysis. Financial statement analysis can show trends over time, which can be helpful in making future business decisions. Converting information to percentages or ratios eliminates some of the disparity between competitor sizes and operating abilities, making it easier for stakeholders to make informed decisions. It can assist with understanding the makeup of current operations within the business, and which shifts need to occur internally to increase productivity.

A stakeholder needs to keep in mind that past performance does not always dictate future performance. Attention must be given to possible economic influences that could skew the numbers being analysed, such as inflation or a recession. Additionally, the way a business reports information within accounts may change over time. For example, where and when certain transactions are recorded may shift, which may not be readily evident in the financial statements.

A business that wants to budget properly, control costs, increase revenues, and make long-term expenditure decisions may want to use financial statement analysis to guide future operations. As long as the business understands the limitations of the information provided, financial statement analysis is a good tool to predict growth and business financial strength.

Using financial statement analysis as a vehicle for asking questions

The numbers and outputs from financial statement analysis alone cannot tell us exactly what is happening in a business. Instead it provides users of the financial statements with a way to analyse the data so that they can ask the most appropriate questions. For shareholders, this might be asking a question of management at an annual general meeting. For lenders, this could be probing deeper when they are asked to provide another loan or an alteration to a borrowing contract.

In reality, very few accountants or business people conduct the calculations you are about to learn by hand. Today, most users of such analysis obtain it from websites or service providers who use software and technology to remove the mundane actions of calculating these numbers. The key is to understand HOW the various forms of analysis are constructed so that you can INTERPRET the outputs and then develop good QUESTIONS to ask.

Horizontal and vertical analysis

MITCHELL FRANKLIN; PATTY GRAYBEAL; DIXON COOPER; AND AMANDA WHITE

Horizontal and vertical analysis are two types of analysis you can do that use simple mathematical formulas. Ideally, two years (or periods) of data is required to conduct these types of analysis because knowing the horizontal or vertical analysis for one year of a business is useful, but you obtain greater insights by observing firm trends over time.

Horizontal Analysis

Horizontal analysis (also known as trend analysis) looks at trends over time on various financial statement line items. A business will look at one period (usually a year) and compare it to another period. For example, a business may compare sales from their current year to sales from the prior year. The trending of items on these financial statements can give a business valuable information on overall performance and specific areas for improvement. It is most valuable to do horizontal analysis for information over multiple periods to see how change is occurring for each line item. If multiple periods are not used, it can be difficult to identify a trend. The year being used for comparison purposes is called the base year (usually the prior period). The year of comparison for horizontal analysis is analysed for dollar and percent changes against the base year.

The dollar change is found by taking the dollar amount in the base year and subtracting that from the year of analysis.

$$\text{Dollar Change} = \text{Year of Analysis Amount} - \text{Base Year Amount}$$

Using Mistborn Trading (MT) as our example, if MT wanted to compare Revenue in the current year (year of analysis) of \$120,000 to the prior year (base year) of \$100,000, the dollar change would be as follows:

$$\text{Dollar change} = \$120,000 - \$100,000 = \$20,000$$

The percentage change is found by taking the dollar change, dividing by the base year amount, and then multiplying by 100.

$$\text{Percent Change} = \left(\frac{\text{Dollar Change}}{\text{Base Year Amount}} \right) \times 100$$

Let's compute the percentage change for Mistborn Trading's revenue.

$$\text{Percentage change} = (20,000 / 100,000) \times 100 = 20\%$$

This means Mistborn Trading saw an increase of \$20,000 in revenue in the current year as compared to the prior year, which was a 20% increase. The same dollar change and percentage change calculations would be used for the income statement line items as well as the balance sheet line items. The figure below shows the complete horizontal analysis of the income statement and balance sheet for Mistborn Trading.

Mistborn Trading Comparative year-end Income Statement			HORIZONTAL ANALYSIS		
	Current year	Prior year		Dollar change	Percentage change
Revenue	120,000	100,000		20,000	20%
Cost of sales	60,000	50,000		10,000	20%
Gross profit	60,000	50,000		10,000	20%
Rent expense	5,500	5,000		500	10%
Depreciation expense	3,600	2,500		1,100	44%
Wages expense	5,400	3,000		2,400	80%
Utilities expense	2,500	1,500		1,000	67%
Net profit before interest and tax	43,000	38,000		5,000	13%
Interest expense	5,400	3,000		2,400	80%
Income tax	6,000	5,000		1,000	20%
Net profit after interest and tax	31,600	30,000		1,600	5%
Mistborn Trading Comparative year-end Balance Sheets					
	Current year	Prior year		Dollar change	Percentage change
Assets					
<i>Current assets</i>					
Cash	110,000	90,000		20,000	22%
Accounts receivable	30,000	20,000		10,000	50%
Inventory	40,000	35,000		5,000	14%
<i>Non-current assets</i>					
Property plant and equipment	50,000	40,000		10,000	25%
Land	20,000	15,000		5,000	33%
Total assets	250,000	200,000		50,000	25%
Liabilities					
<i>Current liabilities</i>					
Accounts payable	75,000	60,000		15,000	25%
Unearned revenue	25,000	10,000		15,000	150%
<i>Non-current liabilities</i>					
Bank loan	50,000	40,000		10,000	25%
Total liabilities	150,000	110,000		40,000	36%
NET ASSETS	100,000	90,000		10,000	11%
Equity					
Share capital	80,000	75,000		5,000	7%
Retained earnings	20,000	15,000		5,000	33%
Total equity	100,000	90,000		10,000	11%

Depending on their expectations, Mistborn Trading could make decisions to alter operations to produce expected outcomes. For example, MT saw a 50% accounts receivable increase from the prior year to the current year. If they were only expecting a 20% increase, they may need to explore this line item further to determine what caused this difference and how to correct it going forward. It could possibly be that they are extending credit to customers more readily than anticipated or not collecting as rapidly on outstanding accounts receivable. The company will need to further examine this difference before deciding on a course of action. Another method of analysis MT might consider before making a decision is vertical analysis.

Vertical Analysis

Vertical analysis shows a comparison of a line item within a statement to another line item within that same statement. For example, a business may compare cash to total assets in the current year. This allows a business to see what percentage of cash (the comparison line item) makes up total assets (the other line item) during the period. This is different from horizontal analysis, which compares across years. Vertical analysis compares line items within a statement in the current year. This can help a business to know how much of one item is contributing to overall operations. For example, a business may want to know how much inventory contributes to total assets. They can then use this information to make business decisions such as preparing the budget, cutting costs, increasing revenues, or investments in property plant or equipment.

The business will need to determine which line item they are comparing all items to within that statement and then calculate the percentage makeup. These percentages are considered *common-size* because they make businesses within industry comparable by taking out fluctuations for size. It is typical for an income statement to use revenue (or sales) as the comparison line item. This means revenue will be set at 100% and all other line items within the income statement will represent a percentage of revenue.

On the balance sheet, a company will typically look at two areas: (1) total assets, and (2) total liabilities and shareholders' equity. Total assets will be set at 100% and all assets will represent a percentage of total assets. Total liabilities and shareholders' equity will also be set at 100% and all line items within liabilities and equity will be represented as a percentage of total liabilities and stockholders' equity. The line item set at 100% is considered the base amount and the comparison line item is considered the comparison amount. The formula to determine the common-size percentage is:

$$\text{Common-Size Percentage} = \left(\frac{\text{Comparison Amount}}{\text{Base Amount}} \right) \times 100$$

For example, if Mistborn Trading set total assets as the base amount and wanted to see what percentage of total assets were made up of cash in the current year, the following calculation would occur.

$$\text{Common-size percentage} = (\$110,000 / \$250,000) \times 100 = 44\%$$

Cash in the current year is \$110,000 and total assets equal \$250,000, giving a common-size percentage of 44%. If the company had an expected cash balance of 40% of total assets, they would be exceeding expectations. This may not be enough of a difference to make a change, but if they notice this deviates from industry standards, they may need to make adjustments, such as reducing the amount of cash on hand to reinvest in the business. The figure below shows the common-size calculations on the comparative income statements and comparative balance sheets for Mistborn Trading. The highlighted part of the figure shows the number used as the base to create the common-sizing.

Mistborn Trading Comparative year-end Income Statement			VERTICAL ANALYSIS					
	Current year	Prior year	Current year	Prior year				
Revenue	120,000	100,000	100%	100%	Revenue is the base for the P&L			
Cost of sales	60,000	50,000	50%	50%				
Gross profit	60,000	50,000	50%	50%				
Rent expense	5,500	5,000	5%	5%				
Depreciation expense	3,600	2,500	3%	3%				
Wages expense	5,400	3,000	5%	3%				
Utilities expense	2,500	1,500	2%	2%				
Net profit before interest and tax	43,000	38,000	36%	38%				
			0%	0%				
Interest expense	5,400	3,000	5%	3%				
Income tax	6,000	5,000	5%	5%				
Net profit after interest and tax	31,600	30,000	26%	30%				
Mistborn Trading Comparative year-end Balance Sheets								
	Current year	Prior year	Current year	Prior year				
Assets					Total assets is the base for the Balance Sheet			
<i>Current assets</i>								
Cash	110,000	90,000	44%	45%				
Accounts receivable	30,000	20,000	12%	10%				
Inventory	40,000	35,000	16%	18%				
<i>Non-current assets</i>								
Property plant and equipment	50,000	40,000	20%	20%				
Land	20,000	15,000	8%	8%				
Total assets	250,000	200,000	100%	100%				
Liabilities								
<i>Current liabilities</i>								
Accounts payable	75,000	60,000	30%	30%				
Unearned revenue	25,000	10,000	10%	5%				
<i>Non-current liabilities</i>								
Bank loan	50,000	40,000	20%	20%				
Total liabilities	150,000	110,000	60%	55%				
NET ASSETS	100,000	90,000	40%	45%				
Equity								
Share capital	80,000	75,000	32%	38%				
Retained earnings	20,000	15,000	8%	8%				
Total equity	100,000	90,000	40%	45%				

Even though vertical analysis is a statement comparison within the same year, MT can use information from the prior year's vertical analysis to make sure the business is operating as expected. For example, unearned revenues increased from the prior year to the current year and made up a larger portion of total liabilities and shareholders' equity. This could be due to many factors, and Mistborn Trading will need to examine this further to see why this change has occurred.

But what other forms of analysis are available? In the next section, we will examine ratio analysis.

Ratio analysis

MITCHELL FRANKLIN; PATTY GRAYBEAL; DIXON COOPER; AND AMANDA WHITE

Overview of Financial Ratios

Financial ratios help both internal and external users of information make informed decisions about a business. A stakeholder could be looking to invest, become a supplier, make a loan, or alter internal operations, among other things, based in part on the outcomes of ratio analysis. The information resulting from ratio analysis can be used to examine trends in performance, establish benchmarks for success, set budget expectations, and compare industry competitors. There are four main categories of ratios: **liquidity, solvency, efficiency, and profitability**. Note that while there are more ideal outcomes for some ratios, the industry in which the business operates can change the influence each of these ratios has over stakeholder decisions. You will learn more about ratios, industry standards, and ratio interpretation if you go on to study accounting or finance in more detail.

Liquidity Ratios

Liquidity ratios show the ability of the business to pay short-term obligations if they came due immediately with assets that can be quickly converted to cash. This is done by comparing current assets to current liabilities. Lenders, for example, may consider the outcomes of liquidity ratios when deciding whether to extend a loan to a company. A business would like to be liquid enough to manage any currently due obligations but not too liquid where they may not be effectively investing in growth opportunities. Three common liquidity measurements are working capital, current ratio, and quick ratio.

Working Capital

Working capital measures the financial health of an organisation in the short-term by finding the difference between current assets and current liabilities. A business will need enough current assets to cover current liabilities; otherwise, they may not be able to continue operations in the future. Before a lender extends credit, they will review the working capital of the business to see if the business can meet their obligations. A larger difference signals that a business can cover their short-term debts and a lender may be more willing to extend the loan. On the other hand, too large of a difference may indicate that the business may not be correctly using their assets to grow the business. The formula for working capital is:

$$\text{Working Capital} = \text{Current Assets} - \text{Current Liabilities}$$

Using Mistborn Trading, working capital is computed as follows for the current year:

$$\text{Working capital} = 180,000 - 100,000 = \$80,000$$

In this case, current assets were \$180,000, and current liabilities were \$100,000. Current assets were far greater than current liabilities for Mistborn Trading and they would easily be able to cover short-term debt.

The dollar value of the difference for working capital is limited given company size and scope. It is most useful to convert this information to a ratio to determine the business's current financial health. This ratio is the current ratio.

Current Ratio

Working capital expressed as a ratio is the current ratio. The current ratio considers the amount of current assets

available to cover current liabilities. The higher the current ratio, the more likely the company can cover its short-term debt. The formula for current ratio is:

$$\text{Current Ratio} = \left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$$

The current ratio in the current year for Mistborn Trading is:

$$\text{Current ratio} = (180,000 / 100,000) = \mathbf{1.8}$$

A 1.8 ratio means the business has 180% as many current assets as current liabilities; typically, this would be plenty to cover obligations. This may be an acceptable ratio for Mistborn Trading, but if it is too high (for example if the current ratio was 10), they may want to consider using those assets in a different way to grow the business.

Quick Ratio

The quick ratio, also known as the acid-test ratio, is similar to the current ratio except current assets are more narrowly defined as the most liquid assets, which exclude inventory and prepaid expenses. The conversion of inventory and prepaid expenses to cash can sometimes take more time than the liquidation of other current assets. A business will want to know what they have on hand and can use quickly if an immediate obligation is due. The formula for the quick ratio is:

$$\text{Quick Ratio} = \left(\frac{\text{Cash} + \text{Short-Term Investments} + \text{Accounts Receivable}}{\text{Current Liabilities}} \right)$$

The quick ratio for Mistborn Trading in the current year is:

$$\text{Quick ratio} = (140,000 / 100,000) = \mathbf{1.4}$$

A 1.4 ratio means the business has enough quick assets to cover current liabilities. When evaluating a business, we want to see that the quick ratio is above 1. A quick ratio below one means that the business does not have enough liquid assets to pay their debts and may be at risk of being insolvent.

Another category of financial measurement uses solvency ratios.

Solvency Ratios

Solvency implies that a business can meet its long-term obligations and will likely stay in business in the future. To stay in business the company must generate more revenue than debt in the long-term. Meeting long-term obligations includes the ability to pay any interest incurred on long-term debt. Two main solvency ratios are the debt-to-equity ratio and the times interest earned ratio.

Debt to Equity Ratio

The debt-to-equity ratio shows the relationship between debt and equity as it relates to business financing. A business can take out loans, issue shares, and retain earnings to be used in future periods to keep operations running. It is less risky and less costly to use equity sources for financing (issue shares) as compared to debt resources (obtain a loan). This is mainly due to interest expense repayment that a loan carries as opposed to equity, which does not have this requirement. Therefore, a business wants to know how much debt and equity contribute to its financing. Ideally, a business would prefer more equity than debt financing. The formula for the debt to equity ratio is:

$$\text{Debt-to-equity ratio} = \left(\frac{\text{Total liabilities}}{\text{Total equity}} \right)$$

The information needed to compute the debt-to-equity ratio for Mistborn Trading in the current year can be found on the balance sheet.

$$\text{Debt to equity ratio} = (150,000 / 100,000) = \mathbf{1.5}$$

This means that for every \$1 of equity (contributions from shareholders and past earnings of the firm), \$1.50 is contributed from lenders. This could be a concern for Mistborn Trading. This could be a red flag for potential investors that the business could be trending toward insolvency because they have too many obligations. MT might want to get the ratio below 1:1 to improve their long-term business viability.

Times Interest Earned Ratio

Time interest earned measures the business's ability to pay interest expense on long-term debt incurred. This ability to pay is determined by the available earnings (profit) before interest and taxes (EBIT) are deducted. These earnings are considered the operating income. Lenders will pay attention to this ratio before extending credit. The more times over a business can cover interest, the more likely a lender will extend long-term credit. The formula for times interest earned is:

$$\text{Times Interest Earned} = \left(\frac{\text{Earnings before Interest and Taxes}}{\text{Interest Expense}} \right)$$

The information needed to compute times interest earned for Mistborn Trading in the current year can be found on the income statement.

$$\text{Times interest earned} = (43,000 / 5,400) = \mathbf{7.96}$$

The \$43,000 is the net profit before interest and tax. The 7.96 times outcome suggests that Mistborn Trading can easily repay interest on an outstanding loan and creditors would have little risk that Mistborn Trading would be unable to pay. However, this idea that they could easily repay interest could change if the business obtained loans or interest rates changed. It could also change if the business environment changes – affecting their ability to generate revenue and the expenses they incur.

Another category of financial measurement uses efficiency ratios.

Efficiency Ratios

Efficiency shows how well a business uses and manages their assets. Areas of importance with efficiency are management of sales, accounts receivable, and inventory. A business that is efficient typically will be able to generate revenues quickly using the assets it acquires. Let's examine four efficiency ratios: accounts receivable turnover, total asset turnover, inventory turnover, and days' sales in inventory.

Accounts Receivable Turnover

Accounts receivable turnover measures how many times in a period (usually a year) a business will collect cash from accounts receivable. A higher number of times could mean cash is collected more quickly and that credit customers are of high quality. A higher number is usually preferable because the cash collected can be reinvested

in the business at a quicker rate. A lower number of times could mean cash is collected slowly on these accounts and customers may not be properly qualified to accept the debt. The formula for accounts receivable turnover is:

$$\text{Accounts Receivable Turnover} = \left(\frac{\text{Net Credit Sales}}{\text{Average Accounts Receivable}} \right)$$

$$\text{Average Accounts Receivable} = \left(\frac{\text{Beginning Accounts Receivable} + \text{Ending Accounts Receivable}}{2} \right)$$

Many businesses do not split credit and cash sales, in which case an assumption is made that all sales are credit sales and therefore total sales or revenue would be used to compute accounts receivable turnover. Average accounts receivable is found by dividing the sum of beginning and ending accounts receivable balances found on the balance sheet. The beginning accounts receivable balance in the current year is taken from the ending accounts receivable balance in the prior year.

When computing the accounts receivable turnover for Mistborn Trading, let's assume net credit sales make up \$100,000 of the \$120,000 of the revenue found on the income statement in the current year.

$$\text{Accounts receivable turnover} = (100,000 / (20,000 + 30,000) / 2)$$

$$\text{Accounts receivable turnover} = (100,000 / 25,000) = 4$$

An accounts receivable turnover of four times per year may be low for Mistborn Trading. Given this outcome, they may want to consider stricter credit lending practices to make sure credit customers are of a higher quality. They may also need to be more aggressive with collecting any outstanding accounts receivables from customers.

Days in receivables

The days in receivables ratio tells us how many days a customer's debt is outstanding before they pay. We use the Accounts Receivable Turnover ratio to calculate it.

$$\text{Days in receivables} = \left(\frac{365}{\text{Accounts receivable turnover}} \right)$$

Therefore for Mistborn Trading, we can calculate the days in receivables as follows:

$$\text{Days in receivables} = 365 / 4 = 91$$

This is an extremely long time to wait for customers to pay, and anything could happen to those customers during that period – for example, they could go out of business and therefore be unable to pay you. Collecting sooner is always better and in most industries, the average period of time to give a customer credit is 30 days.

Inventory Turnover

Inventory turnover measures how many times during the year a business has sold and replaced inventory. This can tell a business how well inventory is managed. A higher ratio is preferable; however, an extremely high turnover may mean that the company does not have enough inventory available to meet demand. A low turnover may mean the company has too much supply of inventory on hand. The formula for inventory turnover is:

$$\text{Inventory Turnover} = \left(\frac{\text{Cost of Goods Sold}}{\text{Average Inventory}} \right)$$

$$\text{Average Inventory} = \left(\frac{\text{Beginning Inventory} + \text{Ending Inventory}}{2} \right)$$

Cost of goods sold (or Cost of sales) for the current year is found on the income statement/P&L. Average inventory is found by dividing the sum of beginning and ending inventory balances found on the balance sheet. The beginning inventory balance in the current year is taken from the ending inventory balance in the prior year.

Mistborn Trading's inventory turnover is:

$$\text{Inventory turnover} = (60,000 / (35,000 + 40,000) / 2)$$

$$\text{Inventory turnover} = (60,000 / 37,500) = 1.6$$

1.6 times is a very low turnover rate for Mistborn Trading. This may mean the company is maintaining too high an inventory supply to meet a low demand from customers. They may want to decrease their on-hand inventory to free up more liquid assets to use in other ways.

Days' Sales in Inventory

Days' sales in inventory expresses the number of days it takes a business to turn inventory into sales. This assumes that no new purchase of inventory occurred within that time period. The fewer the number of days, the more quickly the business can sell its inventory. The higher the number of days, the longer it takes to sell its inventory. The formula for days' sales in inventory is:

$$\text{Days in inventory} = \left(\frac{365}{\text{Inventory turnover}} \right)$$

Mistborn Trading's days' sales in inventory is:

$$\text{Days' sales in inventory} = 365 / 1.6 = 228 \text{ days}$$

228 days is a long time to sell inventory. While industry averages dictates what is an acceptable number of days to sell inventory, in most cases 228 days is unsustainable long-term. Mistborn Trading will need to better manage their inventory and sales strategies to move inventory more quickly.

Days sales in inventory should also be examined within the context of the item(s) being sold. A car dealership that sells Aston Martins is likely to have a higher days sales in inventory and lower inventory turnover because it is a luxury product. In comparison, Toyota focuses on making money by selling volume and would expect to have a lower days sales and higher inventory turnover.

Total Asset Turnover

Total asset turnover measures the ability of a business to use their assets to generate revenues. A business would like to use as few assets as possible to generate the most sales or revenue. Therefore, a higher total asset turnover

means the business is using their assets very efficiently to produce net sales. The formula for total asset turnover is:

$$\text{Total Asset Turnover} = \left(\frac{\text{Net Sales}}{\text{Average Total Assets}} \right)$$

$$\text{Average Total Assets} = \left(\frac{\text{Beginning Total Assets} + \text{Ending Total Assets}}{2} \right)$$

Average total assets are found by dividing the sum of beginning and ending total assets balances found on the balance sheet. The beginning total assets balance in the current year is taken from the ending total assets balance in the prior year.

Mistborn Trading's total asset turnover is:

$$\text{Total asset turnover} = (120,000 / (200,000 + 250,000) / 2)$$

$$\text{Total asset turnover} = (120,000 / 225,000) = \mathbf{0.53}$$

The outcome of 0.53 means that for every \$1 of assets, \$0.53 of sales revenue are generated. Over time, Mistborn Trading would like to see this turnover ratio increase.

The last category of financial measurement examines profitability ratios.

Profitability Ratios

Profitability considers how well a business produces returns given their operational performance. The business needs to leverage its operations to increase profit. To assist with profit goal attainment, business revenues need to outweigh expenses. Let's consider three profitability measurements and ratios: profit margin, return on total assets, and return on equity.

Profit Margin

Profit margin represents how much of sales revenue has translated into income. This ratio shows how much of each \$1 of sales is returned as profit. The larger the ratio figure (the closer it gets to 1), the more of each sales dollar is returned as profit. The portion of the sales dollar not returned as profit goes toward expenses. The formula for profit margin is:

$$\text{Profit margin} = \left(\frac{\text{Net profit}}{\text{Revenue or Sales}} \right)$$

For Mistborn Trading, the profit margin in the current year is:

$$\text{Profit margin} = 31,600 / 120,000 = 0.2633 = 26.33\%$$

This means that for every dollar of sales, \$0.26 returns as profit. If Mistborn Trading thinks this is too low, the company could try and find ways to reduce expenses and increase sales.

Return on Assets (ROA)

The return on assets measures the business's ability to use its assets successfully to generate a profit. The higher the return (ratio outcome), the more profit is created from asset use. Average total assets are found by dividing the sum of beginning and ending total assets balances found on the balance sheet. The beginning total assets balance in the current year is taken from the ending total assets balance in the prior year. The formula for return on total assets is:

$$\text{Return on Total Assets} = \left(\frac{\text{Net Income}}{\text{Average Total Assets}} \right)$$

$$\text{Average Total Assets} = \left(\frac{\text{Beginning Total Assets} + \text{Ending Total Assets}}{2} \right)$$

For Mistborn Trading, the return on assets for the current year is:

$$\text{Return on assets} = (31,600 / (200,000 + 250,000 / 2))$$

$$\text{Return on assets} = (31,600 / 225,000) = 0.1404 = 14.04\%$$

Therefore assets in total are returning \$0.14 for every \$1 of asset.

The higher the figure, the better the company is using its assets to create a profit. Industry standards can dictate what is an acceptable return.

Return on Equity

Return on equity (ROE) measures the business's ability to use its invested capital (from shareholders) and retained earnings to generate income. The invested capital comes from shareholders' investments in the company's shares and its retained earnings and is leveraged to create profit. The higher the return, the better the business is at using its investments to yield a profit. The formula for return on equity is:

$$\text{Return on equity} = \left(\frac{\text{Net profit}}{\text{Average total equity}} \right)$$

$$\text{Average total equity} = \left(\frac{\text{Equity current year} + \text{Equity previous year}}{2} \right)$$

Average total equity is found by dividing the sum of beginning and ending total equity balances. But how do we

find these balances? The beginning total equity balance in the current year is taken from the ending total equity balance in the prior year.

For Mistborn Trading, we will use the net income figure and assume no preferred dividends have been paid. The return on equity for the current year is:

$$\text{Return on equity} = (31,600 / (90,000 + 100,000)/2)$$

$$\text{Return on equity} = (31,600 / 95,000) = 0.3326 = 33.26\%$$

The higher the figure, the better the business is using the investments by shareholders and past profits to generate further profit. Industry standards can dictate what is an acceptable return.

SOLUTION GUIDE

The entire spreadsheet and solutions for the horizontal analysis, vertical analysis and ratio analysis is provided below. Check out the formulas used in Excel to make it easier to conduct this analysis.

Chapter-6-Mistborn-Trading-financial-statements SOLUTIONS

Comparing business reports to other measures

AMANDA WHITE

So far we've examined comparing the business to itself through the prior period. But what other comparisons to users of financial statements make to help them in their decision making?

Industry averages

It is difficult to conduct horizontal or vertical analysis using industry averages because no one creates an industry average set of financial statements. However, many analysis websites collate firms in the same industry to create industry averages for ratios. Therefore, you can compare the current ratio of one business, to the industry average to determine how the business is performing against the rest of the industry.

There are some caveats to this approach. For example, some industries may have very large and very small players. A small owner-operated IGA Supermarket would have a slightly different business model and buying power than Woolworths or Coles and thus comparing the IGA supermarket ratios to a major supermarket chain might not be useful.

Another caveat is where an industry grouping might be very diverse. For example, biotechnology could include a whole range of firms, from medical research to large pharmaceutical companies – the businesses in the industry average might not be similar (or homogenous), resulting in averages that might not be meaningful.

Trends over time

We have examined just two years in our analysis, however, the more data points that you have, the greater the chances of seeing a trend develop over time. Analysis websites like Morningstar and Investing.com will show longer trends of data.

Budgets/forecasts

The final comparison a business may make is between their ACTUAL performance (based on recorded transactions) and their BUDGET or FORECAST for the same period. Did they do better than their budget? Generate more revenue? Decrease expenses?

We will learn in a later section that budgets can be manipulated, especially when part of a performance measurement or bonus scheme, perhaps artificially. Therefore any comparison to budgets should be made with a healthy dose of scepticism.

CHAPTER 7: ACCOUNTABILITY AND MANAGEMENT DECISION MAKING

In this introduction to management accounting, we examine

- Who are the internal users of accounting information?
- The three primary responsibilities of management
- Characteristics of information for decision making

Management accounting is accounting and analysis for internal decision making – but before we dive into the technicalities like budgeting and planning – we need to understand the needs of internal decision makers.

Who are the internal users of accounting information?

AMANDA WHITE; MITCHELL FRANKLIN; PATTY GRAYBEAL; AND DIXON COOPER

Accounting information is collected about every business transaction that occurs – sales to customers, purchases from suppliers, the effort exerted by employees and rewarding shareholders/owners for their efforts. In the previous chapters we have examined how to record transactions, collate them and report them in financial statements. We have also examined how to conduct preliminary analysis related to the financial statements in terms of horizontal, vertical and ratio analysis. The financial accounting process provides a useful level of detail for external users, such as investors and creditors, but it does not provide enough detailed information for the types of decisions made in the day-to-day operation of the business or for the types of decisions that guide the company long term. Managerial accounting is the process that allows decision makers to set and evaluate business goals by determining what information they need to make a particular decision and how to analyse and communicate this information.

But who are internal users of accounting information within a business?

The easy answer is, who are all the people who work within that business? Every one of them will be making decisions in the business that could be informed by accounting information. Here are some examples:

Internal user	How they may use accounting information
Sales staff	Examine sales trends to determine what sort of sales strategies may be used in the business to provide growth. Determine which sales people are performing strongly so that they can be rewarded.
Marketing staff	Combine accounting information along with marketing metrics (such as the performance of various advertising streams like social media, print, radio) to make decisions about future marketing campaigns. Work with the sales staff, combining information about sales, marketing and profits made on each item to decide on future sales strategies and negotiate discounts.
Production / manufacturing staff	Use information related to the costs of inputs for production (raw materials) and labour to evaluate the cost of producing the goods a business sells. Evaluating these costs may help the business achieve economies of scale, potentially reducing costs and increasing profits.
Logistics / shipping staff	Examine the sales trends over time to predict the need for logistical support. For example, there may be increased need around Christmas or sale periods for additional logistics and shipping staff. The logistics team may also notice increased number of returned packages from customers – highlighting a potential product quality issue.
Research and development staff	The business must plan and decide what sort of research and development activities they engage in to continue business growth. This will require the preparation of budgets and an evaluation of the potential R&D activities and their potential benefits.
Internal audit staff	The internal auditors will use accounting information as well as information from other systems to determine whether there is any fraud or a failure to follow business processes.

Information is the most powerful tool that a business can use. Businesses are collecting more and more data about their operations and environment. Combining this information with accounting information allows businesses to hopefully become more agile in their decision making and make more optimal decisions for their current situation.

Business analytics is an emerging discipline – combining both data analytics and business knowledge – to unearth insights into the business and their environment that can be leveraged for better decision making, and hopefully greater organisational performance.

The three primary responsibilities of management

MITCHELL FRANKLIN; PATTY GRAYBEAL; DIXON COOPER; AND AMANDA WHITE

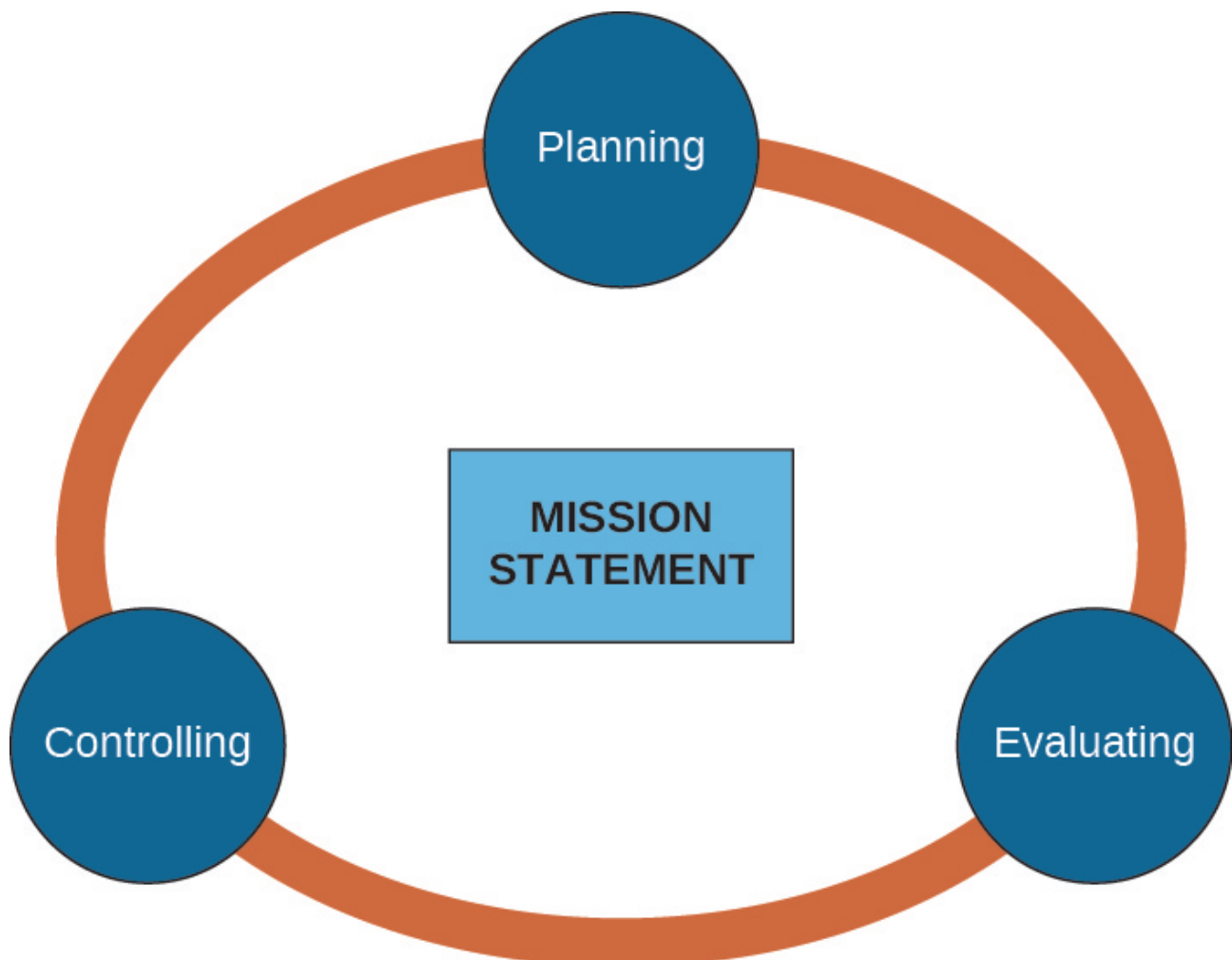
What is the role of a manager?

Very few people will graduate university and step into the role of manager. Instead, most will start in some sort of other capacity and as a reward for performance, be promoted into a role that makes them responsible for others and the performance of a business unit.

The study of management accounting is about the study of information and techniques required to make daily business decisions to help an organisation achieve its objectives. However, first, it is important to understand the various roles managers play in a business in order to understand the types of information and the level of detail that are needed. Most of the job responsibilities of a manager fit into one of three categories: planning, controlling, or evaluating.

The model in the figure below sums up the three primary responsibilities of management and the management accountant's role in the process. As you can see from the model, the function of accomplishing an entity's mission statement is a circular, ongoing process.

The Process of Adhering to the Mission Statement. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license)



Planning

One of the first items on a new company's agenda is the creation of a mission statement. A mission statement is a short statement of a company's purpose and focus. This statement should be broad enough that it will encompass future growth and changes of the company. The table below contains the mission statement of three different types of companies: a manufacturer, an e-commerce company, and a service company.

Sample Mission Statements	
Company	Mission Statement
Dow Chemical	"To passionately create innovation for our stakeholders at the intersection of chemistry, biology, and physics." ¹
Starbucks	"To inspire and nurture the human spirit—one person, one cup, and one neighborhood at a time." ²
Google	"Our mission is to organize the world's information and make it universally accessible and useful." ³

Once the mission of the company has been determined, the company can begin the process of setting goals, or what the company expects to accomplish over time, and objectives, or the targets that need to be met in order to meet the company's goals. This is known as planning. Planning occurs at all levels of an organisation and can cover various periods of time. One type of planning, called strategic planning, involves setting priorities and determining how to allocate corporate resources to help an organisation accomplish both short-term and long-term goals. For example, one hotel may want to be the low-price, no-frills, clean alternative, while another may decide to be the superior quality, high-price luxury hotel with many amenities. Obviously, to be successful, either of these businesses must determine the goals necessary to meet their particular strategy.

Typically, a strategic plan will span any number of years an organisation chooses (three, five, seven, or even ten years), and often companies will have multiple strategic plans, such as one for three years, one for five years, and one for ten years. Given the time length involved in many plans, the organisation also needs to factor in the potential effects of changes in their senior executive leadership and the composition of the board of directors.

What types of objectives are part of a strategic plan? Strategic objectives should be diverse and will vary from company to company and from industry to industry, but some general goals can include maximising market share, increasing short-term profits, increasing innovation, offering the best value for the cost, maintaining commitment to community programs, and exceeding environmental protection mandates.

From a managerial accounting perspective, planning involves determining steps or actions to meet the strategic or other goals of the company. For example, High Valley Cheese, a major producer of organic dairy products in Mudgee (in central NSW), has made increasing the market share of its products one of its strategic goals. However, to be truly effective, the goals need to be defined specifically. For example, the goals might be stated in terms of percentage growth, both annually and in terms of the number of markets addressed in their growth projections.

Also, High Valley Cheese's planning process would include the steps the company plans to use to implement to increase market share. These plans may include current-year plans, five-year plans, and ten-year plans.

The current-year plan may be to sell the company's products in 10 percent more stores in the states in which it currently operates. The five-year plan may be to sell the products internationally in three countries, and the ten-year plan may be to acquire their chief competitor and, thus, their customers. Each of these plans will require outlining specific steps to reach these goals and communicating those steps to the employees who will carry out or have an impact on reaching these goals and implementing these plans.

Planning can involve financial and non-financial processes and measures. One planning tool that we will cover is the budgeting process, which requires management to assess the resources – for example, time, money, and number and type of employees needed – to meet current-year objectives. Budgeting often includes both financial data, such as worker pay rates, and non-financial data, such as the number of customers an employee can serve in a given time period.

A retail company can plan for the expected sales volume, a hospital can plan for the number of x-rays they expect to administer, a law firm can plan the hours expected for the various types of legal services they perform, a manufacturing firm can plan for the level of quality expected in each item produced, and a utility company can plan for the level of air pollutants that are acceptable. Notice that in each of these examples, the aspect of the business that is being planned and evaluated is a qualitative (non-financial) factor or characteristic. In your

study of managerial accounting, you will learn about many situations in which both financial and non-financial data or information are equally relevant. However, the qualitative aspects are typically not quantified in dollars but evaluated using some other standards, such as customers served or students advised.

While these functions are initially stated in qualitative terms, most of these items would at some point be translated into a dollar value or dollar effect. In each of these examples, the managerial accounting function would help to determine the variables that would help appropriately measure the desired goal as well as plan how to quantify these measures. However, measures are only useful if tracked and used to determine their effectiveness. This is known as the control function of management.

Controlling

To measure whether plans are meeting objectives or goals, management must put in place ways to assess success or lack of success. Controlling involves the monitoring of the planning objectives that were put into place. For example, if you have a retail store and you have a plan to minimise shoplifting, you can implement a control, such as anti-theft tags that trigger an alarm when someone removes them from the store. You could also install in the ceilings cameras that provide a different view of customers shopping and therefore may catch a thief more easily or clearly. The anti-theft tags and cameras serve as your controls against shoplifting.

Managerial accounting is a useful tool in the management control function. Managerial accounting helps determine the appropriate controls for measuring the success of a plan. There are many types of controls that a company can use. Some controls can be in the form of financial measures, such as the ratio for inventory turnover, which is a measure of inventory control and is defined as $\text{Cost of Goods Sold} \div \text{Average Inventory}$, or in the form of a performance measure, such as decreasing production costs by 10 percent to help guide or control the decisions made by managers. Other controls can be physical controls, such as fingerprint identification or password protection. Essentially, the controlling function in management involves helping to coordinate the day-to-day activities of a business so that these activities lead to meeting corporate goals.

Without controls, it is very unlikely a plan would be successful, and it would be difficult to know if your plan was a success. Consider the plan by High Valley Cheese to increase market share. The plan for the first year was to increase market share by selling the company's products in 10 percent more stores in the states in which the company already operates. How will the company implement this plan? The implementation, or carrying out, of the plan will require the company to put controls in place to measure which new stores are successfully selling the company's products, which products are being sold the most, what the sales volume and dollar value of the new stores are, and whether the sales in these new stores are affecting the volume of sales in current stores. Without this information, the company would not know if the plan is reaching the desired result of increased market share.

The control function helps to determine the courses of action that are taken in the implementation of a plan by helping to define and administer the steps of the plan. Essentially, the control function facilitates coordination of the plan within the organisation. It is through the system of controls that the actual results of decisions made in implementing a plan can be identified and measured. Managerial accounting not only helps to determine and design control measures, it also assists by providing performance reports and control reports that focus on variances between the planned objective performance and the actual performance. Control is achieved through effective feedback, or information that is used to assess a process. Feedback allows management to evaluate the results, determine whether progress is being made, or determine whether corrective measures need to be taken. This evaluation is in the next management function.

Evaluating

Managers must ultimately determine whether the company has met the goals set in the planning phase. Evaluating, also called *assessing* or *analysing*, involves comparing actual results against expected results, and it can occur at the product, department, division, and company levels. When there are deviations from the stated objectives, managers must decide what modifications are needed.

The controls that were put into place to coordinate the implementation of a particular company plan must be evaluated so that success can be measured, or corrective action can be taken. Consider High Valley Cheese's

one-year plan to increase market share by selling products in 10 percent more stores in the states in which the company currently operates. Suppose one of the controls put into place is to measure the sales in the current stores to determine if selling the company's products in new stores is adding new sales or merely moving sales from existing stores. This control measure, same-store sales, must be evaluated to determine the effect of the decision to expand the selling of products within the state. This control measure will be evaluated by comparing sales in the current year in those stores to sales from the prior year in those same stores. The results of this evaluation will help guide management in their decision to move forward with their plan, to modify the plan, or to scrap the plan.

As discussed previously, not all evaluations will involve quantitative or financial measures. In expanding market share, the company wants to maintain or improve its reputation with customers and does not want the planned increased availability or easier access to their products to decrease customer perceptions of the products or the company. They could use customer surveys to evaluate the perceived effect on the company's reputation as a result of implementing this one-year plan. However, there are many ways that companies can evaluate various controls. In addition to the financial gauges, organisations are now measuring efficiencies, customer development, employee retention, and sustainability.

Managers spend their time in various stages of planning, controlling, and evaluating. Generally, higher-level managers spend more time on planning, whereas lower-level managers spend more time on evaluating. At any level, managers work closely with the managerial accounting team to help in each of these stages. Managerial accountants help determine whether plans are measurable, what controls should be implemented to carry out a plan, and what are the proper means of evaluation of those controls. This would include the type of feedback necessary for management to assess the results of their plans and actions. Management accountants generate the reports and information needed to assess the results of the various evaluations, and they help interpret the results.

To put this in context, think about how you will spend your weekend. First, you are the manager of your own time. You must plan based on your workload and on how much time you will spend studying, exercising, sleeping, and meeting with friends. You then control how your plan is implemented by setting self-imposed or possibly group meeting-imposed deadlines, and last, you evaluate how well you carried out your plan by gathering more data—such as grades on assignments, personal fulfillment, and number of hours of sleep—to determine if you met your plans (goals). Not planning, controlling, and evaluating often results in less-than-desirable outcomes, such as late assignments, too little sleep, or bad grades. In this scenario, you did not need a separate managerial accountant to help you with these functions, because you could manage planning, controlling, and evaluating on your own. However, in the business world, most businesses will have both managers and managerial accountants. (Figure) illustrates some examples.

Relating Managerial Accounting Functions to Various Business Majors

	Sales	Human Resources	Logistics
Planning	What are our expected sales for each product in each geographic region? How much should be budgeted for salaries and commissions for our salespeople?	How much should we budget for salary and wage increases for the year? How much should we plan to spend on safety and training for the year?	Should we invest in radio-frequency identification (RFID) processors to enable computer tracking of inventory? How much raw material should be ordered and delivered to ensure timely delivery of our finished products to our customers?
Controlling	Are we meeting expected sales growth in each region? Are each of the salespeople meeting their sales projections?	Is our projected budget for wages and salaries sufficient? Are we meeting our safety and training goals?	Are our products being delivered to our customers in a timely manner, and at what cost? Are we dealing with stock-outs in inventory? If so, what is that costing us?
Evaluating	How do our actual sales compare to our forecasted or budgeted sales? What sales promotions are our competitors offering, and what effect is it having on our market share?	Would it be cheaper to hire temporary employees to get through our "busy" season or to pay our current employees for overtime?	What are the cost differences in starting our own delivery service versus continuing to use other carriers? Should we outsource the manufacturing of a component part or continue to make it ourselves? What are the price differences?

Accountability of the management function

Management of any business or organisation must be held accountable for the decisions they make in relation to their functions – their decisions related to planning, controlling and evaluating affect the value of shareholders equity. Management are accountable to shareholders/owners through the process of corporate governance. A reminder from Chapter 4 in relation to a definition of corporate governance:

the framework of rules, relationships, systems and processes within and by which authority is exercised and controlled within corporations. It encompasses the mechanisms by which companies, and those in control, are held to account

(Justice Owen in the HIH Royal Commission, The Failure of HIH Insurance Volume 1: A Corporate Collapse and Its Lessons, Commonwealth of Australia, April 2003 at page xxxiv.)

Owners and shareholders must hold management accountable. Management accounting information plays a critical role – allowing owners (and in larger companies, their representatives – the board of directors) to evaluate the outcomes of management's decisions.

In the remainder of this textbook, we will learn different tools and techniques to analyse accounting and non-accounting data to evaluate the outcomes of past decisions, and guide future decisions that need to be made.

Characteristics of information for decision making

AMANDA WHITE

Information for internal decision making should meet a number of characteristics.

1. Accurate
2. Complete
3. Reliable
4. Relevant
5. Timely

Accurate information is that recorded correctly from the original transaction.

Complete information is one where all transactions have been recorded, with no transactions are missing or purposely omitted.

Reliable information is that which is both accurate and complete, consistently, so that it can be relied upon for decision making.

Relevant information is that which is useful in the decision making process (and is highly dependent on the decision being made of course!)

Timely information is that which is produced so that it is available when decisions need to be made.

Information that managers need to make decisions on a daily basis in a business must meet all of these requirements. Accurate and complete information, that then becomes reliable, is the product of strong systems of internal control and accounting systems. Where information for decision making is incomplete – managers may not make the best decision for the business. Decision makers must decide what information is relevant to their needs, a common deficiency in decision making is simply accepting whatever reports your business's information systems provide, rather than considering what information is really useful in the decision making process and trying to obtain it. If information is not provided in a timely manner, managers may not be able to react to the changes in the industry or moves by competitors quickly enough – resulting in lost customer share, declining revenues and declining profits.

Therefore, if you're making decisions in a business – as an accountant, as a marketing executive, as a supply chain manager – it is wise to keep these characteristics in mind when evaluating the information available to you to support decision making.

CHAPTER 8: DECISION MAKING IN THE SHORT TERM - COST-VOLUME-PROFIT ANALYSIS

Internal decision makers in a business will need to make decisions frequently about the products including setting a sales price, determining discounts and evaluating costs. In this chapter we will learn:

- Why costs matter
- To understand the cost equation
- The concept of the contribution margin
- Calculate the break even point for a business
- Perform sensitivity analysis for a business that sells a single product
- Perform sensitivity analysis for a business that sells multiple products
- To calculate the degree of operating leverage

Why does understanding costs matter?

MITCHELL FRANKLIN; PATTY GRAYBEAL; DIXON COOPER; AND AMANDA WHITE

Balancing Cost, Volume, and Profit. Managers employ cost-volume-profit (CVP) analysis to determine the sales level at which they break even or balance their revenue with their expenses. (credit: modification of “Balance Swing Equality” by “Mediamodifier”/Pixabay, CC0)



As president of the Business Students Club, you are working on a fundraiser selling T-shirts on campus, with the funds going towards OzHarvest – a charity providing meals to the less fortunate. You have gotten quotes from several suppliers ranging from \$8 to \$10 per shirt and now have to select a vendor. The prices vary based on whether the T-shirts have pockets, have long sleeves or short sleeves, and are printed on one side or both. You are confident that you can sell them for \$15 each. However, the university will charge a fee of \$100 to have a stall on-campus, and your T-shirt sales must cover this cost and any net profit will be donated to charity.

In addition, several of the vendors will give volume discounts—the more shirts you purchase, the less each shirt costs. In short, you need to know exactly which style of T-shirt, vendor, and quantity will allow you to reach your desired net profit and cover your fixed expense of \$100. You decide on a short-sleeve shirt with a pocket that costs \$10 each and that you can sell for \$15.

This \$5 per shirt “gross profit” will first go toward covering the \$100 student sale fee. That means you will have to sell 20 shirts to pay the fee ($\$100/\$5 = 20$ shirts). After selling the first 20 shirts, the \$5 profit will be available to start contributing towards your OzHarvest donation. Your goal is to donate \$750 which will provide 1500 meals to those in need. This means the t-shirt stall will need to generate an additional \$750 on top of the first 20 shirts.

At \$5 per shirt you will need to sell 150 shirts to reach your donation target ($\$750/\5). How many shirts will the club need to sell overall? You will need to sell a total of 170 shirts: 20 to cover your fixed cost of \$100 and an additional 150 to cover the donation target (\$750).

What you have just completed is a cost-volume-profit analysis. In this chapter, we will explore how managers can use this type of analysis to make a wide range of decisions about their business operations.

Understanding the cost equation

AMANDA WHITE; DIXON COOPER; MITCHELL FRANKLIN; AND PATTY GRAYBEAL

To be able to complete any cost-volume-profit (CVP) analysis, first we must understand some basic information about costs that businesses incur.

Costs can be classified in many ways – and there can be many starting points in terms of categorising costs – but let's start with the following classifications:

1. Variable costs
2. Fixed costs
3. Mixed costs

Variable costs change as the quantity of goods or services produced or provided changes. **Fixed costs** are exactly as the name implies – they remain the same regardless of the quantity / volume of goods or services produced within the period. **Mixed costs** are those a combination of variable and fixed components (and when conducting CVP analysis, we will break mixed costs into fixed and variable components).

Consider the following example. Amantha's Artistry (AA) makes sweet treats. Amantha's variable costs are flour, butter, sugar, vanilla essence and other ingredients in her cupcakes. The fixed costs are the rent for her store and public liability insurance. Amantha's mixed costs include her utilities. Electricity for example, has a fixed component (a monthly access charge) and a variable component based on how much electricity is used (which is dependent on how many hours a day the ovens are in use).

This can be represented in an equation

$$Y = a + bx$$

where Y is the total cost, a is the fixed cost, b is the variable cost per unit, and x is the level of activity.

The cost equation is a linear equation that takes into consideration total fixed costs, the fixed component of mixed costs, and variable cost per unit. Cost equations can use past data to determine patterns of past costs that can then project future costs, or they can use estimated or expected future data to estimate future costs.

Let's take a more in-depth look at the cost equation by examining the costs incurred by Amantha's Artistry in the manufacture of sweet treats, as shown in the table below.

Cost Information for Amantha's Artistry

Cost Incurred	Fixed or Variable	Cost
Rent on premises	Fixed	\$20,000 per year
Public liability insurance	Fixed	\$15,000 per year
Ingredients	Variable	\$2 per treat
Staff labour	Variable	\$1 per treat

By applying the cost equation, Amantha's Artistry can predict its costs at any level of activity (x) as follows:

1. Determine total fixed costs: $\$30,000 + \$15,000 = \$35,000$
2. Determine variable costs per unit: $\$2 + \$1 = \$3$
3. Complete the cost equation: $Y = \$35,000 + \$3x$

Using this equation, Amantha's Artistry can now predict its total costs (Y) for any given level of activity (x), as show in the table below

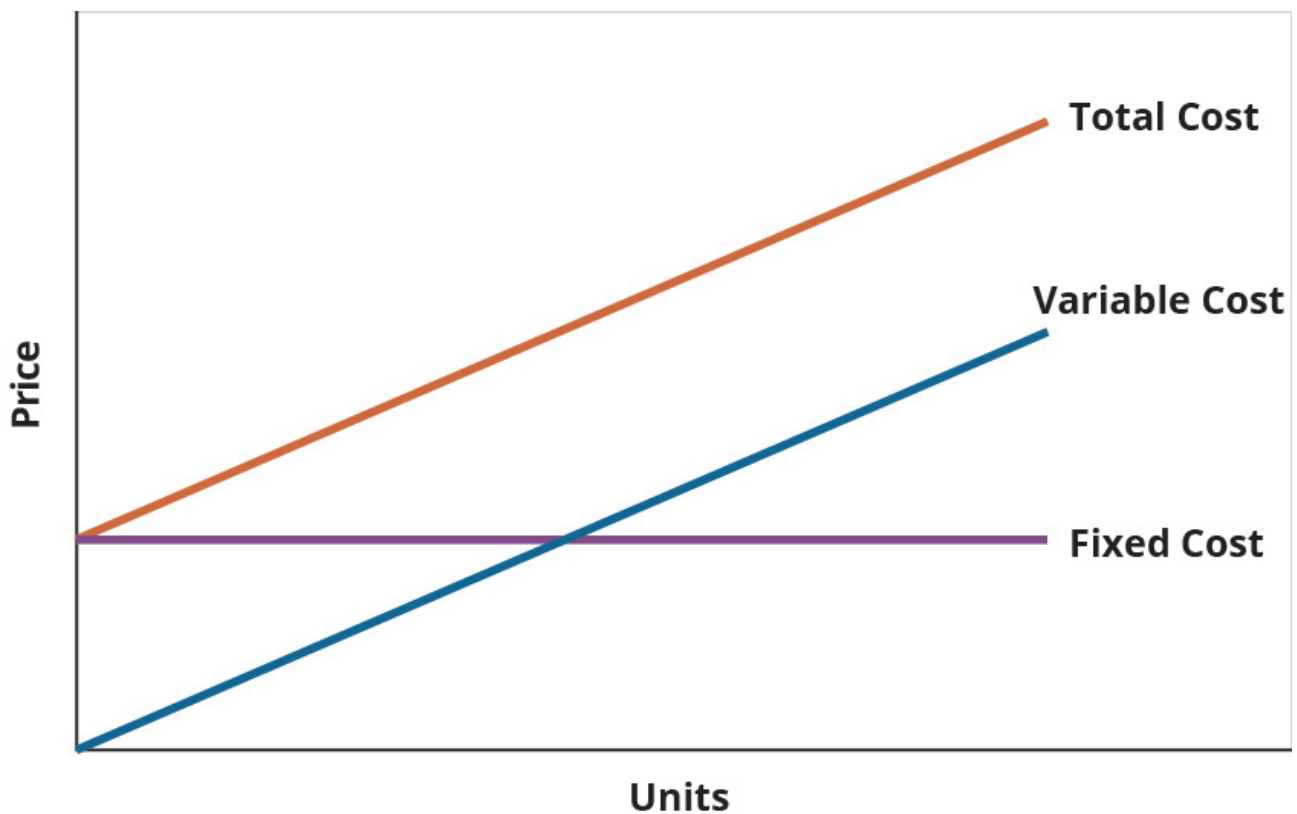
Treats produced per annum	Cost equation	Total costs
5,000	$Y = \$35,000 + (\$3 \times 5,000)$	\$50,000
12,000	$Y = \$35,000 + (\$3 \times 12,000)$	\$71,000
20,000	$Y = \$35,000 + (\$3 \times 20,000)$	\$95,000

When using this approach, Amantha's Artistry must be certain that it is only predicting costs for its relevant range. For example, if the business expands over 40,000 treats, the business would need to expand and rent a larger premises.

Why do we need to distinguish between fixed and variable costs?

Distinguishing between fixed and variable costs is critical because the total cost is the sum of all fixed costs (the total fixed costs) and all variable costs (the total variable costs). For every unit produced, every customer served, or every hotel room rented, for example, managers can determine their total costs both per unit of activity and in total by combining their fixed and variable costs together.

The graphic in (Figure) illustrates the concept of total costs.



Total Cost as the Sum of Total Fixed Costs and Total Variable Costs. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license)

Remember that the reason that businesses take the time and effort to classify costs as either fixed or variable is to be able to control costs. When they classify costs properly, managers can use cost data to make decisions and plan for the future of the business.

Example – Boeing

If you've ever flown on an airplane, there's a good chance you know Boeing. The Boeing Company generates around \$90 billion each year from selling thousands of airplanes to commercial and military customers around the world. It employs around 200,000 people, and it's indirectly responsible for more than a million jobs through its suppliers, contractors, regulators, and others. Its main assembly line in Everett, WA (USA), is housed in the largest building in the world, a colossal facility that covers nearly a half-trillion cubic feet. Boeing is, simply put, a massive enterprise.

And yet, Boeing's managers know the exact cost of everything the company uses to produce its airplanes: every propeller, flap, seat belt, welder, computer programmer, and so forth. Moreover, they know how those costs would change if they produced more airplanes or fewer. They also know the price at which they sold each plane and the profit the company made on each sale. Boeing's executives expect their managers to know this information, in real time, if the company is to remain profitable.

Test your understanding

Test your understanding of fixed, variable and mixed costs before we move onto using these costs to conduct cost-volume-profit (CVP) analysis.



An interactive H5P element has been excluded from this version of the text. You can view it online here:

<https://oer.pressbooks.pub/utsaccounting1/?p=2072#h5p-23>

Contribution margin - the foundation for CVP

MITCHELL FRANKLIN; PATTY GRAYBEAL; DIXON COOPER; AND AMANDA WHITE

Fixed costs, relevant range and variable costs

To be able to conduct Cost Volume Profit (CVP) analysis, we need to understand something called the **contribution margin**. However, before examining contribution margins, let's review some key concepts: fixed costs, relevant range and variable costs.

Fixed costs are those costs that will not change within a given range of production. For example, in the current case, the fixed costs will be the student sales staff fee of \$100. No matter how many shirts the club sells within the relevant range, the fee will be locked in at \$100. The relevant range is the anticipated production activity level. Fixed costs remain constant within a relevant range. If production levels exceed expectations, then additional fixed costs will be required (eg have two stalls).

For example, assume that the Club is going to hire a people mover van to get students to a weekend study camp. A people-mover van like a Toyota HiAce People mover will hold twelve passengers, at a cost of \$200 per van. If they send one to twelve participants, the fixed cost for the van would be \$200. If they send thirteen to twenty four students, the fixed cost would be \$400 because they will need two vans. We would consider the relevant range to be between one and twelve passengers, and the fixed cost in this range would be \$200. If they exceed the initial relevant range, the fixed costs would increase to \$400 for thirteen to twenty four passengers.

Variable costs are those costs that vary per unit of production. Direct materials are often typical variable costs, because you normally use more direct materials when you produce more items. In our example, if the students sold 100 shirts, assuming an individual variable cost per shirt of \$10, the total variable costs would be \$1,000 ($100 \times \10). If they sold 250 shirts, again assuming an individual variable cost per shirt of \$10, then the total variable costs would be \$2,500 ($250 \times \10).

Defining the contribution margin

Contribution margin is the amount by which a product's selling price exceeds its total variable cost per unit. This difference between the sales price and the per unit variable cost is called the contribution margin because it is the per unit contribution toward covering the fixed costs. It typically is calculated by comparing the sales revenue generated by the sale of one item versus the variable cost of the item:

$$\text{Contribution Margin} = \text{Sales} - \text{Variable Costs}$$

In our example, the sales revenue from one shirt is \$15 and the variable cost of one shirt is \$10, so the individual contribution margin is \$5. This \$5 contribution margin is assumed to first cover fixed costs first and then any contribution after fixed costs are covered can be considered profit.

As you will see, it is not just small operations, such as the Business Students Club scenario provided in the previous section, that benefit from cost-volume-profit (CVP) analysis. At some point, all businesses find themselves asking the same basic questions: How many units must be sold in order to reach a desired income level? How much will each unit cost? How much of the sales price from each unit will help cover our fixed costs?

For example, **Starbucks** faces these same questions every day, only on a larger scale. When they introduce new menu items, such as seasonal specialty drinks, they must determine the fixed and variable costs associated

with each item. Adding menu items may not only increase their fixed costs in the short run (via advertising and promotions) but will bring new variable costs. Starbucks needs to price these drinks in a way that covers the variable costs per unit and additional fixed costs and contributes to overall net income. Regardless of how large or small the enterprise, understanding how fixed costs, variable costs, and volume are related to income is vital for sound decision-making.

Starbucks. Large corporations like Starbucks use cost-volume-profit analysis to make decisions about their products and services to ensure that they are maximising their revenues.



(credit: modification of "StarbucksVaughanMills" by "Raysonho"/Wikimedia Commons, CC0)

Understanding how to use fixed costs, variable costs, and sales in CVP analyses requires an understanding of the term **margin**. You may have heard that restaurants and supermarkets have very low margins, while jewellery stores and furniture stores have very high margins. What does "margin" mean? In the broadest terms, margin is the difference between a product or service's selling price and its cost of production. Recall the accounting club's T-shirt sale. The difference between the sales price per T-shirt and the purchase price of the T-shirts was the accounting club's margin:

Sales Price	\$15
Cost per T-shirt	<u>10</u>
Margin	\$ 5

Recall that in the previous section, we explained the characteristics of fixed and variable costs and introduced the basics of cost behavior. Let's now apply these behaviors to the concept of contribution margin. The company will use this "margin" to cover fixed expenses and hopefully to provide a profit. There are multiple ways to analyse the contribution margin

1. by unit of production
2. as a ratio
3. in total.

Let's begin by examining contribution margin on a per unit basis.

Unit Contribution Margin

When the contribution margin is calculated on a per unit basis, it is referred to as the contribution margin per unit or unit contribution margin. You can find the contribution margin per unit using the equation shown below:

$$\text{Contribution margin per unit} = \text{Per unit sales price} - \text{Variable cost per unit}$$

It is important to note that this unit contribution margin can be calculated either in dollars or as a percentage. To demonstrate this principle, let's consider the costs and revenues of Leung Manufacturing, a small company that manufactures and sells birdbaths to specialty retailers. The birdbaths are named after recognisable Australian birds such as the Rosella and the Cockatoo.



Adult Crimson Rosella JJ Harrison (<https://www.jjharrison.com.au/>), CC BY-SA 3.0 <<https://creativecommons.org/licenses/by-sa/3.0/>>, via Wikimedia Commons

Leung Manufacturing sells its Rosella Model for \$100 and incurs variable costs of \$20 per unit. In order to calculate their per unit contribution margin, we use the formula in the table below to determine that on a *per unit* basis, their contribution margin is:

Leung Manufacturing
ROSELLA Model for year ending 30 June 2022

Sales price per unit	\$100
– Variable cost per unit	\$20
= Contribution margin per unit	\$80

This means that for every Rosella model they sell, they will have \$80 to *contribute* toward covering fixed costs, such as rent, insurance, and manager salaries.

But Leung Manufacturing manufactures and sells more than one model of birdbath. They also sell a Cockatoo Model for \$75, and these birdbaths incur variable costs of \$15 per unit. For the Cockatoo Model, their contribution margin on a per unit basis is the \$75 sales price less the \$15 per unit variable costs is as follows:

Leung Manufacturing
COCKATOO Model for year ending 30 June 2022

Sales price per unit	\$75
– Variable cost per unit	\$15
= Contribution margin per unit	\$60

This demonstrates that, for every Cockatoo model they sell, they will have \$60 to *contribute* toward covering fixed costs and, if there is any left, toward profit. Every product that a company manufactures or every service a company provides will have a unique contribution margin per unit.

In these examples, the contribution margin per unit was calculated in dollars per unit, but another way to calculate contribution margin is as a ratio (percentage).

Contribution Margin Ratio

The contribution margin ratio (CMR) is the percentage of a unit's selling price that exceeds total unit variable costs. In other words, contribution margin is expressed as a percentage of sales price and is calculated using this formula:

$$\text{Contribution Margin Ratio} = \frac{\text{Contribution Margin per Unit}}{\text{Sales Price per Unit}}$$

For Leung Manufacturing and their ROSELLA Model, the contribution margin ratio will be

$$\frac{\$80 \text{ Contribution Margin per Unit}}{\$100 \text{ Sales Price per Unit}} = 0.80$$

At a contribution margin ratio of 80%, approximately \$0.80 of each sales dollar generated by the sale of a Rosella Model is available to cover fixed expenses and contribute to profit. The contribution margin ratio for the birdbath implies that, for every \$1 generated by the sale of a Rosella Model, they have \$0.80 that contributes to fixed costs and profit. Thus, 20% of each sales dollar represents the variable cost of the item and 80% of the sales dollar is margin. Just as each product or service has its own contribution margin on a per unit basis, each has a unique contribution margin ratio. Although this process is extremely useful for analysing the profitability of a single product, good, or service, managers also need to see the “big picture” and will examine contribution margin in total across all products, goods, or services.

Another example of contribution margin

You rent a kiosk (a free standing stall) in the local shopping centre for \$300 a month and use it to sell T-shirts

with sporting team logos from all over the world. You sell each T-shirt for \$25, and your cost for each shirt is \$15 (including appropriate licensing and royalty fees for using the sporting team logos). You also pay your sales person a commission of \$0.50 per T-shirt sold in addition to a salary of \$400 per month. Construct a contribution margin income statement for two different months: in one month, assume 100 T-shirts are sold, and in the other, assume 200 T-shirts are sold.

Solution

Pertinent information		Contribution margin income statement 100 units sold		Contribution margin income statement 200 units sold	
Sales price per unit	\$ 25	Sales revenue	\$2,500	Sales revenue	\$5,000
Variable costs:		Variable costs per unit	1,550	Variable costs per unit	3,100
		(\$15 + 0.50) x 100 units		(\$15 + 0.50) x 200 units	
Per shirt cost	15	Contribution margin	950	Contribution margin	1,900
Per shirt commission	0.50	Fixed costs	700	Fixed costs	700
Fixed costs:		Net operating		Net operating	
Kiosk rental	300	income	\$ 250	income	\$1,200
Salary	400				

Total Contribution Margin

This “big picture” is gained by calculating total contribution margin – the total amount by which total sales exceed total variable costs. We calculate total contribution margin by multiplying per unit contribution margin by sales volume or number of units sold. This approach allows managers to determine how much profit a company is making before paying its fixed expenses. For Leung Manufacturing, if the managers want to determine how much their Rosella Model contributes to the overall profitability of the company, they can calculate total contribution margin as follows:

Leung Manufacturing ROSELLA Model for month ending 31 May 2022	
Units sold	500 units
Contribution margin per unit	\$80
= Total contribution margin (500 x \$80)	\$40,000

For the month of May, sales from the Rosella Model contributed \$40,000 toward fixed costs. Looking at contribution margin in total allows managers to evaluate whether a particular product is profitable and how the sales revenue from that product contributes to the overall profitability of the company. In fact, we can create a specialised income statement called a contribution margin income statement to determine how changes in sales volume impact the bottom line.

To illustrate how this form of income statement can be used, contribution margin income statements for Leung Manufacturing are shown for the months of May and June, where fixed costs are \$23,000 per month.

In May, Leung sold 500 Rosella Models at \$100 per unit, which resulted in the operating income shown on the contribution margin income statement:

Leung Manufacturing Contribution Margin Income Statement for month ending 31 May 2022	
Sales (500 units x \$100/unit)	\$50,000
Less Variable costs (500 units x \$20/unit)	\$10,000
CONTRIBUTION MARGIN	\$40,000
Less Fixed costs	\$23,000
Net profit	\$17,000

In June, 750 of the Rosella models were sold. When comparing the two statements, take note of what changed and what remained the same from May to June.

Leung Manufacturing Contribution Margin Income Statement for month ending 30 June 2022	
Sales (750 units x \$100/unit)	\$75,000
Less Variable costs (750 units x \$20/unit)	\$15,000
CONTRIBUTION MARGIN	\$60,000
Less Fixed costs	\$23,000
Net profit	\$37,000

Using this contribution margin format makes it easy to see the impact of changing sales volume on operating income. Fixed costs remained unchanged; however, as more units are produced and sold, more of the per-unit sales price is available to contribute to the company's net income.

Before going further, let's note several key points about CVP and the contribution margin income statement.

- First, the contribution margin income statement is used for *internal* purposes and is not shared with external stakeholders.
- Secondly, in this specialised profit and loss/income statement, when net profit is shown, it actually refers to net profit *without regard to income taxes*. Companies can also consider taxes when performing a CVP analysis to project both pre-tax and post-tax profit, however that is beyond the scope of this introductory course on accounting.

Why use three different methods to discuss contribution margin?

Regardless of whether contribution margin is calculated on a per-unit basis, calculated as a ratio, or incorporated into an income statement, all three express how much sales revenue is available to cover fixed expenses and contribute to profit. Let's examine how all three approaches convey the same financial performance, although represented somewhat differently.

You will recall that the per-unit contribution margin was \$80 for a Leung Rosella birdbath. When Leung sold 500 units in May, each unit contributed \$80 to fixed expenses and profit.

Now, let's use June's Contribution Margin Income Statement as previously calculated to verify the contribution margin based on the contribution margin ratio previously calculated, which was 80%, by applying this formula:

$$\text{Total Sales} \times \text{Contribution Margin Ratio} = \text{Total Contribution Margin}$$

June sales were \$75,000. The Contribution Margin Ratio (CMR) is 0.80. Therefore,

$$\text{Total Contribution Margin} = \text{Total Sales} \times \text{CMR} = \$75,000 \times 0.80 = \$60,000.$$

This matches with the Contribution margin income statement for June shown above.

Regardless of how contribution margin is expressed, it provides critical information for managers. Understanding how each product, good, or service contributes to the business's profitability allows managers to make decisions such as which product lines they should expand or which might be discontinued. When allocating

scarce resources, the contribution margin will help them focus on those products or services with the highest margin, thereby maximising profits.

The evolution of Cost-Volume-Profit relationships

The CVP relationships of many organisations have become more complex recently because many labour-intensive jobs have been replaced by or supplemented with technology, changing both fixed and variable costs. For those organizations that are still labour-intensive, the labour costs tend to be variable costs, since at higher levels of activity there will be a demand for more labour usage. For example, assuming one worker is needed for every 50 customers per hour, we might need two workers for an average sales season, but during the Christmas season, the store might experience 250 customers per hour and thus would need five workers.

However, the growing trend in many segments of the economy is to convert labour-intensive enterprises (primarily variable costs) to operations heavily dependent on equipment or technology (primarily fixed costs). For example, in retail, many functions that were previously performed by people are now performed by machines or software, such as the self-checkout machines in stores such as **Woolworths** and **Coles**. Since machine and software costs are often depreciated or amortised, these costs tend to be the same or fixed, no matter the level of activity within a given relevant range.

In China, completely unmanned grocery stores have been created that use facial recognition for accessing the store. Patrons will shop, bag the purchased items, leave the store, and be billed based on what they put in their bags. Along with managing the purchasing process, inventory is maintained by sensors that let managers know when they need to restock an item.

In the United States, Amazon uses Amazon Go stores to offer the same service. Check out this video (copyright owned by CNET) for an example of an Amazon Go store. Note that there are currently 25 Amazon Go stores in the USA, but none in Australia or Asia.

In Australia, COVID19 accelerated the click-and-collect service offered by retailers. Customers can order online from most stores and have it ready to pick up in just a few hours (avoiding potentially long wait times for courier or postal delivery). In some instances, you don't even need to enter the store. Woolworths offers a direct-to-boot service – order your items online and book a window to pick them up. When you arrive, click a button on the app or in the text message you received letting you know your groceries are ready – and someone will bring out your order and place it directly in your boot.

Another major innovation affecting labor costs is the development of driverless cars and trucks (primarily fixed costs), which will have a major impact on the number of taxi and truck drivers in the future (primarily variable costs). The first to be approved for use is the Nuro system in the USA (you can read more about Nuro in this article from CNET). Do these labour-saving processes change the cost structure for the company? Are variable costs decreased? What about fixed costs? Let's look at this in more detail.

When ordering food through an app, there is no need to have an employee take the order, but someone still needs to prepare the food and package it for the customer. The variable costs associated with the wages of order takers will likely decrease, but the fixed costs associated with additional technology to allow for online ordering will likely increase. When grocery customers place their orders online, this not only requires increased fixed costs for the new technology, but it can also increase variable labor costs, as employees are needed to fill customers' online orders. Many stores may move customer-facing positions to online order fulfillment rather than hiring additional employees. Other stores may have employees fill online grocery orders during slow or downtimes. Both Woolworths and Coles operate "dark stores" in Australia – stores that have no customers and are designed only for online order fulfilment.

Using driverless cars and trucks decreases the variable costs tied to the wages of the drivers but requires a major investment in fixed-cost assets – the autonomous vehicles – and companies would need to charge prices that allowed them to recoup their expensive investments in the technology as well as make a profit. Alternatively, companies that rely on shipping and delivery companies that use driverless technology may be faced with an increase in transportation or shipping costs (variable costs). These costs may be higher because technology is often more expensive when it is new than it will be in the future, when it is easier and more cost effective to produce and also more accessible. A good example of the change in cost of a new technological innovation over time is the personal computer, which was very expensive when it was first developed but has decreased in cost

significantly since that time. The same will likely happen over time with the cost of creating and using driverless transportation.

You might wonder why a company would trade variable costs for fixed costs. One reason might be to meet company goals, such as gaining market share. Other reasons include being a leader in the use of innovation and improving efficiencies. If a company uses the latest technology, such as online ordering and delivery, this may help the company attract a new type of customer or create loyalty with longstanding customers. In addition, although fixed costs are riskier because they exist regardless of the sales level, once those fixed costs are met, profits grow. All of these new trends result in changes in the composition of fixed and variable costs for a company and it is this composition that helps determine a company's profit.

As you will learn in future chapters, in order for businesses to remain profitable, it is important for managers to understand how to measure and manage fixed and variable costs for decision-making. In this chapter, we begin examining the relationship among sales volume, fixed costs, variable costs, and profit in decision-making. We will discuss how to use the concepts of fixed and variable costs and their relationship to profit to determine the sales needed to break even or to reach a desired profit. You will also learn how to plan for changes in selling price or costs, whether a single product, multiple products, or services are involved.

What sort of decisions can be made with CVP analysis?

Once you understand variable costs, fixed costs and CVP – the application to internal decision making is vast. The table below provides some examples.

Link between Business Decision and Cost Information Used

Decision	Cost Information
Discontinue a product line	Variable costs, overhead directly tied to product, potential reduction in fixed costs
Add second production shift	Labor costs, cost of fringe benefits, potential overhead increases (utilities, security personnel)
Open additional retail outlets	Fixed costs, variable operating costs, potential increases in administrative expenses at corporate headquarters

Deciding Between Orders

You are evaluating orders from two new customers, but you will only be able to accept one of the orders without increasing your fixed costs. Management has directed you to choose the one that is most profitable for the company. Customer A is ordering 500 units and is willing to pay \$200 per unit, and these units have a contribution margin of \$60 per unit. Customer B is ordering 1,000 units and is willing to pay \$140 per unit, and these units have a contribution margin ratio of 40%. Which order do you select and why?

Watch this video from Investopedia reviewing the concept of contribution margin to learn more. Keep in mind that contribution margin per sale first contributes to meeting fixed costs and then to profit.

Key Concepts and Summary

- Contribution margin can be used to calculate how much of every dollar in sales is available to cover fixed expenses and contribute to profit.
- Contribution margin can be expressed on a per-unit basis, as a ratio, or in total.
- A specialised profit and loss/income statement, the Contribution Margin Income Statement, can be useful in looking at total sales and total contribution margin at varying levels of activity.

Check your understanding

By completing the following activity



An interactive H5P element has been excluded from this version of the text. You can view it online here:
<https://oer.pressbooks.pub/utsaccounting1/?p=2090#h5p-24>

Calculate the break-even point

MITCHELL FRANKLIN; PATTY GRAYBEAL; DIXON COOPER; AND AMANDA WHITE

Assumptions required for cost-volume-profit analysis

In a previous section, you learned how to determine and recognise the fixed and variable components of costs, and now you have learned about contribution margin. Those concepts can be used together to conduct cost-volume-profit (CVP) analysis, which is a method used by companies to determine what will occur financially if selling prices change, costs (either fixed or variable) change, or sales/production volume changes.

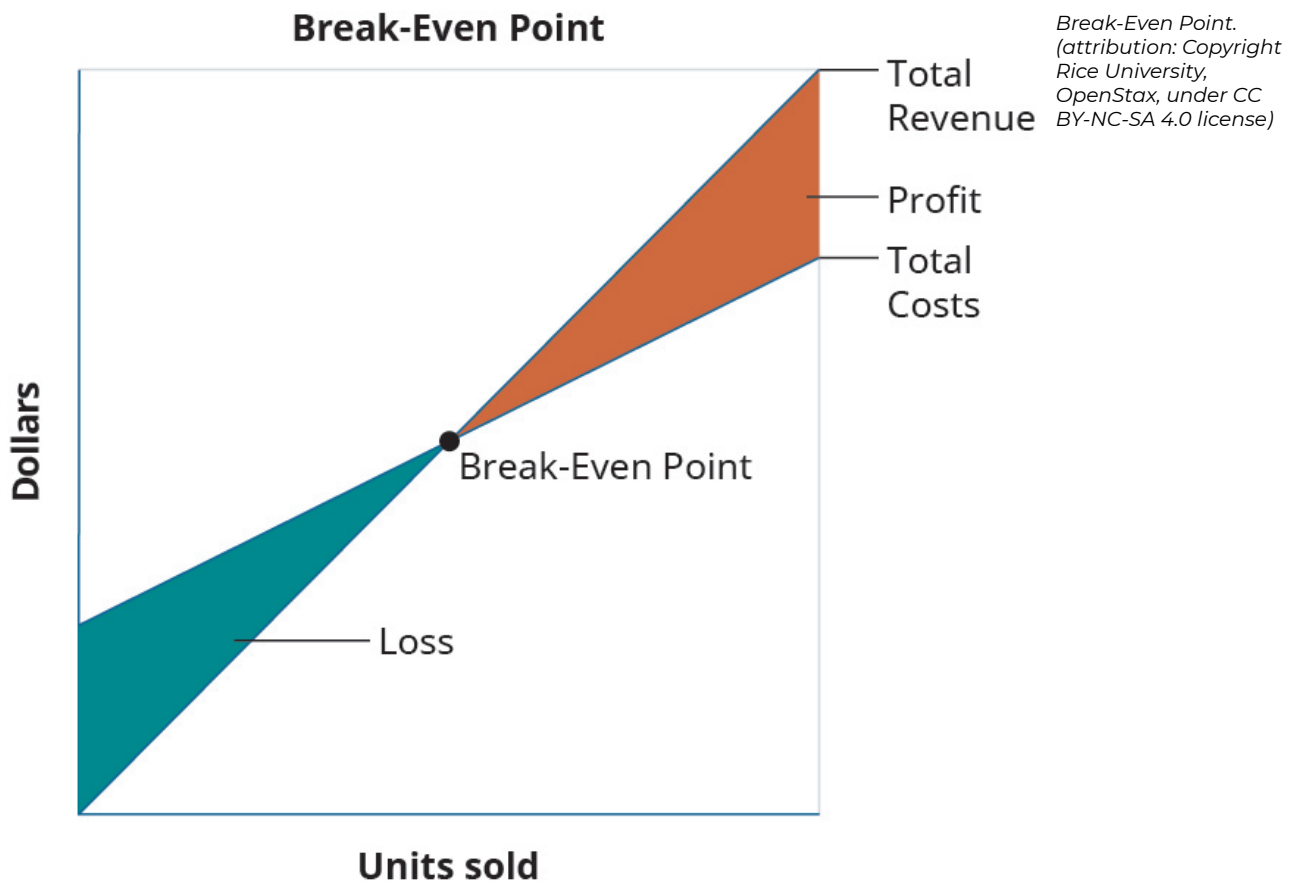
It is important, first, to make several assumptions about operations in order to understand CVP analysis and the associated contribution margin income statement. However, while the following assumptions are typical in CVP analysis, there can be exceptions. For example, while we typically assume that the sales price will remain the same, there might be exceptions where a quantity discount might be allowed. Our CVP analysis will be based on these four (4) assumptions:

1. **Costs are linear and can clearly be designated as either fixed or variable.** In other words, fixed costs remain fixed in total over the relevant range and variable costs remain fixed on a per-unit basis. For example, if a company has the capability of producing up to 1,000 units a month of a product given its current resources, the relevant range would be 0 to 1,000. If they decided that they wanted to produce 1,800 units a month, they would have to secure additional production capacity. While they might be able to add an extra production shift and then produce 1,800 units a month without buying an additional machine that would increase production capacity to 2,000 units a month, companies often have to buy additional production equipment to increase their relevant range. In this example, the production capacity between 1,800 and 2,000 would be an expense that currently would not provide additional contribution toward fixed costs.
2. **Selling price per unit remains constant and does not increase or decrease based on volume** (i.e., customers are not given discounts based on quantity purchased).
3. In the case of manufacturing businesses, inventory does not change because we make the assumption that **all units produced are sold**.
4. In the case of a company that sells multiple products, the **sales mix remains constant**. For example, if we are a beverage supplier, we might assume that our beverage sales are 3 units of coffee pods and two units of tea bags.

Using these assumptions, we can begin our discussion of CVP analysis with the break-even point.

Basics of the break-even point

The break-even point is the dollar amount (total sales dollars) or production level (total units produced) at which the company has recovered all variable and fixed costs. In other words, no profit or loss occurs at break-even because Total Cost = Total Revenue. (Figure) illustrates the components of the break-even point:



The basic theory illustrated in the diagram above is that, because of the existence of fixed costs in most production processes, in the first stages of production and subsequent sale of the products, the company will report a loss. For example, assume that in an extreme case the company has fixed costs of \$20,000, a sales price of \$400 per unit and variable costs of \$250 per unit, and it sells no units. It would realize a loss of \$20,000 (the fixed costs) since it recognised no revenue or variable costs. This loss explains why the company's cost graph recognised costs (in this example, \$20,000) even though there were no sales. If it subsequently sells units, the loss would be reduced by \$150 (the contribution margin) for each unit sold. This relationship will be continued until we reach the break-even point, where total revenue equals total costs. Once we reach the break-even point for each unit sold the company will see an increase in profits of \$150.

For each additional unit sold, the loss typically is lessened until it reaches the break-even point. At this stage, the company is theoretically making neither a profit nor a loss – hence the term “break-even”. After the next sale beyond the break-even point, the company will begin to make a profit, and the profit will continue to increase as more units are sold. While there are exceptions and complications that could be incorporated, these are the general guidelines for break-even analysis.

As you can imagine, the concept of the break-even point applies to every business endeavor—manufacturing, retail, and service. Because of its universal applicability, it is a critical concept to managers, business owners, and accountants. When a company first starts out, it is important for the owners to know when their sales will be sufficient to cover all of their fixed costs and begin to generate a profit for the business. Larger companies may look at the break-even point when investing in new machinery, plants, or equipment in order to predict how long it will take for their sales volume to cover new or additional fixed costs. Since the break-even point represents that point where the company is neither losing nor making money, managers need to make decisions that will help the company reach and exceed this point as quickly as possible. No business can operate for very long below break-even. Eventually the company will suffer losses so great that they are forced to close their doors.

Break-even analysis and profitability

The first step in determining the viability of the business decision to sell a product or provide a service is analysing the true cost of the product or service and the timeline of payment for the product or service. Ethical managers need an estimate of a product or service's cost and related revenue streams to evaluate the chance of reaching the break-even point.

Determining an accurate price for a product or service requires a detailed analysis of both the cost and how the cost changes as the volume increases. This analysis includes the timing of both costs and receipts for payment, as well as how these costs will be financed. An example is an IT service contract for a corporation where the costs will be frontloaded. When costs or activities are frontloaded, a greater proportion of the costs or activities occur in an earlier stage of the project. An IT service contract is typically employee cost intensive and requires an estimate of at least 120 days of employee costs before a payment will be received for the costs incurred. An IT service contract for \$100,000 in monthly services with a 30% profit margin will require 4 months of upfront financing of \$280,000 balanced over the four months before a single payment is received.

The overall profit at a specific point in time requires a careful determination of all of the costs associated with creating and selling the product or providing the service. An ethical managerial accountant will provide a realistic cost estimate, regardless of management's desire to sell a product or provide a service. What might be a lucrative product on its face needs additional analysis provided by the managerial accountant.

To illustrate the concept of break-even, we will return to Leung Manufacturing and look at the Rosella birdbath they manufacture and sell.

Sales where net profit is \$0

Leung Manufacturing is interested in finding out the point at which they break even selling their Rosella Model birdbath. They will break even when the operating income is \$0. The operating income is determined by subtracting the total variable and fixed costs from the sales revenue generated by an enterprise. In other words, the managers at Leung want to know how many Rosella birdbaths they will need to sell in order to cover their fixed expenses and break even. Information on this product is:

Leung Manufacturing Rosella Model – for the year ending 30 June 2022	
Sales Price per Unit	\$100
Variable Cost per Unit	\$20
CONTRIBUTION MARGIN per Unit	\$80
Total Fixed Costs per Month	\$18,000

In order to find their break-even point, we will use the contribution margin for the Rosella and determine how many contribution margins we need in order to cover the fixed expenses, as shown in the formula in (Figure).

$$\text{Break-Even Point in Units: } \frac{\text{Total Fixed Costs}}{\text{Contribution Margin per Unit}}$$

Break-Even Point in Units. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license)

Applying this to Leung calculates as:

$$\text{Break Even}_{\text{units}} = \$18,000 / \$80 = 225 \text{ units}$$

What this tells us is that Leung must sell 225 Rosella Model birdbaths in order to cover their fixed expenses. In other words, they will not begin to show a profit until they sell the 226th unit. This is illustrated in their contribution margin income statement.

Leung Manufacturing
Contribution Margin Income Statement
for the year ending 30 June 2022

Sales (225 units x \$100 sales price)

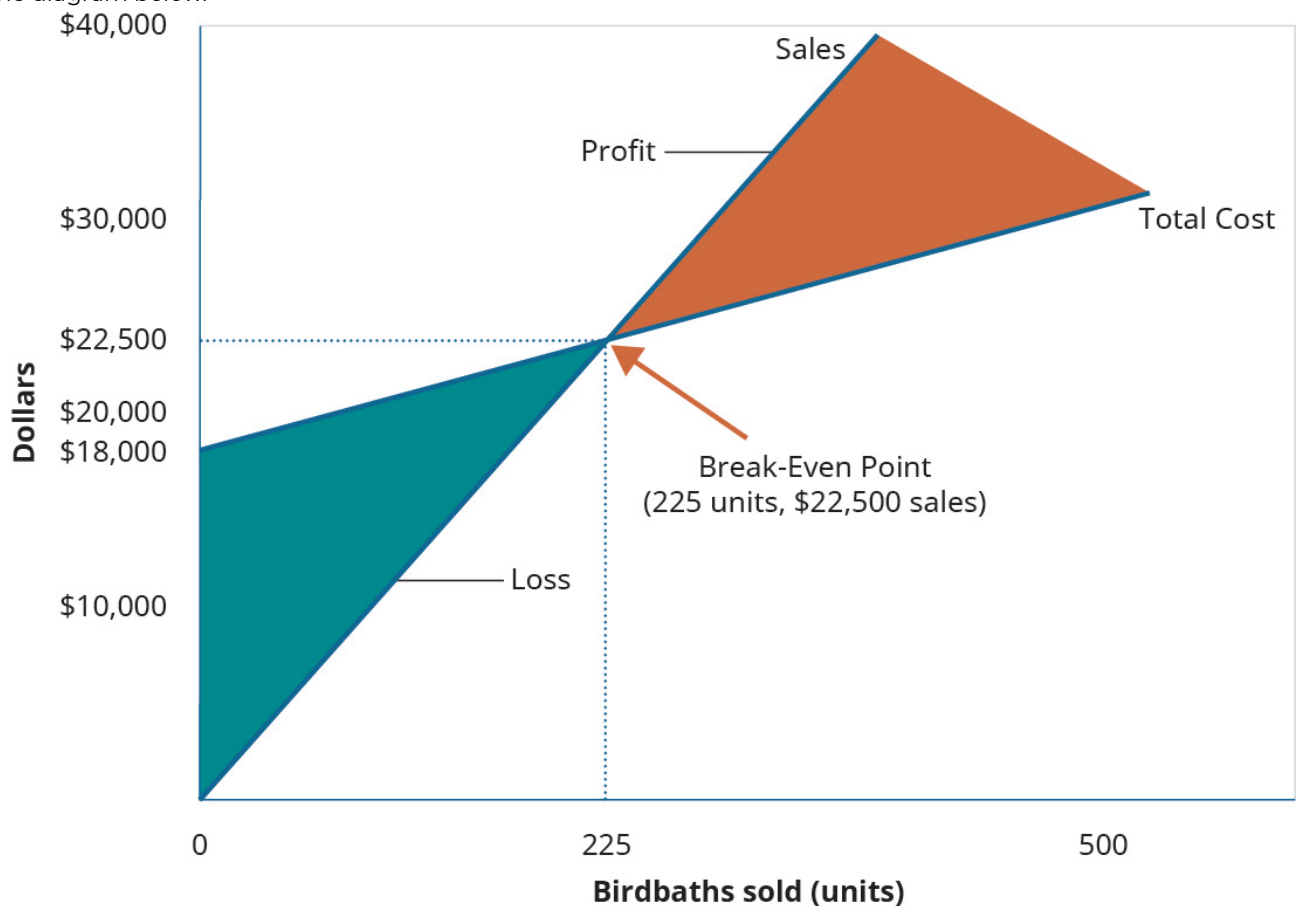
Variable Costs (225 units x \$20 VC)

CONTRIBUTION MARGIN

Fixed Costs

NET PROFIT

The break-even point for Leung Manufacturing at a sales volume of \$22,500 (225 units) is shown graphically in the diagram below.



Break-Even Point for 225 Units. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license)

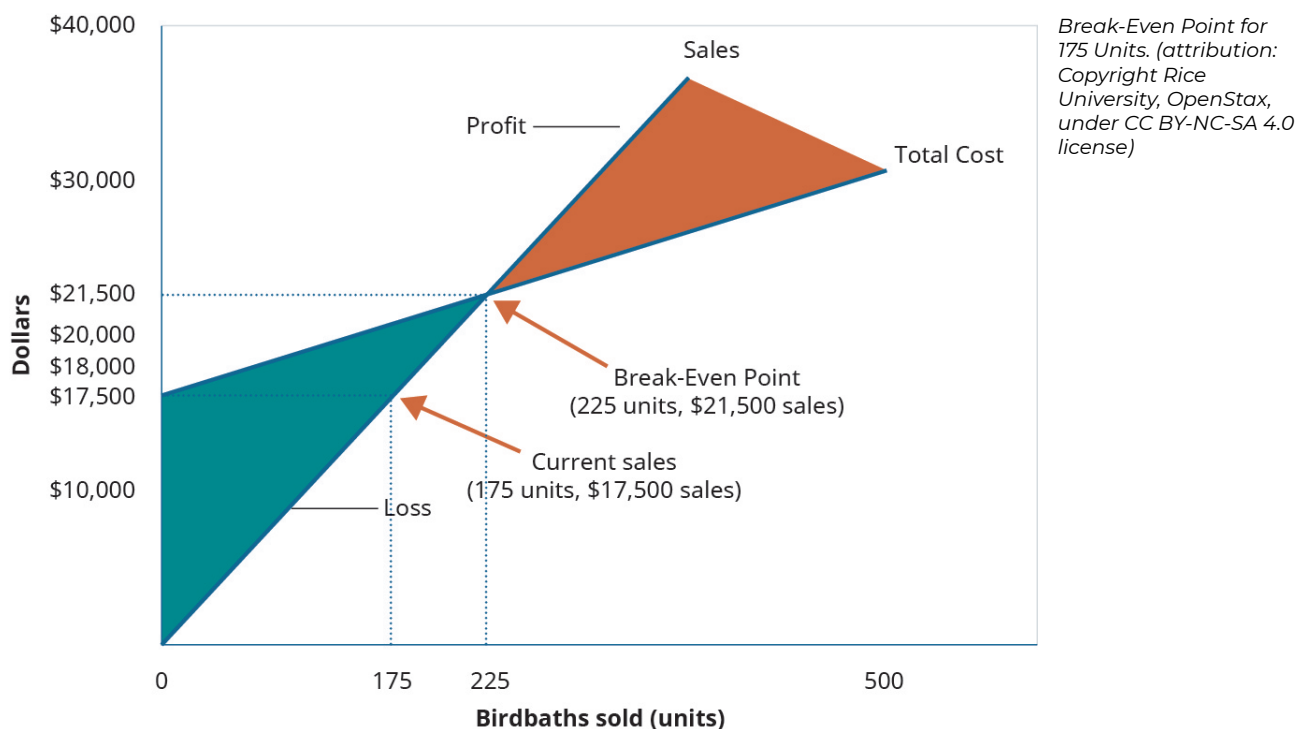
As you can see, when Leung Manufacturing sells 225 Rosella Model birdbaths, they will make no profit, but will not suffer a loss because all of their fixed expenses are covered. However, what happens when they do not sell 225 units? If that happens, the business will make a net loss.

Sales where a loss is made (profit is negative)

In a recent month, local flooding caused Leung to close for several days, reducing the number of units they could ship and sell from 225 units to 175 units. The information in the table below reflects this drop in sales.

Leung Manufacturing Contribution Margin Income Statement for the year ending 30 June 2022	
Sales (175 units x \$100 sales price)	\$17,500
Variable Costs (175 units x \$20 VC)	\$3,500
CONTRIBUTION MARGIN	\$14,000
Fixed Costs	\$18,000
NET PROFIT (LOSS)	(\$4,000)

At 175 units (\$17,500 in sales), Leung does not generate enough sales revenue to cover their fixed expenses and they suffer a loss of \$4,000. They did not reach the break-even point of 225 units.

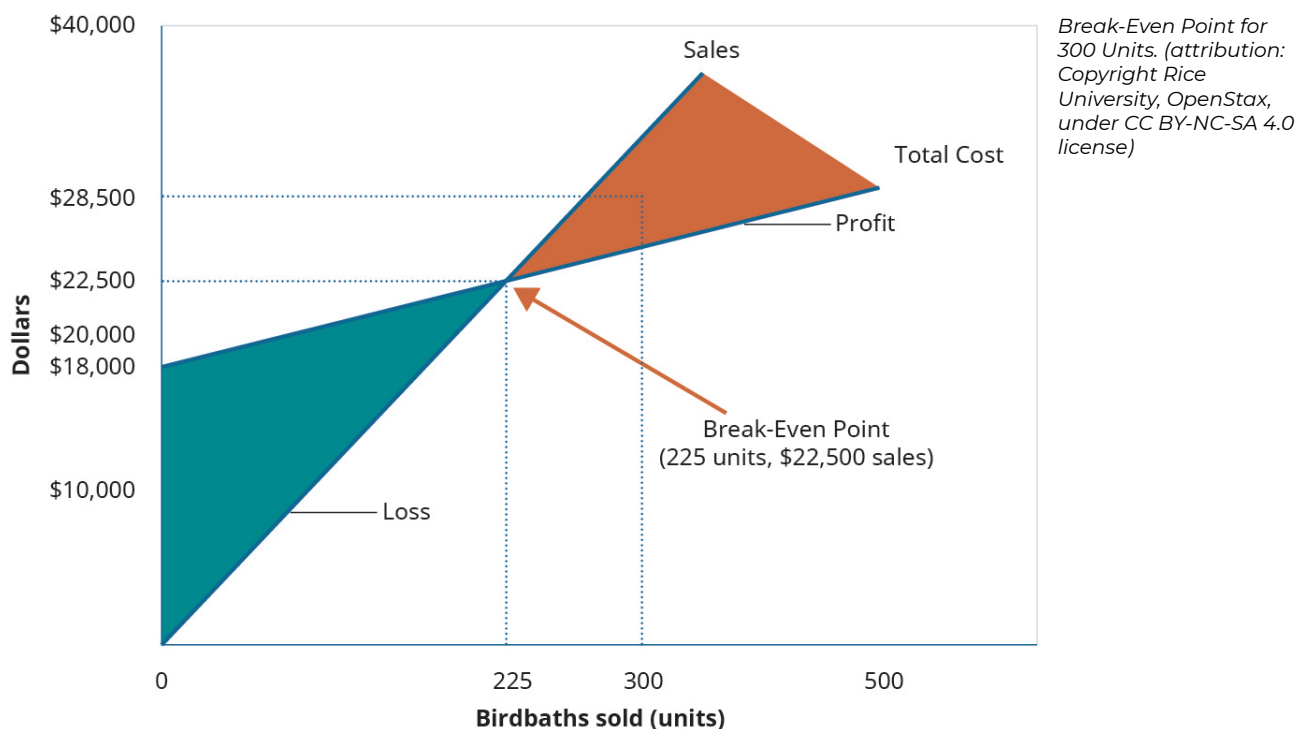


Sales where net profit is positive

What happens when Leung has a busy month and sells 300 Rosella birdbaths? We have already established that the contribution margin from 225 units will put them at break-even. When sales exceed the break-even point the unit contribution margin from the additional units will go toward profit. This is reflected on their income statement.

Leung Manufacturing Contribution Margin Income Statement for the year ending 30 June 2022	
Sales (300 units x \$100 sales price)	\$30,000
Variable Costs (300 units x \$20 VC)	\$6,000
CONTRIBUTION MARGIN	\$24,000
Fixed Costs	\$18,000
NET PROFIT	\$6,000

Again, looking at the graph for break-even below, you will see that their sales have moved them beyond the point where total revenue is equal to total cost and into the profit area of the graph.



Leung Manufacturing can use the information from these different scenarios to inform many of their decisions about operations, such as sales goals.

However, using the contribution margin per unit is not the only way to determine a break-even point. Recall that we were able to determine a contribution margin expressed in dollars by finding the contribution margin ratio. We can apply that contribution margin ratio to the break-even analysis to determine the break-even point in dollars. For example, we know that Leung had \$18,000 in fixed costs and a contribution margin ratio of 80% for the Rosella model. We will use this ratio to calculate the break-even point in dollars.

$$\text{Break-Even Point in Dollars} = \frac{\text{Fixed Costs}}{\text{Contribution Margin Ratio}}$$

Break-Even Point in Dollars. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license)

Applying the formula to Leung gives this calculation:

$$\text{Break-Even point} = \$18,000 / 0.80 = \$22,500$$

Leung Manufacturing will have to generate \$22,500 in monthly sales in order to cover all of their fixed costs. In order for us to verify that Leung's break-even point is \$22,500 (or 225 units) we will look again at the contribution margin income statement at break-even:

Leung Manufacturing Contribution Margin Income Statement for the year ending 30 June 2022	
Sales (225 units x \$100 sales price)	
Variable Costs (225 units x \$20 VC)	
CONTRIBUTION MARGIN	
Fixed Costs	
NET PROFIT	

By knowing at what level sales are sufficient to cover fixed expenses is critical, but companies want to be able to make a profit and can use this break-even analysis to help them.

Example – the cost of a haircut

You are the manager of a hair salon and want to know how many ladies' haircuts your salon needs to sell in a month in order to cover the fixed costs of running the salon. You have determined that, at the current price of \$35 per haircut, you have \$20 in variable costs associated with each cut. These variable costs include stylist wages, hair product, and shop supplies. Your fixed costs are \$3,000 per month. You perform a break-even analysis on a per-unit basis and discover the following:

Sales price per service	\$ 35
Variable cost per service	20
Contribution margin per service	15
Break-even (in services)	200

You have 4 stylists plus yourself working in the salon and are open 6 days per week. Considering the break-even point and the number of available stylists, will the salon ever break even? If it does, what will need to happen? What can be done to achieve the break-even point?

Examples of the effects of variable and fixed costs in determining the break-even point

Companies typically do not want to simply break even, as they are in business to make a profit. Break-even analysis

also can help companies determine the level of sales (in dollars or in units) that is needed to make a desired profit. The process for factoring a desired level of profit into a break-even analysis is to add the desired level of profit to the fixed costs and then calculate a new break-even point. We know that Leung Manufacturing breaks even at 225 Rosella birdbaths, but what if they have a target profit for the month of July? They can simply add that target to their fixed costs. By calculating a target profit, they will produce and (hopefully) sell enough bird baths to cover both fixed costs and the target profit.

If Leung wants to earn \$16,000 in profit in the month of June, we can calculate their new break-even point as follows:

$$\begin{aligned}\text{Target sales} &= (\text{Fixed costs} + \text{Desired Profit}) / \text{Contribution Margin per unit} \\ &= (18,000 + 16,000) / 80 \\ &= \mathbf{425 \text{ units}}\end{aligned}$$

We have already established that the \$18,000 in fixed costs is covered at the 225 units mark, so an additional 200 units will cover the desired profit (200 units × \$80 per unit contribution margin = \$16,000). Alternatively, we can calculate this in terms of dollars by using the contribution margin ratio.

$$\begin{aligned}\text{Target sales} &= (\text{Fixed costs} + \text{Desired Profit}) / \text{Contribution Margin Ratio} \\ &= (18,000 + 16,000) / 0.8 \\ &= \mathbf{\$42,500}\end{aligned}$$

Note – when you use the Contribution Margin in dollars, the output is in units. When you use the Contribution Margin Ratio, the output is in dollars.

As done previously, we can confirm this calculation using the contribution margin income statement:

Sales (425 units at \$100 per unit)	\$42,500
Variable Costs (425 units at \$20 per unit)	<u>8,500</u>
Contribution Margin	34,000
Fixed Costs	<u>18,000</u>
Operating Income (loss)	<u><u>\$16,000</u></u>

Application of break-even concepts for a service organisation

Because break-even analysis is applicable to any business enterprise, we can apply these same principles to a service business. For example, Marshall & Hirito is a mid-sized accounting firm that provides a wide range of accounting services to its clients but relies heavily on personal income tax preparation for much of its revenue. They have analysed the cost to the firm associated with preparing these returns. They have determined the following cost structure for the preparation of a standard Individual Income Tax Return:

Charge to Client (sales price per return)	\$400
Variable Cost per Return	150

They have fixed costs of \$14,000 per month associated with the salaries of the accountants who are responsible for preparing the tax return. In order to determine their break-even point, they first determine the contribution margin for tax return preparation as shown:

Sales Price per Return	\$400
Variable Cost per Return	150
Contribution Margin per Return	250

Now they can calculate their break-even point:

$$\begin{aligned}\text{Break-even}_{\text{units}} &= \text{Fixed costs} / \text{Contribution margin} \\ &= \$14,000 / 250 \\ &= 56 \text{ tax returns}\end{aligned}$$

Remember, this is the break-even point in units (the number of tax returns) but they can also find a break-even point expressed in dollars by using the contribution margin ratio. First, they find the contribution margin ratio. Then, they use the ratio to calculate the break-even point in dollars:

$$\begin{aligned}\text{Break-even} &= \text{Fixed costs} / \text{Contribution margin ratio} \\ &= \$14,000 / 0.625 \\ &= \$22,400\end{aligned}$$

We can confirm these figures by preparing a contribution margin income statement:

MARSHALL & SON, CPAs
Contribution Margin Income Statement
For Year Ended December 31, 2019

Sales (56 at \$400 per return)	\$22,400
Variable Costs (56 at \$150 per return)	<u>8,400</u>
Contribution Margin	14,000
Fixed costs	<u>14,000</u>
Operating Income (loss)	<u><u>\$ 0</u></u>

Therefore, as long as Marshall & Hirito prepares 56 tax returns, they will earn no profit but also incur no loss. What if Marshall & Hirito has a target monthly profit of \$10,000? They can use the break-even analysis process to determine how many returns they will need to prepare in order to cover their fixed expenses and reach their target profit:

$$\begin{aligned}\text{Target returns} &= (\text{Fixed costs} + \text{Target Profit}) / \text{Contribution Margin per unit} \\ &= (14,000 + 10,000) / 250 \\ &= \mathbf{96 \text{ units (or tax returns)}}\end{aligned}$$

They will need to prepare 96 returns during the month in order to realize a \$10,000 profit. Expressing this in dollars instead of units requires that we use the contribution margin ratio as shown:

$$\begin{aligned}\text{Target sales} &= (\text{Fixed costs} + \text{Target Profit}) / \text{Contribution Margin Ratio} \\ &= (14,000 + 10,000) / 0.625 \\ &= \mathbf{\$38,400}\end{aligned}$$

Marshall & Hirito now knows that, in order to cover the fixed costs associated with this service, they must generate \$38,400 in revenue. Once again, let's verify this by constructing a contribution margin income statement:

MARSHALL & SON, CPAs

Contribution Margin Income Statement For Year Ended December 31, 2019

Sales (96 at \$400 per return)	\$38,400
Variable Costs (96 at \$150 per return)	<u>14,400</u>
Contribution Margin	24,000
Fixed Costs	<u>14,000</u>
Operating Income (loss)	<u><u>\$10,000</u></u>

As you can see, the \$38,400 in revenue will not only cover the \$14,000 in fixed costs, but will supply Marshall & Hirito with the \$10,000 in profit (net income) they desire.

As you've learned, break-even can be calculated using either contribution margin per unit or the contribution margin ratio. Now that you have seen this process, let's look at an example of these two concepts presented together to illustrate how either method will provide the same financial results.

Suppose that Channing's Chairs designs, builds, and sells unique ergonomic desk chairs for home and business. Their bestselling chair is the Spine Saver. (Figure) illustrates how Channing could determine the break-even point in sales dollars using either the contribution margin per unit or the contribution margin ratio.

Sales Price per Unit	Cost per Unit	Contribution Margin per Unit	Fixed Costs	Fixed Costs/Contribution Margin per Unit	Break-Even in Units	Break Even in Dollars
\$1,250	\$850	\$400	\$16,800	\$16,800/\$400	42	42 x \$1,250 = \$52,500

*Channing's Break-Even Point.
(attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license)*

Contribution Margin per Unit (\$1,250 - \$850)	Contribution Margin Ratio (CM/Sales or \$400 ÷ \$1,250)	Break-Even in Sales Dollars (FC ÷ CM or \$16,800 ÷ 0.32)	Break-Even in Units (Break Even Sales ÷ Unit Selling Price or \$52,500 ÷ \$1,250)
\$400	32%	\$52,500	42 Units

Note that in either scenario, the break-even point is the same in dollars and units, regardless of approach. Thus, you can always find the break-even point (or a desired profit) in units and then convert it to sales by multiplying by the selling price per unit. Alternatively, you can find the break-even point in sales dollars and then find the number of units by dividing by the selling price per unit.

What about incorporating taxes?

So far, we have conducted all of our analysis excluding tax. Tax rates for incorporated business in Australia is 30% (Australian Taxation Office). Therefore, to calculate net profit AFTER tax, we simply deduct 30% from pre-tax net profit in taxes.

We can also incorporate taxes into our Target Profit figure when conducting CVP sensitivity analysis. For example, if a business desires to make \$150,500 in profit AFTER tax, then we need to calculate their desired or target profit BEFORE tax. This would be calculated by dividing \$150,500 by 70 and multiplying by 100. This is because \$150,000 represents 70% of net profit before tax. The desired pre-tax profit would be \$215,000.

Perform break-even sensitivity analysis for a single product

MITCHELL FRANKLIN; PATTY GRAYBEAL; DIXON COOPER; AND AMANDA WHITE

Finding the break-even point or the sales necessary to meet a desired profit is very useful to a business, but cost-volume-profit analysis also can be used to conduct a sensitivity analysis, which shows what will happen if the sales price, units sold, variable cost per unit, or fixed costs change. Businesses use this type of analysis to consider possible scenarios that assist them in planning. It allows businesses to say “what if?” and consider the possible outcomes.

The effects on break-even under changing business conditions

Circumstances often change within a business, within an industry, or even within the economy that impact the decision-making of an organisation. Sometimes, these effects are sudden and unexpected, for example, if a flood destroyed the factory of a business's major supplier; other times, they occur more slowly, such as when union negotiations affect your labour costs. In either of these situations, costs to the business will be affected. Using CVP analysis, the business can predict how these changes will affect profits.

Changing a single variable

To demonstrate the effects of changing any one of these variables, consider Back Door Café, a small coffee shop that roasts its own beans to make coffee. They also sell a variety of baked goods and T-shirts with their logo on them. They track their costs carefully and use CVP analysis to make sure that their sales cover their fixed costs and provide a reasonable level of profit for the owners. There are 3 potential components that could be changed – the sales price, the variable costs or the fixed costs. Let's analyse the impact of a change of each of these (in isolation, not compounded)

Change in sales price

The owner of Back Door has one of her employees conduct a survey of the other coffee shops in the area and finds that competitors are charging \$0.75 more for coffee. As a result, the owner wants to determine what would happen to operating income if she increased her price by just \$0.50 and sales remained constant, so she performs the following analysis:

Price Change Analysis		
	With Current Price	With New Price
Sales Price per Unit	\$ 3.75	\$ 4.25
Variable Cost per Unit	\$ 1.50	\$ 1.50
Contribution Margin per Unit	\$ 2.25	\$ 2.75
Fixed Costs	\$2,475	\$2,475
Break-even (in units)	1,100	900
Break-Even (in dollars)	\$4,125	\$3,825
Contribution Margin Income Statement Current Price versus New Price		
Unit Sales, Expected	1,500	1,500
Sales	\$5,625	\$6,375
Variable Costs	<u>2,250</u>	<u>2,250</u>
Contribution Margin	\$3,375	\$4,125
Fixed Costs	<u>2,475</u>	<u>2,475</u>
Net Income	<u>\$ 900</u>	<u>\$1,650</u>

The only variable that has changed is the \$0.50 increase in the price of their coffee drinks, but the **net profit/income will increase** by \$750. Another way to think of this increase in profit is that, if the sales price increases by \$0.50 per coffee drink and the estimated sales are 1,500 units, then this will result in an increase in overall contribution margin of \$750. Moreover, since all of the fixed costs were met by the lower sales price, all of this \$750 goes to profit. Again, this is assuming the higher sales price does not decrease the number of units sold. Since the other coffee shops will still be priced higher than Back Door, the owner believes that there will not be a decrease in sales volume.

When making this adjustment to their sales price, Back Door Café is engaging in target pricing, a process in which a company uses market analysis and production information to determine the maximum price customers are willing to pay for a good or service. If the good can be produced at a cost that allows both the desired profit percentage as well as deliver the good at a price acceptable to the customer, then the company should proceed with the product; otherwise, the company will not achieve its desired profit goals.

Change in variable cost

In March, the owner of Back Door receives a letter from her cups supplier informing her that there is a \$0.05 price increase due to higher material prices. Assume that the example uses the original \$3.75 per unit sales price. The owner wants to know what would happen to net profit/income if she absorbs the cost increase (not passing it on to her customers), so she performs the following analysis:

Variable Cost Change Analysis		
	With Current Price	With Increased Variable Cost
Sales Price per Unit	\$ 3.75	\$ 3.75
Variable Cost per Unit	\$ 1.50	\$ 1.55
Contribution Margin per Unit	\$ 2.25	\$ 2.20
Fixed Costs	\$2,475	\$ 2,475
Break-even in Units	1,100	1,125
Break-even in Dollars	\$4,125	\$4,218.75
Monthly Contribution Margin Income Statement Current Variable Costs versus Increased Variable Costs		
Unit Sales, Expected	1,500	1,500
Sales	\$5,625	\$ 5,625
Variable Costs	<u>2,250</u>	<u>2,325</u>
Contribution Margin	\$3,375	\$ 3,300
Fixed Costs	<u>2,475</u>	<u>2,475</u>
Net Income	<u>\$ 900</u>	<u>\$ 825</u>

She is surprised to see that just a \$0.05 increase in variable costs (cups) will **reduce her net income** by \$75. The owner may decide that she is fine with the lower income, but if she wants to maintain her income, she will need to find a new cup supplier, reduce other costs, or pass the price increase on to her customers. Because the increase in the cost of the cups was a variable cost, the impact on net profit/income can be seen by taking the increase in cost per unit, \$0.05, and multiplying that by the units expected to be sold, 1,500, to see the impact on the contribution margin, which in this case would be a decrease of \$75. This also means a decrease in net income of \$75.

Change in fixed cost

Back Door Café's lease is coming up for renewal. The owner calls the landlord to indicate that she wants to renew her lease for another 5 years. The landlord is happy to hear she will continue renting from him but informs her that the rent will increase \$225 per month. She is not certain that she can afford an additional \$225 per month and tells him she needs to look at her numbers and will call him back. She pulls out her CVP spreadsheet and adjusts her monthly fixed costs upwards by \$225. Assume that the example uses the original \$3.75 per unit sales price for coffee drinks. The results of her analysis of the impact of the rent increase on her annual net income are:

Fixed Cost Change Analysis		
	With Current Price	With Increased Fixed Cost
Sales Price per Unit	\$ 3.75	\$ 3.75
Variable Cost per Unit	\$ 1.50	\$ 1.50
Contribution Margin per Unit	\$ 2.25	\$ 2.25
Fixed Costs	\$2,475	\$2,700
Break-even in Units	1,100	1,200
Break-even in Dollars	\$4,125	\$4,500
Monthly Contribution Margin Income Statement Current Fixed Costs versus Increased Fixed Costs		
Unit Sales, Expected	1,500	1,500
Sales	\$5,625	\$5,625
Variable Costs	<u>2,250</u>	<u>2,250</u>
Contribution Margin	\$3,375	\$3,375
Fixed Costs	<u>2,475</u>	<u>2,700</u>
Net Income	<u>\$ 900</u>	<u>\$ 675</u>

Because the rent increase is a change in a fixed cost, the contribution margin per unit remains the same. However, **the break-even point in both units and dollars increase** because more units of contribution are needed to cover the \$225 monthly increase in fixed costs. If the owner of the Back Door agrees to the increase in rent for the new lease, she will likely look for ways to increase the contribution margin per unit to offset this increase in fixed costs.

In each of the prior examples, only one variable was changed—sales price, variable costs, or fixed costs. There are some generalisations or rules of thumb that can be made regarding how a change in any one of these variables affects the break-even point. These general rules of thumb are summarised in the table below

Rules of thumb regarding changes in break-even point from a change in one variable

Condition	Result
Sales Price Increases	Break-Even Point Decreases (Contribution Margin is Higher, Need Fewer Sales to Break Even)
Sales Price Decreases	Break-Even Point Increases (Contribution Margin is Lower, Need More Sales to Break Even)
Variable Costs Increase	Break-Even Point Increases (Contribution Margin is Lower, Need More Sales to Break Even)
Variable Costs Decrease	Break-Even Point Decreases (Contribution Margin is Higher, Need Fewer Sales to Break Even)
Fixed Costs Increase	Break-Even Point Increases (Contribution Margin Does Not Change, but Need More Sales to Meet Fixed Costs)
Fixed Costs Decrease	Break-Even Point Decreases (Contribution Margin Does Not Change, but Need Fewer Sales to Meet Fixed Costs)

Watch this video that walks through, step by step, how to calculate break even in units and dollars and at a desired profit or sales level to learn more.

Changing multiple variables

We have analysed situations in which one variable changes, but often, more than one change will occur at a time. For example, a business may need to lower its selling price to compete, but they may also be able to lower certain variable costs by switching suppliers.

Suppose Back Door Café has the opportunity to purchase a new espresso machine that will reduce the amount of coffee beans required for an espresso drink by putting the beans under higher pressure. The new machine will cost \$15,000, but it will decrease the variable cost per cup by \$0.05. The owner wants to see what the effect will be on the net income and break-even point if she purchases the new machine. She has arranged financing for the new machine and the monthly payment will increase her fixed costs by \$400 per month. When she conducts this analysis, she gets the following results:

Variable Cost and Fixed Cost Change Analysis		
	With Current Price	With Decreased VC and Increased FC
Sales Price per Unit	\$ 3.75	\$ 3.75
Variable Cost per Unit	\$ 1.50	\$ 1.45
Contribution Margin per Unit	\$ 2.25	\$ 2.30
Fixed Costs	\$ 2,475	\$ 2,875
Break-even in Units	1,100	1,250
Break-even in Dollars	\$4,125.00	\$4,687.50
Monthly Contribution Margin Income Statement Current Fixed Costs versus Increased Fixed Costs		
Unit Sales, Expected	1,500	1,500
Sales	\$ 5,625	\$ 5,625
Variable Costs	<u>2,250</u>	<u>2,175</u>
Contribution Margin	\$ 3,375	\$ 3,450
Fixed Costs	<u>2,475</u>	<u>2,875</u>
Net Income	<u>\$ 900</u>	<u>\$ 575</u>

Looking at the “what-if” analysis, we see that the contribution margin per unit increases because of the \$0.05 reduction in variable cost per unit. As a result, she has a higher total contribution margin available to cover fixed expenses. This is good, because the monthly payment on the espresso machine represents an increased fixed cost. Even though the contribution margin ratio increases, it is not enough to totally offset the increase in fixed costs, and her monthly break-even point has risen from \$4,125.00 to \$4,687.50. If the new break-even point in units is a realistic number (within the relevant range), then she would decide to purchase the new machine because, once it has been paid for, her break-even point will fall and her net profit/income will rise. Performing this analysis is an effective way for managers and business owners to look into the future, so to speak, and see what impact business decisions will have on their financial position.

Let’s look at another option the owner of the Back Door Café has to consider when making the decision about this new machine. What would happen if she purchased the new machine to realise the variable cost savings and also raised her price by just \$0.20? She feels confident that such a small price increase will go virtually unnoticed by her customers but may help her offset the increase in fixed costs. She runs the analysis as follows:

Selling price, variable cost, and fixed cost change analysis			
	With Current Price	With decreased VC and increased FC	With increased SP, decreased VC, and increased FC
Sales price per unit	\$ 3.75	\$ 3.75	\$ 3.95
Variable cost per unit	\$ 1.50	\$ 1.45	\$ 1.45
Contribution margin per unit	\$ 2.25	\$ 2.30	\$ 2.50
Fixed costs	\$ 2,475	\$ 2,875	\$ 2,875
Break-even in units	1,100	1,250	1,150
Break-even in dollars	\$4,125.00	\$4,687.50	\$4,542.50
Monthly contribution margin income statement			
Unit sales, expected	1,500	1,500	1,500
Sales	\$ 5,625	\$ 5,625	\$ 5,925
Variable costs	<u>2,250</u>	<u>2,175</u>	<u>2,175</u>
Contribution margin	\$ 3,375	\$ 3,450	\$ 3,750
Fixed costs	<u>2,475</u>	<u>2,875</u>	<u>2,875</u>
Net income	<u>\$ 900</u>	<u>\$ 575</u>	<u>\$ 875</u>

The analysis shows the expected result: an increase in the per-unit contribution margin, a decrease in the break-even point, and an increase in the net operating income. She has changed three variables in her costs – sales price, variable cost, and fixed cost. In fact, the small price increase almost gets her back to the net profit/ income she was expecting before the purchase of the new espresso machine.

By now, you should begin to understand why CVP analysis is such a powerful tool. The owner of Back Door Café can run an unlimited number of these what-if scenarios until she meets the financial goals for her company. There are very few tools in managerial accounting as powerful and meaningful as a cost-volume-profit analysis.

How can they sell it that cheap?

If you've ever needed a caffeine boost but are low on cash in Australia, you will have likely thought about purchasing a \$1 coffee from any 7 Eleven convenience store or at a Woolworths or Coles metro store. But how can they sell coffee so cheaply?

Volume! Although the margin on each unit is very small, these stores hope to make up the difference in quantity. They also hope that consumers will purchase other items while in the store – a donut, some fruit, a chocolate bar or chips – where the margins are much higher for each individual item.

Free tools and templates

Rather than creating sensitivity analysis by hand – you can use an excel template like this one

Break even and CVP analysis – single product

Test your understanding

By completing the following multiple choice questions in relation to sensitivity analysis



An interactive H5P element has been excluded from this version of the text. You can view it online here:
<https://oer.pressbooks.pub/utsaccounting1/?p=2131#h5p-25>

Perform break-even sensitivity analysis for a multi-product environment

MITCHELL FRANKLIN; PATTY GRAYBEAL; DIXON COOPER; AND AMANDA WHITE

Up to this point in our CVP analysis, we have assumed that a business only sells one product, but we know that, realistically, this is not the case. Most businesses operate in a multi-product environment, in which they sell different products, manufacture different products, or offer different types of services. Businesses price each one of their products or services differently, and the costs associated with each of those products or services vary as well. In addition, companies have limited resources, such as time and labour, and must decide which products to sell or produce and in what quantities, or which services to offer in order to be the most profitable. These profitability considerations often help a business **decide on its sales mix** – the rough proportions of their products that they plan to sell.

The basics of break-even analysis in a multi-product environment

In order to perform a break-even analysis for a company that sells multiple products or provides multiple services, it is important to understand the **concept of a sales mix**. A sales mix represents the relative proportions of the products that a company sells—in other words, the percentage of the company's total revenue that comes from product A, product B, product C, and so forth. Sales mix is important to business owners and managers because they seek to have a mix that maximises profit, since not all products have the same profit margin. Businesses can maximise their profits if they are able to achieve a sales mix that is heavy with high-margin products, goods, or services. If a company focuses on a sales mix heavy with low-margin items, overall profitability will often suffer.

Performing a break-even analysis for these multi-product businesses is more complex because each product has a different selling price, a different variable cost, and, ultimately, a different contribution margin. We must also proceed under the assumption that the sales mix remains constant; if it does change, the CVP analysis must be revised to reflect the change in sales mix. For the sake of clarity, we will also assume that all costs are companywide costs, and each product contributes toward covering these companywide costs.

Example – Selling sandwiches

You are the manager of a sandwich shop located near a university campus. The university has recently added a fast-food style café to the university food court, which has reduced the number of students eating at your shop. Your highest margin items are drinks (a contribution margin of approximately 90%) and vegetarian subs (a contribution margin of approximately 75%). How can you use CVP analysis to help you compete with the university's food court café? What would you suggest as possible ways to increase business while maintaining target income levels?

To conduct appropriate CVP analysis we need to know

- contribution margin for each product
- the existing sales mix of products

Calculating break-even analysis in a multi-product environment

When a business sells more than one product or provides more than one service, break-even analysis is more complex because not all of the products sell for the same price or have the same costs associated with them: Each product has its own margin. Consequently, the break-even point in a multi-product environment depends on the mix of products sold. Further, when the mix of products changes, so does the break-even point. If demand shifts and customers purchase more low-margin products, then the break-even point rises. Conversely, if customers purchase more high-margin products, the break-even point falls. In fact, even if total sales dollars remain unchanged, the break-even point can change based on the sales mix. Let's look at an example of how break-even analysis works in a multi-product environment.

In multi-product CVP analysis, the company's sales mix is viewed as a composite unit, a selection of discrete products associated together in proportion to the sales mix. The composite unit is not sold to customers but is a concept used to calculate a weighted average unit contribution margin, which is then used to estimate the break-even point. Think of a weighted average unit as a virtual basket of fruit that contains the proportion of individual fruits equal to the company's sales mix. If we purchased these items individually to make the fruit basket, each one would have a separate price and a different contribution margin. This is how a weighted average unit works in CVP analysis. We calculate the contribution margins of all of the component parts of the weighted average unit and then use the total to calculate the break-even point. It is important to note that fixed costs are allocated among the various components (products) that make up this weighted average unit. Should a product be eliminated from the weighted average unit or sales mix, the fixed costs must be re-allocated among the remaining products.

If we use the fruit basket as an example, we can look at the individual fruits that make up the basket: apples, oranges, bananas, and pears. We see that each individual fruit has a selling price and a cost. Each fruit has its own contribution margin. But how would we determine the contribution margin for a weighted average of fruit, or in other words, for our basket of fruit?

For our particular baskets, we will use 5 apples, 3 oranges, 2 bananas, and 1 pear. This means that our product mix is 5:3:2:1, as shown in (Figure).

Contribution Margin Based on Product Mix. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license)

Fruit	Number of Units	Selling Price per Unit	Total Selling Price	Cost per Unit	Total Cost	Contribution Margin
Apple	5	\$0.60	\$3.00	\$0.25	\$1.25	\$1.75
Orange	3	1.00	3.00	0.75	2.25	0.75
Banana	2	0.80	1.60	0.50	1.00	0.60
Pear	1	1.90	1.90	1.50	1.50	0.40
Total			\$9.50		\$6.00	\$3.50

Notice that the composite contribution margin is based on the number of units of each item that is included in the composite item. If we change the composition of the basket, then the composite contribution margin would change even though contribution margin of the individual items would not change. For example, if we only include 4 apples, the contribution margin of a single apple is still \$0.35, but the contribution margin of the apples in the basket is \$1.40, not \$1.75 as it is when 5 apples are included in the basket. Let's look at an additional example and see how we find the break-even point for this weighted average basket.

Practical example

Let's meet Soul Sisters – they are a social enterprise who work with refugee women to help develop their seamstress skills while producing ethical fashion. They currently make three clothing items – a long sleeve blouse, a pair of work pants and a work skirt with pockets. Each item has its own sales price, variable cost and contribution margin, as shown below:

	Sales price per item	Variable cost per item	Contribution margin
Long sleeve blouse	\$150	\$75	\$75
Work pants	\$140	\$50	\$90
Work skirt	\$115	\$65	\$50

The sales mix is that if the business sold 10 products – 6 would be blouses, 3 would be work pants and 1 would be a work skirt.

Our next step is to calculate a weighted average contribution margin:

	Contribution margin	Mix	Weighted contribution margin (CM x Mix)
Long sleeve blouse	\$75	60%	\$45
Work pants	\$90	30%	\$27
Work skirt	\$50	10%	\$5
Weighted average contribution margin for one unit			\$77

What is the break even point? To do this, we need to know the fixed costs. Soul Sisters tells us that fixed costs are \$13,860. We use the weighted average contribution margin in the same way as we would use the contribution margin to calculate the break even point:

$$\begin{aligned}
 \text{Break even}_{\text{units}} &= \text{Fixed costs} / \text{Weighted average contribution margin} \\
 &= \$13,860 / \$77 \\
 &= 180 \text{ units}
 \end{aligned}$$

However, we don't actually sell this weighted average unit. So we need to break up the 180 units into the 3 different products using our mix of 60%. 30% and 10%.

	Total break even units	Mix	Break even sales in units
Long sleeve blouse	180	60%	108
Work pants	180	30%	54
Work skirt	180	10%	18

Using a forecasted or estimated contribution margin income statement, let's verify that the break even sales in units at Soul Sisters is correct.

SOUL SISTERS Forecasted Contribution Margin Income Statement	
Sales	
Long sleeve blouse (108 x \$75)	16,200
Work pants (54 x \$90)	7,560
Work skirt (18 x \$50)	2,070
Total sales	25,830
Less Variable Costs	
Long sleeve blouse (108 x \$75)	8,100
Work pants (54 x \$50)	2,700
Work skirt (18 x \$65)	1,170
Total variable costs	11,970
CONTRIBUTION MARGIN	13,860
Fixed costs	13,860
NET PROFIT/INCOME	0

Soul Sisters can use this CVP analysis for a wide range of business decisions and for planning purposes. Remember, however, that if the sales mix changes from its current ratio, then the break-even point will change. For planning purposes, Soul Sisters can change the sales mix, sales price, or variable cost of one or more of the products in the composite unit and perform a “what-if” analysis.

One way that businesses can easily conduct this analysis is by building a CVP sensitivity analysis template. We've provided one for you below that can be used in various situations.

Break even and CVP analysis – multi-product

Understanding the degree of operating leverage

AMANDA WHITE

What is the degree of operating leverage?

Degree of Operating Leverage (DOL) is a measure of the proportion of fixed costs to a business's overall cost structure. OL tells a business how sensitive profit is to changes in sales volume. The formula for DOL is as follows:

$$\text{Degree of Operating Leverage} = \frac{\text{Contribution Margin}}{\text{Net profit or income}}$$

How can we use the operating leverage statistic?

The Degree of Operating Leverage (DOL) statistic is most often used to compare different businesses, rather than as a tool for sensitivity analysis for a single firm. Let's try an example using two cafes – Stockmarket Cafe and Universal Cafe.

	Stockmarket Cafe	Universal Cafe
Total contribution margin	180,000	180,000
Net income or profit	90,000	120,000
Operating leverage (= CM / Net income)	2	1.5

Now we have our DOL for both firms – Stockmarket is 2 and Universal is 1.5. What on earth does this mean? It means that for Stockmarket Cafe, if sales increase (or decrease), net income or profit will increase (or decrease) by 2 times the percentage change. That is, if sales increases by 10%, then profit will increase by 20%. Looking at Universal Cafe, if sales increase (or decrease), net income or profit will increase (or decrease) by 1.5 times the percentage change. Using the same 10% increase in sales, at Universal Cafe, profit will increase by 15% (1.5 x 10%).

Which of these two firms is the better investment? Stockmarket Cafe or Universal Cafe?



An interactive H5P element has been excluded from this version of the text. You can view it online here:

<https://oer.pressbooks.pub/utsaccounting1/?p=2558#h5p-26>

Is it as simple as higher is better?

No! Remember that Operating Leverage uses contribution margin, and does not take into account any fixed costs. So while OL is one number, it should be looked at in conjunction with other measures. Businesses that have high

fixed costs and lower variable costs (one reason could be high levels of automated machinery) will have a higher operating leverage. Businesses that have higher variable costs and therefore lower operating leverage, may have lower fixed costs. To make a more informed decision – examining the number of units to be sold to break even could be useful in assessing which firm may be a better investment.

Investopedia has produced a summary video about the Degree of Operating Leverage [link opens a YouTube video]

CHAPTER 9: PLANNING FOR THE FUTURE USING BUDGETS



Chris and Nikki needed to budget effectively in order to take advantage of sightseeing opportunities while studying abroad. (credit: modification of “Tourists: Here or there?” by “morebyless”/Flickr, CC BY 2.0)

Chris and Nikki are studying abroad next year as part of a university exchange program. Chris wants to spend her weekends sightseeing, but she does not have a lot of extra money. She creates a budget so she can save money to sightsee. She can reliably predict costs such as university fees, books, travel, and much of the sightseeing costs. She can also predict the amount of resources she will have to meet those costs, including scholarships, some savings, and earnings from her job here in Australia.

Chris developed a budget from this information and planned for emergencies by including extra working hours and listing expenses that could be eliminated. On her trip, Chris was very careful with expenses and visited all the places she budgeted to visit.

Chris’s roommate, Nikki, on the other hand, did not plan ahead before going abroad. She did not have any travel funds for the last several weeks and lamented that she should not have purchased so many souvenirs.

Chris and Nikki are clear illustrations of why people and companies prepare budgets. Preparing a budget for future anticipated activities requires a business to look critically at its revenue and expenses. A good budget gives management the ability to evaluate results at the end of the budget cycle. Even well-planned budgets can have emergencies or unplanned financial disruptions, but having a budget provides a business with the information to develop an alternative budget. A good budget can be adjusted to work with changes in income and still produce similar results.

Budgets are a critical tool for business and assist managers in their roles associated with planning business activity and evaluating business performance. As we work through this chapter, we will be learning:

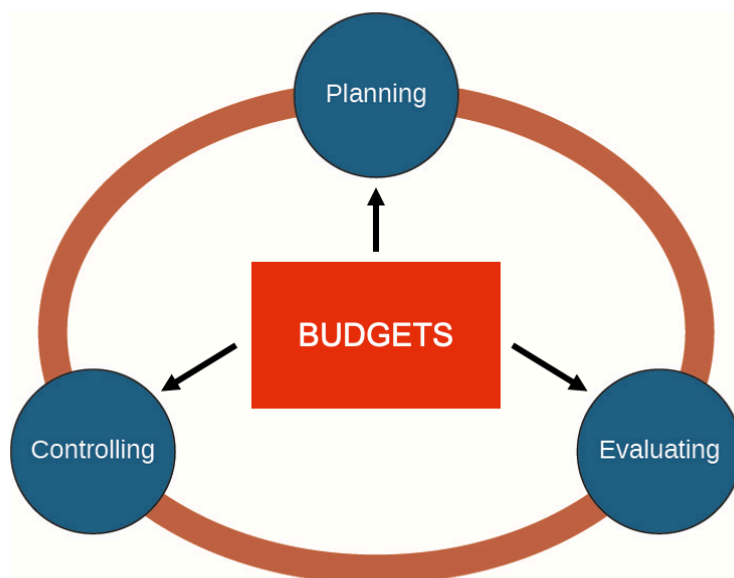
1. How and why managers use budgets
2. Understanding the structure of budgets
3. Preparing a sales budget
4. Preparing operating budgets
5. Preparing a cash budget
6. Using budgets to evaluate performance

Describe how and why managers use budgets

MITCHELL FRANKLIN; PATTY GRAYBEAL; DIXON COOPER; AND AMANDA WHITE

Why do managers need budgets?

Implementation of a business's strategic plan often begins by determining management's basic expectations about future economic, competitive, and technological conditions, and their effects on anticipated goals, both long-term and short-term. As detailed in Chapter 7, planning involves developing future objectives, whereas controlling involves monitoring the planning objectives that have been put into place. Budgets play a role in planning, controlling and evaluating.



This image is a derivative of the three responsibilities of management (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license)

The business will develop strategies and plans to help them achieve these goals. Budgeting helps businesses consider the costs of their strategies and plans (over both the short and longer term). A good budgeting system will help a company reach its strategic goals by allowing management to plan and to control major categories of activity, such as revenue, expenses, and predicting and managing the cash required for these activities.

There are many advantages to budgeting, including:

- Communication
 - Budgeting is a formal method to communicate a business's plans to its internal stakeholders, such as executives, department managers, and others who have an interest in—or responsibility for—monitoring the business's performance.
 - Budgeting requires managers to plan for both revenues and expenses.
- Planning

- Preparing a budget requires managers to consider and evaluate
 - The assumptions used to prepare the budget.
 - Long-term financial goals.
 - Short-term financial goals.
 - The business's position in the market.
 - How each department supports the strategic plan.
- Preparing a budget requires departments to work together to
 - Determine realisable sales goals.
 - Compute the manufacturing or other requirements necessary to meet the sales goals.
 - Solve bottlenecks that are predicted by the budget.
 - Allocate resources so they can be used effectively to meet the sales and manufacturing goals.
 - Compare forecasted or flexible budgets with actual results.
- Evaluation
 - When compared to actual results, budgets are early alerts and they forecast:
 - Cash flows for various levels of production.
 - When loans may be required or when loans may be reduced.
 - Budgets show which areas, departments, units, and so forth, are profitable or meet their appropriate goals. Similarly, they also show which components are unprofitable or do not reach their anticipated goals.
 - Budgets set defined benchmarks that may be used for evaluating business and management performance, including raises and bonuses, as well as negative consequences, such as firing.

As with every set of advantages, there are also disadvantages

- Budgets can be inflexible
- They are based on assumptions which may not turn out to be correct
- They can take a long time to create – especially in large organisations where each department must prepare a budget

To understand the benefits of budgeting, consider Big Bad Bikes, a company that manufactures high-end mountain bikes. The company will begin producing and selling bike trainers this year. Trainers are stands that allow a rider to ride their bike indoors similar to the way bikes are used in spinning classes. Big Bad Bikes has a 5-year plan and has always been successful in managing its budget. Managers participate in developing the budget and are aware that all expenses must be related to the company's strategic plan. They know that managing their departments is much easier when the budget is developed to support the strategic plan.

The plan for Big Bad Bikes is to introduce itself to the trainer market with a sales price of \$70 for the first two quarters of the year and then raise the price to \$75 per unit. The marketing department estimates that sales will be 1,000 units for the first two quarters, 1,500 for the third quarter, and 2,500 per quarter through the second year. Management will work with each department to communicate goals and build a budget based on the sales plan. The resulting budget can be evaluated by all departments involved.

Budgets have the potential to impact employee behaviour

In the long run, proper budget reporting assists management in making good decisions. Management uses budgets to evaluate the performance of employees and their department. They can also use budgets to evaluate and benchmark the performance of a business unit in a large business or of the entire performance of a small entity. They can also use budgets to evaluate separate projects. In budgeting situations, employees may feel a tension between reporting actual results and reporting results that reach the predetermined goals created by the budget. This creates a situation where managers may choose to act unethically and pressure accountants to report favorable financial results not supported by the operations.

Accountants need to be aware of this circumstance and use ethical standards when assisting the development

and creation of budgets. After a proper budget has been created, the reporting of the actual results will assist in creating a realistic and honest picture of the actual operations for the managers reviewing the budget. The budget accountant needs to take steps to ensure that employees are not trying to misreport the budget results; for example, managers might be tempted to set artificially low standards to ensure that targets are hit and significantly exceeded. Such results could lead to what might be considered as excessive bonuses paid to managers.

The basics of budgeting

All businesses – large and small – have limits on the amount of money or resources they can receive and pay out. How these resources are used to reach their goals and objectives must be planned. The quantitative plan estimating when and how much cash or other resources will be received and when and how the cash or other resources will be used is the budget. As you've learned, some of the benefits of budgeting include improved communication, planning, coordination, and evaluation.

All budgets are quantitative plans for the future and will be constructed based on the needs of the business for which the budget is being created. Depending on the complexity, some budgets can take months or even years to develop. The most common time period covered by a budget is one year, although the time period may vary from strategic, long-term budgets to very detailed, short-term budgets. Generally, the closer the business is to the start of the budget's time period, the more detailed the budget becomes.

Management begins with a vision of the future. The long-term vision sets the direction of the company. The vision develops into goals and strategies that are built into the budget and are directly or indirectly reflected on the master budget.

Test your understanding

Try these questions about the theory behind using budgets



An interactive H5P element has been excluded from this version of the text. You can view it online here:

<https://oer.pressbooks.pub/utsaccounting1/?p=2160#h5p-27>

Understanding the structure of budgets

MITCHELL FRANKLIN; PATTY GRAYBEAL; DIXON COOPER; AND AMANDA WHITE

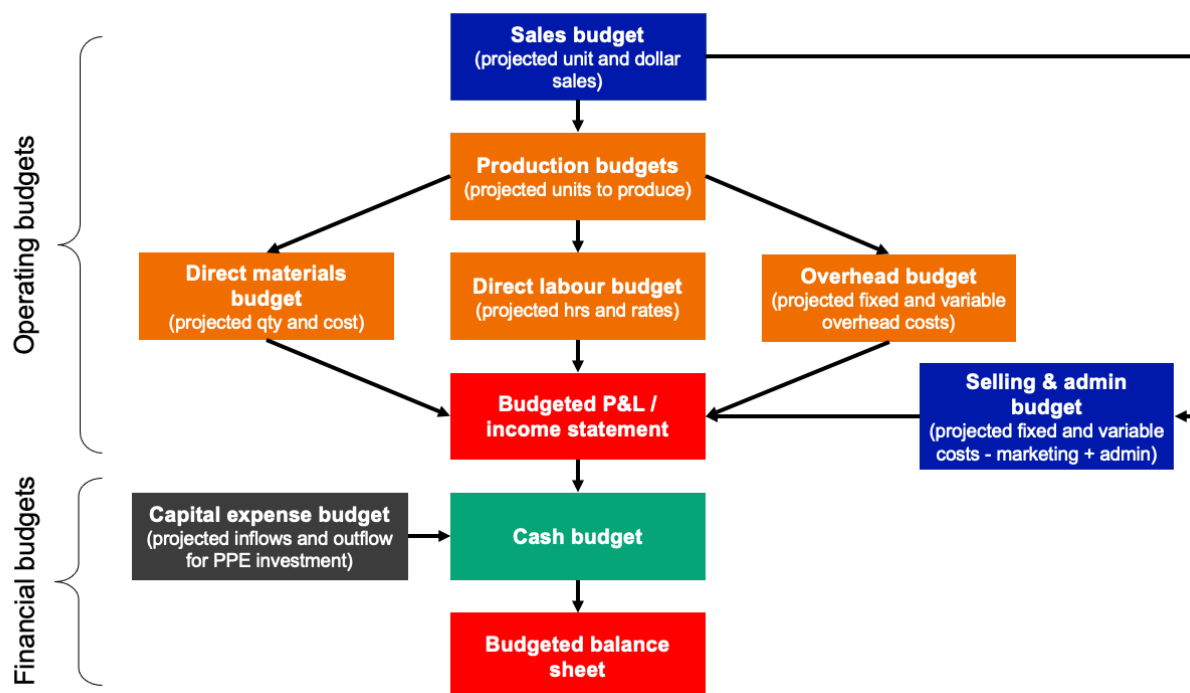
The structure of budgets

The **master budget** is exactly as the term describes – the budget that exists above all others. It will contain every source of revenue coming into the business and every cost the business will need to pay for.

The master budget has two major categories: the **financial budget** and the **operating budget**. The financial budget plans the use of assets and liabilities and results in a projected balance sheet. The operating budget helps plan future revenue and expenses and results in a projected income statement. The operating budget has several subsidiary budgets that all begin with projected sales. For example, management estimates sales for the upcoming few years. It then breaks down estimated sales into quarters, months, and weeks and prepares the sales budget. The sales budget is the foundation for other operating budgets. Management uses the number of units from the sales budget and the company's inventory policy to determine how many units need to be produced. This information in units and in dollars becomes the production budget.

The production budget is then broken up into budgets for materials, labour, and overhead. The materials are variable cost raw materials used to manufacture the item. Labour is the variable cost of people used to manufacture the item. Overhead is generally the fixed costs that support manufacturing – such as rent for the premises, costs to maintain machines, power to run machines. To create these budgets we use information such as the standard quantity and standard price for raw materials that need to be purchased, the standard direct labour rate and the standard direct labour hours that need to be scheduled, and the standard costs for all other direct and indirect operating expenses. Companies use the historic quantities of the amount of material per unit and the hours of direct labour per unit to compute a standard used to estimate the quantity of materials and labour hours needed for the expected level of production. Current costs are used to develop standard costs for the price of materials, the direct labour rate, as well as an estimate of overhead costs.

The figure below lays out how operating budgets and financial budgets are related within a master budget.



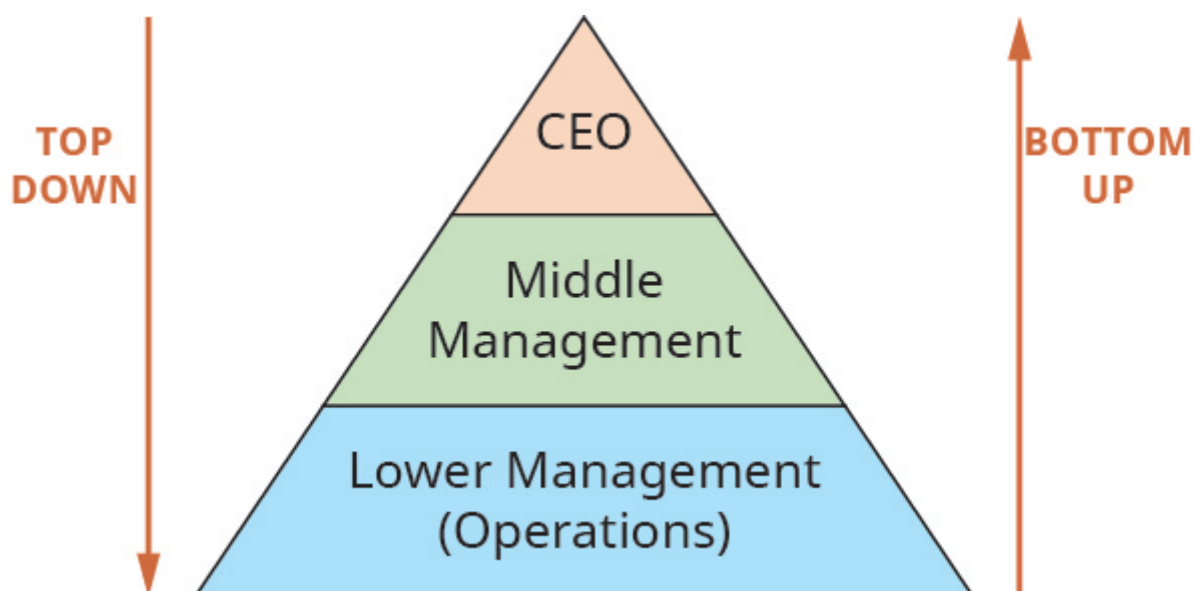
Operating Budgets, Financial Budgets, and the Relationship between Budgets. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license) / adjusted for Australian terminology

How are budgets developed?

The budget development process results in various budgets for various purposes, such as revenue, expenses, or units produced, but they all begin with a plan. To save time and eliminate unnecessary repetition, management often starts with the current year's budget and adjusts it to meet future needs.

There are various strategies companies use in adjusting the budget amounts and planning for the future. For example, budgets can be derived from a top-down approach or from a bottom-up approach. (Figure) shows the general difference between the top-down approach and the bottom-up approach. The top-down approach typically begins with senior management. The goals, assumptions, and predicted revenue and expenses information are passed from the senior manager to middle managers, who further pass the information downward. Each department must then determine how it can allocate its expenses efficiently while still meeting the company goals. The benefit of this approach is that it ties in to the strategic plan and company goals. Another benefit of passing the amount of allowed expenses downward is that the final anticipated costs are reduced by the *vetting* (fact checking and information gathering) process.

In the **top-down approach**, management must devote attention to efficiently allocating resources to ensure that expenses are not padded to create budgetary slack. The drawback to this approach to budgeting is that the budget is prepared by individuals who are not familiar with specific operations and expenses to understand each department's nuances.



Top-Down versus Bottom-Up Approach to Budgeting. The top-down approach to budgeting starts with upper-level management, while the bottom-up approach starts with input from lower-level management. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license)

The **bottom-up approach** (sometimes also named a self-imposed or participative budget) begins at the lowest level of the company. After senior management has communicated the expected departmental goals, the departments then plan and predict their sales and estimates the amount of resources needed to reach these goals. This information is communicated to the supervisor, who then passes it on to upper levels of management. The advantages of this approach are that managers feel their work is valued and that knowledgeable individuals develop the budget with realistic numbers. Therefore, the budget is more likely to be attainable. The drawback is that managers may not fully understand or may misunderstand the strategic plan.

Other approaches in addition to the top-down and bottom-up approaches include:

- the **combination** approach – guidelines and targets are set at the top while the managers work to develop a budget within the targeted parameters.
- **zero-based budgeting** approach – budgeting begins with zero dollars and then adds to the budget only revenues and expenses that can be supported or justified. (For those wishing to learn more – check out

Investopedia's zero based budgeting page)

- **rolling budget** approach – budget is adjusted monthly, and a new month is added as each month passes.

The role of the master budget

Most organisations will create a master budget—whether that business is large or small, public or private, or a merchandising, manufacturing, or service company. A master budget is one that includes two areas, operational and financial, each of which has its own sub-budgets. The operating budget spans several areas that help plan and manage day-to-day business. The financial budget depicts the expectations for cash inflows and outflows, including cash payments for planned operations, the purchase or sale of assets, the payment or financing of loans, and changes in equity. Each of the sub-budgets is made up of separate but interrelated budgets, and the number and type of separate budgets will differ depending on the type and size of the business. For example, the sales budget predicts the sales expected for each quarter. The direct materials budget uses information from the sales budget to compute the number of units necessary for production. This information is used in other budgets, such as the direct materials budget, which plans when materials will be purchased, how much will be purchased, and how much that material should cost. We will demonstrate how to create each of these sub-budgets in later sections.

The role of operating budgets

An operating budget consists of the sales budget, production budget, direct material budget, direct labour budget, and overhead budget. These budgets serve to assist in planning and monitoring the day-to-day activities of the organisation by informing management of how many units need to be produced, how much material needs to be ordered, how many labour hours need to be scheduled, and the amount of overhead expected to be incurred. The individual pieces of the operating budget collectively lead to the creation of the budgeted income statement. For example, Big Bad Bikes estimates it will sell 1,000 trainers for \$70 each in the first quarter and prepares a sales budget to show the sales by quarter. Management understands that it needs to have on hand the 1,000 trainers that it estimates will be sold. It also understands that additional inventory needs to be on hand in the event there are additional sales and to prepare for sales in the second quarter. This information is used to develop a production budget. Each trainer requires 3.2 kilograms of material that usually costs \$1.25 per kilogram. Knowing how many units are to be produced and how much inventory needs to be on hand is used to develop a direct materials budget.

The direct materials budget lets managers know when and how much raw materials need to be ordered. The same is true for direct labour, as management knows how many units will be manufactured and how many hours of direct labour are needed. The necessary hours of direct labour and the estimated labour rate are used to develop the direct labour budget. While the materials and labour are determined from the production budget, only the variable overhead can be determined from the production budget. Existing information regarding fixed manufacturing costs are combined with variable manufacturing costs to determine the manufacturing overhead budget. The information from the sales budget is used to determine the sales and administrative budget. Finally, the sales, direct materials, direct labour, fixed manufacturing overhead budget, and sales and administrative budgets are used to develop a pro-forma income statement.

The role of financial budgets

A financial budget consists of the cash budget, the budgeted balance sheet, and the budget for capital expenses. Similar to the individual budgets that make up the operating budgets, the financial budgets serve to assist with planning and monitoring the financing / cash requirements of the business. High profits may not always mean high levels of cash in the business's bank accounts. Management must plan carefully how much cash is

anticipated to come in from sales and customers each month, and what cash may be paid out. If a business is unable to pay their bills when they are due – they may be trading while insolvent, which is illegal in Australia.

The business may also need to consider its plans for property plant and equipment (often called “capital assets” or “capital expenditure”, sometimes shortened to “capex”). It may take time to save cash to spend on capex, or the business may need to apply for loan. The cash budget will also assist management in helping them determine whether they will have sufficient cash to repay such loans.

A business might also want to keep a minimum level of cash in case of emergencies.

Key concepts and summary

- A good budgeting system assists management in reaching their goals through the planning and control of cash inflows through revenue and financing and outflows through payment and expenses.
- There are various budgeting strategies including bottom-up, top-down, and zero-based budgeting.
- A static budget is prepared at one level of activity, while a flexible budget allows the variable expenses to be adjusted for various levels of activity.
- A master budget includes the subcategories of operating budgets and financial budgets.
- A master budget is developed at the estimated level of activity.

Test your understanding



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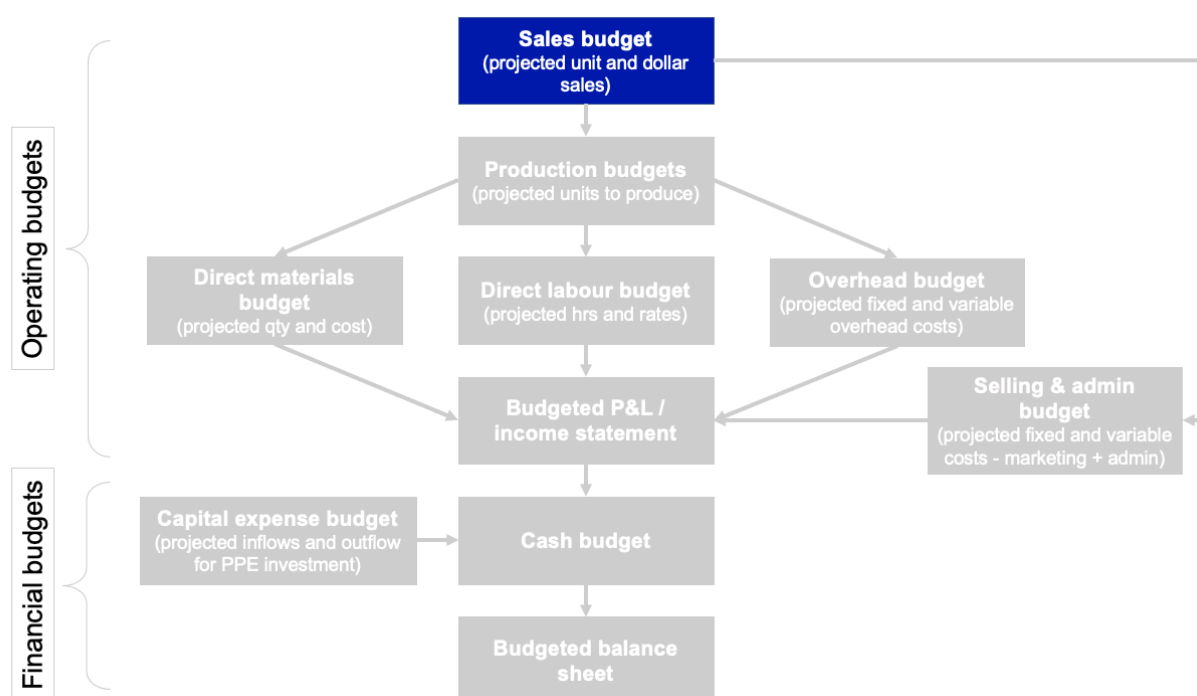
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Preparing a sales budget

AMANDA WHITE; MITCHELL FRANKLIN; PATTY GRAYBEAL; AND DIXON COOPER

Why we need to prepare a sales budget

Remember that our operating budgets involve examining the expectations for the primary operations (sales and manufacturing of a good) of the business. Assumptions such as sales in units, sales price, manufacturing costs per unit, and direct material needed per unit involve a significant amount of time and input from various parts of the business. It is important to obtain all of the information, however, because the more accurate the information, the more accurate the resulting budget, and the more likely management is to effectively monitor and achieve its budget goals. In this section – we will start with the first part of our operating budget – the sales budget.



Operating Budgets, Financial Budgets, and the Relationship between Budgets. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license) / adjusted for Australian terminology and emphasis added

In order for a business to align the budget with the strategic plan, it must budget for the day-to-day operations of the business. This means the business must understand when and how many sales will occur, as well as what expenses are required to generate those sales. In short, each component – sales, production/manufacturing, and other expenses – must be properly budgeted to generate the operating budget components and the resulting budgeted P&L/income statement.

The **budgeting process begins with the estimate of sales**. When management has a solid estimate of sales for each quarter, month, week, or other relevant time period, they can determine how many units must be produced. From there, they determine the expenditures, such as direct materials necessary to produce the units. It is critical for the sales estimate to be accurate so that management knows how many units to produce. If the business under-estimates customer demand, they will not have enough inventory to satisfy customers, and they will not have ordered enough material or scheduled enough direct labour to manufacture more units. Customers may then shop somewhere else to meet their needs. Likewise, if sales are overestimated, management will have purchased more material than necessary and have a larger labor force than needed. This overestimate will cause

management to have spent more cash than was necessary. No manager has a crystal ball and can predict demand precisely – but the better management and the marketing department can become at predicting demand, the businesses resources of materials, labour and cash can be most optimally utilised.

How to prepare a sales budget

The sales budget details the expected sales in units and the sales price for the budget period. The information from the sales budget is carried to several places in the master budget. It is used to determine how many units must be produced as well as when and how much cash will be collected from those sales.

The sales budget requires the business to generate a **sales forecast** for the year. The marketing department will work with management to build a sales forecast for the period (usually a year, broken down by quarters or months). That sales forecast will use the following information to generate sales:

- Sales activity for the business from previous years
- Competitor sales activity
- Industry trends
- Economy-wide trends
- Planned marketing campaigns
- Weather

For example, Big Bad Bikes used the above information to estimate the number of units that will be sold in each quarter of the coming year. The number of units is multiplied by the sales price to determine the sales by quarter as shown in the table below.

BIG BAD BIKES Sales Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Expected Sales (Units)	1,000	1,000	1,500	2,500	6,000
Sales Price per Unit	\$ 70	\$ 70	\$ 75	\$ 75	
Total Sales Revenue	\$70,000	\$70,000	\$112,500	\$187,500	\$440,000

Sales Budget for Big Bad Bikes. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license)

The sales budget leads into the production budget to determine how many units must be produced each week, month, quarter, or year. It also leads into the cash receipts budget, which will be discussed in a later section.

Fluctuations in sales budgets

The expected sales units in the Big Bad Bikes example above shows that the new product is expected to increase sales in Quarter 3 and Quarter 4. This may be due to the fact that it will take time to build demand for this new product. It may also be because they expect greater sales towards Christmas.

Sales budgets for fruit and vegetable products may depend on the seasons. Sales budgets for livestock producers (such as beef, pork and lamb) will fluctuate in accordance with the reproductive schedules of animals, whereas for chickens it might be more standard. Sales budgets for seafood producers are highest in Australia around Easter (as Good Friday is a day where traditionally Christians eat seafood) and Christmas (where hot summers mean large turkey dinners that we see on television in the USA and Europe are not the normal). Butchers budget for almost non-existent sales of camel meat in Australia except around Ramadan, where camel burgers at night markets have become a common fixture at Ramadan night markets.

It is important to understand your business, your customers and your market when preparing a sales budget.

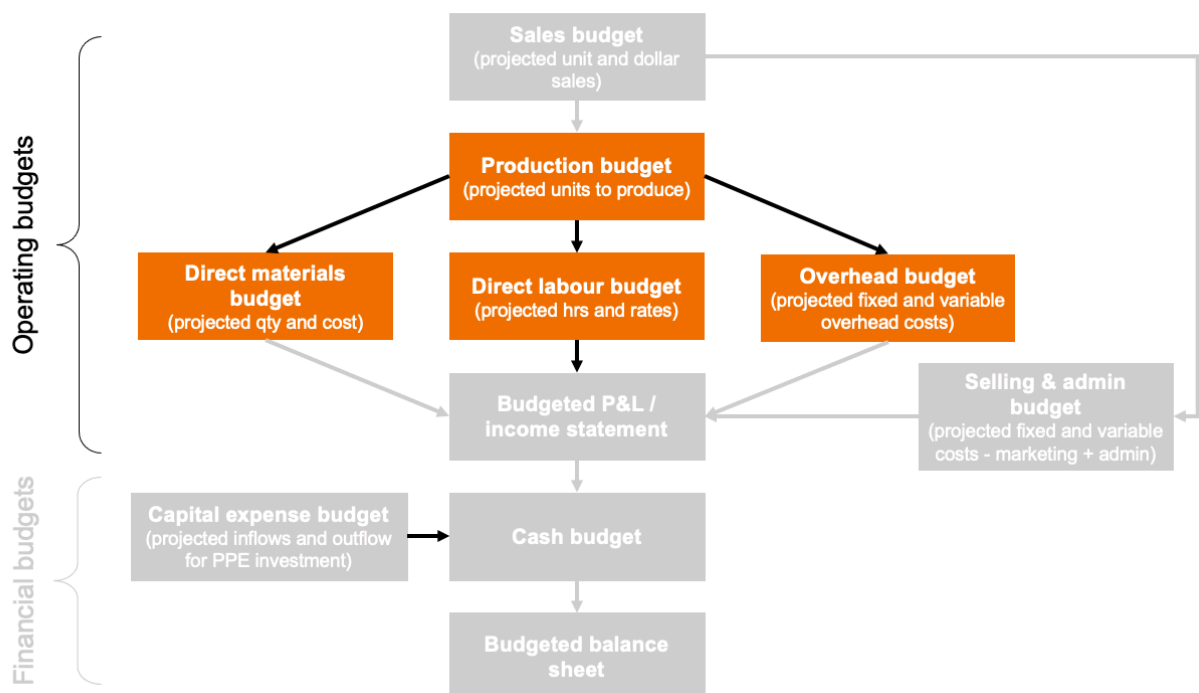
Preparing production budgets

MITCHELL FRANKLIN; PATTY GRAYBEAL; DIXON COOPER; AND AMANDA WHITE

Why we need to prepare a production budget

To be able to meet the demand predicted by the marketing department and management, the production or manufacturing department must be able to plan out how much inventory must be made and what components (materials, labour and overhead) will be required. A production budget plans out the inventory, and then sub-budgets related to materials, labour and overhead are produced.

In our master budget diagram, the coloured budgets are the ones we will learn how to produce in this section.



Operating Budgets, Financial Budgets, and the Relationship between Budgets. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license) / adjusted for Australian terminology and emphasis added

Preparing a production budget

Estimating sales leads to identifying the desired quantity of inventory to meet the demand. Management wants to have enough inventory to meet production, but they do not want too much in the ending inventory to avoid paying for unnecessary storage. Management often uses a formula to estimate how much should remain in ending inventory. Management wants to be flexible with its budgeting, wants to create budgets that can grow or shrink as needed, and needs to have inventory on hand. So the amount of ending inventory often is a percentage of the next week's, month's, or quarter's sales.

In creating the production budget, a major issue is how much inventory should be on hand. Having inventory on hand helps the company avoid losing a customer because the product isn't available. However, there are storage costs associated with holding inventory as well as having a lag time between paying to manufacture a product and receiving cash from selling that product. Management must balance the two issues and determine the amount of inventory that should be available.

When determining the number of units needed to be produced, start with the estimated sales plus the desired

ending inventory to derive the maximum number of units that must be available during the period. Since the number of units in beginning inventory are already produced, subtracting the beginning inventory from the goods available results in the number of units that need to be produced.

After management has estimated how many units will sell and how many units need to be in ending inventory, it develops the production budget to compute the number of units that need to be produced during each quarter. The formula is the reverse of the formula for the cost of goods sold.

Cost of Goods Sold	Number of Units Produced
Beginning Inventory	Goods Sold
<u>+ Purchases (or produced)</u>	<u>+ Ending Inventory</u>
Goods available for sale	Goods available for sale
<u>– Ending Inventory</u>	<u>– Beginning Inventory</u>

The number of units expected to be sold plus the desired ending inventory equals the number of units that are available. When the beginning inventory is subtracted from the number of units available, management knows how many units must be produced during that quarter to meet sales.

In a merchandising firm, retailers do not produce their inventory but purchase it. Therefore, stores such as **KMart** and **BigW** do not have raw materials and instead substitute the number of units to be purchased in place of the number of units to be produced; the result is the merchandise inventory to be purchased.

To illustrate the steps in developing a production budget, recall that Big Bad Bikes is introducing a new product that the marketing department thinks will have strong sales. For new products, Big Bad Bikes requires a target ending inventory of 30% of the next quarter's sales. Unfortunately, they were unable to manufacture any units before the end of the current year, so the first quarter's beginning inventory is 0 units. As shown in (Figure), sales in quarter 2 are estimated at 1,000 units; since 30% is required to be in ending inventory, the ending inventory for quarter 1 needs to be 300 units. With expected sales of 1,000 units for quarter 2 and a required ending inventory of 30%, or 300 units, Big Bad Bikes needs to have 1,300 units available during the quarter. Since 1,300 units needed to be available and there are zero units in beginning inventory, Big Bad Bikes needs to manufacture 1,300 units, as shown in (Figure)

BIG BAD BIKES Production Budget For the Year Ended December 31, 2019				
	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Expected Sales	1,000	1,000	1,500	2,500
Desired Ending Inventory	<u>300</u>	<u>450</u>	<u>750</u>	<u>1,050</u>
Total Required Units	1,300	1,450	2,250	3,550
– Beginning Inventory	<u>0</u>	<u>300</u>	<u>450</u>	<u>750</u>
Required Production	1,300	1,150	1,800	2,800

*Production Budget for Big Bad Bikes.
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The ending inventory from one quarter is the beginning inventory for the next quarter and the calculations are all the same. In order to determine the ending inventory in quarter 4, Big Bad Bikes must estimate the sales for the first quarter of the next year. Big Bad Bikes's marketing department believes sales will increase in each of the next several quarters, and they estimate sales as 3,500 for the first quarter of the next year and 4,500 for the second quarter of the next year. Thirty percent of 3,500 is 1,050, so the number of units required in the ending inventory for quarter 4 is 1,050.

The number of units needed in production for the first quarter of the next year provides information needed for other budgets such as the direct materials budget, so Big Bad Bikes must also determine the number of units needed in production for that first quarter. The estimated sales of 3,500 and the desired ending inventory of 1,350 (30% of the next quarter's estimated sales of 4,500) determines that 4,850 units are required during the quarter.

The beginning inventory is estimated to be 1,050, which means the number of units that need to be produced during the first quarter of year 2 is 3,800.

The number of units needed to be produced each quarter was computed from the estimated sales and is used to determine the quantity of direct or raw material to purchase, to schedule enough direct labour to manufacture the units, and to approximate the overhead required for production. It is also necessary to estimate the sales for the first quarter of the next year. The ending inventory for the current year is based on the sales estimates for the first quarter of the following year. From this amount, the production budget and direct materials budget are calculated and flow to the operating and cash budget.

Preparing a direct materials budget

From the production budget, management knows how many units need to be produced in each budget period. Management is already aware of how much material it needs to produce each unit and can combine the direct material per unit with the production budget to compute the direct materials budget. This information is used to ensure the correct quantity of materials is ordered and the correct amount is budgeted for those materials.

Similar to the production budget, management wants to have an ending inventory available to ensure there are enough materials on hand. The direct materials budget illustrates how much material needs to be ordered and how much that material costs. The calculation is similar to that used in the production budget, with the addition of the cost per unit.

If Big Bad Bikes uses 3.2 pounds of material for each trainer it manufactures and each pound of material costs \$1.25, we can create a direct materials budget. Management's goal is to have 20% of the next quarter's material needs on hand as the desired ending materials inventory. Therefore, the determination of each quarter's material needs is partially dependent on the following quarter's production requirements. The desired ending inventory of material is readily determined for quarters 1 through 3 as those needs are based on the production requirements for quarters 2 through 4. To compute the desired ending materials inventory for quarter 4, we need the production requirements for quarter 1 of year 2. Recall that the number of units to be produced during the first quarter of year 2 is 3,800. Thus, quarter 4 materials ending inventory requirement is 20% of 3,800. That information is used to compute the direct materials budget shown in (Figure).

BIG BAD BIKES Direct Materials Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Units to be Produced	1,300	1,150	1,800	2,800	7,050
Direct Material per Unit	3.20	3.20	3.20	3.20	3.20
Total Pounds Needed for Production	4,160	3,680	5,760	8,960	22,560
+ Desired Ending Inventory	736	1,152	1,792	2,432	2,432
Total Material Required	4,896	4,832	7,552	11,392	24,992
– Beginning Inventory	0	736	1,152	1,792	0
Pounds of Direct Material Required	4,896	4,096	6,400	9,600	24,992
Cost per Pound	\$ 1.25	\$ 1.25	\$ 1.25	\$ 1.25	\$ 1.25
Total Cost of Direct Material Purchase	\$6,120	\$5,120	\$8,000	\$12,000	\$31,240

Direct Materials Budget for Big Bad Bikes. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license)

Management knows how much the materials will cost and integrates this information into the schedule of expected cash disbursements, which will be shown in the section on cash budgets. This information will also be used in the budgeted income statement and on the budgeted balance sheet. With 6,000 units estimated for sale, 3.2 pounds of material per unit, and \$1.25 per pound, the direct materials used represent \$24,000 of the cost of goods sold. The remaining \$7,240 is included in ending inventory as units completed and raw material.

Preparing a direct labour budget

Management uses the same information in the production budget to develop the direct labour budget. This information is used to ensure that the proper amount of staff is available for production and that there is money available to pay for the labour, including potential overtime. Typically, the number of hours is computed and then multiplied by an hourly rate, so the total direct labour cost is known.

If Big Bad Bikes knows that they need 45 minutes or 0.75 hours of direct labour for each unit produced, and the labour rate for this type of manufacturing is \$20 per hour, the computation for direct labour simply begins with the number of units in the production budget. As shown in (Figure), the number of units produced each quarter multiplied by the number of hours per unit equals the required direct labour hours needed to be scheduled in order to meet production needs. The total number of hours is next multiplied by the direct labour rate per hour, and the labour cost can be budgeted and used in the cash disbursement budget and operating budget illustrated in Prepare Financial Budgets.

BIG BAD BIKES Direct Labor Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Units to be Produced	1,300	1,150	1,800	2,800	7,050
Direct Labor Hours per Unit	00.75	00.75	00.75	00.75	00.75
Total Required Direct Labor Hours	975	862.50	1,350	2,100	5,287.50
Labor Cost per Hour	\$ 20	\$ 20	\$ 20	\$ 20	\$ 20
Total Direct Labor Cost	\$19,500	\$17,250	\$27,000	\$42,000	\$ 105,750

*Direct Labour Budget
for Big Bad Bikes.
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The direct labour of \$105,750 will be apportioned to the budgeted income statement and budgeted balance sheet. With 0.75 hours of direct labour per unit and \$20 per direct labour hour, each unit will cost \$15 in direct labour. Of the 7,050 units produced, 6,000 units will be sold, so \$90,000 represents the labour portion of the cost of goods sold and will be shown on the income statement, while the remaining \$15,750 will be the labour portion of ending inventory and will be shown on the balance sheet.

Preparing the overhead budget

The manufacturing overhead budget includes the remainder of the production costs not covered by the direct materials and direct labour budgets. In the manufacturing overhead budgeting process, producers will typically allocate overhead costs depending upon their cost behavior production characteristics, which are generally classified as either variable or fixed. Based on this allocation process, the variable component will be treated as occurring proportionately in relation to budgeted activity, while the fixed component will be treated as remaining constant.

For Big Bad Bikes to create their manufacturing overhead budget, they first determine that the appropriate driver for assigning overhead costs to products is direct labour hours. The overhead allocation rates for the variable overhead costs are: indirect material of \$1.00 per hour, indirect labour of \$1.25 per hour, maintenance of \$0.25 per hour, and utilities of \$0.50 per hour. The fixed overhead costs per quarter are: supervisor salaries of \$15,000, fixed maintenance salaries of \$4,000, insurance of \$7,000, and depreciation expenses of \$3,000.

Given the direct labour hours for each quarter from the direct labour budget, the variable costs are the number of hours multiplied by the variable overhead application rate. The fixed costs are the same for each quarter, as shown in the manufacturing overhead budget in (Figure).

BIG BAD BIKES Manufacturing Overhead Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Variable Costs					
Indirect Material	\$ 975	\$ 863	\$ 1,350	\$ 2,100	\$ 5,288
Indirect Labor	1,219	1,078	1,688	2,625	6,609
Maintenance	244	216	338	525	1,322
Utilities	488	431	675	1,050	2,644
Total Variable Manufacturing Costs	\$ 2,926	\$ 2,588	\$ 4,051	\$ 6,300	\$ 15,863
Fixed Costs					
Supervisory Salaries	\$15,000	\$15,000	\$15,000	\$15,000	\$ 60,000
Maintenance Salaries	4,000	4,000	4,000	4,000	16,000
Insurance	7,000	7,000	7,000	7,000	28,000
Depreciation	3,000	3,000	3,000	3,000	12,000
Total Fixed Manufacturing Costs	\$29,000	\$29,000	\$29,000	\$29,000	\$116,000
Total Manufacturing Overhead	\$31,925	\$31,588	\$33,050	\$35,300	\$131,863

Manufacturing Overhead Budget for Big Bad Bikes.
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The total manufacturing overhead cost was \$131,863 for 7,050 units, or \$18.70 per unit (rounded). Since 6,000 units are sold, \$112,200 (6,000 units × \$18.70 /unit) will be expensed as cost of goods sold, while the remaining \$19,663 will be part of finished goods ending inventory.

Preparing the selling and administration budget

The direct materials budget, the direct labour budget, and the manufacturing overhead budget plan for all costs related to production, while the selling and administrative expense budget contains a listing of variable and fixed expenses estimated to be incurred in all areas other than production costs. While this one budget contains all nonmanufacturing expenses, in practice, it actually comprises several small budgets created by managers in sales and administrative positions. All managers must follow the budget, but setting an appropriate budget for selling and administrative functions is complicated and is not always thoroughly understood by managers without a background in managerial accounting.

If Big Bad Bikes pays a sales commission of \$2 per unit sold and a transportation cost of \$0.50 per unit, they can use these costs to put together their sales and administrative budget. All other costs are fixed costs per quarter: sales salaries of \$5,000; administrative salaries of \$5,000; marketing expenses of \$5,000; insurance of \$1,000; and depreciation of \$2,000. The sales and administrative budget is shown in (Figure), along with the budgeted sales used in the computation of variable sales and administrative expenses.

BIG BAD BIKES Sales and Administrative Expense Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Budgeted Sales in Units	1,000	1,000	1,500	2,500	6,000
Variable Expenses					
Sales Commissions	2,000	2,000	3,000	5,000	12,000
Transportation	500	500	750	1,250	3,000
Total Variable Expenses	\$ 2,500	\$ 2,500	\$ 3,750	\$ 6,250	\$15,000
Fixed Expenses					
Sales Salaries	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$20,000
Administrative Salaries	5,000	5,000	5,000	5,000	20,000
Marketing Expenses	5,000	5,000	5,000	5,000	20,000
Insurance Expenses	1,000	1,000	1,000	1,000	4,000
Depreciation Expenses	2,000	2,000	2,000	2,000	8,000
Total Fixed Expenses	\$18,000	\$18,000	\$18,000	\$18,000	\$72,000
Total Selling and Administrative expenses	\$20,500	\$20,500	\$21,750	\$24,250	\$87,000

Sales and Administrative Expense Budget for Big Bad Bikes.
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Only manufacturing costs are treated as a product cost and included in ending inventory, so all of the expenses in the sales and administrative budget are period expenses and included in the budgeted income statement.

Budgeted P&L/income statement

A budgeted income statement is formatted similarly to a traditional income statement except that it contains budgeted data. Once all of the operating budgets have been created, these costs are used to prepare a budgeted income statement and budgeted balance sheet. The manufacturing costs are allocated to the cost of goods sold and the ending inventory. In this introductory text, we will not cover how to create the budgeted income statement because of the complexity surrounding the allocation of cost of goods sold and raw materials inventory. However, for those looking to become accountants, this will be covered in your later studies. It is sufficient to know that all components of our Sales budget, Production budget and Selling and admin budget will form the basis of a budgeted P&L/income statement.

Test your understanding



An interactive H5P element has been excluded from this version of the text. You can view it online here:

<https://oer.pressbooks.pub/utsaccounting1/?p=2184#h5p-30>

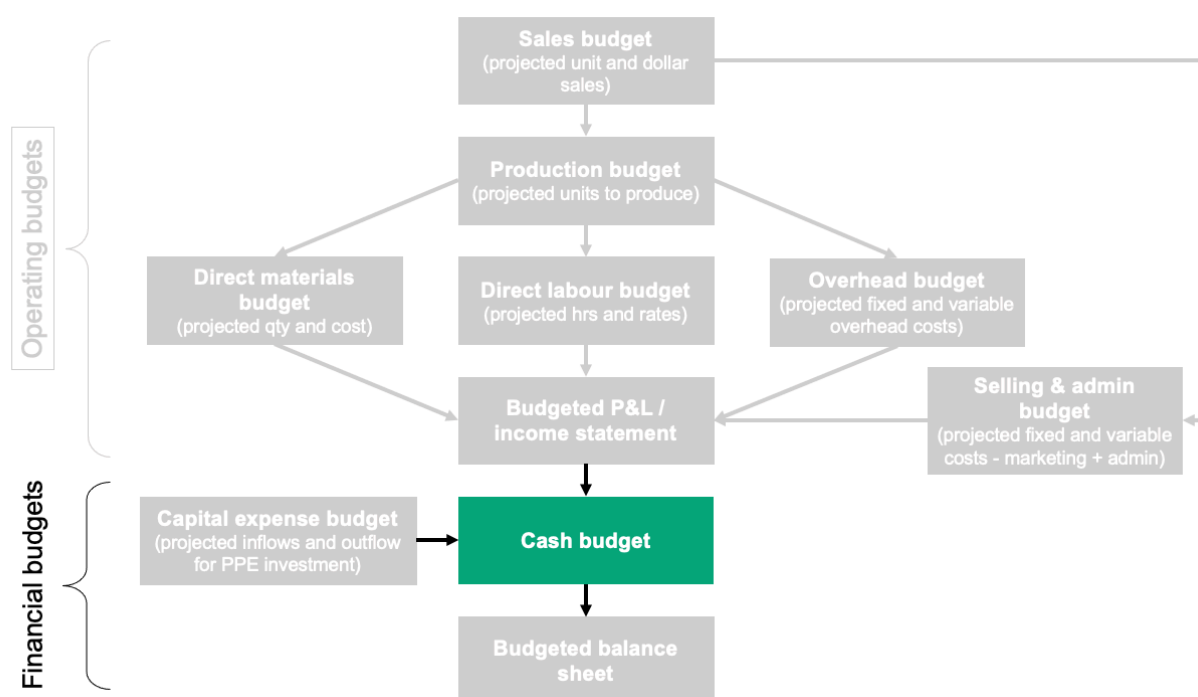
Preparing a cash budget

MITCHELL FRANKLIN; PATTY GRAYBEAL; DIXON COOPER; AND AMANDA WHITE

Why we need to prepare a cash budget

The financial budgets involves examining the expectations for financing the operations of the business and planning for the cash needs of the business. The budget helps estimate the source, amount, and timing of cash collection and cash payments as well as determine if and when additional financing is needed or debt can be paid.

We will focus on preparing the cash budget as shown in the master budget diagram below (preparing a capital expense budget and budgeted balance sheet is beyond the introductory scope of this text). It is critical for the business to understand how much cash is going to be received and why, as well as the size and timing of payments to suppliers and employees. Remember that trading while insolvent (that is, trading while unable to pay your debts) is against the law. For incorporated entities – Directors can face serious penalties if found to have been trading a business and incurring new debts when they knew that existing debts could not be paid (refer to ASIC's guide to insolvency for directors if you would like to extend your understanding further).

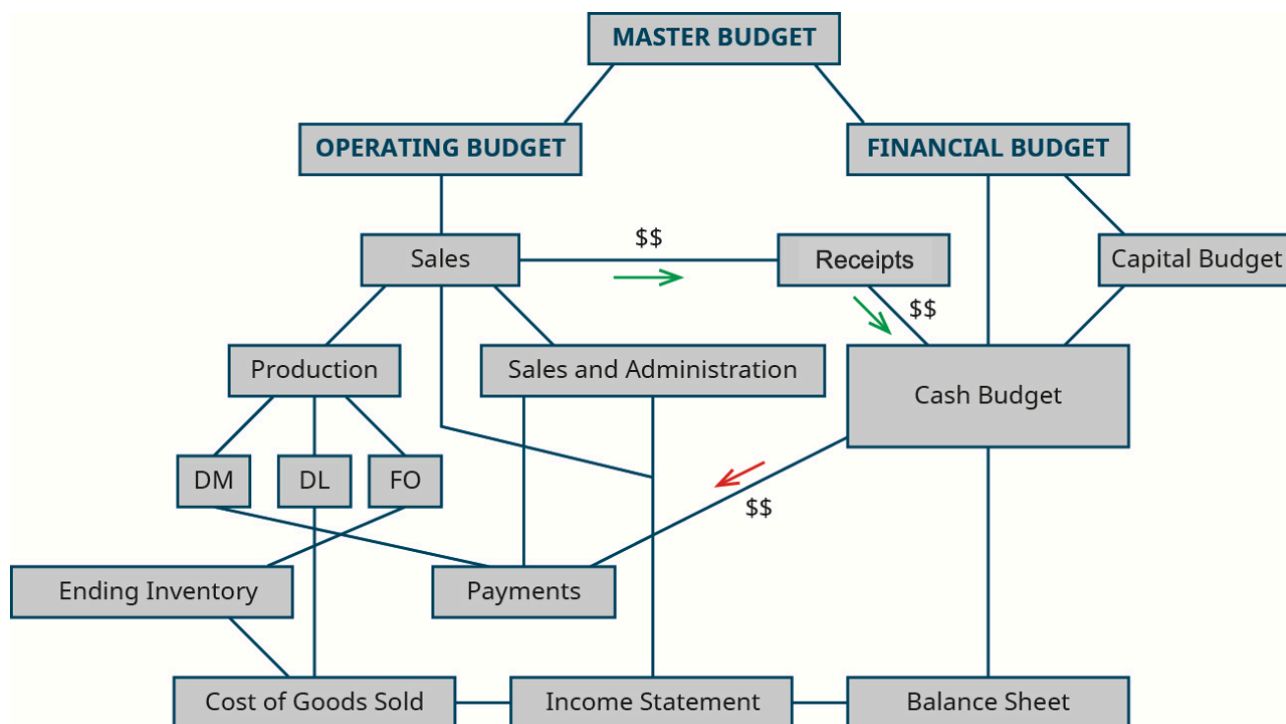


Operating Budgets, Financial Budgets, and the Relationship between Budgets. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license) / adjusted for Australian terminology and emphasis added

Preparing a cash budget

The cash budget is the combined budget of all inflows and outflows of cash. It should be divided into the shortest time period possible, so management can be quickly made aware of potential problems resulting from fluctuations in cash flow. One goal of this budget is to anticipate the timing of cash inflows and outflows, which allows a company to try to avoid a decrease in the cash balance due to paying out more cash than it receives. In order to provide timely feedback and alert management to short-term cash needs, the cash flow budget is

commonly geared toward monthly or quarterly figures. (Figure) shows how the other budgets tie into the cash budget.



Relationship between Budgets. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license) / amended for Australian terminology

Cash is so important to the operations of a company that, often, companies will arrange to have an emergency cash source, such as a *line of credit*, to avoid defaulting on current payables due and also to protect against other unanticipated expenses, such as major repair costs on equipment.

Because the cash budget accounts for every inflow and outflow of cash, it is broken down into smaller components. The **cash receipts** schedule includes all of the cash inflow expected to be received from customer sales, whether those customers pay at the same rate or even if they pay at all. The cash receipts schedule includes all the cash expected to be received and does not include the amount of the receivables estimated as uncollectible. The **cash payments** schedule plans the outflow or payments of all accounts payable, showing when cash will be used to pay for direct material purchases. Both the cash receipts schedule and the cash payments schedule are included along with other cash transactions in a cash budget. The cash budget, then, combines the cash collection schedule, the cash payment schedule, and all other budgets that plan for the inflow or outflow of cash. When everything is combined into one budget, that budget shows if financing arrangements are needed to maintain balances or if excess cash is available to pay for additional liabilities or assets.

The operating budgets all begin with the sales budget. The cash receipts schedule does as well. Since purchases are made at varying times during the period and cash is received from customers at varying rates, data are needed to estimate how much will be collected in the month of sale, the month after the sale, two months after the sale, and so forth. Bad debts also need to be estimated, since that is cash that will not be collected.

To illustrate, let's return to Big Bad Bikes. They believe cash collections for the trainer sales will be similar to the collections from their bicycle sales, so they will use that pattern to budget cash collections for the trainers. In the quarter of sales, 65% of that quarter's sales will be collected. In the quarter after the sale, 30% will be collected. This leaves 5% of the sales considered uncollectible. Uncollectible sales are those accounts receivables that cannot be collected and must be converted from an asset (Accounts receivable) to an Expense. These uncollectible sales are called bad debts and we will explore these in more detail in the follow up textbook, Accounting Business and Society.

The diagram below illustrates when each quarter's sales will be collected. An estimate of the net realisable balance of Accounts Receivable can be reconciled by using information from the cash collections schedule:

Quarter 4: Beginning balance of Accounts Receivable (Quarter 3 Sales of \$112,500 × 30%)	\$ 33,750
+ Quarter 4: Sales	187,500
– Quarter 4: Cash Receipts (65% of Quarter 4 Sales)	121,875
= Quarter 4: Ending Balance in Gross Accounts Receivable	\$ 99,375

Note the Ending Balance is gross accounts receivable which includes the 5% estimated uncollectible, but that amount would be excluded from net realizable accounts receivable.

Illustration of a rule for estimating cash receipts. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license)

Percentage of Sales Collected				
	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Prior year, Quarter 4 Sales	30%			
Quarter 1 Sales	65%	30%		
Quarter 2 Sales		65%	30%	
Quarter 3 Sales			65%	30%
Quarter 4 Sales				65%

Cash Receipts Schedule for Big Bad Bikes. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license)

For example, in quarter 1 of year 2, 65% of the quarter 1 sales will be collected in cash, as well as 30% of the sales from quarter 4 of the prior year. There were no sales in quarter 4 of the prior year so 30% of zero sales shows the collections are \$0. Using information from Big Bad Bikes sales budget, the cash collections from the sales are shown in (Figure).

BIG BAD BIKES Cash Collections Schedule For the Year Ended December 31, 2019						
	Sales	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Collections from prior year Quarter 4	0	0				
Quarter 1	\$ 70,000	\$45,500	\$21,000			\$ 66,500
Quarter 2	70,000		45,500	\$21,000		66,500
Quarter 3	112,500			73,125	\$ 33,750	106,875
Quarter 4	187,500				121,875	121,875
Total Collections	\$440,000	\$45,500	\$66,500	\$94,125	\$155,625	\$361,750
Accounts Receivable	\$ 78,250					

Cash Collections Schedule for Big Bad Bikes. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license)

When the cash collections schedule is made for sales, management must account for other potential cash collections such as cash received from the sale of equipment or the issuance of stock. These are listed individually in the cash inflows portion of the cash budget.

The cash payments schedule, on the other hand, shows when cash will be used to pay for Accounts Payable. One such example are direct material purchases, which originates from the direct materials budget. When the production budget is determined from the sales, management prepares the direct materials budget to determine when and how much material needs to be ordered. Orders for materials take place throughout the quarter, and payments for the purchases are made at different intervals from the orders. A schedule of cash payments is similar to the cash collections schedule, except that it accounts for the company's purchases instead of the company's sales. The information from the cash payments schedule feeds into the cash budget.

Big Bad Bikes typically pays half of its purchases in the quarter of purchase. The remaining half is paid in the following quarter, so payments in the first quarter include payments for purchases made during the first quarter as well as half of the purchases for the preceding quarter. (Figure) shows when each quarter's purchases will be

paid. Additionally, the balance of purchases in Accounts Payable can be reconciled by using information from the cash payment schedule as follows:

Quarter 4: Beginning balance of Accounts Payable	\$ 4,000*
+ Quarter 4: purchase of direct material	12,000
– Quarter 4: Cash Payments	<u>10,000</u>
= Quarter 4: Ending balance in Accounts Payable	<u>\$ 6,000*</u>

* Big Bad Bikes has a policy of paying 50% of purchases in the quarter of purchases, and the remaining 50% the month after the purchase. The beginning balance of accounts payable should be 50% of the prior quarter's purchases.

Illustration of a rule for estimating cash receipts. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license)

	Percentage of Cash Payments for Purchases			
	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Prior year, Quarter 4 Purchases	50%			
Quarter 1 Purchases	50%	50%		
Quarter 2 Purchases		50%	50%	
Quarter 3 Purchases			50%	50%
Quarter 4 Purchases				50%

Cash Payment Schedule. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license)

The first quarter of the year plans cash payments from the prior quarter as well as the current quarter. Again, since the trainers are a new product, in this example, there are no purchases in the preceding quarter, and the payments are \$0. (Figure).

BIG BAD BIKES Cash Payments Schedule For the Year Ended December 31, 2019						
Payments	Purchases	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Quarter 4, prior year	\$ 0	\$ 0				
Quarter 1	6,120	3,060	\$3,060			\$ 6,120
Quarter 2	5,120		2,560	\$2,560		5,120
Quarter 3	8,000			4,000	\$ 4,000	8,000
Quarter 4	<u>12,000</u>				<u>6,000</u>	<u>6,000</u>
Total payments	\$31,240	\$3,060	\$5,620	\$6,560	\$10,000	\$25,240
Accounts Payable	\$ 6,000					

Cash Payments Schedule for Big Bad Bikes. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license)

While the cash payments schedule is made for purchases of material on account, there are other outflows of cash for the company, and management must estimate all other cash payments for the year. Typically, this includes the manufacturing overhead budget, the sales and administrative budget, the capital asset budget, and any other potential payments of cash. Since depreciation is an expense not requiring cash, the cash budget includes the amount from the budgets less depreciation. Cash payments are listed on the cash budget following cash receipts. (Figure) shows the major components of the cash budget.

JOB COST SHEET
General Overview of Cash Budget Components*

Cash Receipts from Sales
+ Other cash receipts (issuance of stock, borrowing money, receiving interest or dividends, from selling assets such as equipment, etc.)
– Cash Payments for Purchases or Production of Inventory
– Cash Payments for manufacturing expenses**
– Cash Payments for selling and administrative expenses**
– Cash payments for capital asset purchases
– Other cash payments (paying interest, paying loan payments, etc.)
= Net Cash

*This is a general overview of the types of cash transactions that might appear in a cash budget and is representative of the components but not of a typical presentation of those components
**Note that depreciation, a non-cash expense, would be excluded from these expenses

*General Overview of Cash Budget Components. A cash budget will contain all the budgeted cash inflows and out flows from the sub-budgets as well as any cash items that might not appear on one of the sub-budgets.
(attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license)*

The cash budget totals the cash receipts and adds it to the beginning cash balance to determine the available cash. From the available cash, the cash payments are subtracted to compute the net cash excess or deficiency of cash for the quarter. This amount is the potential ending cash balance. Organizations typically require a minimum cash balance. If the potential ending cash balance does not meet the minimum amount, management must plan to acquire financing to reach that amount. If the potential ending cash balance exceeds the minimum cash balance, the excess amount may be used to pay any financing loans and interest.

Big Bad Bikes has a minimum cash balance requirement of \$10,000 and has a line of credit available for an interest rate of 19%. They also plan to issue additional capital stock for \$5,000 in the first quarter, to pay taxes of \$1,000 during each quarter, and to purchase a copier for \$8,500 cash in the third quarter. The beginning cash balance for Big Bad Bikes is \$13,000, which can be used to create the cash budget shown in (Figure).

BIG BAD BIKES
Cash Budget
For the Year Ended December 31, 2019

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Beginning Cash Balance	\$13,000	\$10,000	\$ 10,000	\$ 10,000	\$ 13,000
Collections from Customers (Cash Collections Schedule)	45,500	66,500	94,125	155,625	361,750
Issuing of Stock	5,000				5,000
Total Cash Collected during the Period	\$50,500	\$66,500	\$ 94,125	\$155,625	\$366,750
Total Available Cash	\$63,500	\$76,500	\$104,125	\$165,625	\$379,750
– Disbursements					
Direct Materials (Cash Payments Schedule)	3,060	5,620	6,560	10,000	25,240
Direct Labor (Direct Labor Budget)	19,500	17,250	27,000	42,000	105,750
Manufacturing Overhead Less Depreciation (MFG OH Budget)	28,925	28,588	30,050	32,300	119,863
Selling and Administrative Expenses Less Depreciation (Sales and Administrative Expense Budget)	18,500	18,500	19,750	22,250	79,000
Income Tax Expense	1,000	1,000	1,000	1,000	4,000
Purchase of Copier (Capital Asset Budget)			8,500		8,500
Total Disbursements	\$70,985	\$70,958	\$ 92,860	\$107,550	\$342,353
Excess (deficiency) of Available Cash	(\$ 7,485)	\$ 5,542	\$ 11,265	\$ 58,075	\$ 37,397
Financing					
+ Borrowings	17,485	4,458			21,943
– Repayments Including Interest			(1,265)	(21,632)	(22,897)
Ending Cash Balance	\$10,000	\$10,000	\$ 10,000	\$ 36,443	\$ 36,443

Cash Budget for Big Bad Bikes. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license)

Budgeted balance sheet

The cash budget shows how cash changes from the beginning of the year to the end of the year, and the ending cash balance is the amount shown on the budgeted balance sheet. The budgeted balance sheet is the estimated assets, liabilities, and equities that the company would have at the end of the year if their performance were to meet its expectations. Creating a budgeted balance sheet is a more advanced skill not covered in this text.

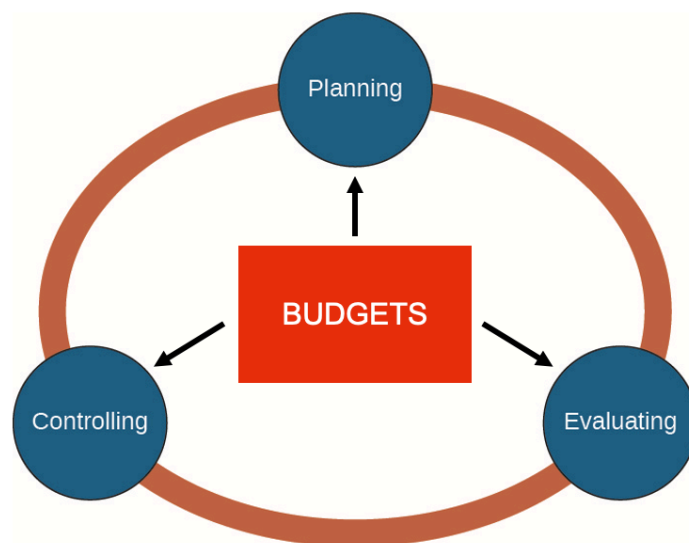
If you want to learn more about this – please refer to the OpenStax textbook Principles of Financial Accounting 2 and section 7.3 (this textbook uses Principles of Financial Accounting 1 and 2 as a source of material – however our budgeting chapter has been adjusted for an introductory audience).

Using budgets to evaluate performance

AMANDA WHITE

Comparing budget vs actual performance

Remember that budgets are used as part of management's three responsibilities – they help management create specific plans to meet strategic objectives and that has been the focus of this chapter. However, budgets also also play a role in evaluating business performance by comparing actual performance to our plan or budget.



Three responsibilities of management (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license) / derivative work by Amanda White – amendment to include the relationship of budgets to the three responsibilities of management

Is the comparison of budgeted performance to actual performance a fair one?

Our budgets are created using a number of assumptions including those related to:

- customer demand
- economic sentiment
- price of raw materials
- availability of raw materials
- pay rates of labour
- prices of overheads and selling and administration costs

However, as the COVID19 pandemic clearly illustrated, budgets and plans may need to be adjusted due to changes in an industry, a country's economic situation or in reaction to global events. A budget prepared in December 2019 for the period January to December 2020 would not be useful when comparing to ACTUAL financial results for January to December 2020. The original budget produced for planning is called a **static budget**.

As a result of this potentially unfair comparison, businesses use a technique called **flexible budgeting** – where an original budget can be adjusted for changes in sales volume or activity. A flexible budget adjusts the cost of goods produced for varying levels of production and is more useful than a static budget, which remains at one amount regardless of the production level. A flexible budget is created at the end of the accounting period, whereas the static budget is created before the fiscal year begins.

In our next chapter, we will learn how to create a flexible budget so that we can then perform evaluation of business performance in a fair and equitable way.

CHAPTER 10: SHORT-TERM PERFORMANCE EVALUATION USING VARIANCE ANALYSIS

Remember in our previous chapter we discussed how comparing our actual performance to our budgeted performance might not be a great comparison? The assumptions under which we made our budget might have changed due to a change in the global economy, in the business's industry or with customers or a supplier. We raised the idea of a better way of creating a comparison by using a flexible budget. In this chapter, we are going to learn more about how to use a flexible budget to evaluate short-term performance.

Let's look at an example

Bar Xpresso (the name of my dad's cafe before he retired) prepares a budget for the year. Projections are prepared about how many hot and cold beverages, toast and pastries and hot lunches will be sold each month.

However, COVID19 hits and Bar Xpresso's business is severely affected. No in-cafe dining is permitted, resulting in less hot lunches sold and an overall decrease in customer traffic. Therefore, to be able to figure out whether Bar Xpresso is performing well against the budget – the budget needs to be adjusted to be flexible. Once adjusted for the actual sales, the business doesn't seem to be making as much profit as it should be. The Bar Xpresso owner also notices that they seem to be using higher levels of beans and the wage bill is disproportionately higher. How can the business try and investigate the potential causes of these differences?

Variance analysis!

Variance analysis will allow the business to identify exactly what is driving higher or lower profits by digging into the components of the budget – the prices at which they sell their goods, the prices of inputs and how efficiently the business uses its inputs to create the product or service that they sell.

In this chapter, we will cover the following learning objectives:

- Create a flexible budget
- Conduct variance analysis using a static budget and flexible budget
- Identify what drives variances between the static and flexible budgets for sales, materials and labour
- Discuss how this information can be used to improve a business



Photo by Ksenia Chernaya: <https://www.pexels.com/photo/interior-of-well-lit-stylish-coffee-house-3951751/> – CC

Creating a flexible budget

MITCHELL FRANKLIN; PATTY GRAYBEAL; DIXON COOPER; AND AMANDA WHITE

What is a flexible budget?

In Chapter 9, Using budgets to evaluate performance, we discussed the idea of a flexible budget – the restating of our original budget, but using the sales quantities that were actually recorded. This results in two budgets. The first is the **static budget** – our original budget – labelled static because it does not move or change. We use our projected sales quantities and prices, materials, labour and overhead to generate our budgeted profit. The second budget is our **flexible budget** – using all of the same assumptions about sales price, cost of raw materials and cost of labour – but adjusted for the actual units sold.

How do we create a flexible budget?

A flexible budget is one based on different volumes of sales. A flexible budget *flexes* the static budget for each anticipated level of production. This flexibility allows management to estimate what the budgeted numbers would look like at various levels of sales. Flexible budgets are prepared at the end of each analysis period (usually monthly), rather than in advance, since the idea is to compare the operating income to the expenses deemed appropriate at the actual production level.



Lobster Instant Noodles

Example – Lobster Instant Noodles

Lobster Instant Noodles make instant ramen noodles in cups that are commonly eaten by university students across the world. Simply add boiling water, close the lid for 3 minutes and you've got an instant meal. The business had planned to sell 25,000 units in 2022 at a price of \$6.50. There were direct variable costs for materials \$0.80, labour \$1.00, overhead \$0.50 and selling and administration \$0.50. There were also fixed costs of \$25,000 related to the factory and \$25,000 related to selling and administration.

The static budget for Lobster Instant Noodles in 2022 is as follows:

Lobster Instant Noodles Static Budget For year ended 30 June 2022			
Budgeted sales		25,000	
Budgeted price		\$ 6.50	
Total sales		\$ 162,500.00	
	Per unit		
Less Cost of Goods sold			
Direct material	\$ 0.80	\$ 20,000.00	
Direct labour	\$ 1.00	\$ 25,000.00	
Variable overhead	\$ 0.50	\$ 12,500.00	
Fixed overhead		\$ 25,000.00	
		\$ 82,500.00	
GROSS PROFIT		\$ 80,000.00	
Variable selling and admin	\$ 0.50	\$ 12,500.00	
Fixed selling and admin		\$ 25,000.00	
NET PROFIT		\$ 42,500.00	

However, things did not go as plan in 2022. Lobster Instant Noodles faced significant issues related to their supply chain – delays in getting raw materials, employees who became unwell with COVID19 or needing to isolate resulted in performance less than what the business expected. The table below shows that Lobster Instant Noodles sold 7000 less units and instead of making a budgeted \$42,500 of profit, instead made just \$900. But is the comparison below fair? Of course, if you sell 18,000 less units, you would expect profit to be less – this is where the flexible budget comes in.

Lobster Instant Noodles				
		Static Budget	Actual	Variance
Budgeted sales (units)		25,000	18,000	(7,000)
Budgeted price		\$ 6.50		
Total sales		\$ 162,500.00	\$ 108,000.00	\$ (54,500.00)
	Per unit			
Less Cost of Goods sold				
Direct material	\$ 0.80	\$ 20,000.00	\$ 21,600.00	\$ 1,600.00
Direct labour	\$ 1.00	\$ 25,000.00	\$ 18,000.00	\$ (7,000.00)
Variable overhead	\$ 0.50	\$ 12,500.00	\$ 8,100.00	\$ (4,400.00)
Fixed overhead		\$ 25,000.00	\$ 24,000.00	\$ (1,000.00)
		\$ 82,500.00	\$ 71,700.00	\$ (10,800.00)
GROSS PROFIT		\$ 80,000.00	\$ 36,300.00	\$ (43,700.00)
Variable selling and admin	\$ 0.50	\$ 12,500.00	\$ 9,900.00	\$ (2,600.00)
Fixed selling and admin		\$ 25,000.00	\$ 25,500.00	\$ 500.00
NET PROFIT		\$ 42,500.00	\$ 900.00	\$ (41,600.00)

To create the flexible budget – we use the standard amounts for the sales price, materials, labour, overhead, and selling and administration costs. We can then compare our static budget, flexible budget and actual. This is shown below for Lobster Instant Noodles.

Lobster Instant Noodles					
		Static Budget	Flexible Budget	Actual	Flexible Variance
Budgeted sales (units)		25,000	18,000	18,000	
Budgeted price		\$ 6.50	\$ 6.50		
Total sales		\$ 162,500.00	\$ 117,000.00	\$ 108,000.00	\$ (9,000.00)
	Per unit				
Less Cost of Goods sold					
Direct material	\$ 0.80	\$ 20,000.00	\$ 14,400.00	\$ 21,600.00	\$ 7,200.00
Direct labour	\$ 1.00	\$ 25,000.00	\$ 18,000.00	\$ 18,000.00	\$ -
Variable overhead	\$ 0.50	\$ 12,500.00	\$ 9,000.00	\$ 8,100.00	\$ (900.00)
Fixed overhead		\$ 25,000.00	\$ 25,000.00	\$ 24,000.00	\$ (1,000.00)
		\$ 82,500.00	\$ 66,400.00	\$ 71,700.00	\$ 5,300.00
GROSS PROFIT		\$ 80,000.00	\$ 50,600.00	\$ 36,300.00	\$ (14,300.00)
Variable selling and admin	\$ 0.50	\$ 12,500.00	\$ 9,000.00	\$ 9,900.00	\$ 900.00
Fixed selling and admin		\$ 25,000.00	\$ 25,000.00	\$ 25,500.00	\$ 500.00
NET PROFIT		\$ 42,500.00	\$ 16,600.00	\$ 900.00	\$ (15,700.00)

As you can see, the flexible budget indicates we should have made \$16,600 in profit, a more reasonable number than \$42,500 given the decrease in sales by 7,000 units.

Now that we know how to create the flexible budget, the next step is to understand the variance analysis – the comparison between the flexible budget and the business's actual performance.

Conducting a variance analysis using the static and flexible budget

AMANDA WHITE; MITCHELL FRANKLIN; PATTY GRAYBEAL; AND DIXON COOPER

Why compare the static and flexible budgets

As you've learned, an advantage of budgeting is **evaluating performance**. Having a strong understanding of their budgets helps managers keep track of expenses and work toward the company's goals. Companies need to understand their revenue and expense details to develop budgets as a tool for planning operations and cash flow. Part of understanding revenue and expenses is evaluating the prior year. Did the company earn the expected profit? Could it have earned a higher profit? What expenses or revenues were not on the budget? Critically evaluating the actual results versus the estimated budgetary results can help management plan for the future.

The variance is the difference between the flexible budgeted performance and the actual performance. Identifying the variances do not necessarily tell us what is causing the issues, but highlights the issue so that management and the business can investigate the cause. Variances are categorised as either favourable or unfavourable. A favourable variance is when revenue is higher than budgeted or expenses are lower than budgeted. An unfavourable variance is when revenue is lower than budgeted or expenses are higher than budgeted.

Comparing Favourable to Unfavourable Variances

Favourable

Actual Sales > Budgeted Sales

Actual Expenses < Budgeted Expenses

Unfavourable

Actual Sales < Budgeted Sales

Actual Expenses > Budgeted expenses

It is easy to understand that an unfavourable variance may be a problem. But that is not always true, as a higher rate for wages may mean the company has a higher quality employee who is able to waste less material. Likewise, having a favourable variance indicates that more revenue was earned or less expenses were incurred but further analysis can indicate if costs were cut too far and better materials should have been purchased.

Example – Lobster Instant Noodles

The Lobster Instant Noodles variance analysis has been updated to include whether the variances are favourable or unfavourable. Remember – a negative variance doesn't mean unfavourable – remember to think about the item – a negative variance for revenue means that we earned less than expected. However a negative variance for an expense means that we spent less than expected – that is a good thing!

Lobster Instant Noodles						
		Static Budget	Flexible Budget	Actual	Flexible Variance	
Budgeted sales (units)		25,000	18,000	18,000		
Budgeted price		\$ 6.50	\$ 6.50			
Total sales		\$ 162,500.00	\$ 117,000.00	\$ 108,000.00	\$ (9,000.00)	Unfavourable
	Per unit					
Less Cost of Goods sold						
Direct material	\$ 0.80	\$ 20,000.00	\$ 14,400.00	\$ 21,600.00	\$ 7,200.00	Unfavourable
Direct labour	\$ 1.00	\$ 25,000.00	\$ 18,000.00	\$ 18,000.00	\$ -	
Variable overhead	\$ 0.50	\$ 12,500.00	\$ 9,000.00	\$ 8,100.00	\$ (900.00)	Favourable
Fixed overhead		\$ 25,000.00	\$ 25,000.00	\$ 24,000.00	\$ (1,000.00)	Favourable
		\$ 82,500.00	\$ 66,400.00	\$ 71,700.00	\$ 5,300.00	Unfavourable
GROSS PROFIT		\$ 80,000.00	\$ 50,600.00	\$ 36,300.00	\$ (14,300.00)	Unfavourable
Variable selling and admin	\$ 0.50	\$ 12,500.00	\$ 9,000.00	\$ 9,900.00	\$ 900.00	Unfavourable
Fixed selling and admin		\$ 25,000.00	\$ 25,000.00	\$ 25,500.00	\$ 500.00	Unfavourable
NET PROFIT		\$ 42,500.00	\$ 16,600.00	\$ 900.00	\$ (15,700.00)	Unfavourable

For Lobster Instant Noodles, we can see that we spent more on direct materials, but less on manufacturing overhead. We spent more on selling and administration costs overall. Variable analysis is like a torch. It spotlights for us where the issues may be – but we must evaluate whether the variance is significant (is it big enough to warrant investigation) and then conduct further analysis.

What caused us to spend \$7,200 more on direct materials during the year than our original forecast? How did we make a saving on fixed overhead? The critical skill for employees of a business is knowing how to read a variance analysis and then ask the right questions of the right people to determine whether you have a problem.

Identifying the causes of variances

AMANDA WHITE

Why identifying the causes of variances is important

As we've discussed many times in this textbook, simply being able to calculate or report accounting figures is an important skill – but more important is knowing how to USE accounting information to help a business achieve its objectives. Therefore, at Lobster Instant Noodles, knowing the business is making a profit or loss is an important fact. But MORE important is understanding WHY the business is making such a small profit in comparison to its flexible budget.

Remember that understanding accounting information is important because it helps us ask the right QUESTIONS, so that we may get ANSWERS to assist a business in making its next decisions. Thinking about Lobster Instant Noodles – we want to know WHY we had to spend more on direct materials, but less on overhead, and why more on selling and administration?

Lobster Instant Noodles						
		Static Budget	Flexible Budget	Actual	Flexible Variance	
Budgeted sales (units)		25,000	18,000	18,000		
Budgeted price		\$ 6.50	\$ 6.50			
Total sales		\$ 162,500.00	\$ 117,000.00	\$ 108,000.00	\$ (9,000.00)	Unfavourable
	Per unit					
Less Cost of Goods sold						
Direct material	\$ 0.80	\$ 20,000.00	\$ 14,400.00	\$ 21,600.00	\$ 7,200.00	Unfavourable
Direct labour	\$ 1.00	\$ 25,000.00	\$ 18,000.00	\$ 18,000.00	\$ -	
Variable overhead	\$ 0.50	\$ 12,500.00	\$ 9,000.00	\$ 8,100.00	\$ (900.00)	Favourable
Fixed overhead		\$ 25,000.00	\$ 25,000.00	\$ 24,000.00	\$ (1,000.00)	Favourable
		\$ 82,500.00	\$ 66,400.00	\$ 71,700.00	\$ 5,300.00	Unfavourable
GROSS PROFIT		\$ 80,000.00	\$ 50,600.00	\$ 36,300.00	\$ (14,300.00)	Unfavourable
Variable selling and admin	\$ 0.50	\$ 12,500.00	\$ 9,000.00	\$ 9,900.00	\$ 900.00	Unfavourable
Fixed selling and admin		\$ 25,000.00	\$ 25,000.00	\$ 25,500.00	\$ 500.00	Unfavourable
NET PROFIT		\$ 42,500.00	\$ 16,600.00	\$ 900.00	\$ (15,700.00)	Unfavourable

Lobster Instant Noodles – variance analysis of the flexible budget and actual performance (Copyright Amanda White CC-BY-NC-SA)

If you choose to enter the accounting major or specialise in accounting – those further studies will cover how we analyse variances in much greater detail than is covered in this text. The approach taken here is to help you understand the underlying theory behind variance analysis without going into complicated formulas and terminology.

Sales-related variances

Think back to how we create the sales budget as shown in the formula below. Our budgeted sales is calculated by multiplying our predicted sales (developed by marketing and management) by the sales price.

$$\text{Budgeted sales} = \text{Predicted sales (units)} \times \text{Sales price}$$

Our flexible budget uses the same units sold as the actual sales for the year. This means that the only other factor that could result in actual performance being different from budgeted performance is the Sales Price. If we work backwards, \$108,000 divided by 18,000 units provides us with an Actual Sales Price of \$6.00. This is \$0.50 less than our original budget of \$6.50.

Our next step would be to investigate why the sales price was dropped. We may need to meet with the Sales Manager, or Marketing team to find out the reason for the price drop. This could include reasons such as (but not limited to):

- The business was losing customers to a competitor who was charging less than \$6.50
- The economic impact of COVID19 meant that customers were not willing to pay the original budgeted price

Material-related variances

When preparing the budget for our direct materials, we take our predicted sales and multiply this by the budgeted materials used per unit and the price of raw materials. In our Lobster Instant Noodles example, we haven't been provided with this information so far. However, if we compare our actual direct materials per unit and our budgeted raw materials per unit, there is a difference.

$$\text{Direct materials budget} = \text{Sales (units)} \times \text{Budgeted materials used per unit} \times \text{Price of raw materials}$$

Lobster Instant Noodles budgeted for \$0.80 per unit of raw materials (mostly wheat for the noodles, flavour powder and the packaging for the cup). However, the business actually used \$1.20 of raw materials (\$21,600 in total raw materials divided by 18,000 units = \$1.20 per unit). The business spent 50% more on raw materials than the budget.

Presume we are given the following new information

- the raw materials were priced at \$0.40 per 100g and each cup should use 200g of raw materials
- raw material prices did not change since the budget was prepared

Then we can deduce that the business must have used 300g of raw materials to make each cup of noodles (\$1.20 per unit total DM cost and \$0.40 per 100g). Why did the business use more raw materials? Potential reasons could include (but are not limited to)

- the raw materials were of poorer quality and there was more wastage

- the production process had become more inefficient

Business employees and owners can take action on these issues and look at changing suppliers to one that provides a better quality product, or investigate how they can reduce wastage of the raw materials going into the product.

Alternatively, the purchasing managers who arrange to buy the wheat and cups tell us that due to the worldwide supply chain issues and also the Russian invasion of Ukraine, wheat prices have increased significantly. The business still uses 200g of raw materials, but the prices went up \$0.60 per 100g of materials. The key action the business might take here is to try and find a cheaper supplier.

Labour-related variances

When preparing the budget for our direct labour, we take our predicted sales and multiply this by the budgeted labour hours used per unit and the rate of pay for our labour / employees.

$$\text{Direct labour budget} = \text{Sales (units)} \times \text{Budgeted labour hours used per unit} \times \text{Rate of pay for labour}$$

In our Lobster Instant Noodles example, we haven't been provided with this information so far. However, if we compare our actual and flexible budget for direct labour – you'll notice that nothing has changed. There is 0 variance. What does this mean? It could mean one of a few options:

- That the business used the expected number of labour hours per unit and the rate of pay is as expected
- We could be paying employees more per hour, but they may be more efficient – resulting in less hours but at a higher rate, and the same total wage bill
- We could be paying employees less per hour, but they may be inefficient – resulting in greater hours, but at a lesser rate, and the same total wage bill.

Globally, there is a world wide shortage of labour due to COVID19 illness and the need for employees to take sick leave or isolation leave. This has left many businesses – from supermarkets, to restaurants, retail stores and manufacturing facilities short of employees. This has meant that the hourly rate of pay has increased in many industries. However, we have also seen the opposite – with many employees having lost their jobs during COVID19 and looking for work – some businesses may be paying less per hour because more labour is available.

Overhead and selling and administration-related variances

As you can see from the Lobster Instant Noodles variance analysis, the business saved money on variable overhead and fixed overhead. The overhead costing process is quite complicated and we have not gone into detail as to how overhead is calculated. Therefore, we do not expect students to be able to conduct variance analysis in any great detail for overhead and selling and administration-related variances. Simply understanding favourable and unfavourable and being able to brainstorm potential reasons for overall changes is sufficient. Some ideas have been provided below:

Overhead variances	Selling and administration variances
<ul style="list-style-type: none"> • The business negotiated a decrease in a fixed cost such as the rent for the factory or equipment • The business installed solar panels on the factory roof resulting in less paid for electricity to run the manufacturing equipment • The business re-evaluated how they calculated their overhead costs and found an error resulting in a change in the overhead 	<ul style="list-style-type: none"> • The business changed advertising strategies from fixed costs in traditional media (print, television, radio) to a greater focus on social media spending which has a greater variable component • The business shifted from standard post services to express post to keep customers happy and encourage sales

Describe how companies use variance analysis

MITCHELL FRANKLIN; PATTY GRAYBEAL; DIXON COOPER; AND AMANDA WHITE

How businesses use variance analysis

Companies use variance analysis in different ways. The starting point is the determination of standards against which to compare actual results. Many companies produce variance reports, and the management responsible for the variances must explain any variances outside of a certain range. Some companies only require that unfavorable variances be explained, while many companies require both favourable and unfavourable variances to be explained.

Requiring managers to determine what caused unfavourable variances forces them to identify potential problem areas or consider if the variance was a one-time occurrence. Requiring managers to explain favourable variances allows them to assess whether the favourable variance is sustainable. Knowing what caused the favourable variance allows management to plan for it in the future, depending on whether it was a one-time variance or it will be ongoing.

Another possibility is that management may have built the favourable variance into the standards. Management may overestimate the material price, labour wage rate, material quantity, or labour hours per unit, for example. This method of overestimation, sometimes called *budget slack*, is built into the standards so management can still look good even if costs are higher than planned. In either case, managers potentially can help other managers and the company overall by noticing particular problem areas or by sharing knowledge that can improve variances.

Often, management will manage “to the variances,” meaning they will make decisions that may not be advantageous to the company’s best interests over the long run, in order to meet the variance report threshold limits. This can occur when the standards are improperly established, causing significant differences between actual and standard numbers.

Ethical considerations when using variance analysis over the long-term

The proper use of variance analysis is a significant tool for an organisation to reach its long-term goals. When its accounting system recognises a variance, a business needs to understand the significant influence of accounting not only in recording its financial results, but also in how reacting to that variance can shape management’s behaviour toward reaching its goals.¹ Many managers use variance analysis only to determine a short-term reaction, and do not analyse why the variance occurred from a long-term perspective. A more long-term analysis of variances allows an approach that “is responsibility accounting in which authority and accountability for tasks is delegated downward to those managers with the most influence and control over them.”² It is important for managers to analyse the reported variances with more than just a short-term perspective.

Managers sometimes focus only on making numbers for the current period. For example, a manager might decide to make a manufacturing division’s results look profitable in the short term at the expense of reaching the business’s long-term goals. A recognisable cost variance could be an increase in repair costs as a percentage of sales on an increasing basis. This variance could indicate that equipment is not operating efficiently and is increasing overall cost. However, the expense of implementing new, more efficient equipment might be higher than repairing the current equipment. In the short term, it might be more economical to repair the outdated equipment, but in the long term, purchasing more efficient equipment would help the business reach its goal of eco-friendly manufacturing. If the system use for controlling costs is not aligned to reinforce management of the business with a long-term perspective, “the manager has no organizational incentive to be concerned with

important issues unrelated to anything but the immediate costs”³ related to the variance. A manager needs to be cognisant of their organisation’s goals when making decisions based on variance analysis.

Management can use standard costs to prepare the budget for the upcoming period, using the past information to possibly make changes to production elements. Standard costs are a measurement tool and can thus be used to evaluate performance. As you’ve learned, management may manage “to the variances” and can manipulate results to meet expectations. To reduce this possibility, performance should be measured on multiple outcomes, not simply on standard cost variances.

As shown in the table below, standard costs have pros and cons to consider when using them in the decision-making and evaluation processes.

Standard Costs

Pros

- Useful when developing a future budget
- Can be used as a benchmark for performance and quality expectations
- Can individually identify areas of success and areas for improvement

Cons

- Might ignore customer and employee satisfaction rates
- Information could be historical data and not useful in real-time decision-making needs
- The system to manage and develop standard costs requires a lot of resources, which could be costly and time consuming

Standard costing provides many benefits and challenges, and a thorough analysis of each variance and the possible unfavourable or favourable outcomes is required to set future expectations and adjust current production goals.

Footnotes

- 1 Jeffrey R. Cohen and Laurie W. Pant. “The Only Thing That Counts Is That Which Is Counted: A Discussion of Behavioral and Ethical Issues in Cost Accounting That Are Relevant for the OB Professor.” September 18, 2018. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.1026.5569&rep=rep1&type=pdf>
- 2 Jeffrey R. Cohen and Laurie W. Pant. “The Only Thing That Counts Is That Which Is Counted: A Discussion of Behavioral and Ethical Issues in Cost Accounting That Are Relevant for the OB Professor.” September 18, 2018. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.1026.5569&rep=rep1&type=pdf>
- 3 Jeffrey R. Cohen and Laurie W. Pant. “The Only Thing That Counts Is That Which Is Counted: A Discussion of Behavioral and Ethical Issues in Cost Accounting That Are Relevant for the OB Professor.” September 18, 2018. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.1026.5569&rep=rep1&type=pdf>

CHAPTER 11: SHORT TERM DECISION MAKING USING RELEVANT COSTING

You're a designer for a clothing brand – your business started small, with you making clothes yourself. Eventually growth meant that you hired a group of seamstresses to sew clothes for you. However, the business has exploded when people participating in an online reality show started wearing and raving about your clothes on social media.

Business has exploded! But now you've got some choices as demand has increased and you're confused about how to make these decisions. Some of the choices you are faced with include:

- One of these tv stars has approached you about doing a collaboration of special leggings – do you accept?
- A major seller is a waterfall cardigan that mixes and matches with many outfits. A factory in Vietnam has approached you – they can make the cardigan for you – is this a good option?
- A low seller is leather jackets, but could it be because of the weather or is the product just a dud? Should we keep it or drop this product?
- With all of these decisions – the business has limited funds – what is the best way to spend them?

In this chapter – we'll examine what information is required to help us make these decisions. Our learning objectives are:

- Understand what relevant information is required for these types of decisions
- Make a decision about whether to accept a special order
- Make a decision about whether to make or buy a product or component
- Make a decision about whether to keep or drop a product, service or department
- Make a decision when our resources are scarce
- Consider what information is required when making longer term decisions

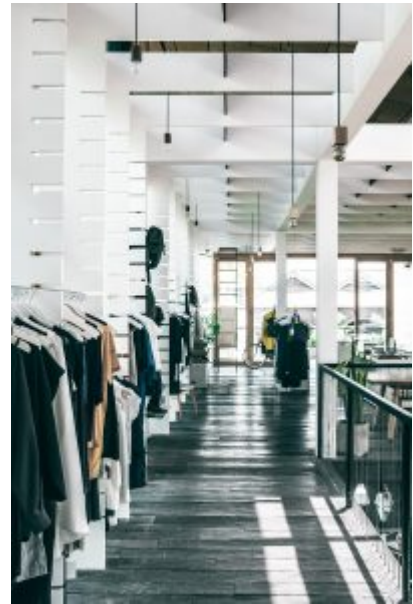


Photo by Maria Orlova:
<https://www.pexels.com/photo/fashion-store-interior-with-garments-hanging-on-racks-4940756/> (CC0)

Identify relevant information for decision-making

MITCHELL FRANKLIN; PATTY GRAYBEAL; DIXON COOPER; AND AMANDA WHITE

Choosing between alternatives

Almost everything we do in life results from choosing between alternatives, and the choices we make result in different consequences. For example, when choosing whether or not to eat breakfast before going to class, you face two alternatives and two sets of consequences. Eating breakfast means you must get up a little earlier, have food available, and be willing to prepare the food. Not eating means sleeping in longer, not having to plan food, and being hungry during class. Just as our lives are fraught with decisions large and small, the same is true for businesses. Almost every aspect of being in business involves choosing between alternatives, and each alternative typically has one or more consequences. Understanding how businesses make decisions paves the way not only to better decision-making processes but potentially to better outcomes.

Decisions made by businesses can have short-term effects or long-term impacts, or in some situations, both. Short-term decisions often address a temporary circumstance or an immediate need while long-term decisions align more with permanent problem solving and meeting strategic goals. These two types of decisions require different types of analyses and different types of accounting and non-accounting information.

What is considered short-term and what is considered long-term? Think back to our accounting definition for current and non-current assets and liabilities. Current assets/liabilities are short-term items – and short term is interpreted as some time in the next 12 months. Non-current is longer term and is anything over or after 12 months from now. Accounting distinguishes between short-term and long-term decisions not only because of the difference in the general nature of these decisions but also because the types of analyses differ significantly between short-term and long-term decision categories. As the time horizon over which the decision will have an impact expands, more costs become relevant to the decision-making process. In addition, when a time element is considered, there will be additional factors such as interest (paid or received) that will have a greater influence on decisions. The table below provides examples of short-term and long-term business decisions.

Short-term and long-term business decisions should be analysed using different frameworks.

Examples of Short-Term and Long-Term Business Decisions

Short-Term Business Decisions

- Accepting a special production order
- Determining the best product mix from current products
- Outsourcing a part or service
- Further processing or refining a current product

Long-Term Business Decisions

- Buying new equipment versus remodeling old equipment
- Choosing which products to manufacture
- Expanding into a new area or country
- Diversifying by buying another business

Short-term decision-making

Short-term decision-making is vital in any business. Considering the business challenges facing **Gearhead Outfitters**, a retailer sells men's, women's and children's outdoor clothing, footwear, and accessories. **Gearhead** must carry a certain level and variety of inventory to meet the demands of its customers. The company will have to maintain appropriate accounting records to make proper business decisions to promote sustainability and growth.

How might **Gearhead** be able to compete with larger chains and remain profitable? Will every sale result in the anticipated profit to the company? Consider what specialised short-term decision-making processes the company may use to meet its goals. Should more of an item than normal be purchased for resale to receive a

larger discount from the supplier? What information about cost, volume, and profit is needed to make a sound business decision in this case? Some items may be sold at a loss (or lesser profit) to attract customers to the store (often called loss-leaders in marketing terminology). What type of information and accounting system is needed to help in this situation? The company requires relevant, consistent, and reliable data to determine the proper course of action. But what information is considered “relevant”?

Relevant information for short-term decision-making

Business decision-making can be outlined as a process that is applied by management with each decision that is made. The process of decision-making in a managerial business environment can be summed up in these steps.

1. Identify the objective or goal. For a business, typically the goal is to maximise revenues or minimise costs.
2. Identify alternative courses of action that can achieve the goal or address an obstacle that is hindering goal achievement.
3. Perform a comprehensive analysis of potential solutions. This includes identifying revenues, costs, benefits, and other financial and qualitative variables.
4. Decide, based upon the analysis, the best course of action.
5. Review, analyse, and evaluate the results of the decision.

The first step of the decision-making process is to identify the goal. In the decisions discussed in this course, the quantitative goal will either be to maximise revenues or to minimise costs. The second step is to identify the alternative courses of action to achieve the goal. (In the real world, steps one and two may require more thought and research that you will learn about in advanced cost accounting and management courses.). This chapter focuses on steps three and four, which involve short-term decision analysis: determining the appropriate information necessary for making a decision that will impact the company in the short term, usually 12 months or fewer, and using that information in a proper analysis in order to reach an informed decision among alternatives. Step five, which involves reviewing and evaluating the decision, is briefly addressed with each type of decision analysed.

Though these same general steps could be used in long-term decision analyses, the nature of long-term decisions is different. Short-term decisions are typically operational in nature: making versus buying a component of a product, using scarce resources, selling a product as-is or processing it further into a different product. It is relatively easy to change a short-term decision with minimal impact on the company. Long-term decisions are strategic in nature and typically involve large sums of money. The effects of a long-term decision can have significant financial impact on a company for years. Examples of long-term decisions include replacing manufacturing equipment, building a new factory, or deciding to eliminate a product line. Managers will need to carefully track and predict costs and revenues to make these decisions – this is because the goal of most businesses is profit maximisation, hence we need to examine the potential impact of a decision on revenues and expenses.

In carrying out step three of the managerial decision-making process, a differential analysis compares the relevant costs and revenues of potential solutions. What does this involve? First, it is important to understand that there are many types of short-term decisions that a business may face, but these decisions always involve choosing between alternatives. Examples of these types of decisions include:

- determining whether to accept a special order
- making a product or component versus buying the product or component
- performing additional processing on a product
- keeping versus eliminating a product or segment.

In each of these situations, the business should compare the relevant costs and the relevant revenues of one alternative to the relevant costs and relevant revenues of the other alternative(s). Therefore, an important step in the differential analysis of potential solutions is to **identify the relevant costs and relevant revenues of the decision**.

Identifying relevant revenues and costs

What does it mean for something to be relevant? In the context of decision-making, something is relevant *if it will influence the decision being made*. For example, suppose you have two options for a summer job—either directing traffic for a road safety and maintenance business or working for a landscaping company mowing lawns. For either job, you will be required to have industrial grade sound protectors (plugs or headphones) for your ears. This cost would not be relevant because it is the same under either alternative, so it will not influence your decision between the two jobs; it would be considered an irrelevant cost. You also believe your transportation costs will be the same for either job; thus this would also be an irrelevant cost.



Photo by Magic K from Pexels – CC0 – <https://www.pexels.com/photo/a-person-using-a-lawn-mower-6728919/>

However, if you are required to have steel-toed boots for the road work job but can wear any type of work boot for the landscaping job, you would need to consider the difference between the costs, or the differential cost, of these two types of boots. This difference in cost between the two pairs of boots would be designated as a relevant cost because it influences your decision.

The two jobs also may have differences in revenues, called a differential revenue. Because the differential revenue influences the decision, it is also a relevant revenue. If both jobs pay the same hourly wage, it would have an irrelevant revenue, but if the road safety job offers overtime for any time worked over 40 hours, then this overtime wage has the potential to be a relevant revenue if overtime is a likely occurrence. Looking only at these differences – of both costs and revenues – between the alternatives, is known as **differential analysis**.

In conducting these types of analyses between alternatives, the initial focus will be on each quantitative factor of the analysis – in other words, the component that can be measured numerically. Examples of quantitative factors in business include sales growth, number of defective parts produced, or number of labor hours worked. However, in decision-making, it is important also to consider each qualitative factor, which is one that cannot be measured numerically. For example, using the same summer job scenario, qualitative factors may include the environment in which you would be working (road dust and tar odors versus pollen and mower exhaust fumes), the amount of time exposed to the sun, the people with whom you will be working (working with friends versus making new friends), and weather-related issues (both jobs are outdoors, but could one job send you home for the day due to weather?). Examples of qualitative factors in business include employee morale, customer satisfaction, and company or brand image. In making short-term decisions, a business will want to analyse both qualitative and quantitative factors.

In short-term decision-making, revenues are often easier to evaluate than costs. In addition, each alternative typically only has one possible one revenue outcome even though there are many costs to consider for each alternative. How do we know if a cost will have an impact on the decision? The starting point is to understand the various labels that are attached to costs in these decision-making environments.

Avoidable versus unavoidable costs

Management must determine if a cost is avoidable or unavoidable because in the short run, only avoidable costs are relevant for decision-making purposes. An **avoidable cost** is one that can be eliminated (in whole or in part) by choosing one alternative over another. For example, assume that a bike shop offers their customers custom paint jobs for bikes that the customers already own. If they eliminate the service, the cost of the bike paint could be eliminated. Also assume that they had been employing a part-time painter to do the work. The painter's compensation would also be an avoidable cost.

An **unavoidable cost** is one that does not change or go away in the short-run by choosing one alternative over another. For example, a company might sign a long-term lease on equipment or a production facility. These types

of leases typically don't allow for cancellation, so if this one does not, then their required payments are unavoidable costs for the duration of the lease.

Variable costs are avoidable costs, since variable costs do not exist if the product is no longer made, or if the portion of the business (such as a segment or division) that generated the variable costs ceases to operate. Fixed costs, on the other hand, may be unavoidable, partially unavoidable, or avoidable only in certain circumstances. Remember that fixed costs tend to remain constant for a period of time and within a relevant range of production and are not easily eliminated in the short-run. Therefore, most fixed costs also are unavoidable. If a fixed cost is specific only to one of the alternatives, then that fixed cost also may be avoidable. Avoidable costs are future costs that are relevant to decision-making. Past costs are never an avoidable cost.

Recall that we are using a short-term viewpoint to determine whether or not costs are avoidable. In the long run, virtually all costs are avoidable. For example, assume that a company has a long-term, ten-year lease on a production facility that cannot be cancelled. For the first ten years it would be noncancelable and thus unavoidable. But after ten years it would become avoidable.

Example: AlexCo's Wagons

AlexCo produces collapsible wagons that are popular with beachgoers, shoppers, gardeners and parents. You can see an example of one in the picture.

Annual sales have been 100,000 wagons per year. The retail selling price of each wagon is \$67.00. To date, AlexCo has produced each of the components used in making the wagons but has been approached by DAL, Inc. with an offer to provide the axle and wheel assembly for \$18.75 per assembly. AlexCo's costs to produce the axle and wheel assembly are \$9.00 in direct materials, \$6.50 in direct labor, \$3.57 in variable overhead, and \$2.50 in fixed overhead. Twenty-five percent of the fixed overhead is avoidable if the assembly is produced by DAL. Should AlexCo continue to make the axle and wheel assembly or should it buy the assembly from DAL, Inc.?



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Solution

	Relevant Costs	
	Make Internally	Buy from DAL, Inc.
Direct materials	\$ 9.00	
Direct labor	6.50	
Variable overhead	3.57	
Avoidable fixed costs	0.63	
Total unit relevant cost	19.70	\$ 18.75
Units required	100,000	100,000
Total relevant costs	\$1,970,000	\$1,875,000

Ignoring qualitative factors, it would be more cost effective for AlexCo to buy the axle and wheel assembly from DAL, Inc. However, AlexCo should be certain of any qualitative issues and not solely base their decision on

the quantitative analysis. What is the quality of the axels and wheel assemblies from DAL? Will they deliver on time? Where are the parts made? (where it may be important to customers that goods be made within a specific country).

Sunk costs

A sunk cost is one that **cannot be avoided because it has already occurred**. A sunk cost will not change regardless of the alternative that management chooses; therefore, sunk costs have no bearing on future events and are not relevant in decision-making. The basic premise sounds simple enough, but sunk costs are difficult to ignore due to human nature and are sometimes incorrectly included in the decision-making process. For example, suppose you have an old car, a hand-me-down from your grandmother, and last year you spent \$1,600 on repairs and new tires and were just told by your mechanic that the car needs \$1,200 in repairs to operate safely. Your goal is to have a safe and reliable car. Your alternatives are to get the repairs completed or trade in the car for a newer used car.

From a quantitative perspective, you have gathered the following information to help with your decision. The trade-in value of your old car will be the minimum given by the dealer, or \$200. The newer used car will require you to make monthly payments of \$150 for two years. In analysing your two alternatives, what costs do you consider? Remember, the \$1,600 you have already spent (note the past tense) is a sunk cost; it is a consequence of a past decision. In this example, the relevant costs for each alternative are the following: \$1,200 in current repair costs to keep your current car or \$3,400 (from the 24 payments of \$150 minus \$200 for the trade in) to buy a newer used car. Obviously, you also would consider qualitative factors, such as the sentimental value of your grandmother's car, the excitement of having a newer car or the need for the reliability of a newer car.

Sunk costs are most problematic for business decisions when they pertain to existing equipment. The value of an asset in the accounting records is a sunk cost regardless of whether a business keeps the asset or disposes of it in some manner. The cost of the asset occurred in the past and therefore is sunk and irrelevant to the decision at hand. Managers may be reluctant to ignore sunk costs when making decisions, especially if the prior decision to purchase the asset was an unwise one. Often, when management takes a path of action that is not achieving the desired results, managers may continue the same path in the hope that the effect of prior decisions will improve the results. The use of the word *prior* is a key indicator that information is nonrelevant to a current decision. Holding on to old decisions or old commitments is common because letting them go forces management to admit they made a bad decision.

Future costs that do not differ (irrelevant costs)

Any future cost that does not differ between the alternatives is **not a relevant cost** for the decision. For example, if a company is considering baking either bagels or doughnuts and both baked goods require \$0.30 worth of flour, then the cost of flour would not be a relevant cost in determining which of the two had the highest production cost. As relevant information for short-term decision-making, the cost of sound protectors for your summer job would not be relevant to your decision because that cost exists in both scenarios. Another irrelevant cost would be your transportation cost, since that cost is also the same regardless of the job you choose. In another example, if a company is planning to produce either red widgets or blue windings and will need to hire 10 additional employees to produce either of the goods, the cost of those 10 employees is irrelevant because it does not differ between the alternatives.

Example: Johnson & Johnson's 1982 Recall and Replacement of All Tylenol in the World

In 1982, **Johnson & Johnson** was faced with a large-scale business and ethical dilemma. During the course of several days beginning on September 29, 1982, seven deaths occurred in the Chicago area that were attributed to consuming capsules of Extra-Strength Tylenol. The painkiller was, at the time, **Johnson & Johnson's** best-selling product. The company had to decide if the short-term cost of replacing the Tylenol was worth the future cost to their reputation and their customer's health and safety. At tremendous expense, **Johnson & Johnson** "placed

consumers first by recalling 31 million bottles of Tylenol capsules from store shelves and offering replacement product in the safer tablet form free of charge.”¹

As it was later discovered, someone was lacing Tylenol capsules with cyanide and returning the pills in the original packages to store shelves. However, **Johnson & Johnson's decision to incur short-term costs by recalling all of their pills ultimately paid off, as in the long run, the company's stock value increased and Tylenol sales recovered. One could look at the decision as an opportunity cost: Johnson & Johnson had to choose between two alternatives. The company could have chosen a short-term solution with reduced short-term losses, but by making an ethical business decision, the long-term rewards were greater than the short-term savings.**

Opportunity costs

When choosing between two alternatives, usually only one of the two choices can be selected. When this is the case, you may be faced with opportunity costs, which are the **costs associated with not choosing the other alternative**. For example, if you are trying to choose between going to work immediately after completing your undergraduate degree or going on to study a masters program, you will have an opportunity cost. If you choose to go to work immediately, your opportunity cost is forgoing a masters degree and any potential job limitations or advancements that result from that decision. If you choose instead to go directly into a masters degree, your opportunity cost is the income that you could have been earning by going to work immediately upon graduation and employment experience that might be helpful in obtaining your next role.

Example: Costs and revenue at Sydney Sweets

Sydney Sweets is a lolly and candy manufacturer in a resort town, just bought a new candy machine for \$27,000 and is planning to increase the production of their signature hard candy. Due to the increased production, Sydney Sweets is deciding between hiring two university students on a casual basis or one full-time employee. Each university student would work half days totalling 20 hours per week, and would earn \$22 per hour. The full-time employee would work full days 40 hours per week and would earn \$22 per hour plus the equivalent of \$2 per hour in sick and annual leave. Each employee is given two t-shirts to wear as their uniform. The t-shirts cost Sydney Sweets \$25 each. In addition, Sydney Sweets provides disposable hair coverings and plastic gloves for the employees. Each employee uses, on average, six sets of gloves per eight-hour shift or four sets per four-hour shift. One hair covering per shift per person is typical. The cost of the hair covering is \$0.05 per covering and the cost of a pair of gloves is \$0.02 per pair. Identify any relevant costs, relevant revenues, sunk costs, and opportunity costs that Carolina Clusters needs to consider in making the decision whether to hire two part-time employees or one full-time employee.

Solution

Item	University student option (2 students)	Full time employee option	Relevant or not relevant?
New candy machine	\$27000	\$27000	Not relevant
Hourly rate	\$22	\$22	Not relevant
Hours worked per week	20hrs x 2 = 40 hours	40 hours	Not relevant
Sick and annual leave	\$0	\$2 per hour x 40 hours = \$80	RELEVANT
Uniforms	2 x \$25 = \$50	1 x \$25 = \$25	RELEVANT
Gloves	2 shifts per day, 4 sets of gloves, \$0.02c per pair = \$0.16	1 shift per day x 6 pairs of gloves, \$0.02 per pair = \$0.12	RELEVANT
Hair covering	2 shifts x \$0.05 = \$0.10	1 shift x \$0.05 = \$0.05	RELEVANT
Revenues			No information given – not relevant
TOTAL RELEVANT COSTS	Sick/annual leave + Uniforms + gloves + hair covering = \$0 + \$50 + \$0.16 + \$0.10 = \$50.26	Sick/annual leave + Uniforms + gloves + hair covering = \$80 + \$25 + \$0.12 + \$0.05 = \$105.17	

Sunk costs: \$27,000 for the candy machine – this does not change based on the employees

Opportunity costs: None

Therefore, at Sydney Sweets, when looking at the total relevant costs, the full time staff member is the more expensive option than two university students. However, we need to think about qualitative factors. This could include the need for greater training costs (not covered in the questions) or that university students may be less efficient at making candy because they are working less hours. We may also need to consider the quality impact of using 2 staff members to make the candy versus one.

Test your understanding

Complete these multiple choice questions about the process of deciding between alternatives and relevant costing



An interactive H5P element has been excluded from this version of the text. You can view it online here:

<https://oer.pressbooks.pub/utsaccounting1/?p=2318#h5p-31>

Accept or reject a special order

MITCHELL FRANKLIN; PATTY GRAYBEAL; DIXON COOPER; AND AMANDA WHITE

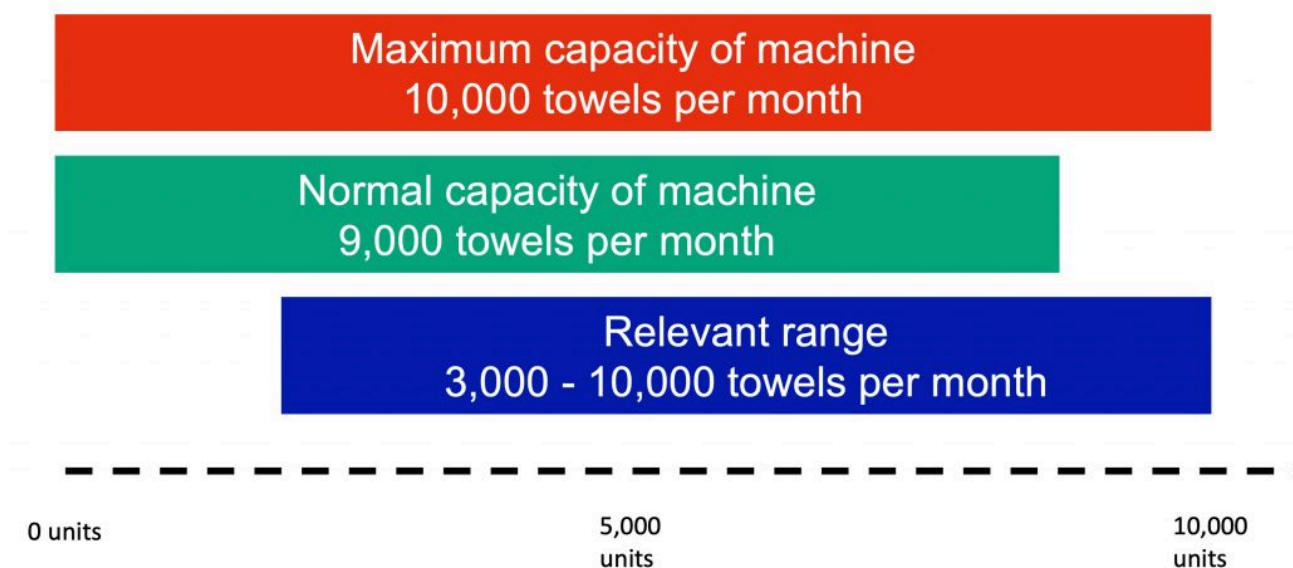
Framework for evaluating whether to accept special orders

Both manufacturing and service companies often receive requests to fill special orders. These special orders are typically for goods or services at a reduced price and are usually a one-time order that, in the short-run, does not affect normal sales. When deciding whether to accept a special order, management must consider several factors:

1. The capacity required to fulfill the special order
2. Whether the price offered by the buyer will cover the cost of producing the products
3. The role of fixed costs in the analysis
4. Qualitative factors

1. Do we have capacity to fulfil the special order?

The starting point for making this decision is to assess the company's normal production capacity. The normal capacity is the production level a company can achieve without adding additional production resources, such as additional equipment or labour. For example, if the company can produce 10,000 towels a month based on its current production capacity, and it is currently contracted to produce 9,000 a month, it could not take on a special one-time order for 3,000 towels without adding additional equipment or workers. Most companies do not work at maximum capacity; rather, they function at normal capacity, which is a concept related to a company's relevant range. The relevant range is the quantitative range of units that can be produced based on the company's current productive assets. These assets can include equipment capacity or its labor capacity. The diagram below demonstrates the difference between the maximum capacity, normal capacity and relevant range. Labour capacity is typically easier to increase on a short-term basis than equipment capacity. The recent example assumes that labour capacity is available, so only equipment capacity is considered. In the example below, there is a minimum which the machine must produce each month.



CC-BY-NC-SA Amanda White – comparing the difference between maximum capacity, normal capacity and the relevant range

Example – capacity and range

Assume that based on a company's present equipment, it can produce 20,000 units a month. Its relevant range of production would be zero to 20,000 units a month. As long as the units of production fall within this range, it does not need additional equipment. However, if it wanted to increase production from 20,000 units to 24,000 units, it would need to buy or lease additional equipment. If production is fewer than 20,000 units, the company would have unused capacity that could be used to produce additional units for its current customers or for new clients.

If the company does not have the capacity to produce a special order, it will have to reduce production of another good or service in order to fulfill the special order or provide another means of producing the goods, such as hiring temporary workers, running an additional shift, or securing additional equipment. As you will learn, not having the capacity to fill the special order will create a different analysis than it would if there is sufficient capacity.

2. Will the price asked by the buyer cover costs?

Next, management must determine if the price offered by the buyer will result in enough revenue to cover the differential costs of producing the items. For example, if price does not meet the variable costs of production, then accepting the special order would be an unprofitable decision.

3. Are there any implications for fixed costs?

Additionally, fixed costs may be relevant if the company is already operating at capacity, as there may be additional fixed costs, such as the need to run an extra shift, hire an additional supervisor, or buy or lease additional equipment. If the company is not operating at capacity—in other words, the company has *unused* capacity—then the fixed costs are irrelevant to the decision if the special order can be met with this unused capacity.

4. What qualitative issues might arise?

Several issues might arise. A logical issue is the concern for how existing customers will feel if they discover a lower price was offered to the special-order customer. For example, you normally sell an item to a regular customer for \$25 each. Then the customer discovers one of their competitors put in a special order and received a price of \$20.

A special order that might be profitable could be rejected if the company determined that accepting the special order could damage relations with current customers. The viral nature of complaints on social media platforms like TikTok, Instagram and Facebook means that the repetitional effect could be wide spread.

If the goods in the special order are modified so that they are cheaper to manufacture, current customers may prefer the modified, cheaper version of the product. Would this hurt the profitability of the company? What does this mean for longer term product development? Would it affect the reputation?

In addition to these considerations, sometimes companies will take on a special order that will not cover costs based on qualitative assessments. For example, the business requesting the special order might be a potential client with whom the manufacturer has been trying to establish a business relationship and the producer is willing to take a one-time loss. However, our coverage of special orders concentrates on decisions based on quantitative factors.

Example – Franco Pty Ltd

Franco Pty Ltd, produces dental office examination chairs. Franco has the capacity to produce 5,000 chairs per year and currently is producing 4,000. Each chair retails for \$2,800, and the costs to produce a single chair consist of direct materials of \$750, direct labour of \$600, and variable overhead of \$300. Fixed overhead costs of \$1,350,000 are met by selling the first 3,000 chairs. Franco has received a special order from Ghanem, Inc., to buy 800 chairs for \$1,800. Should Franco accept the special order?



CC0 – Photo by Daniel Frank: <https://www.pexels.com/photo/black-and-white-dentist-chair-and-equipment-287237/>

Calculations Using Sample Data

Franco is not operating at capacity and the special order does not take them over capacity. Additionally, all the fixed costs have already been met. Therefore, when evaluating the special order, Franco must determine if the special offer price will meet and exceed the costs to produce the chairs. Analysis is provided in the table below.

	Current Cost to Produce	Special Order Price Offer	Difference in Favor of Accepting Special Order
Direct materials	\$ 750		
Direct labor	600		
Variable overhead	300		
Variable costs to produce	1,650		
Special offer price		\$1,800	\$150 per chair

Special Order: Supplier Has Excess Capacity. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license)

Since Franco has already met his fixed costs with current production and since he has the capacity to produce the additional 800 units, Franco only needs to consider his variable costs for this order. Franco's variable cost to produce one chair is \$1,650. Ghanem is offering to buy the chairs for \$1,800 apiece. By accepting the special order, Franco would meet his variable costs and make \$150 per chair. Considering only quantitative factors, Franco should accept the special offer.

How would Franco's decision change if the factory was already producing at capacity at the time of the special offer?

In other words, assume the business is already producing the most it can produce without working more hours or adding more equipment. Accepting the order would likely mean that Franco would incur additional fixed costs. Assume that, to fill the order from Ghanem, Franco would have to run an extra shift, and this would require him to hire a temporary production manager at a cost of \$90,000. Assume no other fixed costs would be incurred. Also assume Franco will incur additional costs related to maintenance and utilities for this extra shift and estimates those costs will be \$70,000. As shown in the table below, in this scenario, Franco would have to charge Ghanem at least \$1,850 in order to meet his cost.

	Current Production	Special Order Current Offer
Selling price	\$2,800	\$1,800
Variable cost to produce	<u>1,650</u>	1,650
Additional costs to recover*		<u>200</u>
Contribution margin	\$1,150	\$ (50)
*\$90,000 supervisor salary + \$70,000 additional costs = \$160,000 in costs to recover ÷ 800 chairs in special order = \$200 per chair additional costs due to capacity issue.		

Special Order: Supplier Does Not Have Excess Capacity. (attribution: Copyright Rice University, OpenStax, under CC BY-NC-SA 4.0 license)

Final analysis of the decision

The analysis of Franco's options did not consider any qualitative factors, such as the impact on morale if the company is already at capacity and opts to implement overtime or hire temporary workers to fill the special order. The analysis also does not consider the effect on regular customers if management elects to meet the special order by not fulfilling some of the regular orders. Another consideration is the impact on existing customers if the price offered for the special order is lower than the regular price. These effects may create a bad dynamic between the company and its customers, or they may cause customers to seek products from competitors. As in the example, Franco would need to consider the impact of displacing other customers and the risk of losing business from regular customers, such as dental supply companies, if he is unable to meet their orders. The next step is to do an overall cost/benefit analysis in which Franco would consider not only the quantitative but the qualitative factors before making his final decision on whether or not to accept the special order.

Make or buy a component

MITCHELL FRANKLIN; PATTY GRAYBEAL; DIXON COOPER; AND AMANDA WHITE

Do it ourselves or outsource?

One of the most common outsourcing scenarios is one in which a company must decide whether it is going to make a component that it needs in manufacturing a product or buy that component already made. For example, all of the components of the iPhone are made by companies other than **Apple**.

Toyota purchases some components from other manufacturers and makes other parts themselves. Samsung Electronics provides many of the components for in-car infotainment systems (the screen that controls your maps, music etc). Other companies provide vehicle exhaust systems, bearings, seals and gaskets. Toyota also manufactures some parts themselves including all engines. So how does Toyota decide whether to make a component themselves or buy? They must evaluate both quantitative and qualitative data to make such a decision.

This type of analysis is also relevant to the service industry; for example, **TOA Global** is an Australian firm that offers outsourcing for the accounting industry – providing services including accounting, bookkeeping, taxation for accounting firms across Australasia. A law firm may decide to hire certain research activities to be completed by outside experts rather than hire the necessary staff to keep that function in-house. These are all examples of outsourcing. **Outsourcing** is the act of using another company to provide goods or services that your company requires.

Many companies outsource some of their work, but why? Consider this scenario: Today, while driving home from class, one of my car's engine warning lights goes on. I will most likely take my car to a local car repair chain (eg Ultra Tune) to have it analysed and repaired. However, my dad (who trained as a mechanic at TAFE and worked in car servicing at Peter Warren Motors in Western Sydney for over a decade) will likely pop the hood, diagnose the problem by combining his own experience and YouTube, and then fix the problem himself. Why? It is often a matter of expertise and sometimes simply a matter of cost benefit.

In my dad's time, car engines were more mechanical and less electronic, which made learning to repair cars a simpler process that required less expertise and only basic tools. Today, cars have many electronic components and often requires sophisticated monitors to assess the problem and may involve the replacement of computer chips or electronic sensors. Thus, I opt to outsource the repair of my car to someone who has the knowledge and facilities to provide the repair more cost effectively than I could if you did it myself. My dad likely could have made the repair to his car a few decades ago as cheaply as the mechanic with only a sacrifice of his time.

Companies outsource for the same reasons. Many companies have found that it is more cost effective to outsource certain activities, such as payroll, data storage, and web design and hosting. It is more efficient to pay an outside expert than to hire the appropriate staff to keep a particular task inside the company. In some instances, even accounting is outsourced – with many small businesses using sophisticated accounting software like Xero or MYOB, adding or connecting a range of apps for processes like sales or inventory management – and then rather than having an accountant hired within the business – outsource to one who checks in on them once a week, fortnight or month.



Toyota truck – Pexels (CC0)

Fundamentals of the decision to make or to buy

As with other decisions, the make-versus-buy decision involves both quantitative and qualitative analysis. The quantitative component requires cost analysis to determine which alternative is more cost effective. This cost analysis can be performed by looking at the cost to buy the component versus the cost to produce the component, which allows us to make a decision based on an analysis of unavoidable costs. For example, the costs to produce will include direct materials, direct labor, variable overhead, and fixed overhead. If the business chooses to buy the component instead, the avoidable costs will go away but **unavoidable** costs (remember these from earlier in the chapter?) will remain and would need to be considered as part of the cost to buy the component.

Make or buy example – Thermal Mugs Inc

Thermal Mugs, Inc., manufactures various types of leak-proof personal drink carriers. Thermal's T6 container, its most insulated carrier, maintains the temperature of the liquid inside for 6 hours. Thermal has designed a new lid for the T6 carrier that allows for easier drinking and pouring. The cost to produce the new lid is \$2.19:

Direct materials	\$0.87
Direct labor	0.45
Fixed overhead	0.51
Variable overhead	<u>0.36</u>
Total unit cost	\$2.19

Plato Plastics has approached Thermal and offered to produce the 120,000 lids Thermal will require for current production levels of the T6 carrier, at a unit price of \$1.75 each. Is this a good deal? Should Thermal buy the lids from Plato rather than produce them themselves? Initially, the \$1.75 presented by Plato seems like a much better price than the \$2.19 that it would cost Thermal to produce the lids. However, more information about the relevant costs is necessary to determine whether the offer by Plato is the better offer. Remember that all the variable costs of producing the lid will only exist if the lid is produced by Thermal, thus the variable costs (direct materials, direct labor, and variable overhead) are all relevant costs that will differ between the alternatives.

What about the fixed costs? Assume all the fixed costs are not tied directly to the production of the lid and therefore will still exist even if the lid is purchased externally from Plato. This means the fixed costs of \$0.51 per unit are unavoidable and therefore are not relevant.

Calculations using sample data

Calculations show that when the relevant costs are compared between the two alternatives, it is more cost effective for Thermal to produce the 120,000 units of the T6 lid internally than to purchase it from Plato.

	Relevant Costs	
	Make Internally	Buy from Plato
Direct materials	\$ 0.87	
Direct labor	0.45	
Variable overhead	0.36	
Total unit relevant cost	1.68	\$ 1.75
Units required	120,000	120,000
Total relevant costs	\$201,600	\$210,000

By producing the T6 lid internally, Thermal can save \$8,400 (\$210,000 – \$201,600). How would the analysis change if a portion of the fixed costs were avoidable? Suppose that, of the \$0.51 in fixed costs per unit of the T6 lid, \$0.12 of those fixed costs are associated with interest costs and insurance expenses and thus would be avoidable if the T6 lid is purchased externally rather than produced internally. How does that change the analysis?

	Relevant Costs	
	Make Internally	Buy from Plato
Direct materials	\$ 0.87	
Direct labor	0.45	
Variable overhead	0.36	
Avoidable fixed costs	0.12	
Total unit relevant cost	1.80	\$ 1.75
Units required	120,000	120,000
Total relevant costs	\$216,000	\$210,000

In this scenario, it is more cost effective for Thermal to buy the T6 lid from Plato, as Thermal would save \$6,000 (\$216,000 – \$210,000).

Final analysis of the decision

The difference in these two presentations of the data emphasises the importance of defining which costs are relevant, as improper cost identification can lead to bad decisions.

These analyses only considered the quantitative factors in a make-versus-buy decision, but there are qualitative factors to consider as well, including:

- Will the T6 lid made by Plato meet the quality requirements of Thermal?
- Will Plato continue to produce the T6 lid at the \$1.75 price, or is this a teaser rate to obtain the business, with the plan for the rate to go up in the future?
- Can Plato continue to produce the quantity of the lids desired? If more or fewer are needed from Plato, is the adjusted production level obtainable, and does it affect the cost?
- Does using Plato to produce the lids displace Thermal workers or hamper morale?
- Does using Plato to produce the lids affect the reputation of Thermal?

In addition, if the decision is to buy the lid, Thermal is dependent on Plato for quality, timely delivery, and cost control. If Plato fails to deliver the lids on time, this can negatively affect Thermal's production and sales. If the lids are of poor quality, returns, replacements, and the damage to Thermal's reputation can be significant. Without

long-term agreements on price increases, Plato can increase the price they charge Thermal, thus making the entire drink container more expensive and less profitable. However, buying the lid likely means that Thermal has excess production capacity that can now be applied to making other products. If Thermal chooses to make the lid, this consumes some of the productive capacity and may affect the relationship Thermal has with the outside supplier if that supplier is already working with Thermal on other products.

Make versus buy, one of many outsourcing decisions, should involve assessing all relevant costs in conjunction with the qualitative issues that affect the decision or arise because of the choice. Although it may appear that these types of outsourcing decisions are difficult to resolve, companies throughout the world make these decisions daily as part of the company's strategic plan, and therefore, each company must weigh the advantages and disadvantages of outsourcing production of goods and services. Some examples are shown in the table below.

Advantages and Disadvantages of Outsourcing

Advantages of Outsourcing

- Utilises external expertise, removes the need for in-house expertise
- Frees up capacity for other uses
- Frees up capital for other uses
- Allows management to focus on competitive strengths
- Transfers some production and technological risks to supplier

Disadvantages of Outsourcing

- Takes away control over quality and timing of production
- May limit ability to upsize or downsize production¹
- May have hidden costs and/or a lack of stability of price
- May diminish innovation
- Often makes it difficult to bring the production back in-house once it has been removed

¹. When you are outsourcing, you will need to specify amounts of components or parts well ahead of time. If you wish to change your production schedule at the last minute, increasing the number of units, you may not be able to source an increased quantity of components from your supplier. If you were wanting to decrease production suddenly, you may also be required to purchase the quantity in your contract with the supplier – even if it is not all needed at that time.

In an outsourcing decision, the relevant costs and qualitative issues should be analysed thoroughly. If there are no qualitative issues that affect the decision and the leasing or purchasing price is less than the relevant (avoidable) costs of producing the good or service in house, the company should outsource the product or service. The following example demonstrates this issue for a service entity.

Toyota makes some components in- house – the ones that require the highest levels of precision and contribute greatly to product longevity. Quantitatively – they may be able to get them made cheaper elsewhere, but qualitatively – the business believes it is important to have more control over certain components that go into their motor vehicles.

However, the iPhone is the ultimate example of outsourcing. Though created in the United States, it is produced all around the globe, with thousands of parts supplied by over 200 suppliers – **none of which is Apple**. Read this article from *The New York Times* on where parts for the iPhone are made to learn how an iPhone gets from the design phase in the United States to production of components around the world, to assembly in China, and then back to the United States for sale in a retail store.

Key concepts and summary

- Deciding to outsource a component of the operations or manufacturing of a business is a choice between alternatives.
- Choosing whether to make or to buy a product, or choosing to have services performed by an outside company, are outsourcing decisions.
- Outsourcing decisions involve comparing the cost to keep the product or service in-house to the cost of buying the product or service from an outside party.
- An important consideration in these types of decisions is unavoidable costs.

Test your understanding

Ensure that you understand the basic theory related to the make or buy decision by attempting these multiple choice questions.



An interactive H5P element has been excluded from this version of the text. You can view it online here:
<https://oer.pressbooks.pub/utsaccounting1/?p=2343#h5p-32>

Keep or discontinue a segment/division or product/service

MITCHELL FRANKLIN; PATTY GRAYBEAL; DIXON COOPER; AND AMANDA WHITE

The use of segments to organise a business

Companies tend to divide their organisation along product lines, geographic locations, or other management needs for decision-making and reporting. A segment is a portion of the business that management believes has sufficient similarities in product lines, geographic locations, or customers to warrant reporting that portion of the company as a distinct part of the entire company. For example, **General Electric, Inc.**, has eight segments and the **Walt Disney Company** has four segments. The table below shows these segments.

Examples of Company Segments

General Electric Segments Disney Segments

- | | |
|---|--|
| <ul style="list-style-type: none">• Additive• Aviation• Capital• Digital• Healthcare• Lighting• Power• Renewable Energy• Transportation | <ul style="list-style-type: none">• Media Networks• Parks, Experiences, and Consumer Products• Studio Entertainment• Direct to Consumer and International |
|---|--|

As part of the normal operations of a business, managers make decisions such as whether to keep producing a product, whether to continue operating in certain areas, or whether to close entire segments of their operations. These are historically some of the most difficult decisions that managers make. Examples of these types of decisions include **Macy's** decision to close 100 stores in 2016 due to increased competition from online retailers such as **Amazon.com**² and **Delta Airline's** decision to eliminate 16 routes to save costs.³ What information does management use in making these types of decisions?

As with other decisions, management must consider both the quantitative and qualitative aspects. In choosing between alternatives—that is, in choosing between keeping and eliminating the product, segment, or service – the relevant revenues and costs should be analysed. Remember that relevant revenues and costs are those that differ between alternatives. Often, the keep-versus-eliminate decision arises because the product or segment appears to be generating less of a profit than in prior periods or is unprofitable. In these situations, the product or segment may produce a positive contribution margin but may appear to have a lower or negative profit because of the allocation of common fixed costs.

Fundamentals of the decision to keep or discontinue a segment or product/service

Two basic approaches can be used to analyse data in this type of decision.

1. Compare contribution margin and fixed costs
2. Compare total net income if the segment/product/service is retained vs dropped.

Approach 1 – contribution margin and fixed costs

One approach is to compare contribution margins and fixed costs. In this method, the contribution margins with and without the segment (or division or product line) are determined. The two contribution margins are compared and the alternative with the greatest contribution margin would be the chosen alternative because it provides the biggest contribution toward meeting fixed costs.

Approach 2 – net income comparisons

The second approach involves calculating the total net income for retaining the segment and comparing it to the total net income for dropping the segment. The company would then proceed with the alternative that has the highest net income. In order to perform these net income calculations, the company would need more information than they would need in order to follow the contribution margin approach, which does not consider the costs and revenues that are the same between the alternatives.

Allocating Common Fixed Costs

Acme, Co., has three retail divisions: Small, Medium, and Large. Sales, variable costs, and fixed costs for each of the divisions are:

	Sales	Variable Costs	Fixed Costs
Small	\$ 5,000,000	\$ 2,875,000	\$2,450,000
Medium	10,000,000	7,235,000	5,125,000
Large	25,000,000	18,960,000	8,230,000

Included in the fixed costs are \$5,400,000 in allocated common costs, which are split evenly among the three divisions. Is an even split the best way to allocate those costs? Why or why not? What other ways might Acme consider using to allocate the common fixed costs? Other options could be based on volume of use of these common costs.

Example – SnowBucks

Suppose SnowBucks, Inc., has three product lines: snow boots, snow sporting equipment, and a clothing line for winter sports. It has been brought to senior management's attention that the snow boot product line is unprofitable. The table below shows the data presented to senior management:

	Snow Boots	Snow Sporting Equipment	Clothing Line	Total
Sales	\$1,150,000	\$1,540,000	\$1,354,000	\$4,044,000
Cost of goods sold				
Variable manufacturing expenses	423,000	507,000	378,000	1,308,000
Fixed manufacturing expenses	392,000	413,000	353,000	1,158,000
Gross margin	335,000	620,000	623,000	1,578,000
Selling and administrative expenses				
Variable selling and administrative expenses	195,000	130,000	147,000	472,000
Fixed selling and administrative expenses	216,000	216,000	216,000	648,000
Operating income	\$ (76,000)	\$ 274,000	\$ 260,000	\$ 458,000

Operating Income Report for SnowBucks, by Segment.
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Upon initial review, it appears that the snow boot product line is unprofitable. Should this product line be eliminated? To adequately analyse this situation, a proper analysis of the relevant revenues and costs must be made. The income statement above does not separate relevant from non-relevant (also called irrelevant) costs.

In conducting the analysis, the accounting team discovers that each product line is allocated certain costs over

which the product line managers have no control. These allocated costs are typically associated with areas of the company that do not generate revenue but are necessary for the running of the business, such as salaries for executives, human resources, and accounting at headquarters.

The cost of these parts of the business must somehow be shared with the revenue-generating portions of the business. Companies often allocate these costs to other parts of the business based on some formula, such as dividing the total costs by the number of divisions or segments, as percentage of total revenue, or as percentage of total square footage.

SnowBucks currently allocates these costs equally to the three product lines, and all the fixed selling and administrative expenses are considered allocated costs. In addition, the fixed manufacturing expenses represent factory rent, depreciation, and insurance, and all these costs will continue to exist regardless of whether the snow boot division continues. However, included in the fixed manufacturing expenses is the \$75,000 salary of a sales supervisor for each division. This is an avoidable fixed cost as this cost would no longer exist if any division ceased operating.

SnowBucks worked example – using the contribution margin method

Based on the new information, a new analysis using a product line margin indicates the following:

	Snow Boots	Snow Sporting Equipment	Clothing Line	Total
Sales	\$1,150,000	\$1,540,000	\$1,354,000	\$4,044,000
Variable expenses				
Variable manufacturing expenses	423,000	507,000	378,000	1,308,000
Variable selling and administrative expenses	195,000	130,000	147,000	472,000
Contribution margin	532,000	903,000	829,000	2,264,000
Direct fixed manufacturing expenses	75,000	75,000	75,000	225,000
Product margin	457,000	828,000	754,000	2,039,000
Allocated fixed expenses				
Fixed selling and administrative expenses				648,000
Fixed manufacturing expenses				933,000
Operating income				<u>\$ 458,000</u>

Final analysis of the decision

This new analysis shows that when the relevant costs and revenues are considered, it is apparent the snow boot product line is contributing toward meeting the fixed costs of the business and therefore to overall corporate profitability. The reason the snow boot product line was showing an operating loss was due to the allocation of common costs. Consideration should be given to the way allocated costs are assigned to the various products to determine if the allocation is logical or if another allocation method, such as one based on each product line's percentage of the total corporate sales, would provide a better matching of costs and services provided by corporate headquarters. Management should also consider qualitative factors, such as the impact of removing one product line on the overall sales of the other products. If customers commonly buy snow boots and skis together, then discontinuing the snow boot line could impact the sales of snow skis.

Test your understanding



An interactive H5P element has been excluded from this version of the text. You can view it online



here:

<https://oer.pressbooks.pub/utsaccounting1/?p=2352#h5p-33>

Making decisions when resources are scarce or limited

MITCHELL FRANKLIN; PATTY GRAYBEAL; DIXON COOPER; AND AMANDA WHITE

Understanding the importance of capacity

Companies use various resources to be productive. These resources, which include time, labour, space, and machines, are limited, thus constraining the ability of a company to have unlimited productive capacity. For example, a retail store is constrained by the amount of floor space available to display its goods, while a law office may be constrained by the number of hours the paralegal team can feasibly work. These constraints require companies to make decisions on the best ways to allocate their resources in a way that maximises the benefit to the firm. This situation is especially true when a company is operating at capacity or makes multiple products or provides multiple services.

The question as to which products and how many should be made is a common constraint problem. For example, consider a business that runs at capacity, making four products by running two eight-hour shifts per day, seven days a week for 50 weeks per year. This business is limited to 5,600 working hours per year (8 hr. shifts × 2 shifts × 7 days per week × 50 weeks) unless a third shift is added. Adding a third shift may be prohibitive for any number of reasons, including local ordinances that prevent operating twenty-four hours a day, Environmental Protection Agency constraints, or the down-time of the machines that is required several hours a day for maintenance and calibration. What is the best way for this company to use these work hours? Which products should it produce first and how many of each should it produce?

These types of situations constrain, or limit, management's ability to use their facilities and workforce. Having limited availability of a resource, such as time, labour, or machine hours means that item becomes a scarce resource. A constraint is a scarce resource that limits the output or productive capacity of the organisation.

Ordinarily, there are very few actual constraints in any process. Sometimes, there is only one. However, the existence of a constraint can have a major effect on the productivity of an organisation. This fact applies to all types of entities, such as production facilities or service providers. One way to view this issue is to consider the old cliché that *a chain is only as strong as its weakest link*. In the example, when trying to measure or estimate a business's maximum efficiency, its results will often be reduced by the overall negative effects of the constraints. When the constraint slows production, it is called a bottleneck. Managers are often faced with the problem of deciding how to best use a scarce resource to prevent bottlenecks. Under the constraint of limited resources, how do managers make decisions when they are working within these conditions?

Fundamentals of how to make decisions when resources are constrained

As with other short-term decisions, a company must consider the relevant costs and revenues when making decisions when resources are constrained. Whether the business facing a constraint is a merchandising, manufacturing, or service organisation, the **initial step in allocating scarce or constrained resources is to determine the unit contribution margin**, which is the selling price per unit minus the variable cost per unit, for each product or service. The company should produce or provide the products or services that generate the highest contribution margin first, followed by those with the second highest, and so forth. The total contribution margin will be maximised by promoting those products or accepting those orders with the highest contribution margin in relation to the scarce resource. In other words, products or services should be ranked based on their unit contribution margin per production restraint, which is the unit contribution margin divided by the production restraint.

If constraints are not managed, a bottleneck usually results, meaning that production slows and a back-up

occurs at stages prior to the bottleneck. For example, in producing boxes of cereal, if the cereal is produced at a rate of 1,000 grams per minute but the bagging machines can only bag 800 grams per minute, this will create a bottleneck. Similarly, if on a Saturday morning before a football grand final, the local supermarket and bottle shop has ten checkout lanes but only opens four of them, long lines will result from the constraint of too few checkout lanes available during a rush of customers. Management must decide how many scarce resources (employees, in this example) to pull from stocking the shelves to working at cash registers. It may be difficult to see how bottlenecks affect profitability, and they appear to be more of a timing or throughput issue. But bottlenecks can affect profitability in a number of ways.

Bottlenecks at the supermarket can result in customers leaving to store shop elsewhere or can negatively affect the reputation of the store, which can impact future sales. In the cereal example, bottlenecks in the packaging area can slow the delivery of boxes of cereal to distributors and individual stores. Poor or inconsistent delivery may drive customers to purchase from other cereal manufacturers, which would have a definite impact on profitability.

A common problem relating to constraints occurs in multi-product production environments. Management will need to evaluate the constraints to determine the best mix of products that will minimise the effects of the constraints. In addition to making sure that the best product mix is chosen, managers should seek ways to increase the effective capacity of the constraint. Conceptually, there are two ways a company can do this: increase the rate of output at the bottleneck, or increase the time available at the bottleneck. Increasing the capacity of the constraint or bottleneck is also called *relaxing the constraint* or *elevating the constraint*. Some specific examples of ways to relax the constraint include:

- Keep the production facilities open longer hours. This may allow the work-flow through the bottleneck area to be slowed and thus prevent the bottleneck from occurring. However, this may require paying workers overtime pay.
- If working extra hours is not a viable option, then moving additional workers to the bottleneck area may be beneficial as long as the areas from which they were moved are adequately covered and additional problem areas do not result.
- Instead of using current workers, additional staff may be hired to smooth the work flow through the bottleneck area.
- Outsource some or all of the work in the area of the bottleneck. It may be cheaper and more cost effective to buy parts of components than to slow production due to the bottleneck.
- Redesign the production process to prevent the bottleneck by adding more resources to eliminate the bottleneck, re-organising the process to distribute the bottleneck-causing activities to different parts of the production process, or managing processing times at other stages prior to the bottleneck to help prevent the bottleneck from occurring.
- Insuring a minimal number of defects and rework, since they typically slow the production process and thus add to the bottleneck.

Preventing and minimising bottlenecks can have significant benefits to the bottom line (profitability) of the company. The reduction of bottlenecks allows the company to move more products through the production phase and thus be ready to sell.

When to include a lifesaving option: the case of the Ford Pinto

The case of the fiery **Ford** Pinto demonstrates that more than cost and revenue should be considered when making an ethical business decision.

In the early 1970s, the **Ford Motor Company** set out to build a Pinto for less than \$2,000. Cars were much less expensive then, and Ford had to determine whether or not to include a component part that cost around \$10. Given the high cost, Ford decided not to include the component, a rubber bladder for the fuel tank. However, in rear-end collisions at over 21 miles per hour, the rubber bladder component functions to prevent the gas tank from flooding the interior of the car with petrol and fumes. Because of the decision not to include the component, a number of Pintos involved in collisions exploded into flames, injuring and sometimes killing the occupants.



Photo by Rodrigo Teixeira : <https://www.pexels.com/photo/photograph-of-a-burning-car-8881892/> (CC0)

Although **Ford** was aware of the defect, the company's cost/benefit analysis indicated it was less expensive to build Pintos without the rubber bladder, even when including expected reimbursement costs for anyone injured or killed. However, the decision to allow a defective product to be built in order to reduce overall costs caused a significant hit to **Ford's** reputation. Ultimately, the litigation costs for knowingly constructing a defective car were higher than the original cost of including the rubber bladder component. While **Ford's** decision seemed profitable in the short-term, their financial analysis could have been improved if it also took into account long-term impacts.

Example – Wood World

Wood World, Inc., produces wooden desks, chairs, and bookcases. These items are produced using the same machines, and there is a maximum of 80,000 machine-hours available during the year. The information about the production time and costs for these three items is:

	Desks	Chair	Bookcase
Hours to produce	1	0.50	0.25
Selling price	\$ 350	\$ 200	\$ 175
Direct materials	\$ 40	\$ 30	\$ 35
Direct labor	\$ 70	\$ 65	\$ 50
Variable overhead	\$ 55	\$ 50	\$ 45
Fixed overhead	\$ 28	\$ 32	\$ 24

Wood World is limited in producing its products by the number of possible machine-hours. Orders have been received for 60,000 desks, 48,000 chairs, and 40,000 bookcases, which will require 94,000 machine-hours to produce. Since there are not enough machine-hours available to fill all of the orders, which orders should Wood World fill first?

Wood World example – working out

To address this question, Wood World must find the contribution margin per machine-hour since machine-hours are the constraining factor for production.

	Desks	Chair	Bookcase
Selling price	\$ 350	\$ 200	\$ 175
Direct materials	\$ 40	\$ 30	\$ 35
Direct labor	\$ 70	\$ 65	\$ 50
Variable overhead	\$ 55	\$ 50	\$ 42
Contribution margin	\$ 185	\$ 55	\$ 48
Hours to produce	1	0.50	0.25
Contribution margin per machine-hour	\$ 185	\$ 110	\$ 192

Final analysis of the decisions

Wood World should fulfill the orders for bookcases first, desks second, and chairs last. The bookcases provide the highest contribution margin per machine-hour, followed by desks and then chairs. Maximising the contribution margin per constraint, in this case per machine-hour, is the best way for Wood World to manage the constraint. How many of each item will be produced?

Available machine hours	80,000
Hours to fill bookcase orders (40,000 × 0.25)	10,000
Remaining hours	70,000
Hours to fill desk orders (60,000 × 1)	60,000
Remaining hours	10,000
Hours needed to produce chairs	÷ 0.50
Chair orders that would be filled	20,000

Therefore, based on contribution margin and the constraint of machine hours, Wood World should fill all 40,000 of the bookcase orders first, then fill the 60,000 desk orders and, and fill 20,000 of the chair orders last.

Are there any qualitative issues that Wood World should consider? One concern may be that customers who typically buy a desk and chair together may not be able to do so if the chair production is affected by a bottleneck. Another qualitative issue in keeping with the furniture example is that a company might find producing dining room tables to be significantly more profitable than matching chairs or matching cupboards. However, they will still be required to produce the less profitable chairs and cupboards, because many consumers will want to buy all three items as a set.

The benefits of effectively managing constraints can be enormous. Managers need to understand the positive impact effective management of constrained resources can have on the company's bottom line. The contribution margin per unit of the scarce resource can be used to assess the value of relaxing the constraint. When there is unsatisfied demand for a single product because of a constraint, the value of additional time on the constraint is simply the contribution margin per unit of the scarce resource for that product. When there are two or more products with unsatisfied demand, the value of additional time on the bottleneck would be the largest contribution margin per unit of the scarce resource for any product whose demand is unsatisfied. In many situations, when dealing with conflicting time constraints an evaluation of multiple bottlenecks might identify a viable solution. While many bottleneck issues and their solutions could be somewhat complex, others might be

addressed more simply. For example, in some cases the problem might be solved by the addition of an additional work shift.

Test your understanding



An interactive H5P element has been excluded from this version of the text. You can view it online here:

<https://oer.pressbooks.pub/utsaccounting1/?p=2368#h5p-34>

Longer term decision making

AMANDA WHITE

We've examined a number of short-term decision making – accept a special order, make or buy a component, and keep or drop a product. We also know that in making these decisions – we need to consider capacity constraints, relevant revenues and costs, identify any avoidable or unavoidable costs, consider the sunk costs and evaluate whether there are any opportunity costs. However, we have not discussed what might happen if we want to consider INCREASING the capacity of the business.

This sort of decision is a longer-term one in which the business is likely to need to spend larger amounts of funds – either from cash previously saved, or obtained from a bank loan or increasing shareholder investment in the business. Business will need to look into the future (often far into the future – periods like 5, 10 and 15 years) and make predictions about potential revenues and costs (remember our budgeting chapter – but over a longer time frame) and determine whether the investment will be worth it.

The technique used to make this type of decision is Net Present Value – determining the value of future cash outflows and inflows that arise from the investment taking into account the cost of borrowing and inflation. This content will usually be covered in an introductory finance subject in business/commerce programs. To find out more – read up on the Investopedia website on NPV.



Photo by Jan Kroon: <https://www.pexels.com/photo/gray-scale-photo-of-road-1038935/> (CC0)

CHAPTER 12: ACCOUNTING, ACCOUNTABILITY AND SOCIAL RESPONSIBILITY

We are here at the final chapter of Accounting and Accountability – you’ve done it – congratulations!!

I hope that by this point you’ve enjoyed our journey together learning about accounting, where it came from and how we use it today to help us maintain accountability for those making decisions. We’ve examined this specifically within the context of business – but the same principles apply in the areas of charity and not-for-profit organisations, governments or government bodies.

However as we wrap up, we have one last topic to explore – social responsibility. We (consumers and the general public) are requiring businesses and organisations to do better – to think about more than just profits. To consider the impact that business or organisation has on its employees, customers, suppliers, the environment. Just as we are doing more on an individual level (is anyone else recycling their soft plastics at home? Or started a compost bin? Catching more public transport or switching to a hybrid or electric vehicle?) we also recognise that change also needs to happen at the business and governmental level.

Our next section is a deep dive into the history of social responsibility to an understanding of where we are in terms of social responsibility. The next section is authored by Leanne Gaul – a PhD student at the University of Technology Sydney and also one of our academic tutors. Leanne spent a decade in the financial planning industry before shifting into academia and completing her Honours thesis on sustainability reporting.

After that, I’d like you to read Terry Wickey’s words again – we’ve linked to some work from Charles Darwin University – understanding and incorporating the indigenous perspectives is everyone’s responsibility.

We then wrap up with some parting words from me 😊. I’ll see you all at the end ❤️



Sustainability as part of accountability and organisational reporting

LEANNE GAUL

"Sustainability is here to stay or we may not be." Niall FitzGerald, Co-Chairman of Unilever

Introduction

Sustainability reporting is a relatively new concept when compared with traditional accounting methods evidenced in Mesopotamia, 6000 years ago¹. Increasing legislative, taxation and economic influences commencing from the industrial revolution in the 19th century have brought about iterative development of accounting and reporting policy.² This development seeks to bring together evolving stakeholder needs and expectations and organisational performance.³

Numerous sustainability reporting terms have developed over time such as; corporate social responsibility (CSR) reporting, triple bottom line (TBL) reporting, corporate sustainability and social responsibility (CSSR) reporting, environment, social and governance (ESG) and corporate citizenship reporting.⁴ The evolution of these terms has led to them being used interchangeably, however this is incorrect, each of these names provide differing context, however 'sustainability reporting' encapsulates the spirit of all terms and will be used for the remainder of this chapter.

In more recent times the effects of climate change have escalated environmental disasters resulting in increased stakeholder concerns and a call for greater transparency over environmental and social impacts caused by organisational operations.⁵ The mechanism for accountability is provided through sustainability reporting, however these disclosures are an outcome to the policies and practices implemented by organisations, hence reporting should be viewed as a process of planning, accounting and reporting.⁶ As this process occurs on a regular basis it is recognised as the *sustainability reporting cycle*.⁷ Each phase provides important contributions to the effectiveness of sustainability performance and reporting outcomes, as summarised in *diagram 1* below.

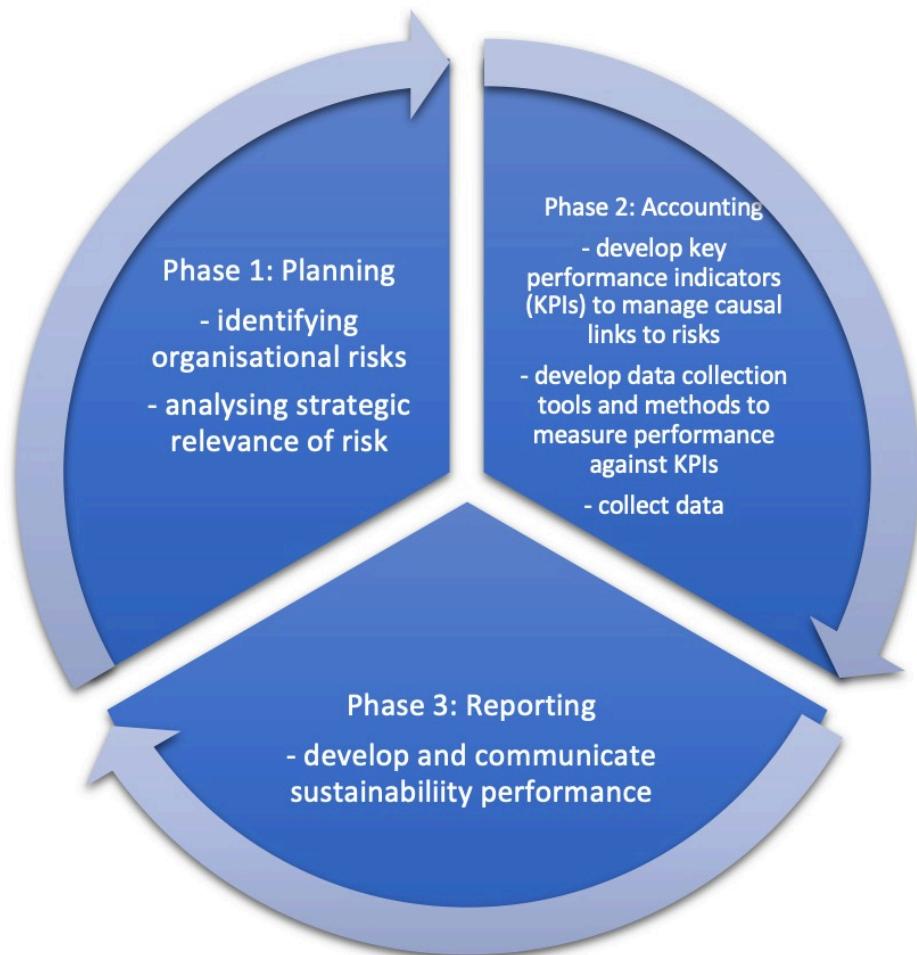


Diagram 1: Sustainability Reporting Cycle Adapted from: Schaltegger & Wagner, (2006).⁸

Sustainability Reporting Phase 1 – Planning

This phase requires the identification of sustainability risks to the organisation and pinpointing the most strategically relevant risk.⁹ Issues in the planning phase are motivated by the sustainability strategy, which is driven by the organisations mission, vision, goals and objectives, hence communicating an understanding what of sustainability is to employees and stakeholders becomes crucial. Absence of a clear definition can translate to stakeholder confusion over what is considered sustainable activity and what is not.

The most widely accepted definition was developed by the World Commission on Environment and Development in 1987 in their seminal “Our Common Future” report (or the “Brundtland Report”).¹⁰ The Brundtland Report focussed on *sustainable development* to offset rising negative impacts to social and environmental systems triggered by organisational activities. The writers of the report sought to convey the importance of action to combat the effects of climate change, hence sustainable development was conceived as development that “meets the needs of the present without compromising the ability of future generations to meet their own needs”.¹¹ The concept of ‘future generations’ as stakeholders was previously not considered due to their lack of existence in a present context which did not allow for the possibility of engagement¹². Several issues have been associated with this definition including the broadness of scope, the concept of ‘needs’¹³ and the lack of attention to basic sustainability concepts of social and environmental concerns. This diminished specificity has allowed organisations to adapt sustainability definitions to suit their goals and objectives, such as a skewed approach to financial objectives rather than a balanced approach to economic, social and environmental concerns¹⁴. To overcome this issue, adaptations of sustainability definitions have been developed since 1987¹⁵, however none have been widely accepted nor are they as readily recognisable as the Brundtland Report’s contribution.¹⁶

Another important contribution came from John Elkington in 1997, which was developed as a result of the

increasing environmental disasters in the 1990s.¹⁷ Elkington focussing on three main areas for sustainability disclosure; economic, social and environmental matters and called this *Triple Bottom Line* (TBL) reporting its focus on profit, people and planet (the 3P's).¹⁸ TBL required a synthesis of all three elements incorporating the traditional financial reporting with environmental and social matters. This enabled insights into each of these three sustainability capitals, but also highlighted relationships between the 3P's. Why is this important? It allows the user of the TBL report to understand the impact each capital has on the others, that is how do profit-seeking activities impact the environment and society. The increased scope of TBL reporting increases organisational transparency and accountability to stakeholders. For organisations pursuing the TBL approach the mission and business strategy must reflect this concept and identifying appropriate definitions to frame this pathway must be undertaken. Let's look at Cisco's mission statement below:

"Shape the future of the Internet by creating unprecedented value and opportunity for our customers, employees, investors, and ecosystem partners."¹⁹

Interpreting this mission statement through the TBL lens (3P's) identifies:

- Profits – relate to investors;
- People – relate to customers and employees; and
- Planet – relate to ecosystem or environment.

From an inter-relational perspective:

unprecedented value and opportunity – are not only possible for each stakeholder group, but can also be realised through connections. For example: value and opportunities created for employees in the form of improved skills through better training results in a more efficient workforce which improves profits and drives innovations to reduce impact on the environment.

Teaching resource:

The Woolworths Group – People, Planet, *Prosperity* – <http://crs.woolworthsgroup.com.au/>

Sustainability Reporting Phase 2 – Accounting

Once risks are identified and analysed in the planning phase, organisational managers can then seek to locate the causal relationship between the sustainability issue and business activities in the accounting phase.²⁰ Once determined, sustainability targets, KPIs, practices and activities can be developed and implemented.²¹ Let's look at some examples taken from Pinna et al. (2018) who examined sustainability KPIs from two soft drink companies²²:

Sustainability Category	KPI	Description/measurement
Water and energy (environmental)	Efficiency in water consumption	Number of litres of water required to produce one litre of beverage
Efficiency in energy consumption	Energy used per litre of produced beverage	
Emissions to water	Measures nutrients and organic pollutants and metal emissions	
Emissions (environmental)	Emission to land	Measures oil and coolant consumption, restricted substances intensity and metal emissions
Emission to air	Measures air acidification, dust and particles, transport and greenhouse gases	
General aspects (social)	Employee turnover	Measures the level of turnover in a company, in terms of number of employee departures divided by the average number of staff members employed.

From a sustainability perspective we can understand the risks to environmental and social perspectives from the given KPIs. The organisations have set a sustainability strategy incorporating impacts to the environment and social concerns, they have identified KPIs that meet with the strategy and set appropriate measurements through policies and practices. Once this has been done appropriate targets would need to be set and then data would be gathered through the relevant period, calculated according to the prescribed formula, then compared to the target. If the organisation outperformed its target a positive message would be communicated to the market, however if it underperformed the opposite may hold. We can see from this the greater level of transparency could put the organisation at a disadvantage, so why would an organisation produce a sustainability report?

The answer is simple, because it is what stakeholders are demanding. In recent times those organisations that have continued to operate sustainably and provide sustainability reporting, have maintained higher stock prices and lower volatility than non-participating entities²⁴. Therefore greater transparency over sustainability matters has inspired greater confidence in investors driving perceived value. So how do organisations account for sustainability?

To account for sustainability performance, formalised frameworks provide a mechanism to maintain quality and standardisation of accounting practices. As accountants we know mandatory compliance with the Australian Accounting Standards is required for the general-purpose financial reports²⁵, however a significant proportion of sustainability reporting is voluntary.²⁶ From a mandatory reporting perspective, the *Corporations Act 2001*(Cth) provides prescriptive guidance for financial reporting which incorporates the requirement to comply with accounting standards.²⁷ Materiality plays an important role in financial reporting disclosure which relates to information that has a material effect on price or value of the organisation and consequently results in misstatement or non-disclosure causing adverse actions by users of the report.²⁸ Despite the material impact of non-financial activities by companies²⁹, Australian government has not made the move to require companies incorporate environmental and social matters within or supplementary to the compulsory financial reporting.³⁰ An exception is the National Greenhouse and Energy Reporting (NGER) scheme initiated by the *National Greenhouse and Energy Reporting Act 2007* (Cth) which is a national framework providing guidance to companies reporting on their greenhouse gas emissions, energy production and consumption and other similar information.³¹

To meet the requirements of disclosure, whether mandatory or voluntary, performance measurement systems must be developed and implemented. The purpose of standard approaches to measuring organisational performance is to achieve comparable and complete reporting with the objective of being transparent in operational activities.³² Therefore the development of universally accepted standards and frameworks is critical.³³ To support the development of non-financial standard-setting, numerous international frameworks have made contributions over time, three of which will be discussed below commencing with the most well-known provider the Global Reporting Initiative or GRI.

The GRI, established by the Coalition for Environmentally Responsible Economies (CERES) in 1997, is an independent body that provides organisations with standards to disclose sustainability impacts, thus improving communications efficacy.³⁴ The GRI standards are split into three categories; topic, sector and universal.³⁵ Another global standards provider is AccountAbility offering guidance over three core areas; AA1000AP-guidance for organisational response to sustainability concerns and long-term development; AA1000SES stakeholder engagement and AA1000AS v3 relating to sustainability assurance.³⁶ A final consideration was developed by the International Organization for Standardization (ISO) commencing in 1947.³⁷ ISO is a collaborative association facilitating the sharing of knowledge by experts to develop standards.³⁸ The ISO standards encapsulate a broad scope of sustainability issues in order to support global trade, economic growth, innovation, health and safety and sustainable development.³⁹

The three standard-setters discussed in the previous paragraph are only a small selection of the available offerings, however they widely used in the global context. All three standards are offered on an international scale allowing standardisation of reporting and fostering comparability between organisations, industries, markets and geographical regions.⁴⁰ It is important to note, organisations can use numerous standards from various standard-setters, this provides flexibility for organisations to select appropriate standards to support sustainability goals and objectives.

Additional resources

- for additional insights into sustainability reporting guidance and other tools see: Siew, R. Y. J. (2015). A review of corporate sustainability tools (SRTs). *Journal of Environmental Management*, 164, (pp. 180-195) – <https://doi.org/10.1016/j.jenvman.2015.09.010>

Sustainability Reporting Phase 3 – Reporting

Beyond the planning and accounting phases follows reporting for accountability to internal and external stakeholders. Two main forms of reporting will be considered below: (1) stand-alone reporting and (2) integrated reporting (<IR>):

- **(1) Stand-alone sustainability reporting** – is set apart from the traditional annual report (AR), usually as an addendum to the AR or separate entirely. This method fails to consider the relationships between environmental, social and economic concerns.⁴¹ This type of reporting is developed by the organisation, either internally or through associations such as consultants or best practice.
- **(2) Integrated reporting (<IR>)** – has the potential to overcome the limitations of stand-alone reporting. The integrated report incorporates economic, social and environmental performance, not only meeting legislative and regulatory compliance, but also providing insights into the connections or relationships between all three reporting areas.⁴² This supports the TBL concept. <IR> was introduced by the International Integrated Reporting Council (IIRC) and is a global partnership comprising of regulators, investors, business and academic stakeholders, accounting professionals and non-government organisations (NGOs).⁴³ <IR> is a framework for reporting, it does not provide standards such as those offered by GRI. Rather it provides a mechanism to nurture 'integrated thinking' by an organisation to encourage all business units to set and maintain sustainability goals.^{44*}

The iterative development of sustainability reporting has created a dynamic environment, which continues in its state of flux. Movement toward integrated reporting has been growing since 2000, however stand-alone reporting continues to hold favour with a majority of Australian listed companies preferring this method, as discussed in the following section.

Additional resources

For more reading on concepts discussed in this section click on the links provided below:

1. Integrated reporting website: <https://www.integratedreporting.org/>
2. *Integrated thinking: A virtuous loop – <https://www.integratedreporting.org/wp-content/uploads/2021/06/Integrated-thinking-virtuous-loop.pdf>
3. Integrated reporting examples: <http://examples.integratedreporting.org/home>
4. Stand-alone sustainability report example: APA sustainability report 2021 – <https://www.apa.com.au/globalassets/asx-releases/2021/apa-sustainability-report-fy21.pdf>
5. M. Bray & M Chapman, What does an integrated report look like? <https://home.kpmg/content/dam/kpmg/pdf/2013/04/what-does-ir-look-like.pdf>

How common is Sustainability Reporting?

The KPMG Sustainability Reporting Survey 2020 (the survey) investigates the incidence of sustainability reporting from a global perspective. The survey identified 96 percent of the G250 companies⁴⁵ and 80 percent of the N100 companies⁴⁶ produced sustainability reports. Additionally, 76 percent of the G250 companies incorporate sustainability performance information in their annual reports⁴⁷, thus aligning with an integrated reporting

presentation. The Australian sustainability reporting environment includes both mandated and voluntary forms, predominantly the latter. Due to the voluntary nature of most reporting, managerial discretion over sustainability reporting content results in a failure to meet stakeholder reporting expectations.⁴⁸ Despite this, Australian companies producing sustainability disclosures continue to grow with 98 percent of ASX100 companies publishing reports, increasing from 93 percent in 2017. Those companies taking a more integrated approach to sustainability reporting increased from 29 percent (2017) to 67 percent (2020), indicating a shift in favour of organisations embedding sustainability goals into business processes.⁴⁹

Sustainability stakeholders

The purpose of organisations producing sustainability reports is to communicate organisational sustainability performance⁵⁰, as such it is important managers select voluntary sustainability content based upon external stakeholders' information needs. Increasingly stakeholders are playing greater roles in the evolution of sustainability reporting from a global perspective.⁵¹ Common stakeholder groups are employees, customers, regulators, investors, government, communities, indigenous groups, society or the broader public, suppliers and NGOs. Stakeholders not commonly cited are transient populations (such as holidaymakers/tourists)⁵², future generations⁵³ and natural ecosystems/biodiversity.⁵⁴ The latter two cannot self-represent their interests, hence they require qualified representation.⁵⁵

Organisational managers are required to prioritise competing stakeholder needs due to their limited resources. This may result in some stakeholders only having their needs partly met or not at all. Therefore, effective engagement by managers involving two-way communications will provide more informed decisions and increase transparency and effectiveness of reporting.

Self-study task

You work for an Australian energy company – products are a mixture of coal fired and renewable energy and LPG. List organisational stakeholders and rank in order of most important to least important and provide a short explanation for each.

Concluding remarks

Escalating global natural disasters from climate change is stimulating stakeholder demand for companies to operate sustainably and be accountable for social and environmental impacts from business operations. Hence public and private sectors are producing sustainability reports to retain, and attract, customers, investors and suppliers. The process of producing these reports is time and resource intensive, however outcomes are beneficial to all participants as organisations foster closer relationships with their stakeholders and build greater efficiencies in business operations. The sustainability reporting cycle is continuously developing, incorporating innovative development and improvement to best practice, thus organisations, and other stakeholders, must keep working toward the goal of sustainable development. To sum up with a quote from Edmund Burke:

“Nobody made a greater mistake that he (or she) who did nothing because he (or she) could only do a little.”

From a sustainability perspective, the key take-away from this quote is individuals can make small contributions to offset environmental degradation, poverty and social injustice and these small efforts will cohesively generate significant change for the greater good. This provides context to “Think globally, act locally”.

Footnotes

1. M.R. Mathews, *Socially responsible accounting*, Routledge & Chapman, London, 1984.
2. *ibid*

3. ibid
4. M. S. Urdan & P. Luoma, 'Designing effective sustainability assignments: How and why definitions of sustainability impact assignments and learning outcomes', *Journal of Management Education*, 44(6), (794-821), 2020.
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6. S. Schaltegger & M. Wagner, 'Managing sustainability performance measurement and reporting in an integrated manner: Sustainability accounting as the link between the sustainability balanced scorecard and sustainability reporting', *Sustainability Accounting and Reporting*, Springer, Netherlands, 2006.
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8. S. Schaltegger and M. Wagner, 'Managing sustainability performance measurement and reporting in an integrated manner: Sustainability accounting as the link between the sustainability balanced scorecard and sustainability reporting' in S. Schaltegger, M. Bennett and R. Burritt (eds) *Sustainability Accounting and Reporting*, Springer, Delft, Netherlands, 2006, ch 30.
9. ibid
10. M. S. Urdan and P. Luoma, 'Designing effective sustainability assignments: How and why definitions of sustainability impact assignments and learning outcomes' (2020) 44(6) *Journal of Management Education* 794-821.
11. World Commission on Environmental Development, *Report for the World Commission on Environment and Development: Our Common Future*. <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf> p. 17 (accessed 5 January 2022).
12. M. A. White, 'Sustainability: I know it when I see it' (2013) 86 *Ecological Economics* 213-217.
13. ibid
14. P. Johnston, M. Everard, D. Santillo and K. H. Robert, 'Reclaiming the definition of sustainability', (2007) 14(1) *Environmental Science and Pollution Research International* 60.
H. Alhaddi, 'Triple bottom line and sustainability: A literature review' (2015) 1 *Business and Management Studies*.
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16. S. Roostaie, N. Nawari and C. J. Kibert, 'Sustainability and resilience: A review of definitions, relationships, and their integration into a combined building assessment framework' (2019) 154 *Building and Environment* 132-144.
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Indigenous perspectives on sustainability and social responsibility

Earlier in the text, we referenced the work of Terry Wickey – an Indigenous student and scholar from Charles Darwin University.

We recommend you read that chapter again in light of our context of social responsibility – especially useful is the section related to the “blak cladding” of businesses – that is, representation that they are Indigenous when in fact they are not.

If you're interested in learning more about Indigenous business and blak cladding – I also suggest following Blak Business on Instagram

The end of the road - or is it?

AMANDA WHITE

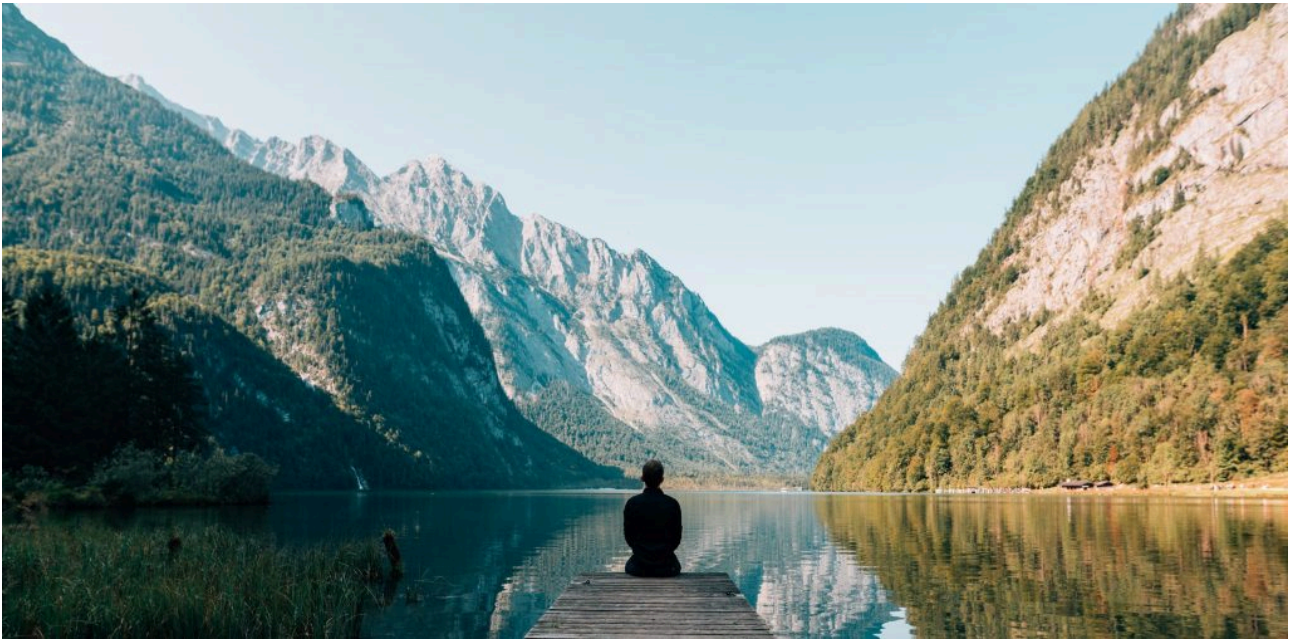


Photo by S Migaj from Pexels: <https://www.pexels.com/photo/a-person-sitting-on-wooden-planks-across-the-lake-scenery-747964/> (CC0)

If you are as old as me, the chapter title might have you humming the Boyz II Men song 'End of the Road' at this point in time. As I write this, it is all that is playing through my head 😊 (and if you have no idea what I'm talking about – it was a chart topping hit in 1992 – here is the official music video on YouTube)

You might be thinking – we are very end of the book! Is this the end of all I need to know about accounting?

Some of you will be continuing on in your accounting journey – and the implications of accounting for business and society in the next textbook – Accounting, Business and Society. For others, this is a temporary rest point while you embark on studies in other areas.

Over the course of this textbook, we've covered much ground. Starting with how accounting has developed from ancient times and the role accounting information plays in helping businesses and managers be accountable to their shareholders. We also considered Indigenous business perspectives and I encourage you to consider how to improve your understanding of Indigenous perspectives in your future studies and future work or volunteer roles. There is much that we can gain from having a better understanding of the oldest continuing civilisation in the world.

To be able to analyse accounting information in our roles within business and other organisations, we need to have some basic understanding of the fundamentals around recording transactions. However, we didn't talk about debits and credits – a notation system for recording our accounting transactions. For those continuing in their accounting study journey, you'll be learning how to overlay the notions of debits and credits over our current understanding of transactions as affecting our assets, liabilities and owners equity (remember our accounting equation?).

For those venturing into the operational aspects of business – an understanding of the systems of internal controls wherever you work or volunteer is going to be important. Protecting the assets and equity of shareholders is critical and we can partially do that through systems of internal controls – by understanding our business environment, identifying risks to achieving business objectives and implementing internal controls to try and mitigate those risks. We also need to ensure that we are gathering data about these transactions and events in

our information systems so that we can monitor our risks and internal control activities. Without strong internal controls, there is no assurance that the data we collect in our information systems will be accurate, and that means when we aggregate our data in our financial statements – the information presented to shareholders may not be correct! This could result in sub-optimal decision making. For larger companies – audits of the financial statements are undertaken to ensure that the financial statements (the income statement, balance sheet, statement of changes in owners equity and cash flow statement) are correct.

We also learned that there are many users of these financial statements and annual reports, from the investors/shareholders that they were designed for, to regulators, suppliers, lenders and customers – even the general community may find useful information within annual reports for decision making. From the investment perspective, we learned about different forms of financial statement analysis – looking at trends over time and various ratios to identify any potential issues or help forecast future performance.

After understanding the fundamentals of recording, summarising and then presenting financial information – we turned inwards to look at decision making made by management and those working within a business. As part of executing the three responsibilities of management (planning, control and evaluation) we covered a range of ways in which accounting information helps support those management functions. Break even and cost volume profit analysis can help businesses starting out – figuring out what it is going to take to become a viable and successful business. Budgets use standard prices and costs to help the business plan over a slightly longer horizon – looking forward a months, quarters or years to try and forecast how the business will perform. Once we've been in business and engaged in transactions, we can use the recorded accounting transactions to help us evaluate our performance. This is called variance analysis and is an instance in which we integrated our management and financial accounting to provide accountability. Did we earn as much revenue as we expected? How much we did we spend on materials and labour? Was this more than our budget? And importantly – whose responsibility are these fluctuations and how can we investigate them?

We then wrapped up our management decision making focus with sticky short term decisions – should we accept a special order from a customer? Is it cheaper to make or buy a product or component? How do we know when to drop a poorly performing product or part of the business? And how do we make all of these decisions when we only have limited resources to deal with? We learned that we need to identify which costs are relevant, which are avoidable or unavoidable and how opportunity costs can come into play in these decisions.

In all of these topics – we needed to have an understanding of the fundamental relationship within accounting – that our assets equal our liabilities plus our equity. Even if you may never go on to BE an accountant (and of course, I encourage you all to further pursue your accounting studies – whether that be in a major, or a sub major or even just a single elective) – knowing HOW accountants and accounting information systems pull together the reports you will use in decision makings in your business experiences is important. It helps you to become a better decision maker, to know when you question your accountant(s) and to ask the right questions to help you get the information you need to make the best decisions at that point in time. The knowledge and skills we've learned can also impact your personal life – whether that be creating a budget to help you save for something large (a car, holiday or deposit on your dream apartment or house), analysing your spending against your budget to see where all your pay is going, or deciding whether your side hustle weekend business could scale up to be a real full time role for you. As I've said to my students in class many times – a budget is my saviour and I've been budgeting my cash inflows and outflows in Excel for over twenty years now! When my husband lost his job, within 15 minutes, I'd figured out how many months we could survive on our savings (seven months), identified avoidable costs (we cut back on our mobile phone plans, eating out, buying new clothes and shoes etc) and could forecast our cash position over the next twelve months. My excel spreadsheet allowed us to ask “what if” he stayed at home and looked after our 3yo full time, or went to part-time work, or could we afford to send him back to university for a Masters program to help him get a new job.

For those considering a career in accounting – remember that there are many types of accountants in every industry imaginable working in every way imaginable. Full time, part time, freelance – from an office or dialling in remotely. You could be the accountant for the stage production Hamiltio, start your own fintech enterprise or use your accounting information to take your love of burgers to TikTok stardom, a successful food truck and brand deals with Masterfoods and KFC! These are not just dreams, but real life examples of the careers my former students are out there living.

So while we come to the end of the this textbook and our journey into introductory accounting – know that accounting will always be here for you. The skills and knowledge you've learned will always be there – no matter what career paths you take or your personal situation – just waiting for integration into your decision making ❤️