

chapter 1

Acquire in **business** knowledge disciplines

- 1.1 What is a subject discipline?
- 1.2 The terminology of disciplines: facts, concepts, frameworks, processes and theories
- 1.3 Facts and what they are
- 1.4 What is a concept?
- 1.5 What is a framework?
- 1.6 What are processes in a discipline?
- 1.7 What is a theory and what is the place of theory in disciplines?
- 1.8 The falsifiability of theories

why you should read this chapter

As soon as you start your subject (discipline) study, your lecturers will be talking about 'concepts', 'theories' and 'frameworks' in that subject. You need to understand these terms to be able to start acquiring knowledge and understanding of your subject. In this chapter we explain what these words mean.

1.1 What is a subject discipline?

Economics, finance, accountancy, marketing, public relations, management—these are all separate subjects, or disciplines, in business. In previous study, you probably heard the word ‘subject’ used to describe an area of study (e.g. history, geography, chemistry). In university study, a subject is referred to as a **discipline** or **discipline area**. The word ‘discipline’ is used because everything to do with that subject area is disciplined or ‘ruled by established procedures and ways of doing things’. To work successfully in your chosen business discipline you will have to learn what these established procedures are, and how to work with them confidently.

Established procedures (or rules) in academic disciplines have been worked out over time by discipline experts. They operate in exactly the same way as rules in any game, like soccer, or chess, or cards. There are certain things you can do, and other things you can’t do (because then you will be breaking the rules). You need to learn the rules of soccer if you are to play the game properly, and the same is true of your business discipline study.

Also, like games, each academic discipline has developed a special set of names that refers to its content and structure. This is called its **terminology**. Just like chess (with the checkmate situation and pieces called pawns, bishops, knights) and soccer (with the offside rule and positions such as centre-half, forward, goalkeeper), academic disciplines have their own special words to refer to their various elements. For example, the discipline of economics has the concept of ‘opportunity cost’, and the discipline of marketing has concepts and theories about ‘consumer behaviour’. Just as you have to learn the rules of the discipline, you also have to learn and work with the terminology of the discipline.



TAKE HOME MESSAGE

At university, your first goal is to have knowledge and skills in your specialist discipline area. This means knowing the rules and terminology of the discipline, its content and structure. By using all these with confidence you will be able to understand issues and solve problems in the discipline. However, to talk and work with specialists in other business discipline areas you will need a basic understanding of these too—their rules of the game and terminology.

1.2 The terminology of disciplines: facts, concepts, frameworks, processes and theories

We have established that every discipline is like a game, with its own special rules, special procedures and specialist words. These things, taken all together, make up the totality, or ‘content’ of the discipline (i.e. what the discipline *contains*). When lecturers talk about ‘the content of the discipline’, this is what they mean.

What can sometimes make this puzzling to new learners is that, although lecturers may use just one word (content), they are actually referring to the whole bundle of ‘stuff’ that makes up the particular discipline—rules and established ways of doing things, terminology, data and structure.

Sometimes learners who are new to a discipline (it doesn’t matter which discipline it is) think that its content just consists of a mountain of ‘facts’, which they have to memorise, and if they can do that, they have ‘learned’ the discipline. This is very far from being true, and learners who make this mistake will not succeed in their discipline studies.

Of course facts (i.e. information or data) are important; you will have to know the relevant facts in the business disciplines you study, and you will also have to keep up to date on new facts as they emerge. However, *facts are only one element in academic disciplines*. As stated above, disciplines are like games—and so they have rules, or procedures, which you will have to understand and apply to business situations. Disciplines also have concepts (key ideas), which again you will need to understand and use. As for frameworks and processes, these terms refer to techniques (organisational devices, and set ways of doing things) that disciplines use to achieve their results. Finally, you will discover that sets of ideas, or concepts, can be linked together into theories.

To be successful in learning a new discipline, you need to become so familiar with all these different elements that you can use them confidently to analyse issues and solve problems. When the discipline is new to you, this may sound like a daunting task. If facts, concepts, frameworks, processes and theories all signify different things, then what is it that they signify? How do you sort them out from each other? And what do you do with them once you have sorted them out?

You are not expected to work all this out for yourself, of course. The lectures you attend and the reading that you do will introduce you to the facts, concepts, frameworks, processes, theories and terminology of your business disciplines. Part of the purpose of the lectures you attend is to demonstrate how experts (lecturers) *use* these elements in practical ways to understand issues and solve problems in the real world. In tutorials you will have opportunities to practise using the elements of the disciplines and their terminologies, and through this practice you can consolidate your understanding. Finally, the assignments you are required to hand in will test how well you have mastered the knowledge and skills of the business disciplines.

To help you get started on all this, the rest of this chapter shows you how to make sense of these different elements of disciplines.



TAKE HOME
MESSAGE

Once you understand what these terms mean (facts, concepts, frameworks, processes and theories), how they differ from each other and the roles they play in academic disciplines, then you are in a very good position to begin acquiring knowledge and skills in your business disciplines.

1.3 Facts and what they are

At the most basic level, there are **facts**. These are 'single units of information', each of which is relevant to a particular business discipline. This can be seen in the following example.



example

A fact in economics: There was a rise of 0.25% in the official interest rate today.

A fact in marketing: The makers of the soft drink 'Tingle' use a well-known celebrity to endorse the brand.

A fact in accountancy: John Smith has a job which gives him the use of a car and medical insurance which are taxed at a different rate from the dollar part of his salary.

A fact in management: The CEO of Smart Mobile Phone Company won the 2009 prize for the most outstanding leader of a small company.

1.3.1 Facts fit in to concepts

Facts are obviously significant; you need to know lots of them and to keep your knowledge up to date. This becomes especially true once you are a business professional, because in-depth, up-to-date knowledge is what experts need as a basis for the decisions they make in the real world. Facts, however, are more than just isolated pieces of information attached to disciplines.



DEFINITION

In any discipline a **fact** is a piece of information that is an example or illustration of a **concept** in that discipline.

It is the **concepts** (the word used for ‘ideas’) in a discipline that are of fundamental importance. Experts are totally familiar with the concepts in their discipline. However, if you are starting to study a new discipline, its key concepts will be new to you, and it will take you some time to understand and be able to use them.

We show you the relationship between a fact and a concept in Table 1.1. You will see that *each of the facts fits into a concept in the relevant discipline*.

The discipline	A fact in the discipline	The relevant concept in the discipline
Economics	Interest rates went up by 0.25% today.	Interest rates
Marketing	The makers of a soft drink use a well-known celebrity to endorse the brand.	Celebrity endorsement
Accountancy	John Smith has a job which gives him medical insurance and the use of a car.	Fringe benefits
Management	The CEO of Smart Mobile Phone Company won the 2009 prize for the most outstanding leader of a small company.	Leadership

1.4 What is a concept?

Concepts clearly play a fundamental part in understanding disciplines, so it’s important that you fully understand what a concept is. The good news is that we use concepts all the time in our everyday life—we just don’t usually refer to them in that way. We will now show you how concepts work in day-to-day life.



example

A concept in everyday life

You and your friend are going to a fancy dress party. You are going to dress up as Jack Sparrow, the pirate from *Pirates of the Caribbean*, and your friend is going to dress up as a witch. Which of the following clothes and items of disguise would you choose for your pirate costume, and what would your friend choose for the witch outfit?

A black patch, a broomstick, a three-cornered hat, long black boots, a set of long false fingernails painted green, an old-fashioned pistol, a cutlass, a big false nose with a wart on it, long, pointy shoes.

You can probably say immediately which item goes with which outfit. Why is this? It's because you know what kinds of clothes pirates wear, and what clothes witches wear, from books you have read, or films you have seen. In other words, you have an idea or concept of pirates and of witches, and you can *apply your knowledge of the concept* to the items of clothing and disguise.

You can see from this how facts fit in to concepts and how you apply your knowledge and understanding of a concept to help you sort out the facts that fit in (that are relevant) and the facts that do not (are not relevant).

Our pirate concept is not limited to clothes. When we think about pirates, we also think about the kinds of things they were supposed to do, like attack and rob other ships on the high seas, take prisoners and make them walk the plank or maroon them on desert islands. There are also the kinds of things pirates are supposed to say, such as 'Yo-ho-ho and a bottle of rum' and 'Ahoy me hearties'. All of these things—clothes, words and actions—when taken together add up to our *concept* of a pirate.

You may wonder what pirates have to do with business disciplines (especially since they made their money in very improper and illegal ways!). We've used the pirate example to demonstrate that in everyday life we use concepts all the time; they are a part of everyday speaking, thinking and understanding. For example, if we all made a list of typical things about 'politicians' or 'celebrities' or 'military personnel', our lists would be quite similar (e.g. making speeches and trying to get elected; wearing glamorous clothes and being mentioned in magazines and on Facebook and Twitter; wearing a uniform and carrying weapons). We have a concept of what these people are like and what they do, and more importantly we all *share these concepts*, in the sense that we all understand the same things when the concept is mentioned.

You can see how useful this is: the use of the concept word (e.g. ‘pirate’, ‘politician’, ‘celebrity’) functions as a kind of shorthand in everyday life to refer to the quantities of information that apply to particular types of people. If we didn’t have the concept word, we would have to go through the list of typical things done by the person instead. (‘Well, the Prime Minister is a person who makes speeches and who spent many years getting elected to various positions in government.’)

Another important thing about concepts is that they are not just about people or types of people. Think of an idea like ‘friendship’—something we all have personal knowledge and experience of. There’s no such ‘thing’ as friendship—there are friends, and there are activities that characterise friendship, and indeed there are activities that we would call unfriendly, because they are the opposite of friendly. So, even if there is no concrete object we can point to called ‘friendship’, we all know what we mean when we use the concept word. And, if we all make a list of the things that we recognise as typical of friendship, our lists would have quite a lot of things in common (e.g. trusting or depending on [a friend], sharing good experiences with [a friend], looking out for [a friend], feeling affection for [a friend]).

To summarise: we know from everyday life what concepts are; we know that sometimes they are real objects and sometimes abstract ideas. There are concepts that we share just by being in the world, and we can apply our knowledge of these in everyday life to understand the world, interpret the behaviour of others and guide our own behaviour.

We said at the start of this section that the good news is that we all understand what concepts are and use them all the time in our everyday lives, and we hope to have convinced you of this. The even better news for you is that, in academic disciplines, concepts work in exactly the same way! In the next section we explain this more fully, and then get you started on understanding and building concepts in a business discipline.

1.4.1 How concepts work in academic disciplines

Concepts have exactly the same role in business disciplines that they do in everyday life: they are words that refer to collections of information that otherwise would all have to be listed and explained every time we wanted to talk about them. This means that concepts are very powerful things in



disciplines. A concept refers to much more than just a single fact, or a single piece of information; a concept refers to a number of facts and information that all have something essential in common, namely that they illustrate and exemplify the concept. For example, if I say ‘I gave my friend first choice from my favourite box of chocolates’, you would immediately recognise this as behaviour belonging to the concept of friendship. In your discipline study, it can be helpful to think of facts, or individual pieces of behaviour, as being on the ‘ground floor’ of thinking, whereas concepts are at a higher level and their job is to make sense of the behaviour. Or, if you imagine facts and individual pieces of behaviour as ordinary soldiers in an army, then concepts are like officers who manage the soldiers and tell them what to do.

So concepts ‘make sense of’ or ‘organise’ the particular aspect of the world that the discipline deals with. For example, for the discipline of marketing, the aspect of the world that interests marketers is what makes consumers buy or use things; the discipline of management asks ‘how we can understand organisations and the people in them?’



DEFINITION

A **concept** in a discipline is an idea that is important to discipline specialists because it lets them organise data (facts and bits of information) in ways that explain the aspect of the world they want to understand.

Below is an example of a concept from management, one of the disciplines that you will be studying in business. Pieces of information are given, each of which is an example of this concept. Read the examples, and work out what the concept being illustrated is.

ACTIVITY

What management concept is referred to here?

In all these examples the missing word is the same—what is the concept being referred to?

- Barack Obama was chosen to lead the Democratic Party in the US because he showed powers of _____.

- The captain of the Australian cricket team has to inspire the team by his example of _____.
- The fact that so many people followed Mao Tse-Tung on the Long March in China shows his powerful and persuasive _____.
- Gerry Norman, the Australian entrepreneur, has shown outstanding _____ in taking his company to the highest levels.

You probably guessed the concept at once; to check your answer, here it is below. (We've mixed up the letters so you can't just read it off quickly.)

EPRAISLDEH

Now that you know what this particular concept is, you can probably think of other examples of behaviour and personal attributes that fit the concept.

1.4.2 How to work with concepts: from 'the consumer' to 'celebrity endorsement' in marketing

Each of the business disciplines you study has its own concepts. As you have seen, they express key ideas in that discipline, and are very important. Here is an example of how subject experts use concepts, and how they even create new concepts. The business discipline this time is marketing.

Step 1: The basic concept of 'the consumer'

The concept of 'the consumer' is fundamental to the discipline of marketing. Consumers are of course just people, like you and me, but the aspect that interests marketers about us, is that we buy (in other words 'consume') things: we eat, drink, wear, drive about in, or otherwise use things that we purchase. What marketers want us to do is to buy the particular thing they're marketing (a McDonald's meal, a Coca-Cola drink, Gucci clothing, a Toyota car). So they try to work out how to influence us (as their potential 'consumers') to buy their product instead of anyone else's (to drink Coca-Cola instead of Pepsi, drive a Toyota instead of a Hyundai). They want us to recognise the brand they are promoting, and to want it enough to buy it and then keep coming back for more.

Step 2: Refining the basic concept of consumer to find the ideal consumer group

Producers will never make enough of a profit if only a few people buy their product. But of course not everyone wants to buy the exact same thing. So out of the whole world of consumers, marketers try to work out who the 'ideal

consumers' for their product are. If it's something very expensive (like a Porsche), then this will be a relatively small number of very wealthy people; if it's something very specialist (like a hearing aid), then this will be a different but still relatively small number of people, those with a hearing impairment. On the other hand, if it's an everyday thing that nearly everyone uses (like a breakfast cereal), the potential group of consumers is very large. It makes sense to promote it to many people. The first stage for marketers is therefore to work out from the great mass of all consumers who they think their ideal consumers will be, and then to work out a promotion strategy to target only that group.

Step 3: The stages of the marketing goal

The marketers use the basic concept of the buyer (consumer) and refine it to create their ideal consumer for their product. Now they ask: 'How can we get our ideal consumers to:

- *recognise* the product?
- *want* the product?
- *buy* the product?
- have *brand loyalty* for the product?' (i.e. when the consumer keeps coming back for more).

Step 4: Finding a strategy to achieve each stage of the marketing goal

One way that marketers increasingly use to promote their products is to associate a celebrity with a particular product. This is called 'celebrity endorsement' and it is used to achieve each stage of the marketing goal. Celebrity endorsement works something like this:

Create recognition: A celebrity is someone who is recognised, so if the product is linked to the celebrity then the product will be recognised too.

Stimulate want: If, as consumers, we see the celebrity using the product, then hopefully we will think that it must be good otherwise such a famous person would not be using it.

Motivate to buy: Do we want it enough to buy it? That will depend on whether the best celebrity for the product has been chosen and how much we feel that we need to have the product ourselves (and also of course on whether the price is right for us).

Create brand loyalty: If the celebrity continues to be shown using the product (and if the person continues to be a celebrity), then this will create continuing desire by consumers to go on buying the product.

Step 5: Celebrity endorsement: the birth of a new concept in marketing

In fact, what probably started out as someone's brilliant idea for a new marketing strategy ('Wow, let's try using a celebrity to endorse our product!') has become so widely used that there is a great deal of factual information, research and scholarly discussion about celebrity endorsement: the use of celebrities, success and failure factors, risks associated with using celebrities, and so on. So now there are a number of *facts and information that all have something essential in common*, namely that they *illustrate and exemplify* celebrity endorsement. Because there are so many pieces of information and thinking relevant to it, celebrity endorsement has now become a concept in its own right. If you look back to the definition of a concept on page 10 you can check this for yourself.

To demonstrate the now scholarly status of the concept of celebrity endorsement, here is a real example, taken from the academic literature of the discipline of marketing taken from the *Journal of Marketing Management*. We quote the abstract from the article which clearly shows that the concept of celebrity endorsement has become an accepted topic for scholarly research.

Abstract

Use of celebrities as part of marketing communications strategy is a fairly common practice for major firms in supporting corporate or brand imagery. Firms invest significant monies in juxtaposing brands and organisations with endorser qualities such as attractiveness, likeability and trustworthiness. They trust that these qualities operate in a transferable way, and, will generate desirable campaign outcomes. But, at times, celebrity qualities may be inappropriate, irrelevant, and undesirable. Thus, a major question is: how can companies select and retain the 'right' celebrity among many competing alternatives, and, simultaneously manage this resource, while avoiding potential pitfalls? This paper seeks to explore variables, which may be considered in any celebrity selection process by drawing together strands from various literature.

Source: Erdogan, Z. B. (1999). Celebrity endorsement: A literature review. *Journal of Marketing Management*, 15(4), 291–314. Retrieved from <http://www.westburnpublishers.com/journals/journal-of-marketing-management.aspx>

1.4.3 Two further points about concepts

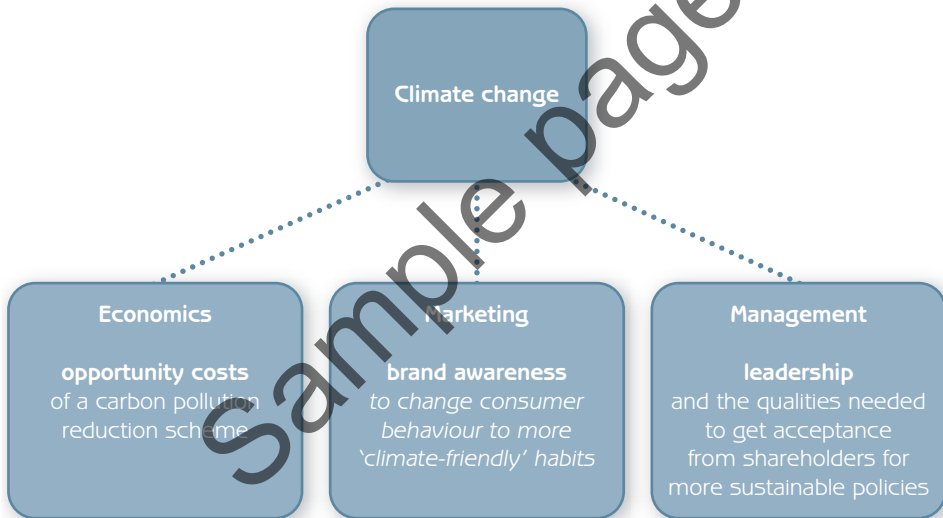
Point 1: You need to understand the key concepts in your subject disciplines or you will not be able to make progress in your studies.

All subject disciplines have many concepts and these will be explained to you in lectures and tutorials and through the reading and other activities you are asked to do. Some concepts will almost certainly be more difficult to understand than

others. However, don't give up; always ask your tutors and lecturers for further explanation whenever you are finding a new concept difficult to understand.

Point 2: As you move further into your business degree, and later in the real world of business, you will often have to use concepts from different business disciplines to respond to a problem.

An example of this would be if you were asked to make some recommendations on ways for a company to respond to 'The challenge of climate change and sustainability'. To do this, you may be asked to carry out research using concepts from economics (e.g. the opportunity costs of a Carbon Pollution Reduction Scheme), from management (e.g. leadership and the qualities needed to get acceptance from shareholders for more sustainable policies) and marketing (e.g. brand awareness to change consumer behaviour to more climate-friendly habits).



You will be given guidance on this in your studies and in this book as well. For example, Chapter 2 on higher order thinking will explain how to go about researching a topic and give you toolkits you can use to help you do this effectively.

1.5 What is a framework?

In your business disciplines you will often be asked to use a particular **framework** to examine an issue or analyse a case study. For example, in an assignment you may be asked to apply a particular framework to analyse a case study, and then go on to recommend a particular course of action. Disciplines have their own theoretical frameworks that have been worked out and tested by discipline

experts and we will look at one of these in more detail below. For now, however, let's first explain what is meant by a framework.

Suppose you'd like to go out tonight to see a movie, but you also know you have to finish an assignment that you must hand in by tomorrow's deadline. You might use a simple **framework** of 'reasons in favour of going out' and 'reasons against going out' to clarify all sides of the situation and help you decide what to do.



DEFINITION

A **framework** is a technique or tool for organising different pieces of information into distinct categories.



example

An organisational framework

You are given a jumble of objects to sort out. You see that they are all red, green or blue, so you decide to sort them out on the basis of colour. In other words, you use a 'colour framework', putting all the reds together, all the blues and all the greens. Then you notice that the objects consist of shoes, T-shirts and pants, so you could use a 'type of clothes framework' and separate them into three different categories on that basis. This would mix the colours, but keep the types of garments separate.

To preserve all the differences, however, you might decide on a further framework: 'colour and clothes' (i.e. blue shoes, blue shirts, blue pants; red shoes, red shirts, etc.). You would have achieved a framework consisting of nine possible categories, and an outcome where a confused jumble was organised into neatly arranged sets. So we can say that the purpose of an 'organisational framework' is to set up a *number of categories where the items in each category have something significant in common*.

1.5.1 Applying frameworks in the disciplines

Organisational frameworks like this are often used in business disciplines; they help sort existing material into separate categories and tell you where to put any new data. You will often use organisational frameworks in this way. However, frameworks in subject disciplines can be more valuable than this—they can help you not only

organise but also analyse information, and in that way can actually assist you in coming to a decision or solving a problem. Through using analytical frameworks you will be able to analyse complex material and understand it, and be better able to make decisions or recommend a course of action in a business problem.

There is a well-known framework in business disciplines called **SWOT** (Strengths, Weaknesses, Opportunities, Threats) that is often used to collect, categorise and analyse the information that may be relevant to a particular problem. If we return to the question of using celebrity endorsement to promote a product, the example below shows how the team of experts from marketing, finance and personnel might summarise some points from their discussion.



SWOT and celebrity endorsement (CE)

Strengths: The marketers showed convincingly from research evidence that sales of products like ours rose by 40+% when CE was used.

Weaknesses: The finance people said CE was very expensive—rather than have a celebrity, we could run a magazine advertising campaign for the same money and this might have more impact; management experts said the company didn't have people trained to manage CE; the marketers agreed that it was crucial to get the right celebrity and to manage the celebrity properly.

Opportunities: CE hasn't been used before in Australia to market this kind of product so all agreed that the company had the chance to be a market leader for this kind of advertising for enough time to make a good profit.

Threats: The finance people said money spent on CE wouldn't be available for other advertising so we might lack other backup for the CE strategy; management people asked what would happen if the celebrity behaved badly and the product got a bad name instead of a good one. Also, what if a wealthier company got a bigger celebrity to endorse their product, and our celebrity and product were completely overshadowed?

As you can see from this example, the organisational and analytical SWOT framework is more powerful than using a simple organisational framework, because it helps the experts analyse every aspect of the topic in much more detail and also consider the possible future consequences of deciding one way

or the other. The decision factors facing the company emerge very clearly from this analysis—there are potentially big profits to be made, but there are big costs involved, higher demands on the human resources of the company, other marketing strategies that will not be able to be undertaken, and finally some significant risks in using celebrities to endorse products.

1.6 What are processes in a discipline?

The next element in academic disciplines that we are considering is **process**. A process means ‘the accepted order in which things are done’. Again, the good news is that you are familiar with the idea of a process from everyday life. For example, if you are cooking something and following a recipe you have to follow a process: that is, *go through each step in the sequence in the correct order* to create the dish properly. You have to:

- carry out some specified actions, and each action has to be done in a particular way (e.g. break the eggs carefully; cut the vegetables into small cubes)
- carry out the actions in a certain order (first oil the pan, then put it over the heat, pour the carefully beaten eggs in when the oil is very hot)
- correctly follow all these instructions to achieve a particular goal (hopefully, in this case, an omelette!).



A **process** in academic disciplines is a way of doing things that has been established and is accepted by those working in the discipline.

Carrying out a process is just like following a recipe: you have to know the exact sequence of actions and exactly how each action is to be carried out. Disciplines have their own processes that you will learn about in your degree study. You will also see your lecturers carrying out these processes as they show you how to understand and solve problems in the disciplines. In your tutorial work, you will practise these processes for yourself until you can use them confidently.

1.7 What is a theory and what is the place of theory in disciplines?

This is the last element of academic disciplines that we will consider in this chapter. It has been left until the end because **theories** are the most comprehensive intellectual elements in disciplines. In fact, all the other elements in a discipline (facts, concepts, frameworks and processes) are parts

of its theories. Until this point, we have introduced discipline elements by showing their links to everyday examples and everyday use of language. This does not work so well when trying to explain what a theory is. Often you hear people say things like ‘I have a theory that . . .’ and this will be followed by a statement like ‘Aidan really likes Melanie more than he likes Sophie’. In this case, the person is not using the word ‘theory’ correctly. They really mean something much less than a theory; more like an opinion, or a vague idea, perhaps based on some knowledge of the people involved, but perhaps not even as definite as that.

A theory in the real sense of the word, and as it is used in academic disciplines, is a much more complicated thing than a point of view. Theories are the heavyweight boxers of the intellectual world—they make very big claims and they deliver a heavy punch.



DEFINITION

A **theory** in a discipline claims to explain the world that is relevant to that discipline. In the context of an academic discipline, ‘explaining’ means:

- accounting for the way everything is now
- making predictions about what will happen next
- doing all this (accounting for and predicting) on the basis of evidence that the discipline’s own rules for evidence judge to be valid and reliable.



example

The discipline of management uses ‘organisational theory’ to help us understand ‘what happens in the world of organisations’. In other words, the theory explains things (e.g. why people in organisations behave in certain ways, why a particular organisation has developed in the way it has). The theory is also used to predict things that might happen to organisations in the future. Theory, described like this, may sound very abstract and unrelated to the real world, but actually, this is not at all the case. If you were the CEO of a company, and management experts applied organisational theory to your company and predicted that it would collapse if the management style did not change, then you would certainly see the real-world relevance! Therefore, knowing how to apply theories to real-world examples could be vital for your success in your future career as a business professional.

1.8 The falsifiability of theories

There is another key element of theories to consider, and that is that theories are also **falsifiable**. What that means is that ‘a theory is only as good as the evidence on which it is based’.

Suppose, for example, you think back to the days when people believed the earth was flat: they thought there was lots of good evidence for this—you could walk and walk and you would never fall off the planet; if you put something down on a table or other surface, it didn’t slide away off the edge, and so on. In fact, the concept that the earth might be round was considered completely mad—people thought it would mean that human beings a long way away would be walking upside down, and that plants would be growing the wrong way round, and so on. However, as scientists continued to carry out experiments, these showed time after time (repetition) and in many different ways (different kinds of demonstration) that the earth couldn’t be flat—it *had* to be round. In other words, a great deal of valid and reliable evidence mounted up that did not fit the theory of a ‘flat earth’. Gradually people had to accept this new theory—that the earth was round.

This is what is meant by the **falsifiability** of a theory—if the predictions of a given theory do not turn out to be true, and this happens time after time, then either the theory has to be modified to take account of these different results, or a new theory has to be put forward, based on the actual results that are being found. The new theory has to explain these results and also predict future results. And, in its turn, the new theory will have to make predictions that turn out to be true, or it too will eventually be questioned and either modified or superseded by a more inclusive theory.

When this has happened in history, old theories have been replaced by new theories; in other words, theories come to be seen as ‘better’ because (and only because) they fit the facts in the world better, just as, for example, the theory that the earth was flat was eventually replaced by the better theory that the earth was round.



The work of testing, falsifying and replacing theories has always been done by experts in the relevant discipline. It is done through thinking rigorously and systematically about the facts, concepts and frameworks of disciplines and testing how these actually work through evidence-based work in the real world. These all important elements of higher order thinking and ‘hypothesis testing’ are discussed in Chapter 2.

1.8.1 Theories and the world: a final thought

Before we move on to Chapter 2 and higher order thinking, here is a final thought about the relevance of theory for real life. We are currently living in the midst of competing theories about the future of our planet—namely the debate about climate change. Some experts (climate change believers) claim that global warming has been caused, or at least significantly contributed to, by human activities—emissions, forest destruction, etc. Other experts (climate change sceptics) claim that human activities are not relevant to global warming and that it is a naturally occurring phenomenon. Because theories about climate change are at an early stage of evidence gathering and hypothesis testing, no theory has been proved conclusively (i.e. beyond doubt). Experts are using such evidence as currently exists in different ways, each side to support their own version; they are also using other pieces of evidence to defend their own theory and make their predictions. If governments choose to rely on the advice of climate change sceptics and make no changes to the relevant human activities, then that will be fine if the sceptics are right. If they are not, then we may be in for a very uncomfortable time as the 21st century proceeds.

This is one of those moments in history and science when ‘getting the right theory’ and ‘getting the theory right’ are totally relevant to the world and what happens in it. Higher order thinking and the gathering of reliable, valid evidence have rarely been more important to the fate of us all.