

Unit 3: Information Systems

Unit code:	H/601/7256
QCF Level 3:	BTEC National
Credit value:	10
Guided learning hours:	60

● Aim and purpose

The aim of this unit is to ensure learners understand how organisations use information and the surrounding use of information, know about information systems and develop the skills necessary to produce management information.

● Unit introduction

Information systems are combinations of software, hardware and communication networks, used to collect, organise and distribute useful information within organisations. The availability of reliable information, presented in an appropriate format is the basis for good decision making. It can be used by organisations for obtaining a competitive advantage and promote efficiency.

People need to become skilled manipulators and users of information to ensure that organisations become more efficient and succeed in achieving their aims and objectives.

In this unit, learners will manipulate data to generate meaningful information. Learners will use an IT tool, such as a spreadsheet or a database, to process data and therefore this unit would fit well with any of the units introducing appropriate software packages.

As IT users, we need to make judgements about sources and accuracy of information and be able to select and manipulate information to support sound decision making. Not all information is current or accurate. In this unit learners will find out how to select their sources and decide on how much credence can be placed in them.

To understand and appreciate how organisations use information, it is necessary to appreciate how businesses operate and the functional areas into which they are divided. This unit looks at these areas, as well as exploring the formal ways that internal and external information flows can be represented. There is scope for this to be contextualised through the setting up of mini-enterprises.

In any organisation it is important that employees know the constraints that impact on the use of information and learners will consider issues such as data protection and other legislation.

● Learning outcomes

On completion of this unit a learner should:

- 1 Understand how organisations use business information
- 2 Understand the issues related to the use of information
- 3 Know the features and functions of information systems
- 4 Be able to use IT tools to produce management information.

Unit content

1 Understand how organisations use business information

Types of information: qualitative, quantitative; primary; secondary

Purposes of information: operational support eg monitoring and controlling activity; analysis eg to identify patterns or trends; decision making (operational, tactical, strategic); gaining commercial advantage

Sources of information: internal eg financial, personnel, marketing, purchasing, sales, manufacturing, administration; external eg government, trade groupings, commercially provided, databases, research; reliability of data sources

Good information: characteristics eg valid, reliable, timely, fit-for-purpose, accessible, cost-effective, sufficiently accurate, relevant, having the right level of detail, from a source in which the user has confidence, understandable by the user

Business functional areas: eg sales, purchasing, manufacturing, marketing, finance, personnel, administration

Information flows: internal information flows; information flows to external bodies; information flow diagrams

2 Understand the issues related to use of information

Legal issues: relevant data protection legislation eg Data Protection Act 1998, Freedom of Information Act 2000; other relevant legislation eg Computer Misuse Act 1990

Ethical issues: codes of practice eg on use of email, internet; 'whistleblowing'; organisational policies; information ownership

Operational issues: security of information; backups; health and safety; organisational policies; business continuance plans; costs eg additional resources required, cost of development; impact of increasing sophistication of systems eg more trained personnel, more complex software

3 Know the features and functions of information systems

Features of information systems: data; people; hardware; software; telecommunications

Functions of information systems: input; storage; processing; output; control and feedback loops; closed and open systems

Transformation of data into information: distinction between data and information; collection, storage, processing, manipulation, retrieval, presentation

Types of information system: management information systems; others eg marketing (sales performance, competitors etc), financial (financial costs, investment returns etc), human resources (HR) (staffing, professional development etc)

Management information systems (MIS): features; benefits; effectiveness criteria eg accuracy, sustainability, response times, confidence

4 Be able to use IT tools to produce management information

Tools: software eg databases, artificial intelligence and expert systems, predictive modelling; internet; others eg data mining systems

Gather information: define the requirement; establish sources of information; define other factors to be considered eg constraints; select information

Analyse information: quality eg validity, accuracy, currency, relevance; identify alternatives

Management information: reports eg sales report, college enrolment statistics, marketing analysis (brick versus click)

Assessment and grading criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria for a pass grade describe the level of achievement required to pass this unit.

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:	To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
P1 explain how organisations use information	M1 illustrate the information flow between different functional areas	D1 explain how an organisation could improve the quality of its business information [EP2]
P2 discuss the characteristics of good information		
P3 explain the issues related to the use of information [IE1, IE2]	M2 assess how issues related to the use of information affect an organisation	
P4 describe the features and functions of information systems		
P5 identify the information systems used in a specified organisation		
P6 select information to support a business decision-making process		D2 justify the information selected to support a business decision-making process. [IE6]
P7 use IT tools to produce management information. [IE4]	M3 generate valid, accurate and useful information.	

PLTS: This summary references where applicable, in the square brackets, the elements of the personal, learning and thinking skills applicable in the pass criteria. It identifies opportunities for learners to demonstrate effective application of the referenced elements of the skills.

Key	IE – independent enquirers	RL – reflective learners	SM – self-managers
	CT – creative thinkers	TW – team workers	EP – effective participators

Essential guidance for tutors

Delivery

Managing information is an important activity in any organisation. Effective information management means using information to ensure that organisational purposes are met, whether it is ensuring efficient day-to-day operations or meeting longer-term goals. Answering queries from customers about whether a product is in stock or deciding whether to build a bypass around a congested town require the use and management of information.

Learners will need to understand how information flows internally and between the organisation and its environment. One approach to aid learning could be for learners to set up a mini-enterprise. Once the basic theory has been introduced, learners can set up their own businesses. By participating in groups and taking part in role play activities, the reasons for needing good, timely information will become apparent and the different functional areas of any small business will emerge naturally. For example, learners may start to consider how to sell their 'product' – leading to the need for a marketing department and a sales department to handle orders. Another approach could be to make use of the various interactive business games which are available commercially.

Data comes from a variety of sources and learners must appreciate that not all data may be accurate or reliable, especially if taken from unknown internet sources. Learners should practise using more than one source to validate data and always check the data is appropriate and fit for purpose.

Case studies and local examples of information systems (eg from within the centre) can be used to demonstrate how information systems support management and ultimately make organisations more efficient.

The legal issues surrounding the use of information can be a directed research task and there are useful videos/DVDs to support this.

Understanding the relationship between data and useful information will underpin learning outcomes 3 and 4.

Learners need to understand how to produce information from a business information system and be able to access the data manipulation and reporting facilities of a software package to produce information and present it in suitable formats to support organisational decision making. Learners may have developed skills in the use of, for example, databases and/or spreadsheets in other units. They will need to be able to use some form of data manipulation tool to undertake the assessment for LO4.

Outline learning plan

The outline learning plan has been included in this unit as guidance and can be used in conjunction with the programme of suggested assignments.

The outline learning plan demonstrates one way in planning the delivery and assessment of this unit.

Topic and suggested assignments/activities and/assessment
<p>How organisations use business information:</p> <ul style="list-style-type: none">• whole-class exercise – tutor presentation on business information, types, purposes, sources, characteristics. Followed by practical exercise• whole-class exercise – tutor presentation on functional areas, followed by practical exercise• whole-class exercise – tutor presentation on Information flow, followed by practical directed sessions, role play exercises, business games/mini enterprise.
<p>Issues related to information use:</p> <ul style="list-style-type: none">• whole-class exercise – tutor presentation on legal issues, Data Protection Act, etc. followed by directed research• whole-class exercise – tutor presentation on ethical issues, followed by discussion• whole-class exercise – tutor presentation on operational issues, followed by directed research• research, case studies, video/DVD.
<p>Information systems:</p> <ul style="list-style-type: none">• whole-class exercise – tutor presentation on the key elements and functions of information systems, followed by directed research• whole-class exercise – tutor presentation on types of information systems, followed by directed research• case studies, research, visiting speaker.
Assignment 1 – How Our Business Works
<p>Using IT tools:</p> <ul style="list-style-type: none">• whole-class exercise – tutor presentation on database and spreadsheet functions and reporting, followed by practical exercise• whole-class exercise – tutor presentation on transforming data into information, followed by practical exercise• whole-class exercise – tutor presentation on checking and analysing information, followed by practical exercise• practical development of software skills and fit for purpose reporting.
Assignment 2 – Management Information

Assessment

The suggested assessment of this unit is through two assignments as summarised in the *Programme of suggested assignments* (PSA) table. These suggested assignments are based on the premise that learners have undertaken the development of a mini-enterprise. Alternatively, evidence for assignment 1 could be in the form of a report or presentation based on a case study or visit to a company.

Suggested Assignment 1 – How Our Business Works

For P1 and P2, learners should touch on much of the content outlined in the unit content for LO1, presenting the information in a logical sequence, eg what is information ie types, sources, characteristics (may require some theoretical content), where is it used (functional areas, purposes), how is it communicated (information flow). At least three internal and two external functional areas should be included to provide sufficient complexity.

The addition of a clear, detailed, comprehensive information flow diagram will cover M1.

For D1, learners should demonstrate an understanding of the characteristics of good information as outlined in the unit content. Learners should support the theory with appropriate examples. This may also encompass criterion D2 if the report is based on their own management reports.

For P3, learners should include at least two items from each of the three issues outlined in the unit content.

For M2, learners will show how each of these issues may affect their enterprise (or based on a case study).

Evidence can be in the form of written reports or a presentation.

Suggested Assignment 2 – Management Information

This suggested assignment is based on the mini enterprise where learners will develop appropriate management information to help run the enterprise. The management information produced should be agreed beforehand and should be sufficiently complex to allow learners to access all the grading criteria.

For P4 and P5, learners could describe the features of information systems and explain which one they would use in their mini-enterprise, and why.

For P6, learners should explain how they decided what data they would require to develop the required management information and how they checked it for accuracy (see gathering and analysing information in the unit content).

For D2, learners will need to justify the decisions made in P6.

Management reports will provide the evidence for P7. The reports should be appropriately titled and well laid out, making their relevance clear. For M3, the reports should be valid, accurate and relevant, ie show useful information that is, importantly, fit for purpose.

Programme of suggested assignments

The table below shows a programme of suggested assignments that cover the pass, merit and distinction criteria in the assessment and grading grid. This is for guidance and it is recommended that centres either write their own assignments or adapt any Edexcel assignments to meet local needs and resources.

Criteria covered	Assignment title	Scenario	Assessment method
PI-P3, M1, M2, D1	How Our Business Works	You are to present a report on the functioning of a mini-enterprise.	Report/presentation Diagrams
P4-P7, M3, D2	Management Information	The enterprise managers have requested a sales and marketing report.	Reports Presentation

Links to National Occupational Standards, other BTEC units, other BTEC qualifications and other relevant units and qualifications

This unit forms part of the BTEC in IT sector suite. This unit has particular links with the following unit titles in the IT suite:

Level 2	Level 3	Level 4
Unit 16: Database Systems	Unit 21: Data Analysis and Design	Information Systems in Organisations

This unit maps to some of the underpinning knowledge from the following areas of competence in the Level 2 National Occupational Standards for IT (ProCom):

- 6.1 Information Management.

Essential resources

Learners will benefit from demonstrations of organisational management information systems. This could be the centre's own information management system for managing learners' personal data, achievement, accounts, etc or it could be an external system demonstrated on a visit to an outside organisation. Using the system to produce reports on learners' achievements within various cohorts should also be demonstrated.

Decision-support systems should also be demonstrated. These could be simple web-based online systems made available by banks where users enter data to assist the bank in making a decision as to the amount of money the customer may borrow. At the higher end of the scale there are medical decision-support systems to assist in the diagnosis of health-related problems and share dealing support systems that instigate buy and sell triggers when trading in shares. This could involve visits to organisations or demonstrations by external speakers.

Employer engagement and vocational contexts

The use of vocational context is essential in the delivery and assessment of this unit. Learners will require access to computer equipment to enable them to gain a practical awareness and enable them to apply their knowledge and understanding to a practical situation.

There are a range of organisations that may be able to help centres engage and involve local employers in the delivery of this unit, for example:

- Work Experience/Workplace learning frameworks – Centre for Education and Industry (CEI University of Warwick) – www.warwick.ac.uk/wie/cei
- Learning and Skills Network – www.vocationallearning.org.uk
- Network for Science, Technology, Engineering and Maths Network Ambassadors Scheme – www.stemnet.org.uk
- National Education and Business Partnership Network – www.nebpn.org
- Local, regional Business links – www.businesslink.gov.uk
- Work-based learning guidance – www.aimhighersw.ac.uk/wbl.htm.

Indicative reading for learners

Textbooks

Anderson H and Yull S – *BTEC Nationals IT Practitioners: Core Units for Computing and IT* (Newnes, 2002)
ISBN-10 0750656840, ISBN-13 978-0750656849

Bocij P, Greasley A and Hickie S – *Business Information Systems: Technology Development and Management for the e-business, Edition 4* (FT Prentice Hall, 2008) ISBN-10 027371662X, ISBN-13 978-0273716624

Knott G and Waites N – *BTEC Nationals for IT Practitioners* (Brancepeth Computer Publications, 2002)
ISBN-10 0953884821, ISBN-13 978-0953884827

Website

www.comp.glam.ac.uk/pages/staff/tdhutchings/chapter1.html

Delivery of personal, learning and thinking skills

The table below identifies the opportunities for personal, learning and thinking skills (PLTS) that have been included within the pass assessment criteria of this unit.

Skill	When learners are ...
Independent enquirers	identifying questions to answer and problems to resolve when explaining how organisations manipulate and use information planning and carrying out research, appreciating the consequences of decisions when investigating the use of information by organisations analysing and evaluating information, judging its relevance and value when using IT tools to produce management information supporting conclusions, using reasoned arguments and evidence when justifying information selection.

Although PLTS are identified within this unit as an inherent part of the assessment criteria, there are further opportunities to develop a range of PLTS through various approaches to teaching and learning.

Skill	When learners are ...
Effective participators	presenting a persuasive case explaining how an organisation could improve the quality of its business information presenting a persuasive case for action, suggesting additions and improvements to the management of information.

● Functional Skills – Level 2

Skill	When learners are ...
ICT – Using ICT	
Plan solutions to complex tasks by analysing the necessary stages	using IT tools to produce valid, accurate and useful information
ICT – Finding and selecting information	
Use appropriate search techniques to locate and select relevant information	using IT tools to produce management information
Select information from a variety of sources to meet requirements of a complex task	selecting information to support a business decision-making process
ICT – Developing, presenting and communicating information	
Enter, develop and refine information using appropriate software to meet requirements of a complex task	using IT tools to produce valid, accurate and useful information
Use appropriate software to meet the requirements of a complex data-handling task	using IT tools to produce valid, accurate and useful information
Combine and present information in ways that are fit for purpose and audience	generating valid, accurate and useful information.