Management Information in Business

Unit 1 An Introduction to Information Systems

Contents

Unit Overview		2
1.1	Information in Organisations	3
1.2	Defining Information Systems – The Process Model	8
1.3	E-Commerce and Digital Business	10
1.4	Systems and Systems Thinking	13
1.5	Analysing Information Systems' Case Studies	15
1.6	Conclusion	16
References		18

Unit Overview

Unit 1 introduces the study of management information and information systems. It discusses concepts that will be used throughout the module. The unit aims to offer an overview of the importance and role of information in organisations. In doing so, it will provide evidence that information systems are actually social systems rather than just technical systems. Finally, it will describe and analyse the gap between the positive potential and the often-negative reality of the use and implementation of information systems in commercial organisations.

Learning outcomes

When you have completed your study of this unit, you will be able to

- describe the role of information in organisational activity
- define what an information system is, and describe its key components
- distinguish between e-commerce and digital business (*aka* 'e-business')
- begin to describe how the rationality–reality gap can be closed in order to facilitate transformations towards implementing digital business in an organisation.

Reading for Unit 1

Steven Gordon and Judith Gordon (2004) 'What is information management?'. *Information Systems: A Management Approach*. 3rd Edition. New York: John Wiley & Sons.

Dave Chaffey (2015) Preface and Chapter 1 'Introduction to digital business and e-commerce'. *Digital Business and E-commerce Management*. 6th Edition. Harlow UK: Pearson Education. (Note that the previous edition of Chaffey's book referred to 'e-business' rather than 'digital business', but the terms are equivalent.)

José-Rodrigo Córdoba-Pachón (2010) Chapter 1 'Introduction'. *Systems Practice in the Information Society*. Abingdon UK: Routledge.

1.1 Information in Organisations

Information lies at the root of everything presented in this module. This first section provides an overview of the role and the importance of information, and how information is different from electronic data. Consider, for instance, the situation where a shoe manufacturing company is subject to the following constraints.

- Suppliers have become expensive, and often do not deliver on time.
- Customers are more demanding; many have decided to buy their shoes online from elsewhere.
- Managers are desperate to reduce operation costs, and to launch new offers and promotions, with little effect.
- Budgets and payrolls are out of control, with continual but fruitless investments in new equipment, marketing campaigns, computer purchases and redundancies.
- Staff morale is low, with many key employees leaving to work for the competition.
- Despite having some information about its customers (in paper records, invoices or registration forms), the organisation does not know how to retain its customers – in other words, it does not really know them.

In contrast to the above, a new business has been set up which sources supplies from different parts of the world. Planning, allocation and evaluation of corporate plans have improved, together with the design and management of manufacturing operations. This business also offers online services for customers who want to find shoes that fit their lifestyle. Sales have increased threefold and the customer base comes now from different geographical locations. Many processes are automated and information is shared across departments. As a result, employees are motivated – they are allowed to become more familiar with and respond to what customers want and need, and there are now groups of customers who follow and contribute to new product developments via Facebook®. The organisation has therefore been able to carry out its work more effectively, and with a clearly shared sense of purpose.

Review Question 1.1

1. What do you think the successful business has done differently from the first one?
2. What role can you attribute to information in contributing to its success?

The above situation indicates two key aspects:

1. A new way of thinking has been adopted, so that the organisation sees itself as part of a network, making the best of its internal and external relations, and enabling staff to develop collectively new ideas and possibilities.

2. Operating in this way, information has become a critical resource for the management – and, indeed, the whole functioning – of the organisation. The absence of information necessarily causes a breakdown in most of the organisation's management functions and purpose. On the other hand, the addition of useful and timely information can energise an organisation to perform much better than it previously did, through improved collaboration and communication, internally and externally.

All this may seem self-evident, but many organisations are still in the process of realising their potential as networked and information-based firms. Once this potential is realised, there is a transformation process that involves changes that range from the way organisations plan their future to the way individuals working for them see themselves. Over the past thirty years or more, many organisations had become used to the idea that they were 'on their own', in that they planned to become single-handedly the best, the leader in the market or a unique provider of products and services. However, this assumption is unlikely to succeed if it fails to take account of the fact that there is an inherent power in the use of information, which can help organisations succeed by collaborating, interacting, learning and adapting continuously.

1.1.1 Data, information and knowledge

Your first reading for this module will introduce what we mean by information, in the context of the organisational challenges described above.

 **Reading 1.1**

Turn to study the extract, 'What is information management?', by Gordon and Gordon (2004).

Gordon & Gordon (2004) 'What is information management?' in *Information Systems: A Management Approach.* pp. 4–11.

 As you read, make careful note of the three different definitions of information, as these will be discussed throughout the unit.

From the Gordons' extract, you can see that information has different meanings. We will look at the latter two definitions later in this unit, but here begin with the first definition – 'information as processed data'. From that we identify the three entities introduced in the subsection title: data, information and knowledge.

Data is raw, unprocessed information

This is what you always start with. Data is generally produced as part of the routine operations of an organisation, such as its payroll or invoicing functions. It often consists of numbers that have been recorded to represent some objects, places, events or other phenomena. For example, a questionnaire may seek the responses of slum dwellers about their health needs and classify these numerically.

Information is data that has been processed to make it useful to its recipient

This is what comes next. Continuing our slum-dwellers' example, the questionnaire responses can be summarised in graphs and tables that depict the main perceived health needs. Note that one person's data may be another person's information. So, what is information to a clerical staff member may actually be only data to managers. Therefore, it is important to develop a *shared understanding* of information that is useful to different people and enables them to take appropriate action in their daily work.

Knowledge is information that has been assimilated into a coherent framework of understanding

This framework of understanding is usually the human mind. This is the final step and involves a person's receiving information, processing it, understanding it and fitting it into their existing base of knowledge. Continuing with the previous example, a health professional can read through the information in the graphs and tables and match it against previous knowledge of the provision of health services to slum dwellers. (Of course, knowledge by itself is not sufficient. It needs to be combined with skills and motivation for a competent analysis.)

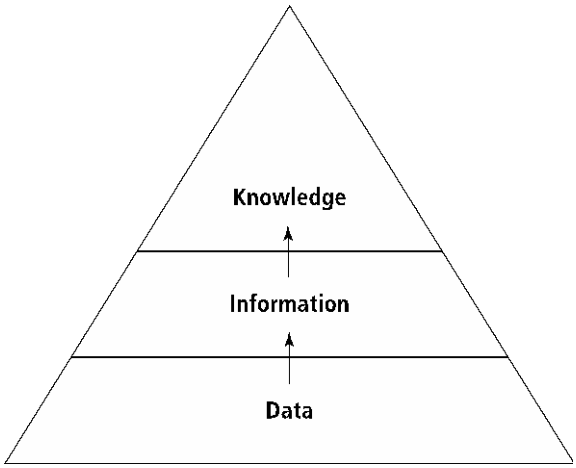
In everyday speech, the words 'data' and 'information' are often used interchangeably, but in formal terms we can now see that they are different.

We can summarise the definitions given above as follows:

- *Data* is processed into *information*, which is assimilated into *knowledge*.

This relationship can be represented in two distinct ways: a *pyramid representation* and a *process representation*. Each contains important insights.

Figure 1.1 The Information Pyramid



This diagram illustrates what we know – that there is a lot of data in an organisation – quite a bit of information, but relatively little knowledge. Related to this, it is knowledge that is most valuable and data that is least valuable to the organisation. But (and it is a *big* 'but') you cannot have information or knowledge without data.

1.1.2 The rise of ICTs

The rise of *information* and communication technologies (ICTs) has changed our daily activities dramatically, and in organisations it has transformed the way data and information are exchanged. New technologies enable the processing of information in different forms (such as storing, gathering, modifying, checking). In the 1980s a key turning point for many organisations was that of gaining *advantage* over others by implementing ICTs and using them to improve their margins over products and services; for instance, the checkouts at supermarkets became points of data collection generating data about our consumption habits, which then became information to help managers offer us discounts or promotions; all of this was possible thanks to the availability of technologies called points-of-sale (POS) systems.

Nowadays, we can do the checkout ourselves at supermarkets (there are barcode readers that check the products that we are buying and card machines that take our payment). We can use our mobile phones to check the availability of restaurants in a specific geographical location; we can check which train services we can use at a specific time; we can decide how to dress according to the weather forecast. We can even pay bills online, and transfer money to friends and relatives. These examples show that we are continuously inter-connected, that we exchange information, and that we use it.

For commercial organisations, information is a central resource for all staff levels and for all activities, from planning to implementation to monitoring and evaluation. It is a resource that allows organisations to work together more efficiently. It is also a resource that can empower people to improve their performance at work. Conceding importance to information and how it is circulated through networks of people is not a new phenomenon, but one that has gained momentum due to the pervasiveness of technologies like mobile phones and mobile computing, many of which are increasingly used by all generations. This is one of the reasons why we need to think carefully about how organisations capture data and transform it into information to support their activities.

Those organisations that are successful in managing information have also developed an understanding of *knowledge* as a way of exploiting information continuously. It is those organisations that continuously find new opportunities, develop new information-based products and services, and enable people to share what they know and work together to generate new knowledge that are able to sustain advantages. Because of the importance of both information and knowledge, there is a need in organisations to appoint *CIOs* (Chief Information Officers), and *CKOs* (Chief Knowledge Officers); these people are responsible for looking after both knowledge and information as organisational assets. They also need to know how ICTs can support information and knowledge management so that employees and

customers can benefit by getting what they need to carry on with their daily activities.

The adequate management and use of information and knowledge in electronic form can lead to important organisational transformations. At the same time, this also requires important attitude changes, given that it is not easy even to promote a culture of information, let alone one of knowledge. Such a transformation needs a transition to electronically-based business (digital, or e-business).

In this module you will learn

a) how information can best be managed to support organisational activity and the sustaining of advantages, and
b) how organisations can transform most (if not all) of such activity to enable them to become digital businesses.

We will also refer (albeit not fully) to the topic of knowledge, to explore how the continuous use of information and information systems can lead organisations to develop a capability to continuously adapt and respond to new challenges.

Reading 1.2

Chaffey (2015) 'Preface' in Digital Business and E-Commerce Management. pp. xiv–xxv.

Please read the preface of the key text by Dave Chaffey (2015), and make particular note of:

- how the book is structured
- the core sections of this book
- how the book defines digital business.

At this point you could usefully take 20–30 minutes to look at the whole key text. As you go through the pages, you will see how it is laid out and, by reading the chapter and section headings and observing the diagrams and textboxes, get an idea of the framework and content of the book.

 Quickly read and note anything that you find particularly interesting.

Now that you have an overview of the textbook, this will help you to study it. (You can use this technique for any large document you need to read.)

Chaffey's book is about managing a digital business, or an organisation that makes the most of its internal and external connections to transform the ways it operates with the help of information and communication technologies (ICTs). Once an organisation defines how information is to support its future, technology-based information systems are simply *tools* to achieve a number of transformations. However, there is more to a digital business than simply the use of ICTs. To be successful, the organisation must also learn to operate in cheaper, quicker and more flexible ways so as to continuously adapt to the demands of customers, suppliers and other groups with whom the organisation interacts.

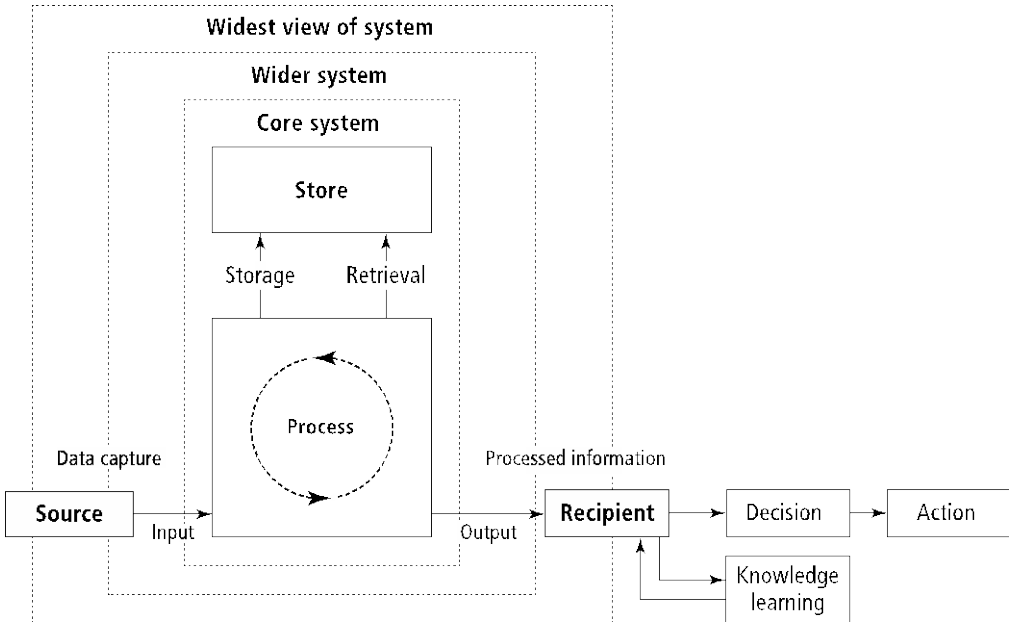
To develop your understanding of how an organisation can become truly networked and information based, your work through the eight units of this module will enable you to learn:

- how the concepts of information and digital business can give advantage through information systems (Unit 1)
- how information and communication technologies (ICTs) can help organisations network, collaborate and better serve their customers (Unit 2)
- how organisations can develop their strategic thinking in order to make the best of possibilities given by ICTs (Unit 3)
- the influence on information systems of people's motivations, skills, management abilities together with their organisation's strategy, culture, structure, politics and external environment – with a focus on information rights and obligations – *ie* data privacy, security and access (Unit 4)
- different types of information systems (Unit 5)
- how to design and implement an information system, taking all the above into account (Units 6 and 7)
- how e-procurement and customer relationship management can help achieve transformations (Unit 8).

1.2 Defining Information Systems – The Process Model

What is needed to enable the potential of ICTs to help us manage information is an *information-system* (IS). Briefly, an information system is a set of components, people and processes that, *often supported by ICTs*, help organisations to accomplish their purpose by supporting the activities of its members through information. This definition underlies the notion of a system as a 'whole', composed of many different elements (human, non-human, technical, non-technical), which are designed and used purposefully – as is depicted in the diagram below.

Figure 1.2 A Process View of an Information System



- Figure 1.2 is a useful and accurate way of visualising an IS. Please note that central to the system there is a process which we can associate with organisational activity (or a set of activities). Here we are not making any distinction (yet) about the types of processes which support organisational activity. However, the representation seems to apply more to formal structured processes than informal ones.
- The definition makes specific mention of non-information and communication technology (ICT) components. This is important. To state the obvious, over the last 30 years or so, ICTs have totally changed the way we communicate – and gather, use and disseminate information. However, remember that you do not need technology to have a successful information system.
- Note how processes generate some outputs (or processed information) which some recipients (*ie* managers or employees) use to support their decisions and actions. As a result of their activity, people can learn and acquire knowledge. The expectation in a networked type of organisation is that both learning and knowledge occur within and beyond the organisation.

Review Question 1.2

Looking at Figure 1.2 above, write brief notes on the following:

- Where in the diagram would you put computers, mobile phones or websites?
- Where would you put people?
- Can there be more than one information system in an organisation? Explain your reasoning.

The figure represents a formal view of an information system. However, we assume that people and technologies are included somewhere, and contrib-

ute to the processing of information as well as to its use in decision-making and other activities. In order to gain a more comprehensive view of an information system we need to complement the formal representation with a more business-oriented concept, to see the role that information plays in helping organisations succeed.

1.3 E-Commerce and Digital Business

Since the middle of the 20th century, organisations have made use of ICTs to support some if not all of their operations. Many organisations started by installing centralised computers (*ie* mainframes), which initially enabled the processing of large volumes of data (such as financial transactions or census records) and consolidated the results. The advent of the personal computer (PC) in the 1980s enabled different departments in organisations to have their own processing capabilities. In the 1990s those computers became interconnected through local networks, which facilitated the consolidation of several sources of data. Organisations then integrated information throughout their operations, which enabled senior managers to monitor overall performance, better understand the market and even forecast future trends.

A term that has emerged to describe how organisations make use of technologies to automate their commercial transactions is *e-commerce*. Here, such activities as sales and payments are supported by online systems which are themselves connected to other systems (*ie* invoicing, accounting). Initially, e-commerce systems operated in isolation from the rest of the organisation. With time, these systems became the backbone of operations as further activities (*ie* manufacturing, post-sale activities, marketing) became supported. Nowadays we can see that technologies have the potential to transform business activities in ways that could not be conceived of previously, and businesses can become more streamlined, efficient and adaptable.

Reading 1.3

Please read pages 12 to 19 of Chapter 1 in *Digital Business and E-commerce Management* by Chaffey (2015).

Chaffey (2015) Extract from Chapter 1 'Introduction to digital business and e-commerce' in *Digital Business and E-commerce Management*. pp. 12–19.

Your notes should enable you to answer the following questions:

- What is the difference between e-commerce and digital business?
- What is the meaning of transformation of business processes?
- How different is the concept of digital business from that of business?
- What are intranets and extranets?

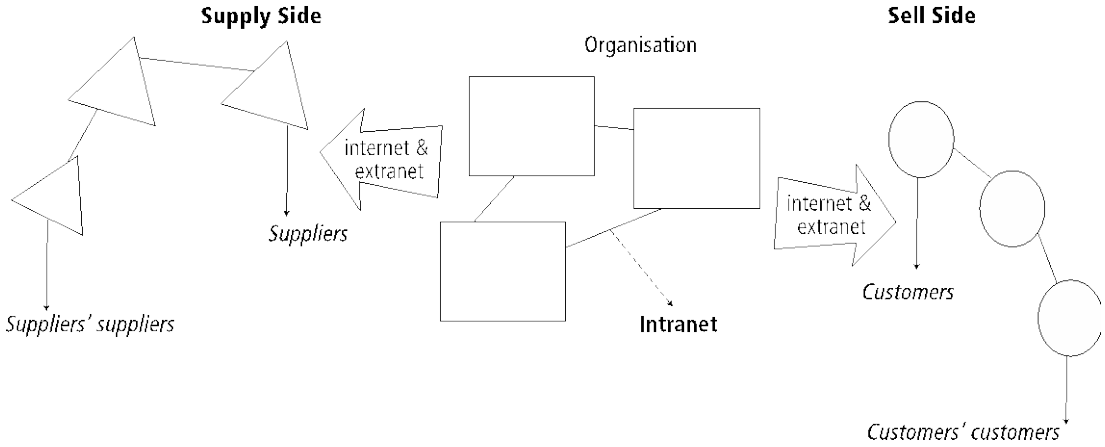
As you have seen from the reading, many businesses succeed because they are able to see themselves through a different lens, not only adopting new technologies but ways of working that enable them to transform their whole operations – in other words, their activities from one end (when they receive inputs or supplies to be converted into products or services) to the customer

end (when they help customers to improve their lives with those products and services). They do that with the help of technology. We now use networks of communications which we term *intra-* or *extranets*, depending on whether access to them is restricted to people inside the organisation or includes external organisations.

It is important to be clear about the difference between the terms *e-commerce* and *digital business*. The former term, e-commerce, refers to activities that involve transactions between an organisation and its third parties, including non-financial transactions. By contrast, digital business is about *transformation*, a re-invention of the business, with full integration between processes and technologies.

In order to become a digital business, organisations need to review in detail all their activities and decide what needs to change. They need to look closely at themselves and determine what could help or what could hinder change. It becomes important to know what can contribute to success and by default what could undermine it, or even lead an organisation to fail in its transformation attempts.

Figure 1.3 Organisation's Relationship between Supply Side and Sell Side



As Figure 1.3 suggests, when thinking about transformations, organisations might decide to focus on their *supply side* (relations between them and their suppliers) or their *sell side* (relations between them and their distributors and their customers). These relations can be enhanced if technologies including the internet and intra-/extranets are used.

By looking at different relations, organisations can assess how information is flowing, how existing processes need to be simplified and how their communication with customers can be strengthened. Often, organisations decide to change their core activities and focus on either becoming better suppliers or better sellers. This can be done if the organisations see themselves not as single actors, but as nodes in a network or a landscape of organisations. Such a perspective might also impact on what an organisation envisages as being successful.

Reading 1.4

Chaffey (2015) Extract from Chapter 1 'Introduction to digital business and e-commerce' in *Digital Business and E-commerce Management*. pp. 17–21.

Read again pages 17 to 19 of Chaffey (2015), and continue until page 21. Pay particular attention to the sections named 'Different types of sell-side e-commerce' and 'Digital marketing'.

Answer the following questions:

- Draw a supply-side or sell-side diagram of any of the example sites given in Activity 1.3, pages 17–18.
- Define a social network and compare it with a brand building site. Describe one similarity and one difference.
- What is a social networking site (SNS)?

In practice, organisations may implement different types of e-commerce solutions, many of which do not directly concern transactions but deal with the gathering or provision of information from or to different stakeholders. Often, electronic channels of communication are used to strengthen relationships with customers and thus support marketing activities. The term *digital marketing* is much used nowadays for technology-supported activities to generate and maintain customer awareness and relationships, by 'getting to know' the customer.

There are many stories of successful businesses that have used information to learn about their customers and continuously provide them with services and products. However, there are other stories in which, despite the firm's important investments in technologies, its customers do not seem to recognise their value. How can there be such differences?

Reading 1.5

Chaffey (2015) Extract from Chapter 1, 'Introduction to digital business and e-commerce' in *Digital Business and E-commerce Management*. pp. 4–13.

Go back a bit and read the first sections of Chapter 1 of Chaffey (2015), pages 4–13, paying particular attention to Activity 1.1 and the Facebook Case Study on pages 8 to 12.

Make notes that enable you to answer these questions:

- What do you think success means for a digital business?
- From the case of Facebook, list and discuss at least five reasons why you think they are 'successful'?
- What would you suggest for any other organisation about how to be successful?

When a firm decides that developing a digital is imperative, significant financial and human resources are invested in information technology and systems because they are *perceived* as solutions to both current and new problems and challenges. Given these resources and the advances in information and communication technologies in recent years, it is logical to assume that information systems recently developed or updated are successful in delivering what they are designed to do, and therefore would transform a business. Many organisations are now at the forefront of their

markets, partly because they effectively use information and also because they have effectively exploited emerging ICTs.

While these successes can lead other organisations to follow their paths, what happens in reality? On average, do new or updated information systems invariably succeed or do they often fail, and why?

Chaffey (2015: pp. 30–37) gives a number of *drivers* that motivate organisations to become e-businesses, but also cites some risks that need to be considered. Organisations can be driven both by the need to reduce their costs and the imperative to increase their competitiveness, so that customers stay with them. They also need to consider how well prepared they are to undertake significant transformations that involve implementing ICTs (such as an internet website). At the heart of any transformation, there needs to be an informed view about how customers are going to value them. This does not mean that organisations should respond wholly to what the customer wants, but that within feasible limits and possibilities, they work to improve the customer's outcome.

Reading 1.6

Study those pages (30 to the end of Chapter 1) of Chaffey (2015) now.

✍ Your notes should expand on the issues raised in this section of the unit.

Chaffey (2015) Extract from Chapter 1 'Introduction to digital business and e-commerce' in *Digital Business and E-commerce Management*. pp. 30–37.

It seems that in order to reduce the chances of failure in implementing IS through ICTs and to give sustained advantages to an organisation, a continuous degree of *alignment* between business strategies, processes, people and technology is needed – an alignment that can offer the customer something valuable that they are willing to pay for. We can call this an *online value proposition*. The alignment of all these elements to offer a valuable online value proposition needs to pervade every activity in the organisation, and also get the commitment of every employee, supplier or intermediary to significantly contribute to it.

In this module we will focus on identifying issues that need to be tackled in order to help organisations align their processes, technologies and people. To do that we will employ a number of concepts, techniques and approaches to get a comprehensive view of an organisation, one in which information is at the centre of activities, valued as a way of thinking based on collaboration and interaction. In order to enhance the value of an online value proposition, it is necessary to consider systems thinking, which is the subject of the next section.

1.4 Systems and Systems Thinking

Systems-thinking involves a collection of ideas, concepts and methods that have been around for a number of years. In this module we will apply some

of the ideas and methods of systems-thinking to management problems, both those relating to the planning and evaluation of information systems and technologies and to the management of change.

A more practical account of systems thinking in relation to complex information systems and technology problems is provided in the key text by Córdoba-Pachón (2010). Here you will find a number of examples of thinking and acting *systemically*, in other words by considering and intervening in different aspects of a situation which, if adequately treated, could help to make more sense of information, systems and technologies within and across organisations.

 **Reading 1.7**

Córdoba-Pachón (2010) Extract from Chapter 1 'Introduction' in *Systems Practice in the Information Society.* pp. 5–7.

As a way of introduction, read Córdoba-Pachón's key text, first chapter, the section on systems thinking, pages 5 to 7. Pay particular attention to the terminology.

 Jot down your answers to the following questions:

- What is the difference between thinking in terms of systems as opposed to thinking linearly in terms of cause-effect?
- What opportunities and constraints do you see to using systems thinking in your organisation?

As you will see in this section, applying a more systemic way of thinking can lead to information being better and more adequately generated and enable an organisation to become a digital business. The use of systems thinking does not aim to replace traditional ways of implementing information systems and related technologies. Rather, it aims to complement organisational activity and ultimately our understanding of why and how we need to continuously improve such activity for the benefit of managers, employees, customers and other organisational stakeholders.

The use of systems thinking can also help us to tackle a key aspect – called the *rationality-reality gap* – that contributes to failure in the implementation of information systems and digital businesses in organisations. In general terms, the rationality-reality gap is a series of problems derived from thinking that organisations are able to transform 'automatically' to an improved way of doing things through the use of ICTs. This view of such transformations fails to consider how organisations currently operate and, more importantly, what the people involved think about what they do or what they should be doing. It is important to understand how these gaps can result from not considering all relevant issues in a situation, or failing to see what the current 'system' (or mode of operating) is and how this affects staff.

This a key point in relation to realignment. In order to understand how information and related technologies can be better used, we need to know and appreciate the varying objectives, interests and perspectives of the different people or institutions involved – that is, we need to understand the

stakeholders or *actors* whose influence can leverage or inhibit transformation possibilities for digital businesses. We will return to this point repeatedly throughout this module.

1.5 Analysing Information Systems' Case Studies

It should now be clear that the implementation of an information system to offer competitive advantages to an organisation is far from a straightforward process. Many aspects have to be considered. Furthermore, after implementation, a system has to be continuously updated so that it can continue to offer further advantages.

What we often see in the literature is just a snapshot of an IS implementation process. Chaffey's book offers many case studies showing how IS has been implemented in digital business. In some of these cases, the failures of implementation have been explicitly identified and presented. However, even the cases that are deemed as 'complete successes' may leave us wondering if there were things that did not work quite as expected. If you had the opportunity to write about an IS project that you were involved with or present a talk or discuss it with an outsider, which project would you be likely to choose? Of course, you would pick the success, which reflects well on you and your organisation, rather than the failure, which reflects badly. The reported ratio of failures to successes is therefore generally less than the actual ratio.

This is what we mean by the *rhetoric* (rationality) and the *reality* of information systems and the resulting gap between these two, which can lead to information systems' failure. During this module we will explore ways in which gaps between these two can be closed with the help of appropriate concepts, ideas and techniques. For now, it suffices to say that case studies in information systems are more complex than they appear, and it is necessary to read them critically.

Reading 1.8

Córdoba-Pachón (2010) Extract from Chapter 1 'Introduction' in *Systems Practice in the Information Society*. pp. 1–5 and pp. 8–12.

Now please study pages 1 to 5 of Córdoba-Pachón's Chapter 1: in particular, look at the three different types of phenomena about the information society. We will touch upon these in the next unit, but for now you can see how the case studies on information systems could refer to one of these three phenomena:

- transformations
- engagements
- unintended consequences.

Look back at Chaffey's Case Study on Facebook (pages 8–12) and consider the relevance of these phenomena.

 Your notes should be clear on all of these concepts, and their relation to information systems.

The information given in a case study might be incomplete in your view. But you can then guess what could have happened, or also look for another case study of the same organisation, and compare your findings.

When reading or hearing about information systems' projects and experiences, we must apply our critical judgement in order to:

- find out whether a system has been fully implemented, or is just a plan or a pilot scheme
- find out who the writer or presenter is, and if they have a vested interest in it
- think about who the different stakeholders are, and what their different motivations might be
- identify some elements of time that could allow us to trace the unfolding of the project as well as its partial or total success/failure
- find out if there are other aspects in the project that are not explicitly mentioned but that you/other people (*ie* other authors or writers who look at the same or similar cases) consider important.

Remember that for every reported success, there is often more than one unreported information systems failure! As a systems thinker, it is your role to expand the boundaries of analysis and bring new elements to the discussion. This will help you to see that IS failure is not only a technical issue, but one that can include several other aspects, including the people involved. Throughout the module (and often at the end of each unit) we will be encouraging you to consider different aspects that need to be tackled to bring a digital business to life through successful change. So please keep looking for 'what else' is needed. This is the beginning of developing systemic thinking as an information manager.

1.6 Conclusion

This unit introduces some of the basic definitions and concepts that we will use throughout the rest of the module. In it, we have looked at the importance of information and how, despite this importance, there are inherent challenges when it comes to implementing information systems to enable organisations to achieve significant transformations and become digital businesses.

Traditional models of input, process, store, output and communicating information that are used to define information systems are to some extent incomplete. Issues of alignment between IS (and its supporting technologies), processes, people and strategies need to be considered. Also, the context in which organisations operate needs to be part of any analysis leading to the implementation of any information system/ technology. A wider type of analysis that considers both that operational context and how organisations are to provide value to their employees, suppliers, distributors' and customers' needs to be undertaken.

Wherever a transformative use of information and new technologies are implemented in an organisation, there is likely to be a significant gap between what is to be prescribed (*ie* the latest fashion or best practice) and what an organisation actually does. Failure to identify gaps between a desired transformation and how it is to be achieved is one of the main factors behind the many wasted and failed investments in technologies, and ultimately behind organisational failure.

Two additional concepts can help you begin to undertake a more comprehensive analysis of information and systems in organisations. One of them is that of *digital business*, which we associated with total transformations and therefore with continuous alignment. The other is that of an organisation as *a network* which has a supply and a sell side, both of which involve sets of relations and interactions which need to be explored in more detail to see how the organisation can increase the value it offers to stakeholders and what roles can be attributed to information management systems and technologies.

We have put forward the idea that systems-thinking, or thinking in terms of systems, can help us appreciate better the different issues and complexities involved in enabling transformations through or with organisational networking. We will refer to systems thinking in more detail later on. For now, you are invited to consider how you as an information manager and your group or organisation are part of bigger systems; what possibilities for positive connections and interactions can emerge; and how through those you/others can offer better value to yourself/your customers.

Review Question 1.3

To help you review the material covered in this unit, you might want to write a few notes to answer these questions:

- What is information?
- How is information different from data and from knowledge?
- What is a digital business?
- What is systems thinking?
- List as many reasons as possible behind information system failure in organisations you know of. You can also use the case studies from Chaffey's Chapter 1.

Additional Reading/Exercise 1.1

Revisit the Case Studies of Chaffey's Chapter 1 and draw a comparative table of the reasons why businesses cited in such cases are successful, what benefits does e-business bring, and what other aspects of the case study need further exploration because they are not fully mentioned.

You can use this template for the table and use at least three of the organisations listed.

Table 1.1

Case	Reasons for success	Benefits of e-business	Aspects not fully mentioned in the case study
Facebook			
Qype and **Yelp**			
Suncorp			
Tatu Couture			
Betfair			
eBay			

References

Chaffey D (2015) *Digital Business and E-commerce Management*. 6th Edition. Harlow UK: Pearson Education.

Córdoba-Pachón J-R (2010) *Systems Practice in the Information Society*. Abingdon UK: Routledge.

Gordon S and J Gordon (2004) 'What is information management?'. *Information Systems: A Management Approach*. 3rd Edition. New York: John Wiley & Sons.

OTEC (2002) *Data, Information, Knowledge and Wisdom*. [Online]. Oregon Technology in Education Council (OTEC). Available from: https://otec.uoregon.edu/data-wisdom.htm