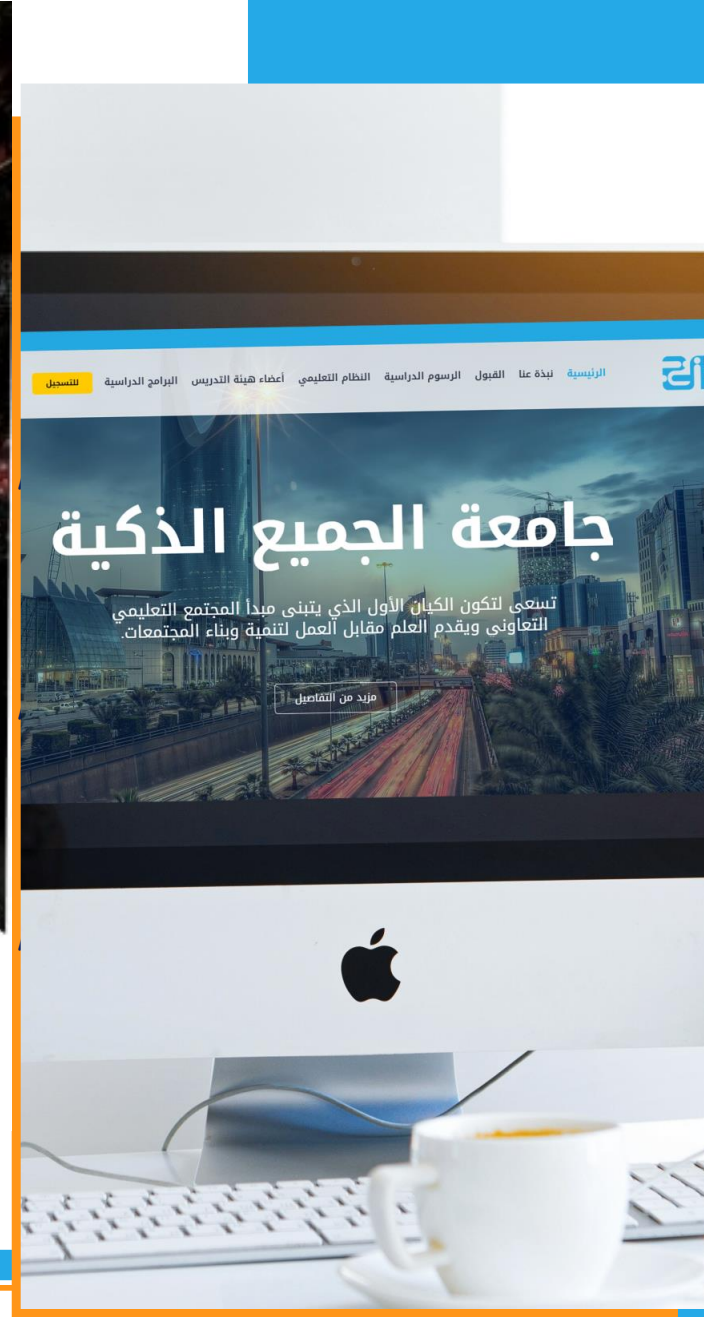




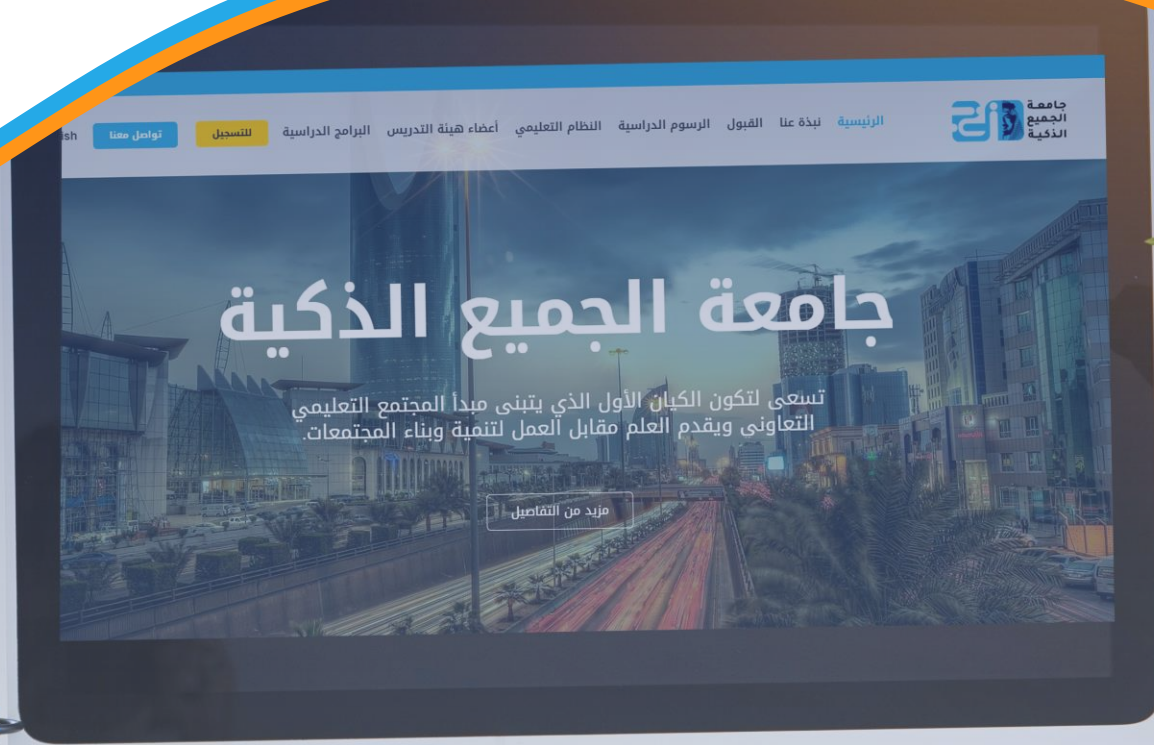
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Project Cost Management



الرئيسية نبذة عنا القبول الرسوم الدراسية النظام التعليمي أعضاء هيئة التدريس البرامج الدراسية التسجيل

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تسعى لتكون الكيان الأول الذي يتبنى مبدأ المجتمع التعليمي التعاوني ويقدم العلم مقابل العمل لتنمية وبناء المجتمعات.

مزيد من التفاصيل



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Dr.Safwa Abdalbagi

Financial management overview

Project engineers (PEs) and project managers (PMs) are not typically known as accountants. Their responsibilities as construction managers (CMs) generally revolve around the paperwork documentation performed at the jobsite to support superintendents and subcontractors in the construction of a building. And, although much of the financial management activities performed at the jobsite are not thought of as 'accounting' per se they do fall under the cost accounting umbrella,



especially when we add and financial management in the title. In addition, everything that is done at the jobsite is connected with the operations of the construction company in the home office, and it is important that jobsite managers understand why they manage finances and how management of finances relates to the operation of the home office accounting department. This course is not meant to be a repeat of standard business-school accounting textbooks or accounting courses, there are many good ones available, but the focus here is on the financial operations of the construction jobsite team and how they interface with the accounting needs of the home office.



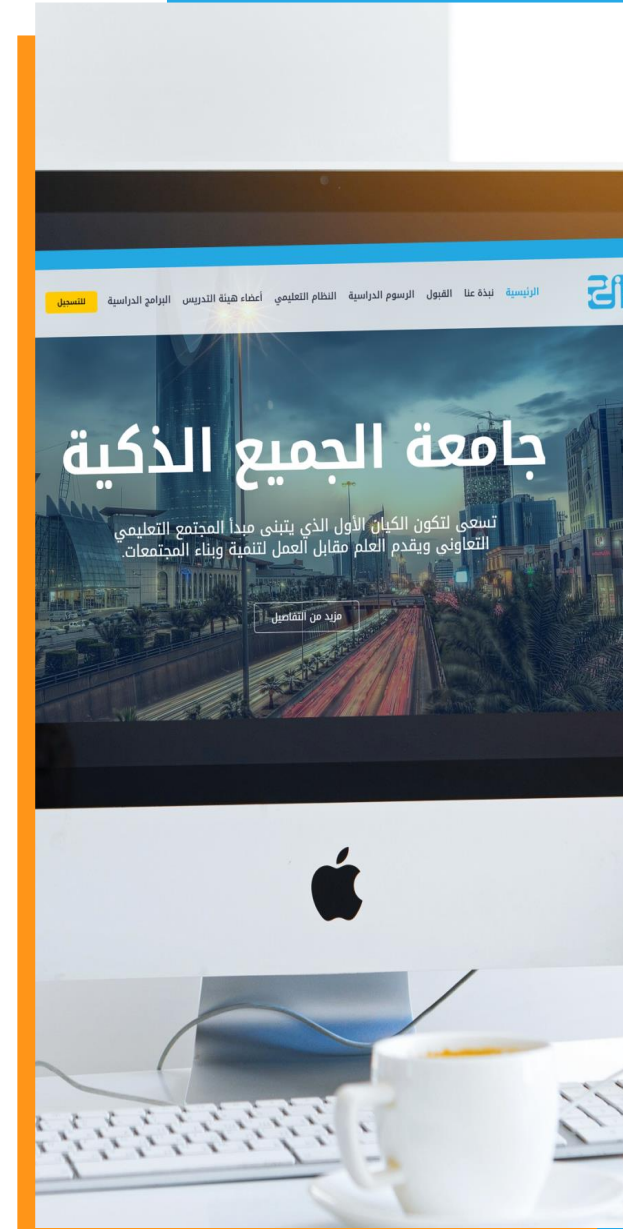
There are many detailed studies on cost accounting, including construction cost accounting.

There are also many pure studies on project management, including construction project management, but the glue that ties these two topics together is a broader study of construction financial management. Financial management includes many CM topics, beyond just cost accounting, including:

- * Estimating anticipated construction costs,
- * Cost control,



- * Cash flow projections and management,
- * Processing invoices from subcontractors and suppliers,
- * Processing pay requests to the project owner,
- * Managing change orders,
- * Financially closing out the construction project, and
- * A variety of other advanced financial management topics such as activity-based costing, lean construction techniques, time value of money, taxes and audits, and the developer's pro forma



Construction is a risky business. Construction failures are very high every year, especially with smaller start-up contractors. There are many statistics and metrics regarding how many contractors fail each year, and maybe just focusing on one year is too specific, but generally approximately 70% of the contractors in business on the first of any year will fail within seven years. Because construction is such a risky business, construction company owners or investors therefore expect a very high rate of return (ROR) on their investment. If all they could get on their out-of-pocket up-front investment in the company was 1–2%, then they would be better off putting their money in the bank where it is insured by the Federal Government and earning a guaranteed interest rate.



In order to receive an acceptable ROR, contractors need to understand and manage their accounting and financial risks and responsibilities. There are many causes or warning signs that a contractor might be in jeopardy of failing financially. These signs are important for not only the internal ownership of the company to be aware of, but also external strategic partners or stakeholders such as the contractor's bank and bonding companies, among others. The first and most common sign that financial difficulties may be boding is the lack of a good financial management plan or system. Some of the signs that a contractor may be suffering financial difficulty include:

- * Inefficient financial management system,
- * Borrowed on their credit line to the limit,
- * Poor estimating processes and/or results,

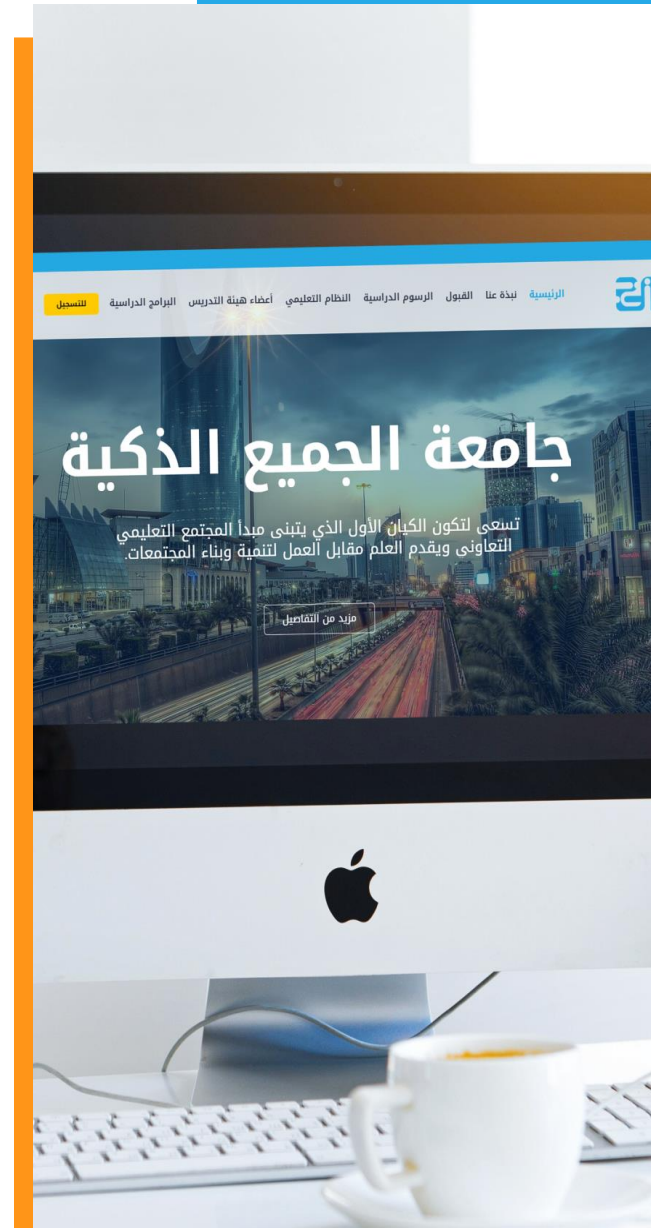


- * Poor project management systems and personnel,
- * An adequate business plan is not in place,
- * Internal and external communication problems, among others.

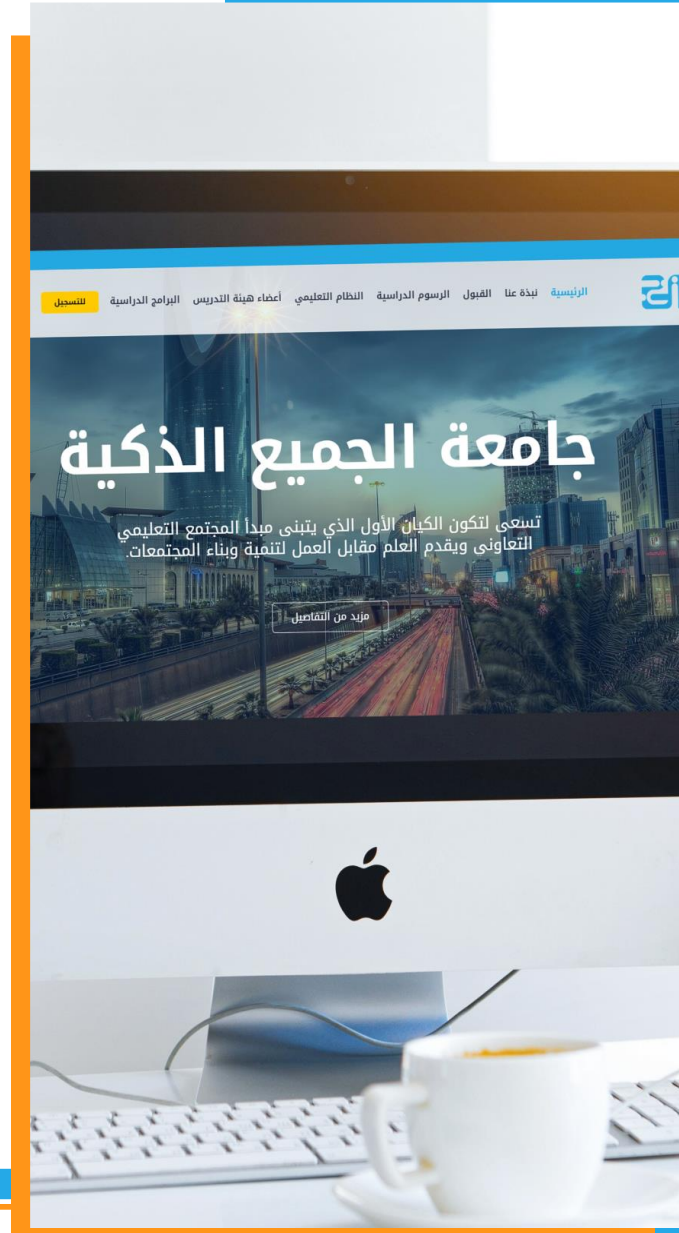
Often contractors think an increase in volume or total revenue will solve all of their financial problems.

This is not necessarily the best solution. There are many reasons a contractor will choose to pursue construction work or feel they have the resources to do so. Some of the reasons they may choose to either bid or propose on a new construction project, or not to bid, include the following:

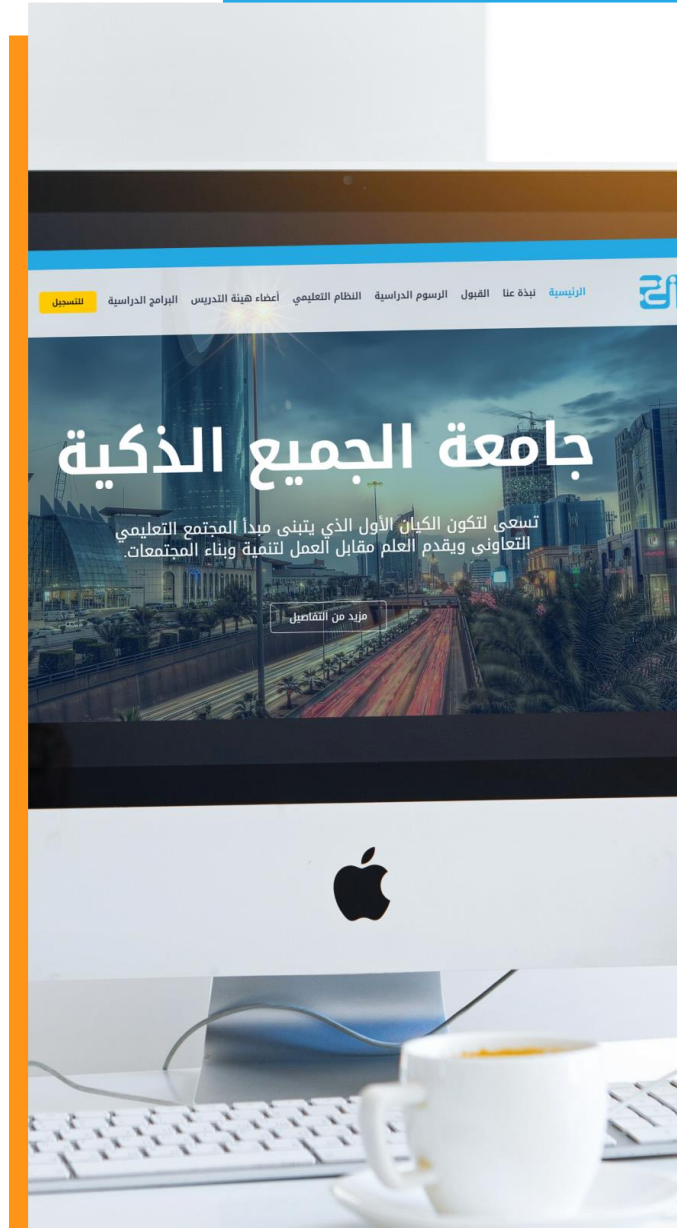
- Although contractors are not expected to provide the construction loan, as will be discussed
- later, they still must have a sufficient positive cash flow, especially early in the project;



- * The contractor has sufficient bonding capacity which is especially important on a public bid project;
- * Qualified and available employees are already on the payroll and ready to start a new project;
- * The contractor has the necessary construction equipment, or immediate access to equipment;
- * The home office overhead is staffed adequately with specialists to support the project team including estimators, schedulers, and cost accountants;



- The contractor's answers to all of these issues affecting their decision to pursue a project also
- The contractor already has a positive history with the client, or is interested in a future relationship with the client, and/or they have a positive history with the architect or engineer, or
- are interested in a future relationship with those firms;
- This type of work is already a specialty of the contractor; and/or
- The contractor could use additional backlog.
- impact the company's finances and approach to accounting both in the home office and at the jobsite

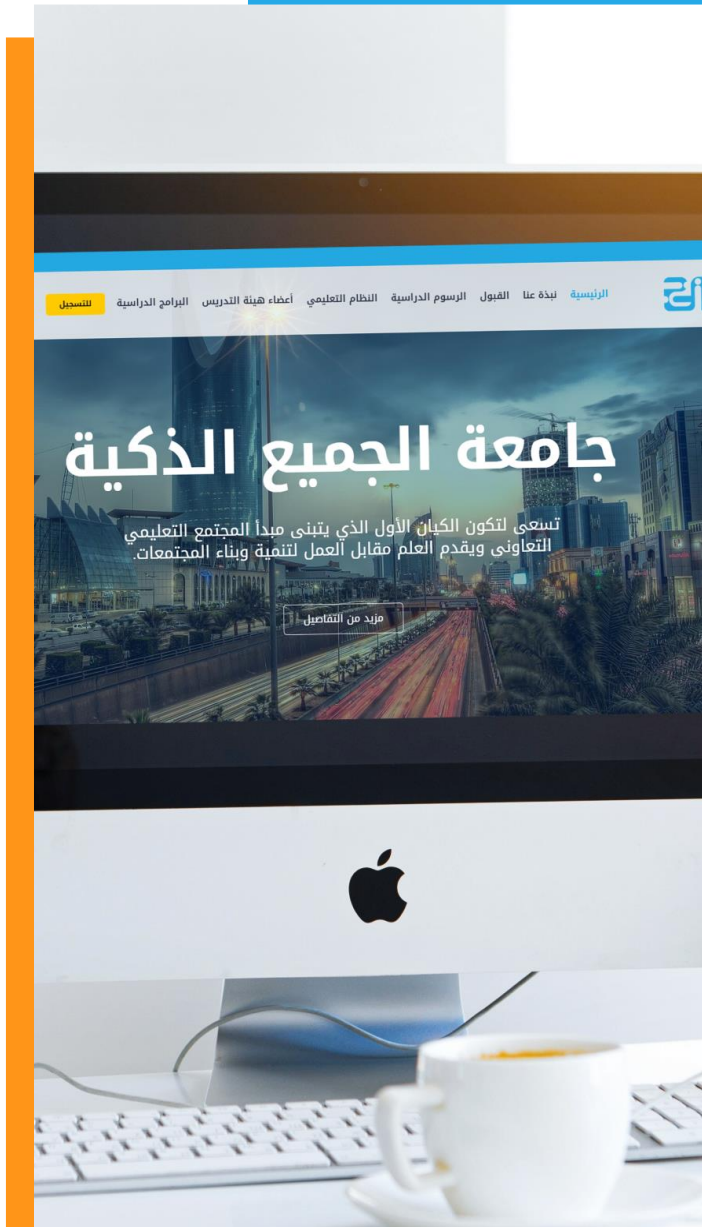


Accounting purposes

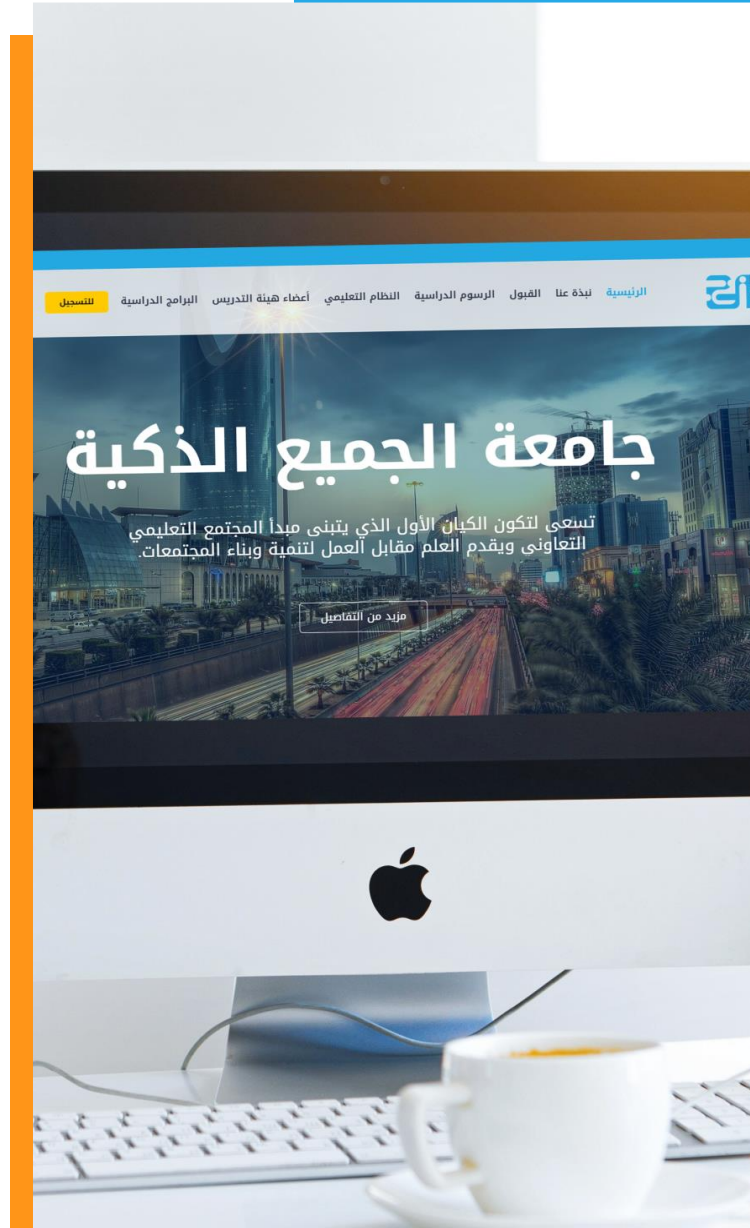
There are several reasons a contractor should establish a formal cost accounting system, both at the home office and at the jobsite.

Four of the more prominent ones include:

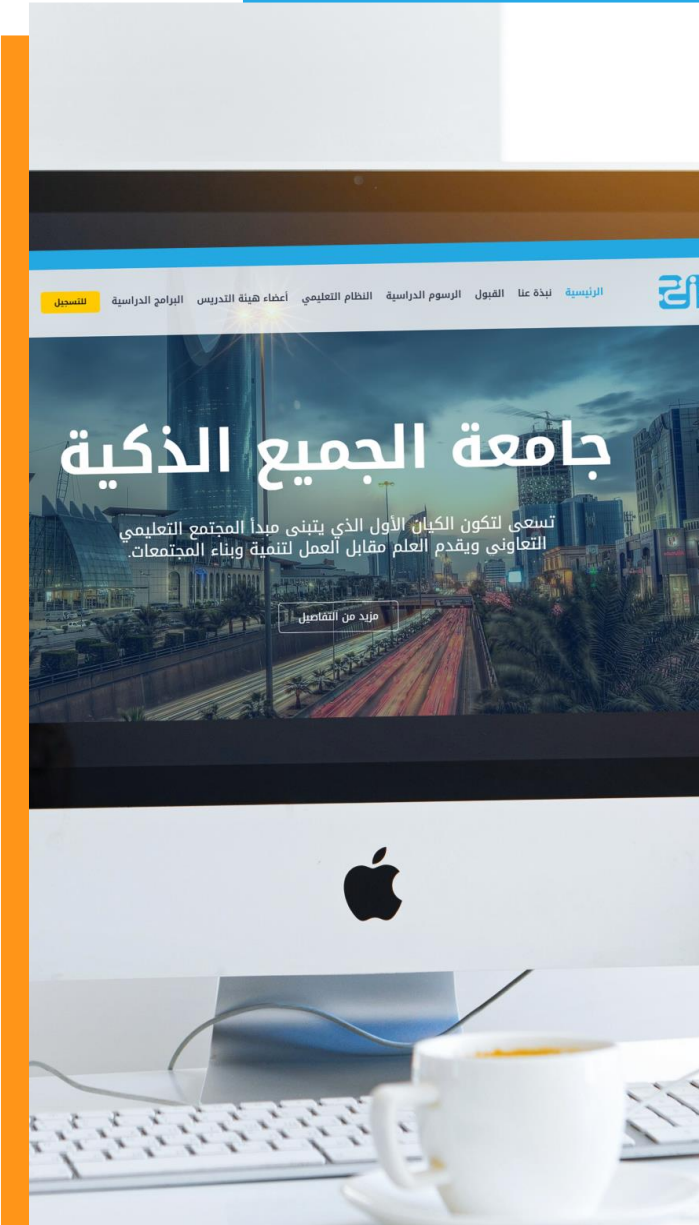
- * Prepare financial statements for internal and external use;
- * Process cash-in (revenue) and cash-out (expenditures);
- * Prepare and file taxes as required by the Federal Government as well as some state and local jurisdictions;
- * Manage the internal financial affairs of the company:



- * Are we making money?
- * Are we returning an adequate return on equity (ROE) to our investors?
 - Are we focusing on the proper type of work?
 - Is our company operating in the proper market?
- * How are our people performing?



Consistency is important for cost accounting and financial management for contractors. Their financial reporting tools must be consistent from year to year, from project to project, and from month to month within each project. In order to report costs and projected profits consistently, contractors must have reliable financial management systems in place, particularly as it relates to cost control. Cost control in construction is an important topic and is discussed in detail in several chapters of this course. It is important to distinguish between cost reporting and cost control, especially as it relates to jobsite cost accounting.

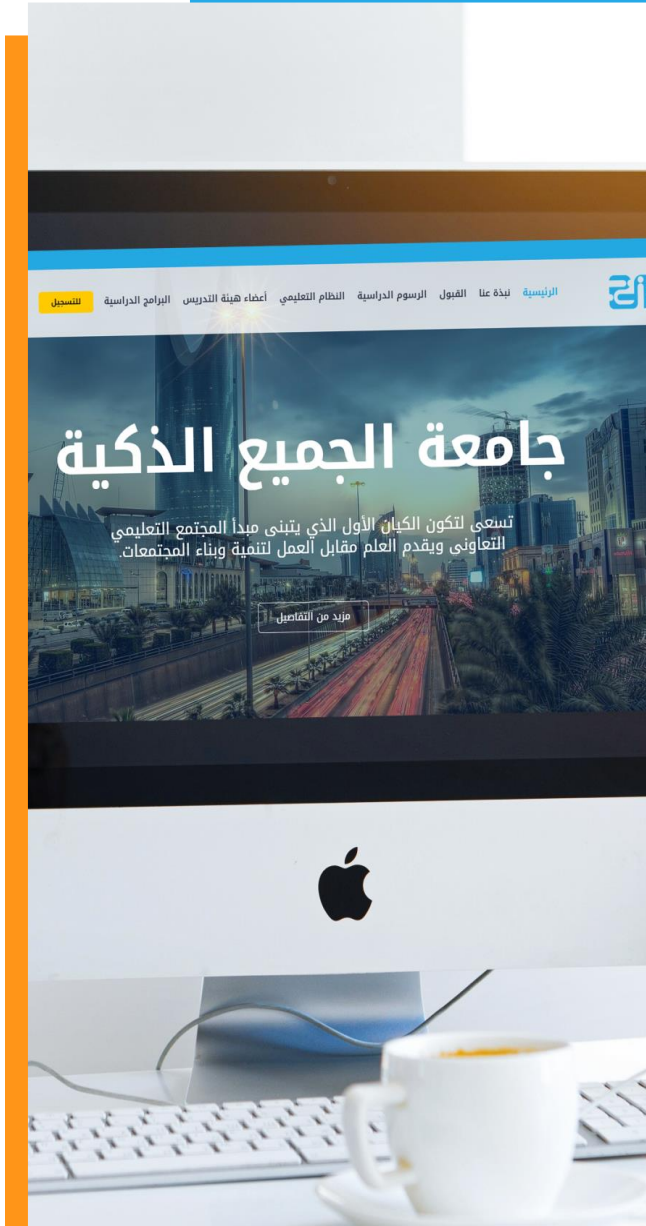


The foremost question to ask is: Can the jobsite team really control costs or are they simply just reporting costs? And can they really 'control' the operations of the construction craftsmen in the field, or are they doing their best to 'manage' the process so that the craftsmen can achieve the estimate?

Most construction management and cost accounting textbooks focus their cost control discussion simply on cost reporting. But if timely modifications and corrections are not made to the processes, the jobsite management team is not properly managing costs and cannot achieve the bottom-line fee, let alone improve it. To have an effective cost control system the construction project team must follow some basic rules:

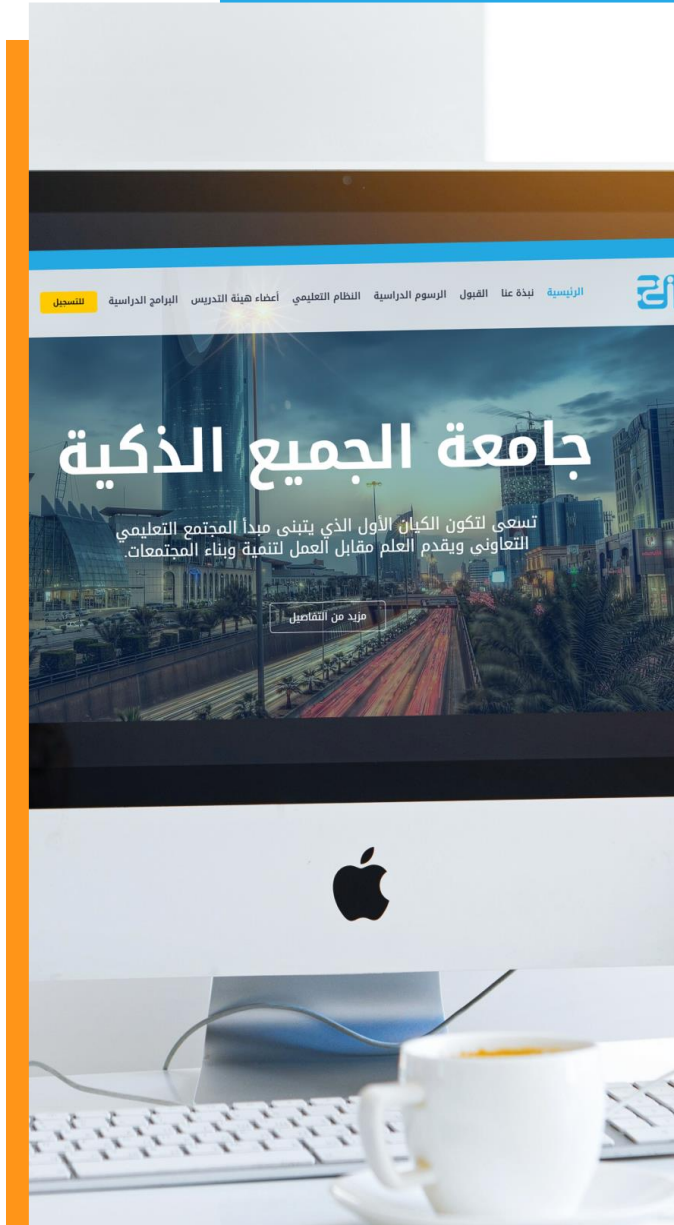


- * Cost reporting data has to be timely and accurate. If actual cost data was not input to the accounting system accurately, then the results will be of no value to the jobsite team.
 - Eighty percent of the costs and risk on a project fall within 20% of the construction activities – this is known as the Pareto 80-20 rule.
 - The jobsite team should focus on the riskiest activities.
- The 80-20 rule is expanded on throughout this discussion of financial management.



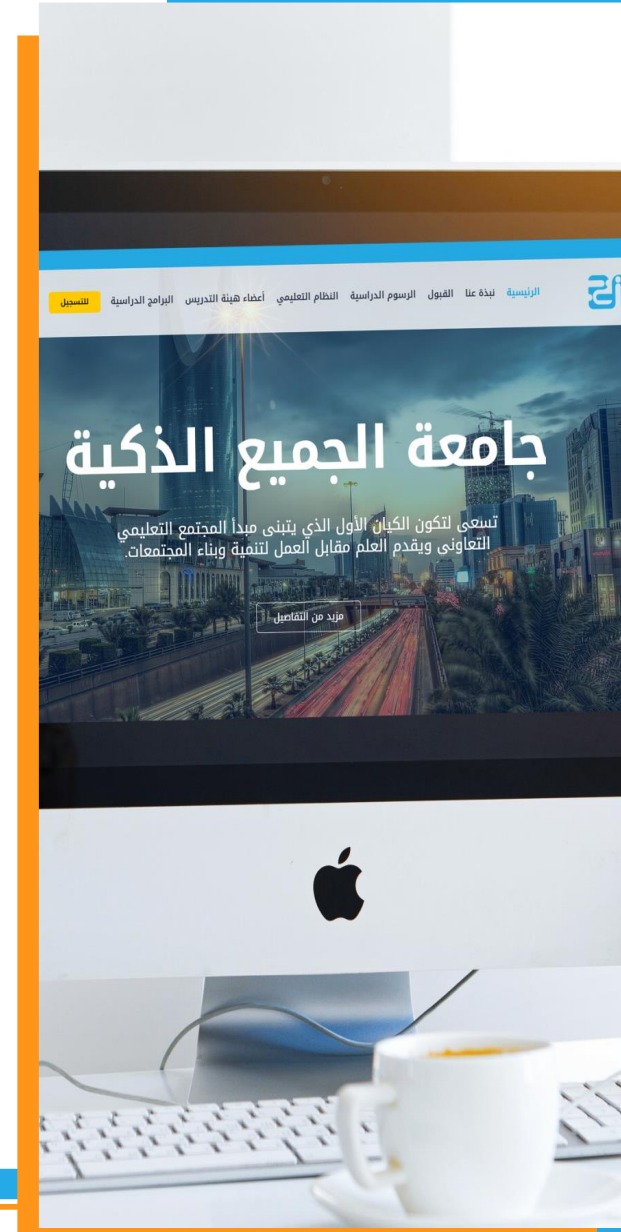
- The original estimate and schedule should be shared with the contractor's field supervision including superintendents and foremen. In order for them to plan and implement the work they need to have been given the complete picture.

There are many bad examples of construction cost accounting, especially as it relates to cost control. We will be sharing some of these throughout the text. There are a few good ones sprinkled in as well. Here are a couple of examples to get you started:



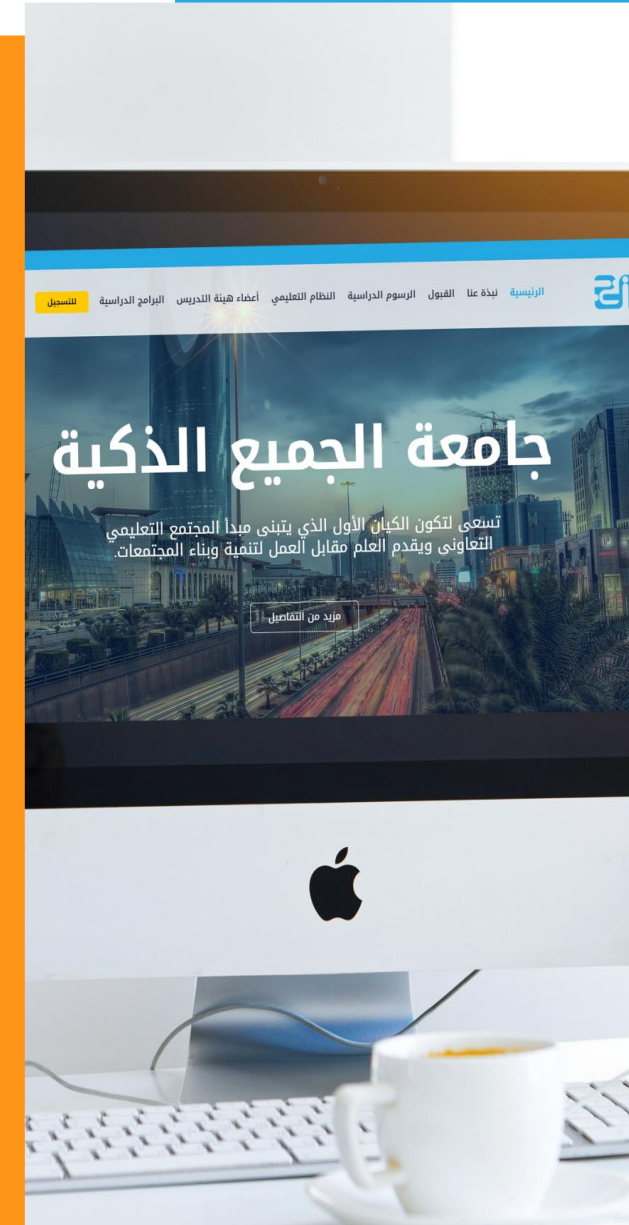
Example One:

This very large international contractor was constructing power plants in the 1980s that cost billions of dollars. There were 1,000 engineers in the office producing design for the 5,000 craftsmen in the field. Design changes and building code changes were occurring so often that it was easy to lose track of the original or current budget. Only two years out of college, this 24-year-old cost engineer was promoted to chief estimator on a \$5 billion construction project, and although completely unqualified for the position, he gladly accepted it. At that time, the way the contractor forecasted next year's expenditures was to take last year's expenditures, regardless of where they were spent, and simply add 10% to it. It is no wonder these projects cost so much money. The proper way to create a cost forecast alter in this book.



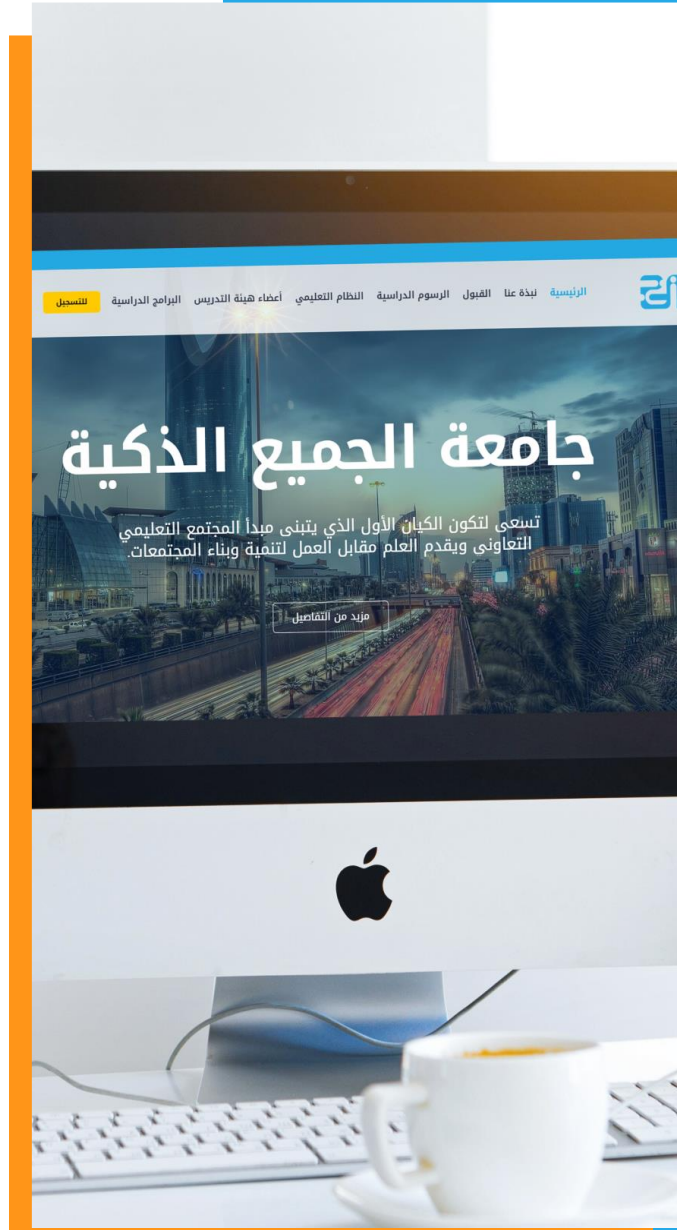
Example Two:

In April, six months after this large aerospace manufacturing facility was successfully completed, the owner of the drywall subcontractor called the general contractor's (GC) project manager and indicated that he was owed an extra \$1 million, even though his contract had been closed out with proper lien releases. The subcontractor could not show why he was owed money other than it was tax time and he was preparing his books and realized the company lost money the previous year and this had been their largest project. He had not been using independent job numbers, let alone cost codes. Contract close-out and lien management are important financial responsibilities of the project team and will be covered in detail in this book.



Example Three:

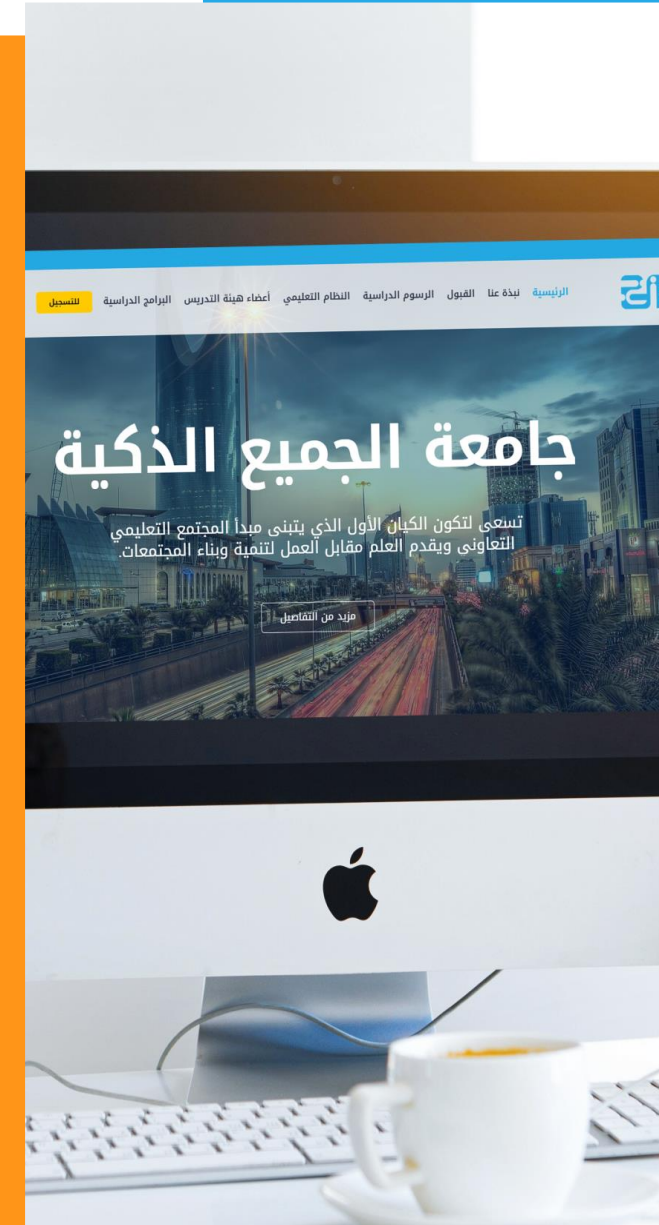
This superintendent wanted to teach the home office staff estimator a lesson on this out-of-town electronics facility construction project. He felt the estimator never included enough money for safety, so he charged \$50,000 of concrete formwork to the safety cost code to make his point and completely blew the safety cost code out of the water. The proper way to create historical databases will be explained in several chapters in this book.



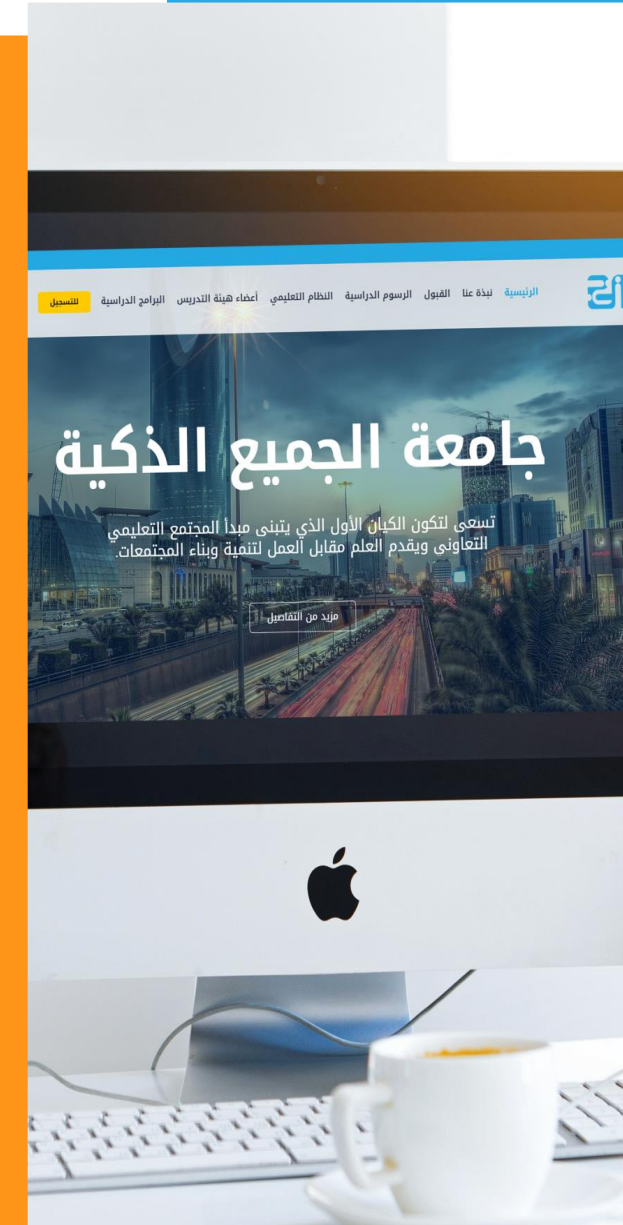
Chapter 01

Introduction to the built environment

There are three major participants in all built environment projects. 'to construction management,' will explain how these different firms might arrange themselves and contract with each other to deliver construction projects on different occasions. Every project has: clients, which will also be referred to as project owners or simply owners; designers, including architects and many different types of engineers; and construction managers and/or general contractors.



There are also many consultants and subcontractors which will contract through or report to these three primary participants. One type of consultant that connects on many levels of cost accounting is the certified public accountant who may help all built environment (BE) participants prepare their books, especially for taxes and audits.



Construction types/industry sectors

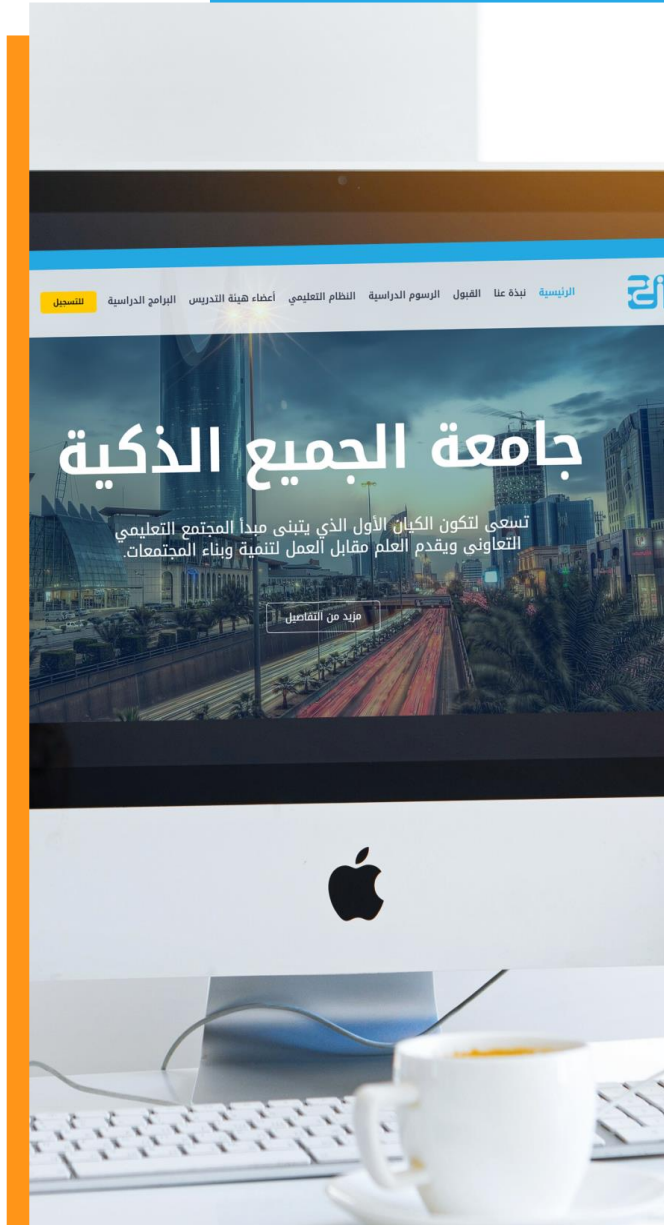
Construction projects can be categorized into different sectors along the lines of type of building or how the facility is utilized. The following are examples of some broad construction industry sectors:

- * Commercial, which includes retail, office, schools, fire stations, churches, and others.

Entertainment and hospitality are subsets of commercial and includes movie theaters, bowling alleys, and restaurants.

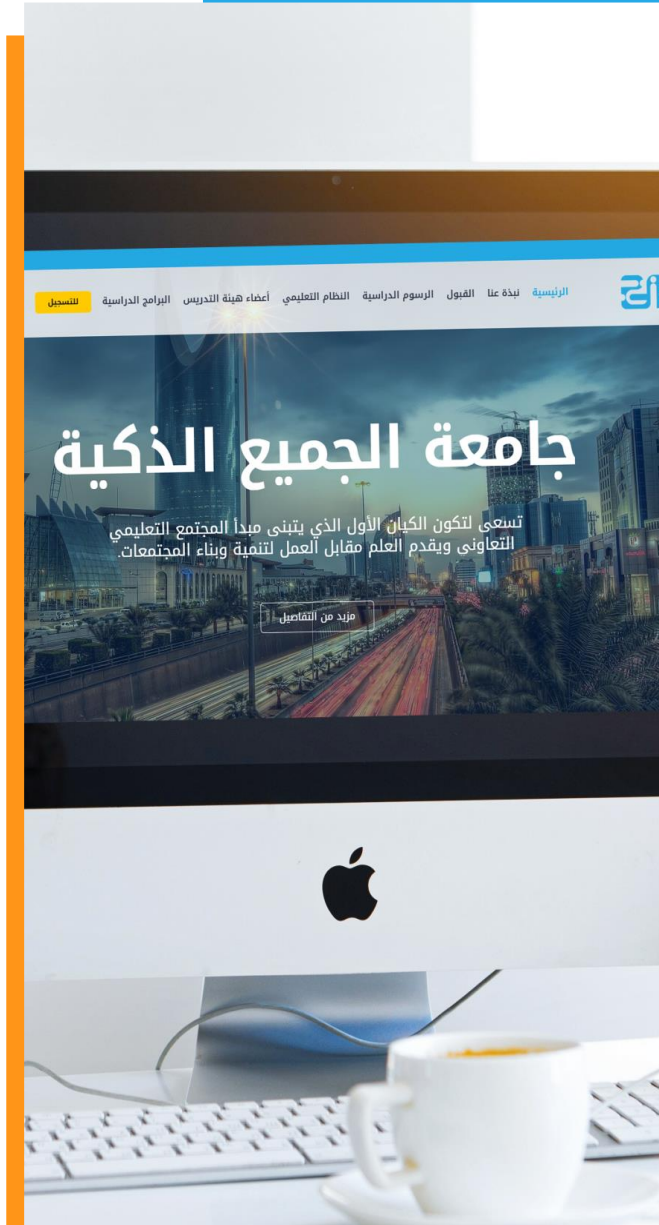
- * Residential including individual spec home and custom home construction. Residential also includes apartments, condominiums, senior housing, and hotels – especially if wood-framed as they include materials and methods similar to apartments.

- * Heavy civil projects include bridges, roads, and utility projects.

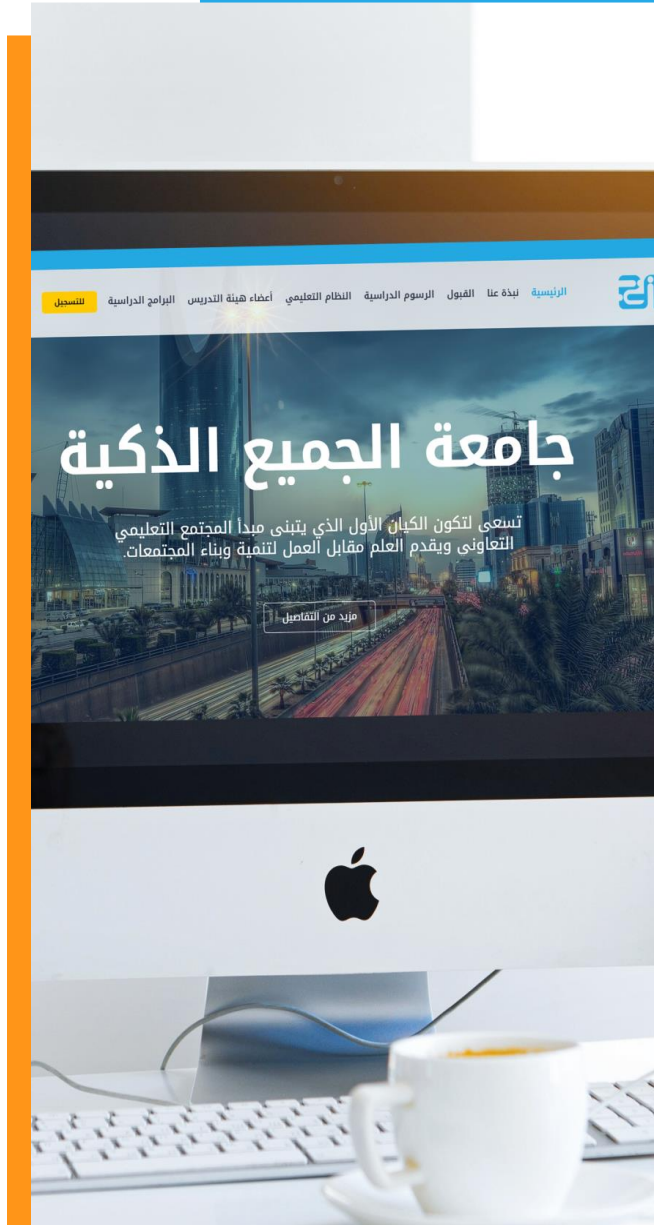


- * Industrial projects are very specialized including power plants, utility treatment plants, refineries, and others.
- * Hybrids or mixed-use developments (MXD) will include two or three different uses, such as a downtown hi-rise hotel with underground parking, a restaurant, retail space, and luxury condominiums on the top floors. Many construction companies are specialized in one of these industries, in that they classify themselves as commercial, residential, civil, or industrial contractors. Some contractors may overlap into a second industry or cover two different industries.

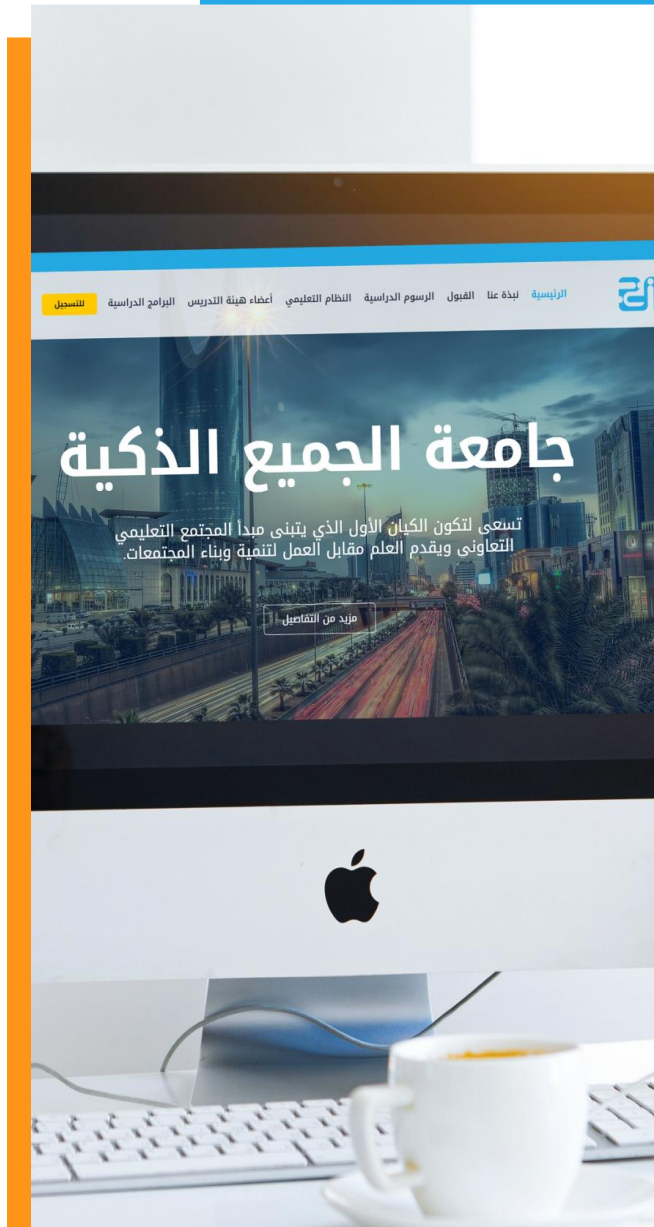
For example:



- * Commercial contractors may also build hi-rise residential apartments or hotels, as the materials and processes are similar to constructing an office building.
- * Some commercial contractors may also have a high-end custom home division.
- * Commercial contractors may also have a real estate development arm, and therefore contract work internally.



- * Some speculative residential home builders also build custom homes and custom home builders may build spec homes.
- * Larger home builders may also have real estate development arms and develop and design and build large tracts of homes on speculation for sale.
- * Some larger residential contractors may also construct smaller commercial projects.

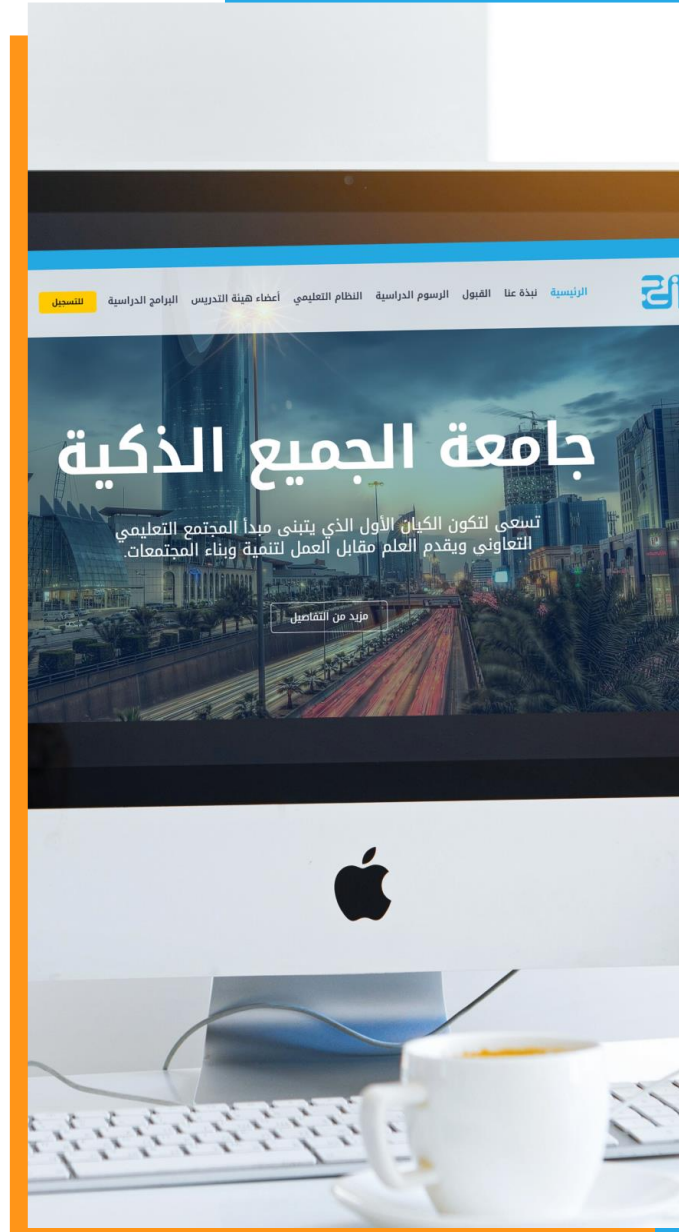


* Civil construction companies may also have a commercial division, but very few civil contractors would build residential projects.

* Specialty contractors are subcontractors which specialize in one or more facet of work, such as a roofing subcontractor or a landscape subcontractor.

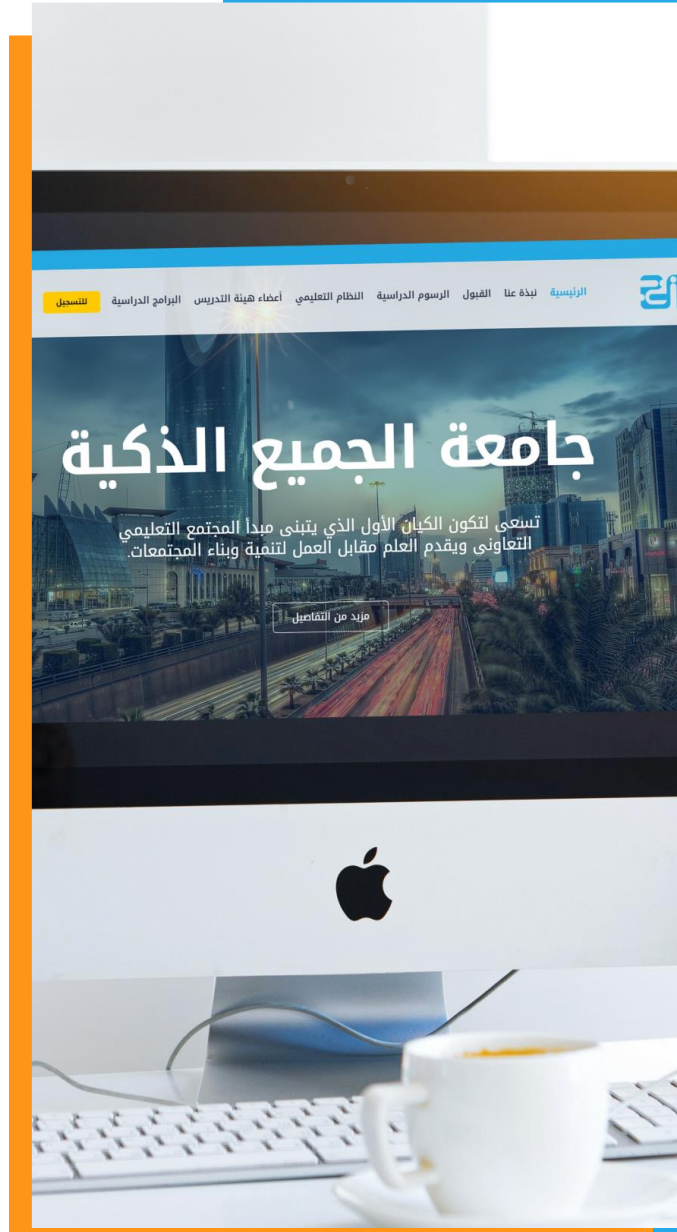
Specialty contractors work within all of these sectors and may specialize in one or more sector similar to general contractors.

Many of these sectors, and/or industry types, each have potentially different cost accounting and financial management applications. Those differences will be highlighted throughout this book.



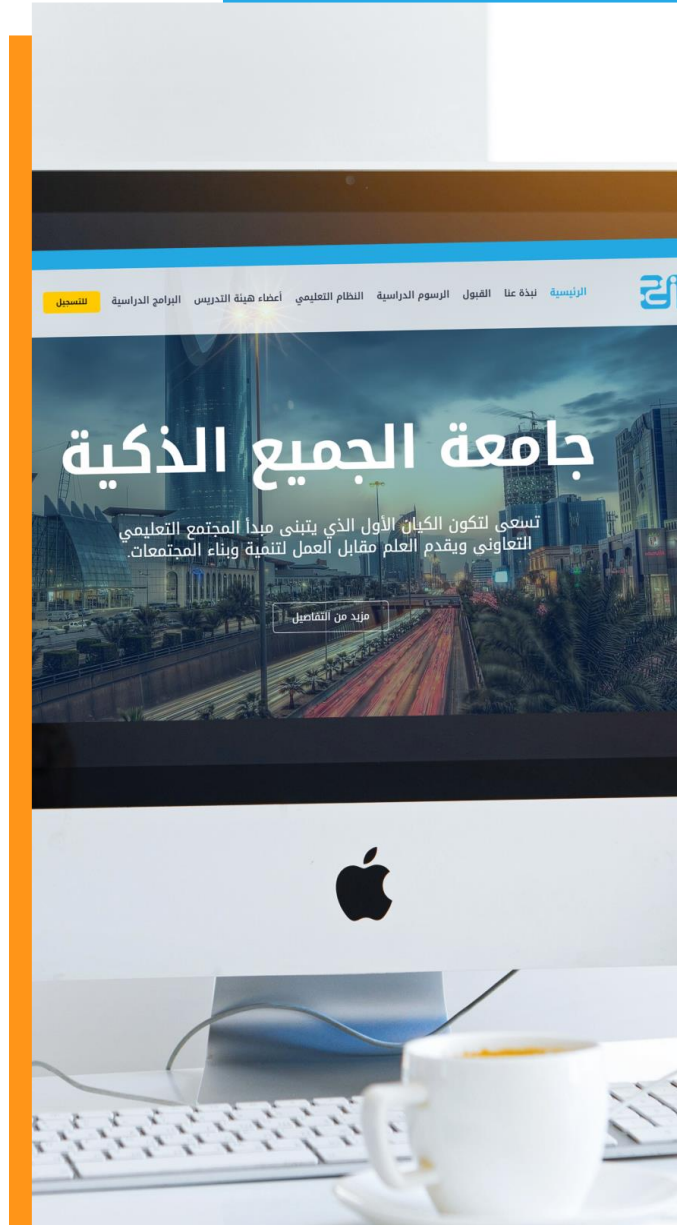
Accounting managers

Chapter 3, 'Introduction to construction management,' will expand on the various BE firms and construction-company personnel. Roles of these people are defined throughout the book and clarify whether they are primarily located in the home office or at the jobsite. As it relates to cost accounting and financial management, the home office team includes the chief executive officer (CEO), the chief financial officer (CFO), and his or her supporting accounting department. Some of the accounting personnel may include positions such as the controller comptroller



bookkeeper, payroll clerk, accounts payable clerk, accounts receivable clerk, and others.

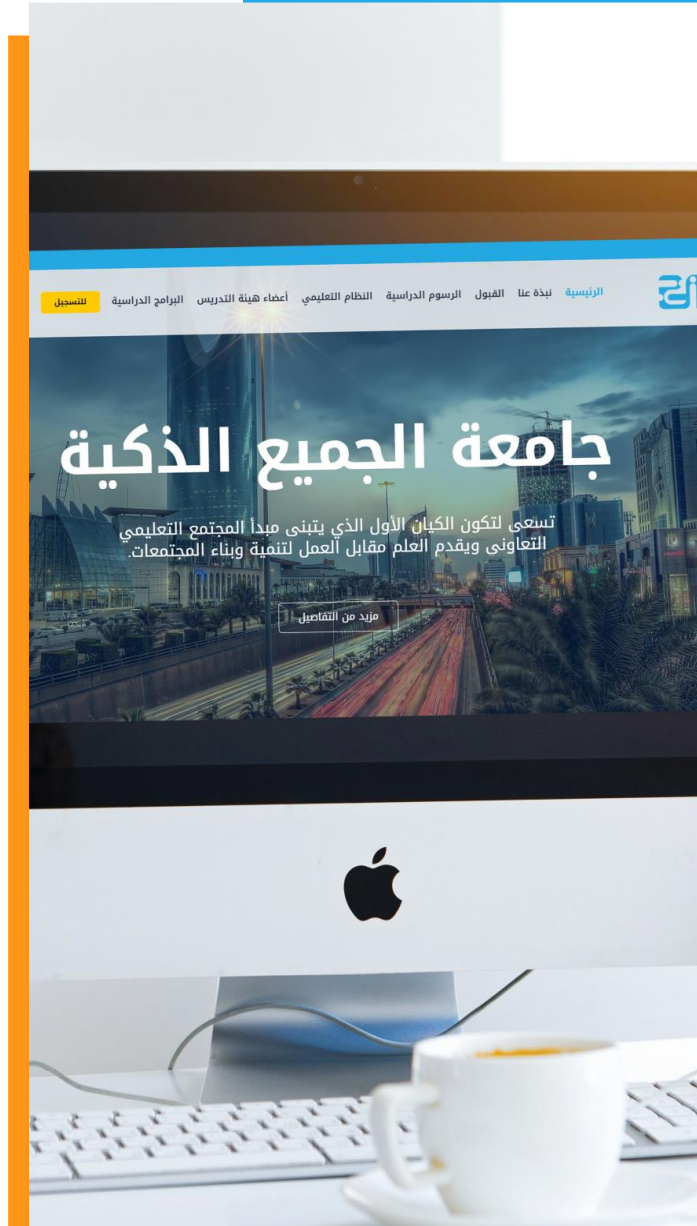
The jobsite team is headed up by the project manager and the site superintendent. Foremen and project engineers, who may also be known as the jobsite cost accountant or cost engineer, work for the superintendent and PM respectively. Contractual terms will have an impact as to who is located at the home office or the field and potentially what their titles might be on any particular project.



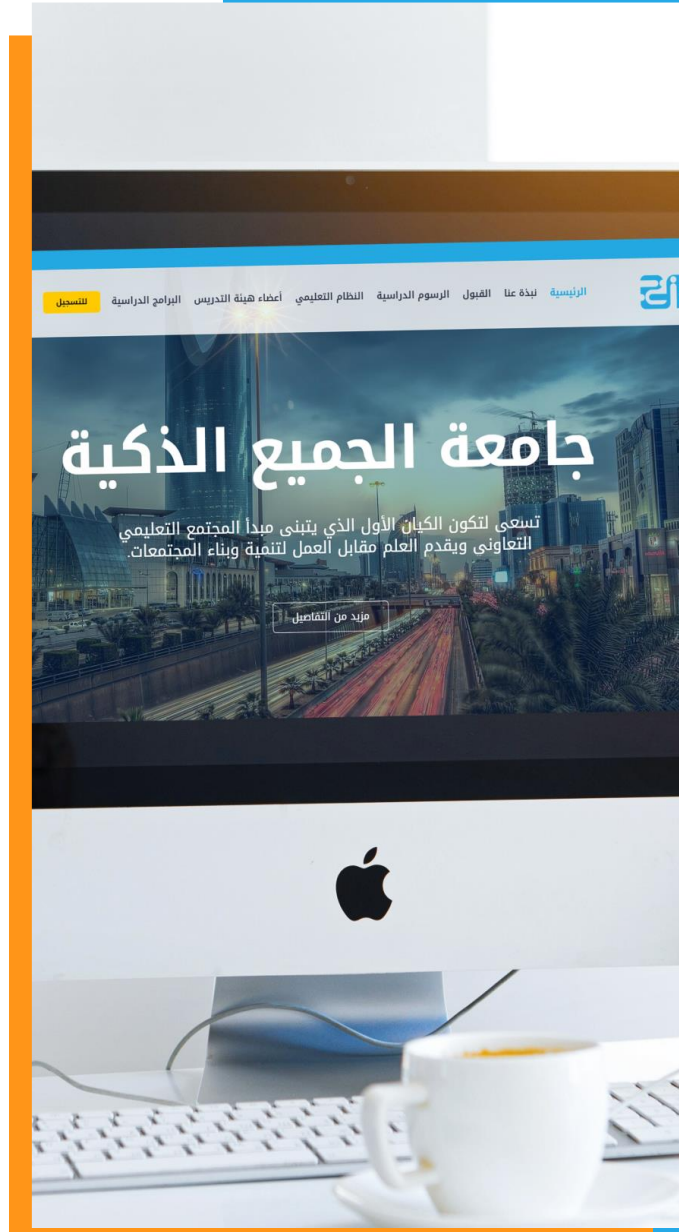
Accounting cycle

The cost accounting cycle includes many different steps and functions which overlap and interplay with phases of construction and cost control steps; all of these will be discussed in subsequent chapters. See Figure 1.1. Note that there are many dependencies between the home office accounting operation and the cost engineering conducted at the jobsite. Some of the cost accounting steps, which form the basis for the following chapters, include:

- * Estimate database maintenance;
- * Estimate preparation;
- Construction award and assignment of a job number by the accounting department;
- Buyout of subcontractors and estimate adjustment and assignment of cost codes;



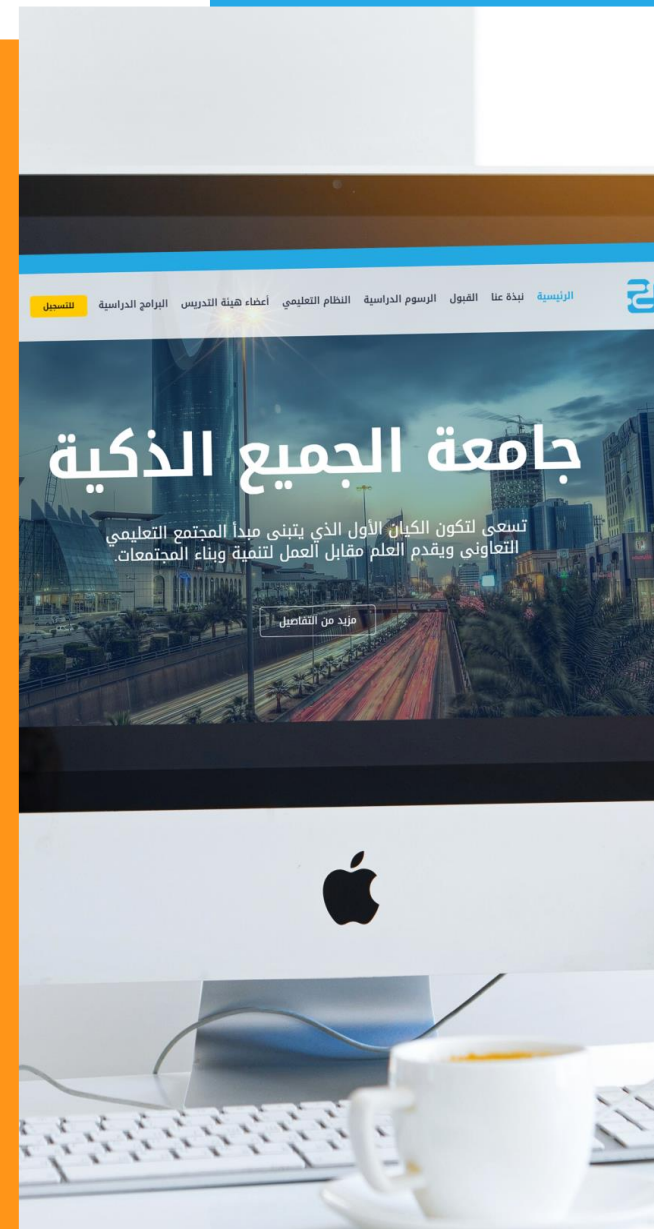
- * Pay request process including payments received from the client and payments made to subcontractors and suppliers;
- * Incorporation of change orders into the project plan and the cost control system;
- * Modifications to the cost control system if there are problems;
- * Home office reporting by the PM including monthly fee forecasts;
- * Financial close-out, including lien releases and retention; and
- * As-built estimate and database update.



Thank
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Chapter 01

Introduction

