

Unit 11: Economics and Finance in Construction and Civil Engineering

NQF Level 3: BTEC National

Guided learning hours: 60

Unit abstract

The economy of any country, in terms of both the local and global markets, is a vital aspect of its health. Prosperity, high employment and the efficient use of resources each contribute to the wealth of a country and of individuals, and are key factors in making the UK economy one of the most successful in the world.

The building economist has to make decisions concerning which project to develop, where to develop the project, the suitability of a particular type of project, and when to commence the work. Finance and capital play a large part in every economy or business. Investment is often the key focus in the success of a construction business, and government of the industry can produce very real effects in terms of producing rapid growth and avoiding sudden recessions.

Learners will develop an understanding of the basic economic issues that are encountered in the sector, of the problems a developer can face, and the decisions that need to be made before work can commence on a construction site. They will explore the use of cost control in a project, and investigate what constitutes a successful project outcome through the use of simple feasibility calculations.

Learning outcomes

On completion of this unit a learner should:

- 1 Understand the basic economic principles that underpin construction projects
- 2 Be able to identify the economic resources required to complete a typical construction project
- 3 Know how to plan and control construction costs
- 4 Be able to produce a feasibility study for a small construction project.

Unit content

1 Understand the basic economic principles that underpin construction projects

Supply: definition; factors affecting supply; supply curves; changes in supply

Demand: definition; factors affecting demand; demand curves; changes in demand; demand elasticity

Markets: determination of the market equilibrium; shortages and scarcity and their effect on price; price determination; changes in price; opportunity costs; consumer choice; price mechanism; the four Ws (where, what, why and when) as applied to a construction product

Types of business: sole trader; partnership; public limited company; private limited company; partnership; housing associations; non-profit-making organisations

2 Be able to identify the economic resources required to complete a typical construction project

Land: types; factors affecting price; factors affecting availability; location

Capital: definition; specific capital; capital goods

Labour: demographics of the working population; factors affecting availability; mobility of labour; factors affecting labour efficiency; the quality of labour; skills; incentives

Entrepreneur: as risk taker; land developers; property developers; private investors; need for knowledge and foresight of the market

Finance: types; availability; sources, eg EU finance, mortgages, venture capital, loans, lottery funding, reinvest profits, shares

3 Know how to plan and control construction costs

Concept of cost control: history of cost control; need for cost control; main aims and objectives; budgeting; comparison of schemes; cost, price and value; building cost price indices

Cost planning: reasons for cost planning; cost value engineering; budgeting; scheme appraisal; profit; sources of finance; techniques, eg elemental, comparative, approximate quantities, cash flow forecasts

Cost control techniques: standard techniques, eg cost value reconciliation, valuations, financial statements and reports, real time costing, s-curves, coding data, resource allocated bar charts, costing stages of construction; types of contract, eg design and build, partnering; effect of each on costs

4 Be able to produce a feasibility study for a small construction project

Budgets: preparation of preliminary estimates; land purchase price; cost of units; elements; measured; design costs; construction costs; potential profit/loss

Feasibility: factors relevant to a practical exercise on a given situation, eg comparison of new scheme against historical project, floor areas, volumes, elements, price indexes, factors affecting decision to proceed, interest rates, availability of finance, land availability, market, break-even point, cost of borrowing, planning restrictions, brown field sites, redevelopment grants, EU grants, enterprise and action zones

Grading grid

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

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 identify the basic economic principles that underpin construction projects	M1 analyse the economic problems associated with the construction market and the cyclical nature of the industry	
P2 identify and describe the four main factors of production as applied to a typical project in the construction industry	M2 analyse the sources of finance available for the funding of a typical construction project	D1 evaluate different sources of finance in terms of the cost of the finance and the conditions imposed by the provider of the finance
P3 identify and describe the main markets within the construction industry	M3 compare the advantages and disadvantages of two different cost control techniques	
P4 identify the reasons for cost planning and describe the techniques that are available to control costs in construction	M4 examine the factors that will affect both the budget required for, and the final feasibility of, a typical project proposal.	D2 evaluate the factors that affect feasibility in terms of the influence of the government on the economics of the construction industry.
P5 carry out the preparation of a cost budget for a simple construction project from historical cost data		

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Grading criteria		
<p>To achieve a pass grade the evidence must show that the learner is able to:</p>	<p>To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:</p>	<p>To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:</p>
<p>P6 undertake a feasibility study on a small construction project and prepare a report for the client.</p>		

Essential guidance for tutors

Delivery

Tutors delivering this unit have opportunities to use a wide range of techniques. Lectures, discussions, seminar presentations, research using the internet and/or library resources and the use of personal and/or industrial experience are all suitable. Delivery should stimulate, motivate, educate and enthuse learners. Visiting expert speakers could add to the relevance of the subject for learners.

In learning outcome 1 learners will gain knowledge of basic economic theories and apply them to the construction market.

Learning outcome 2 looks at the application of the economic resources needed to complete a project.

Learning outcome 3 covers the reasons why construction costs need to be controlled and the techniques used to do so.

Learning outcome 4 investigates feasibility studies, enabling learners to apply knowledge in order to produce a practical conclusion to construction issues.

In order to engage learners, delivery should, as far as possible, always be applied to practical situations within the construction industry. These practical situations may refer to ongoing current construction projects or could be based on contextualised scenarios provided by the tutor.

Group activities are permissible, but tutors will need to ensure that individual learners are provided with equal experiential and assessment opportunities.

Health, safety and welfare issues are paramount and should be strictly reinforced through close supervision of all workshops and activity areas, and risk assessments must be undertaken prior to practical activities. Centres are advised to read the *Delivery approach* section on page 24, and *Annexe G: Provision and Use of Work Equipment Regulations 1998 (PUWER)*.

Assessment

Evidence for this unit may be gathered from a variety of sources, including well-planned investigative assignments, case studies and answers to oral questioning.

There are many suitable forms of assessment that could be employed and tutors are encouraged to consider and adopt these where appropriate. Some examples of possible assessment approaches are suggested below. However, these are not intended to be prescriptive or restrictive and are provided as an illustration of the alternative forms of assessment evidence that would be acceptable. General guidance on the design of suitable assignments is available on page 19 of this specification.

Some criteria can be assessed directly by the tutor during practical activities. If this approach is used then suitable evidence would be observation records or witness statements. Guidance on the use of these is provided on the Edexcel website.

The structure of the unit suggests that the grading criteria may be fully addressed by using assignments. The first of these would cover criteria P1 and M1, the second would cover P2, P3, M2 and D1, the third would cover P4 and M3, and the fourth would cover P5, P6, M4 and D2.

Learning outcome 1 covers P1 and M1, learning outcome 2 covers P2, P3, M2 and D1, learning outcome 3 covers P4 and M3, and learning outcome 4 covers P5, P6, M4 and D2.

To achieve a pass grade learners must meet the six pass criteria listed in the grading grid.

For P1, learners must identify the basic economic principles that underpin construction projects. These should include supply and demand and elasticity, scarcity and the price mechanism, all applied to a simple construction project. Evidence could be in the form of a presentation, a report or through oral questioning based on a tutor-provided case study.

For P2, learners must identify and describe the four main factors of production as applied to a typical project in the construction industry. These should include land as the capital cost of purchase, labour as the human resource to build the project, capital as the finance required to invest in the project and the entrepreneur as the owner of the company providing the driving force to complete the project. Examples of suitable evidence approaches could be as for P1.

For P3, learners must identify and describe the main markets within the construction industry. Learners should use national statistics as a source of raw data. Industry trade associations can provide a useful resource to identify construction markets. Examples of suitable evidence approaches could be as for P1.

For P4, learners must identify the reasons for cost planning and describe the techniques that are available to control costs in construction. Learners are expected to identify and describe profit, budgets, return on capital, cost value reconciliation and cost value engineering. Evidence could be in the form of a presentation or a report supported by appropriate calculations.

For P5, learners must carry out the preparation of a cost budget for a simple construction project from historical cost data. The source material should relate to an historical case study. Learners should produce elemental rates from the source material and adjust and reapply the figures in terms of the proposed scheme. Learners should have access to such information from the main professional body, the Royal Institution of Chartered Surveyors (RICS). Examples of suitable evidence approaches could be as for P4.

For P6, learners must undertake a feasibility study on a small construction project and prepare a report for the client. Learners should use local land values and could effectively combine this with the evidence for P5 to provide an overall project view. They must also provide a recommendation. Evidence should be presented in a standard format, typical of that used in the industry.

To achieve a merit grade learners must meet all of the pass grade criteria and the four merit grade criteria.

For M1, learners must analyse the economic problems associated with the construction market and the cyclical nature of the industry. They could build on the evidence produced for P1 and must apply basic economic principles in the

construction industry marketplace. This is, to an extent, open ended, but it is anticipated that areas such as supply and demand as applied to housing and/or factory units, or the expansion and contraction of the industry, could be explored and analysed. Examples of suitable evidence approaches could be as for P1.

For M2, learners must analyse the sources of finance available for the funding of a typical construction project. Learners should incorporate financial sources from the UK and European markets and reference to some of the many government grant schemes would prove useful. Evidence could be as for P1.

For M3, learners must compare the advantages and disadvantages of two different cost control techniques. This should refer to provided case studies or to realistic examples from industry. Evidence could be as for P4.

For M4, learners must examine the factors that will affect both the budget required for, and the final feasibility of, a typical project proposal. These factors should refer to local issues, such as the physical site and to economic issues. Examples of suitable evidence approaches could be as for P4.

To achieve a distinction grade learners must meet all of the pass and merit grade criteria **and** the two distinction grade criteria.

For D1, learners must evaluate different sources of finance in terms of the cost of the finance and the conditions imposed by the provider of the finance. Learners are expected to make reference to at least one of the many grant schemes. Examples of suitable evidence approaches could be as for P4.

For D2, learners must evaluate the factors that affect feasibility in terms of the influence of the government on the economics of the construction industry. Learners should make reference to terms such as base rates, planning decisions and grants. Examples of suitable evidence approaches could be as for P4.

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

The learning outcomes in this unit are closely linked with, for example, *Unit 9: Measuring, Estimating and Tendering Processes in Construction and the Built Environment* and *Unit 22: Design Procedures in Construction*, together with similar units at Higher National and degree level.

This unit may have links to the Edexcel Level 3 Technical and Professional NVQs for Construction and the Built Environment. Updated information on this, and a summary mapping of the unit to the CIC Occupational Standards, is available from Edexcel. See *Annexe D: National Occupational Standards/mapping with NVQs*.

This unit presents opportunities to demonstrate key skills in application of number, communication, information and communication technology, improving own learning and performance, problem solving and working with others. Opportunities for satisfying requirements for Wider Curriculum Mapping are summarised in *Annexe F: Wider curriculum mapping*.

Essential resources

Access to live data will give learners a real-time framework of construction costs and enrich the learning experience. A 'live' contract will provide up-to-date information and access to web-based resources will help with economic statistics.

Indicative reading for learners

Textbooks

Gruneberg S – *Construction Economics: An Introduction* (Palgrave Macmillan, 1997) ISBN 0333655419

Ive and Gruneberg – *Economics of the Modern Construction Firm* (Palgrave Macmillan, 2000) ISBN 0333919955

Ive and Gruneberg – *Economics of the Modern Construction Sector* (Palgrave Macmillan, 2000) ISBN 0333626621

Seeley I – *Building Economics* (Palgrave Macmillan, 1997) ISBN 0333638352

Key skills

Achievement of key skills is not a requirement of this qualification but it is encouraged. Suggestions of opportunities for the generation of Level 3 key skill evidence are given here. Tutors should check that learners have produced all the evidence required by part B of the key skills specifications when assessing this evidence. Learners may need to develop additional evidence elsewhere to fully meet the requirements of the key skills specifications.

Application of number Level 3	
When learners are:	They should be able to develop the following key skills evidence:
<ul style="list-style-type: none"> carrying out the preparation of a cost budget for a simple construction project from historical cost data. 	<p>N3.1 Plan an activity and get relevant information from relevant sources.</p> <p>N3.2 Use this information to carry out multi-stage calculations to do with:</p> <ul style="list-style-type: none"> a amounts or sizes b scales or proportion c handling statistics d using formulae. <p>N3.3 Interpret the results of your calculations, present your findings and justify your methods.</p>
Communication Level 3	
When learners are:	They should be able to develop the following key skills evidence:
<ul style="list-style-type: none"> identifying the basic economic principles that underpin construction projects. 	<p>C3.1a Take part in a group discussion.</p> <p>C3.1b Make a formal presentation of at least eight minutes using an image or other support material.</p> <p>C3.2 Read and synthesise information from at least two documents about the same subject.</p> <p>Each document must be a minimum of 1000 words long.</p> <p>C3.3 Write two different types of documents, each one giving different information about complex subjects.</p> <p>One document must be at least 1000 words long.</p>

Information and communication technology Level 3	
When learners are:	They should be able to develop the following key skills evidence:
<ul style="list-style-type: none"> identifying and describing the four main factors of production as applied to a typical project in the construction industry. 	<p>ICT3.1 Search for information, using different sources, and multiple search criteria in at least one case.</p> <p>ICT3.2 Enter and develop the information and derive new information.</p> <p>ICT3.3 Present combined information such as text with image, text with number, image with number.</p>
Improving own learning and performance Level 3	
When learners are:	They should be able to develop the following key skills evidence:
<ul style="list-style-type: none"> undertaking a feasibility study on a small construction project and preparing a report for the client. 	<p>LP3.1 Set targets using information from appropriate people and plan how these will be met.</p> <p>LP3.2 Take responsibility for your learning, using your plan to help meet targets and improve your performance.</p> <p>LP3.3 Review progress and establish evidence of your achievements.</p>
Problem solving Level 3	
When learners are:	They should be able to develop the following key skills evidence:
<ul style="list-style-type: none"> identifying the reasons for cost planning and describing the techniques that are available to control costs in construction. 	<p>PS3.1 Explore a problem and identify different ways of tackling it.</p> <p>PS3.2 Plan and implement at least one way of solving the problem.</p> <p>PS3.3 Check if the problem has been solved and review your approach to problem solving.</p>

Working with others Level 3	
When learners are:	They should be able to develop the following key skills evidence:
<ul style="list-style-type: none"> analysing the sources of finance available for the funding of a typical construction project. 	<p>W03.1 Plan work with others.</p> <p>W03.2 Seek to develop co-operation and check progress towards your agreed objectives.</p> <p>W03.3 Review work with others and agree ways of improving collaborative work in the future.</p>