



مدیریت کسب و کار در صنعت ساخت (Construction Business Management)

ماژول ۲: مدیریت کسب و کار

بخش چهارم: مدیریت مالی

ارائه دهنده:

سید محمدرضا علوی پور

(PhD, PMP, CMIT)

CMAA Authorized Trainer

دانشگاه Illinois Tech آمریکا

What we will learn?

- ☐ Accounting versus Financial Management
- ☐ Accounting Systems
- ☐ Financial Statements
- ☐ Financial Management
- ☐ Financial Analysis
- ☐ Using Financial Data
- ☐ Measuring Financial Risk
- ☐ Financial Distress – Turnaround Management
- ☐ Banking and Finance
- ☐ Exercises

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Accounting versus Financial Management

- ☐ Accounting at its **most basic level** may be characterized as the capturing of **transactions**.
- ☐ These transactions are **sources of information**.
- ☐ They build a **financial picture** of a firm.
- ☐ If the accounting of the transactions is **faulty** or **inconsistent**, a **false or distorted picture** emerges.

Tracking revenue and expenses is accounting. Acting on the information is financial management.

❑ Your chief financial officer (CFO) will typically be, or supervise, a certified public accountant (CPA), who offers **three levels of service** relating to financial statements:

1. Audit.

- ❖ A thorough, in-depth **examination** of financial statements.
- ❖ **Detailed testing** is part of the process.
- ❖ Source documents are **inspected** for **errors** and for **fraud**.
- ❖ Material misstatements are vigilantly sought and **discovered** if they exist.

- ❑ Your chief financial officer (CFO) will typically be, or supervise, a certified public accountant (CPA), who offers **three levels of service** relating to financial statements:

2. Review.

- ❖ **Some**, but **not extensive inspection** of the financial statements will be done.
- ❖ **Testing** is done on a macro, or global, basis.
- ❖ The **cost** to the contractor is **less than** for the audited report.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

- ❑ Your chief financial officer (CFO) will typically be, or supervise, a certified public accountant (CPA), who offers **three levels of service** relating to financial statements:

3. Compile.

- ❖ This is the **least expensive** and **least assured** function.
- ❖ An inspection is **not executed**.
- ❖ The CPA uses the **company's books** and **records** to put together the financial statements.
- ❖ This type of examination is **not for setting value** on a construction firm in any way.
- ❖ It should **not be one that gives confidence** or upon which **major decisions** are based, but does give an overall picture.

Accounting and information management

❑ While most contractors and senior construction executives have a technical background and **few have formal accounting education or training**, they are **not exempt** from **responsibility** for selecting, overseeing, and managing data and accounting operations of the organization.

Cash Basis versus Accrual Basis Accounting

The net profit number may be positive or negative. It can be real (cash basis), which means it is immediately felt in the bank account.

It can be theoretical (accrual basis), which means it will impact when checks have to be cut at some time in the future. Either method indicates something very close to the truth.

For those of you without a financial background, let me explain the difference between cash basis and accrual basis.

Cash Basis: This accounting method recognizes income when it is received and expenses when they are paid. You may have earned the income in one year, but the client paid you in the next. Therefore, in that case, you'd enter the expenses to do the work in the year you actually paid for them, but you would not enter the payment from the client until the next year. Put simply, you record income when you get it, and record expenses when you pay them.

Accrual Basis: This accounting method recognizes income when it is earned (not when paid) and expenses when they are due (not when paid).

Each method has its advantages. Certain rules and exceptions to those rules apply and affect how you submit your tax forms. This is only a brief description of the concepts. Contact your accounting professional for expert advice about which method to use and how to do your accounting correctly based on that method.

Accounting and information management

❑ They **obviously are not responsible** for completing the accounting work themselves but must

1. Use basic logic and
2. Investigative reasoning

to determine the **viability** and **appropriateness** of results that are generated by the accounting systems and accounting personnel.

❖ A **captain** of a battle ship **may not know how to operate the engine** systems on the ship,

but **he is certainly responsible** to see that

1. They function properly,
2. The people who operate them know what they are doing, and
3. The results are appropriate.

Financial management

❑ **Financial management** is all about

1. analyzing accounting information and then
2. acting.

❑ Senior management may make decisions about projects, clients, markets, work type, and employees **based on what this analysis** tells them.

❑ It is important to note that the **financial management office** is not the profit center, but the place where **decisions are made** about how to generate profit.

❑ A **negative profit** makes us **change**

1. Our work acquisition and
2. The building of the project,

but it should **not change** the reporting or management functions.

Who is responsible?

The primary responsibility for accurate accounting information always remains with the top management of the company.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Accounting Systems

Primary accounting system

- ☐ The **primary accounting system** is known as a **general ledger system**, which is used by an **accountant** to generate financial statements.
- ☐ The basic accounts within the general ledger system are
 1. Assets
 2. Liabilities
 3. Owners' Equity
 4. Revenue
 5. Expenses

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Primary accounting system

❑ **Secondary or subsidiary systems** are used to generate management reports, such as

1. Accounts receivable,
2. Accounts payable, or
3. Project cost reports.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Primary accounting system

FIGURE 4.1 Example of a Chart of Accounts for a Construction Company

Chart of Accounts	
Code	Accounting Category
100	Assets
110	Cash
112	Cash on Hand
114	Cash in Bank
120	Short-Term Investments
130	Receivables
132	Receivables from Current Contracts
134	Retention
136	Receivables from Sale of Vehicles and Equipment
140	Inventory
150	Construction Work in Progress

(continued)

Primary accounting system

Code	Accounting Category
154	Direct Construction Cost
156	Indirect Construction Cost
158	Warranty Cost
160	Other Current Assets
170	Investments
180	Property, Plant, and Equipment
182	Buildings and Land
184	Construction Equipment
186	Administrative Vehicles
188	Office Equipment
190	Accumulated Depreciation
200	Liabilities and Owners' Equity
210	Accounts Payable
212	Accounts Payable to Subcontractors
214	Accounts Payable to Suppliers
216	Accounts Payable on Vehicles and Equipment
220	Notes Payable
230	Other Current Liabilities
240	Long-Term Liabilities Payable
250	Owners' Equity
300	Revenues and Cost of Sales
310	Revenues
320	Cost of Sales
400	Financing Expense
500	Marketing Expense
600	General and Administrative Expense
610	Salaries
620	Office Expense
630	Computer Expense
640	Professional Services
650	Insurance
660	Taxes
662	Payroll Taxes
664	FICA Taxes
666	Income Taxes
668	Property Taxes
670	Depreciation Expense
700	Other

Primary accounting system – Disputed invoices

- ❑ The **management** of data concerning liabilities and the **accurate recording** of accounts payable is a **prerequisite** to accurate **financial information**.
- ❑ **Disputed invoices** are common in any business whereby a supplier or subcontractor invoices the company for an amount that the company **disagrees with**.
 - ❖ **Many organizations** have excellent systems to **assure** that disputed invoices **do not get paid**,
but the same systems sometimes **prevent** the liability from **being recorded**.

Primary accounting system – Disputed invoices

❑ The proper way to record accounts payable are in the **month they were incurred** and **not when they are dated or received**.

❖ This includes **disputed payables**.

We have observed \$100,000 invoices left off accounts payable because they were returned to the sender with a \$1,000 disputed amount with neither the disputed \$1,000 nor the undisputed \$99,000 recorded as a payable.

Some companies **inadvertently do this regularly**, which can result in **substantial distortions** in accounts payable.

Primary accounting system – Disputed invoices

There is enough potential for error in data collection without building it into the system.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Primary accounting system – recording liabilities

❑ The **appropriate way** to record invoices as accounts payable is **upon receipt**.

❖ **Disputed invoices** can be recorded as **“not approved for payment”**

but **must be captured** by the system as **potential liabilities** before

they are **passed** around the company, and the accounting department loses track and control of the information.

❑ It is **inappropriate** to work **under** the **assumption** that invoices are **not liabilities until approved**.

❖ If a disputed invoice is **disapproved**, or substantially **reduced** at a later date,

it is **prudent** and **conservative** to use a reversing entry rather than not record every disputed invoice.

It is a matter of control and accuracy.

Secondary accounting system

- ❑ One type of secondary accounting system is a **project cost ledger** system, which is used to account for financial data relative to **individual construction projects**.
- ❑ Both project costs and revenues are tracked in this system to allow company managers to **monitor** the **financial status** of individual projects.
- ❑ A typical chart of accounts for a **project cost ledger** system is shown in Figure 4.2.
- ❑ Another secondary accounting system used by many construction companies is an equipment cost ledger, which is used to
determine the **hourly rates** to be charged to **individual projects**
for the use of **company-owned equipment**.

Secondary accounting system

Project Cost Control Chart of Accounts	
Code	Description
01100	Project Supervision
01200	Temporary Facilities
01300	Temporary Utilities
01400	Project Support Equipment
02100	Site-Work Demolition
02200	Earthwork
02300	Utility Line Construction
02400	Paving and Surfacing
02500	Landscaping
03100	Cast-in-Place Concrete
03200	Precast Concrete
03300	Tilt-up Concrete Panels
04100	Brick Masonry
04200	Concrete Unit Masonry
04300	Stonework
05100	Structural Steel
05200	Metal Joists
05300	Metal Decking
05400	Miscellaneous Metal
06100	Rough Carpentry
06200	Finish Carpentry
06300	Casework
06400	Stair Work
07100	Waterproofing
07200	Insulation
07300	Fire Proofing
07400	Roofing
08100	Metal Doors and Frames
08200	Wood Doors
08300	Windows
09100	Drywall
09200	Tile
09300	Floor Covering
09400	Painting
10100	Partitions
10200	Toilet and Bath Accessories
11000	Appliances
14000	Elevators
15000	Mechanical
16000	Electrical

FIGURE 4.2 Example of a Chart of Accounts for a Project Cost Ledger

Secondary accounting system

- ❑ An example of a project cost coding system, using the chart of accounts shown in Figure 4.2, is

(project number) * (chart of accounts code) * (element of cost)

- ❑ Here the **project number** is assigned by the construction firm, the **chart of accounts code** comes from Figure 4.2, and the **element of cost** is the type of cost.
- ❑ An **example** of an element of cost coding is 1. labor 2. equipment 3. incorporated materials 4. subcontract 5. supplies and materials not incorporated into project
 - ❖ Using this system, the cost code for project 9562 for cast-in-place concrete labor would be 9562.03100.1 and for incorporated materials, would be 9562.03100.3

Accounting methods

- ❑ There are **two methods** of construction accounting that a construction firm may use to account for profit on a construction project.
 - ❖ One is the percentage-of-completion method, and the other is the completed-contract method.
- ❑ In the percentage-of-completion method, the company **estimates the percentage completion** of each construction project at the **end of the accounting period**, using the following equation:

$$\frac{\text{cost incurred to date}}{\text{cost incurred to date} + \text{estimated cost to complete}}$$

Financial Statements

Financial statements

❑ **Financial statements** provide a **picture** of the **financial condition** of the construction company.

❖ They are used by managers, bankers, bonding companies, and customers in assessing the **financial health of the firm**.

❖ The **ability** to read and understand these statements is an **essential business management skill**.

❑ The **two most commonly used** financial statements are the

1. Balance sheet and the
2. Income statement.

Balance sheet

❑ The **balance sheet** represents

the **financial condition** of the company as of the **date of the balance sheet**,
usually the end of a month, a quarter, or a year.

❖ A typical balance sheet is illustrated in **Figure 4.3**.

✓ This balance sheet was developed for an accrual accounting system
using the **percentage-of-completion accounting method**.

○ By definition, accounts shown on the balance sheet must balance
in accordance with the following equation:

$$\text{assets} = \text{liabilities} + \text{owners' equity}$$

FIGURE 4.3 Balance Sheet for Western States Construction Company

	Current Year	Last Year
ASSETS		
Current Assets		
Cash	\$809,675	\$870,650
Accounts Receivable—Trade	\$1,863,150	\$1,287,690
Accounts Receivable—Retention	\$172,200	\$105,875
Inventory	\$35,785	\$23,487
Prepaid Expenses	\$20,769	\$25,345
Total Current Assets	\$2,901,579	\$2,313,047
Fixed Assets		
Land	\$165,890	\$150,735
Buildings	\$785,970	\$697,658
Furniture and Equipment	\$150,987	\$140,685
Motor Vehicles	\$224,775	\$201,425
Construction Equipment	\$980,725	\$875,943
Subtotal	\$2,308,347	\$2,066,446
Less Accumulated Depreciation	(\$925,340)	(\$797,780)
Total Fixed Assets	\$1,383,007	\$1,268,666
TOTAL ASSETS	\$4,284,586	\$3,581,713

(continued)

FIGURE 4.3 (continued)

	Current Year	Last Year
LIABILITIES AND OWNERS' EQUITY		
Current Liabilities		
Notes Payable	\$100,000	\$75,000
Accounts Payable—Trade	\$967,050	\$894,300
Accounts Payable—Retention	\$35,600	\$88,400
Accrued Payables	\$114,350	\$144,775
Accrued Taxes	\$67,950	\$60,125
Current Maturity—Long-Term Debt	\$125,000	\$95,000
Total Current Liabilities	\$1,409,950	\$1,357,600
Long-Term Debt	\$450,000	\$500,000
TOTAL LIABILITIES	\$1,859,950	\$1,857,600
OWNERS' EQUITY		
Capital Stock	\$500,000	\$500,000
Retained Earnings	\$1,924,636	\$1,224,113
TOTAL OWNERS' EQUITY	\$2,424,636	\$1,724,113
TOTAL LIABILITIES AND OWNERS' EQUITY	\$4,284,586	\$3,581,713

Table 12.1 A Sample Balance Sheet Format

ABC CONSTRUCTION BALANCE SHEET December 31, 20xa	
ASSETS	
CURRENT ASSETS	
Cash	\$ 166,685
Contract receivables	1,347,367
Inventory	169,463
Prepaid expenses and other current assets	172,240
Costs and estimated earnings in excess of billings on uncompleted contracts	455,605
TOTAL CURRENT ASSETS	2,311,360
PROPERTY AND EQUIPMENT	444,492
OTHER ASSETS	22,225
	\$ 2,778,077
LIABILITIES AND SHAREHOLDERS' EQUITY	
CURRENT LIABILITIES	
Current portion of long-term debt	\$ 44,449
Accounts payable	711,188
Accrued liabilities	147,400
Billings in excess of costs and estimated earnings on uncompleted contracts	341,703
TOTAL CURRENT LIABILITIES	1,244,740
LONG-TERM DEBT, less current portion	238,915
	1,483,655
SHAREHOLDERS' EQUITY	
Common stock, no par value, 1,000,000 shares authorized, 100,000 shares issued and outstanding	100,000
Retained earnings	1,194,422
	1,294,422
	\$ 2,778,077

Income statement

□ The following equations summarize the data shown on an income statement:

1. $\text{gross profit} = \text{sales} - \text{cost of sales}$
2. $\text{net profit before taxes} = \text{gross profit} - \text{operating expenses}$
3. $\text{net profit after taxes} = \text{net profit before taxes} - \text{taxes}$

FIGURE 4.4 Income Statement for Western States Construction Company

	Current Year	Last Year
Revenues		
Sales	\$22,698,572	\$18,875,342
Cost of Sales	(\$17,854,395)	(\$15,150,360)
Gross Profit	\$4,844,177	\$3,724,982
Operating Expenses		
Financing	\$250,875	\$150,230
Marketing	\$376,980	\$250,760
General and Administrative	\$2,796,845	\$2,167,549
Operating Expenses	\$3,424,700	\$2,568,539
Net Profit before Taxes	\$1,419,477	\$1,156,443
State and Federal Taxes	(\$236,579)	(\$192,740)
Net Profit after Taxes	\$1,182,898	\$963,703

Table 12.2 A Sample Income Statement

ABC CONSTRUCTION STATEMENT OF INCOME AND RETAINED EARNINGS Year Ended December 31, 1996	
CONSTRUCTION REVENUE	\$ 8,056,423
COST OF CONSTRUCTION	6,654,605
	GROSS PROFIT 1,401,818
GENERAL AND ADMINISTRATIVE EXPENSES	1,087,618
	INCOME FROM OPERATIONS 314,200
OTHER EXPENSE	(24,169)
	INCOME BEFORE INCOME TAXES 290,031
INCOME TAX EXPENSE	(116,012)
	NET INCOME 174,019
BEGINNING RETAINED EARNINGS	1,020,403
	ENDING RETAINED EARNINGS \$ 1,194,422

Financial Management

Financial management

- ❑ A **key component** of financial management is the **development** of an **annual operations budget**,
which is used to **forecast anticipated** revenues and expenses.
- ❑ An operations budget is a **numerical plan** of operations that is used as a benchmark in **evaluating** the company's financial **performance during the year**.
- ❑ The major components of an operating budget are
 1. Revenue
 2. Project Costs
 3. Company Overhead
 4. Profits

- ❑ **Actual performance** should be measured each month and **compared to budgeted values** as illustrated in Figure 4.16.
- ❖ This budget was developed using an accrual accounting system and a percentage-of-completion accounting method.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

❑ Note that **while** company **revenues to date** are only 5 percent less than the value **anticipated** in the budget,

the **net profit before taxes** is **63 percent below** the budgeted amount.

FIGURE 4.16 Operations Budget for Western States Construction Company

	Annual Budget	Year-to-Date Budget	Year-to-Date Actual	Variance
Revenue	\$23,000,000	\$6,900,000	\$6,548,600	\$351,400
Direct Cost	\$18,000,000	\$5,400,000	\$5,297,500	\$102,500
Gross Profit	\$5,000,000	\$1,500,000	\$1,251,100	\$248,900
Financing Expenses	\$275,000	\$82,500	\$75,978	\$6,522
Marketing Expenses	\$400,000	\$120,000	\$122,759	-\$2,759
General & Administrative Expenses				
Salaries	\$650,000	\$195,000	\$206,865	-\$11,865
Travel	\$150,000	\$45,000	\$37,800	\$7,200
Office Expenses	\$400,000	\$120,000	\$118,765	\$1,235
Computer Expenses	\$150,000	\$45,000	\$41,798	\$3,202
Insurance	\$600,000	\$180,000	\$186,256	-\$6,256
Professional Services	\$150,000	\$45,000	\$37,865	\$7,135
Taxes	\$180,000	\$54,000	\$53,875	\$125
Depreciation	\$450,000	\$135,000	\$137,854	-\$2,854
Administrative Vehicles	\$268,000	\$80,400	\$76,567	\$3,833
Warranty Expenses	\$60,000	\$18,000	\$13,876	\$4,124
Total	\$3,733,000	\$1,119,900	\$1,110,258	\$9,642
Net Profit before Taxes	\$1,267,000	\$380,100	\$140,842	\$239,258

- ❑ **Another major** financial management issue is the development of a **budget for the overhead operations** of the company.
- ❑ This budget would include the **salaries of personnel** who are **not assigned to specific projects**, such as
the president, the marketing department, the accounting department, and human resources management, and the costs of operating the home office of the company.

An example of an overhead budget is shown in Figure 4.17.

Element of Expense	Annual Budget
Charitable Contributions	\$15,000
Computer Equipment	\$45,000
Custodial Services	\$22,500
Employee Recruiting	\$22,000
Employee Taxes	\$75,000
Employee Training	\$45,000
Financing Expenses	\$295,000
Furniture Expenses	\$24,000
Insurance	\$125,000
Legal Services	\$23,000
License Fees	\$2,000
Marketing Expenses	\$320,000
Office Rent	\$50,000
Office Supplies	\$25,000
Office Utilities	\$10,500
Postage	\$5,000
Salaries	\$865,000
Telephone	\$10,500
Travel Expenses	\$20,500
Total	\$2,000,000

FIGURE 4.17 Example of an Overhead Budget

Financial Analysis

Financial analysis

- ❑ There are **two major aspects** of analyzing the financial condition of a company.
 1. First is the **analysis** of the financial statements to assess the **overall financial health** of the company.
 2. The other is a cash flow analysis to determine **cash flow requirements**, so **financial management strategies** can be crafted to ensure that the firm has adequate cash resources to **meet anticipated requirements**.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Financial statement analysis

❑ The major financial characteristics of interest in **evaluating financial statements** are

1. Liquidity,
2. Profitability, and
3. Leverage or debt-to-equity.

❖ **Ratio analysis** is used to assess these characteristics at **single points in time**, and

❖ **Trend analysis** is used to determine how they have **changed over time**.

In other words, has profitability increased, decreased, or remained the same over the past five years?

Financial statement analysis



مدیریت مالی، حسابداری و هزینه در پروژه ها و سازمان های پروژه محور
مدیریت مالی: آنالیز گزارشات مالی در سازمان پروژه محور

What you will learn?

- ☐ Introduction to financial analysis
- ☐ Financial ratios
- ☐ Quick ratio
- ☐ Current ratio
- ☐ Current liabilities to net worth ratio
- ☐ Debt to equity ratio
- ☐ Fixed assets to net worth ratio
- ☐ Current assets to total assets ratio
- ☐ Collection period
- ☐ Receivable period
- ☐ Receivable turns (turnover)
- ☐ Average age of accounts payable
- ☐ Payable turns
- ☐ Assets to revenues ratio

By: Alavipour, PhD, PMP, CMIT

www.dralavipour.com

ذکر مطالب فوق تنها در صورت ذکر منبع بلامانع است.

2



مدیریت مالی، حسابداری و هزینه در پروژه ها و سازمان های پروژه محور
مدیریت مالی: آنالیز گزارشات مالی در سازمان پروژه محور

What you will learn?

- ☐ Working capital turns
- ☐ Accounts payable to revenues ratio
- ☐ Gross profit margin
- ☐ Return on assets
- ☐ General overhead ratio
- ☐ Profit margin
- ☐ Return on equity
- ☐ Degree of fixed asset newness
- ☐ Month in backlog

By: Alavipour, PhD, PMP, CMIT

www.dralavipour.com

ذکر مطالب فوق تنها در صورت ذکر منبع بلامانع است.

3

Financial statement analysis

❑ **Typical ratios** for various industries are published **annually by several sources**.

- ❖ Dun & Bradstreet publish one such source, Industry Norms and Key Business Ratios, which was used to create the typical value figures provided in this section.
- ❖ Data from 1997 through 2005 were analyzed to create the values shown.

FIGURE 4.11 Selective Financial Data for Western States Construction Company

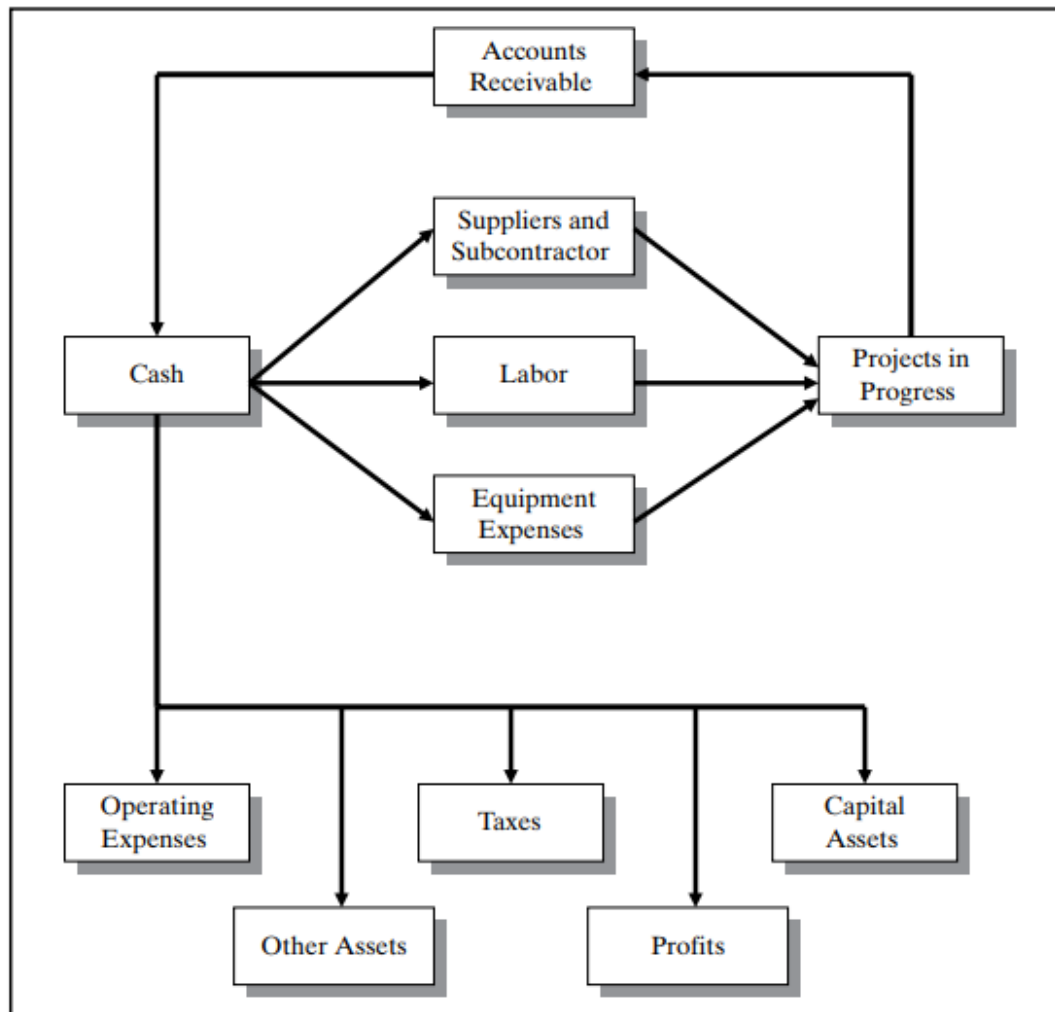
Financial Measure	Current Year-4	Current Year-3	Current Year-2	Current Year-1	Current Year
Total Sales	\$13,271,608	\$15,275,362	\$17,136,547	\$18,875,342	\$22,698,572
Cost of Sales	\$11,736,205	\$13,165,268	\$14,276,302	\$15,150,360	\$17,854,395
Operating Expenses	\$976,321	\$1,536,275	\$1,896,275	\$2,568,539	\$3,424,700
Net Profit after Taxes	\$459,715	\$477,991	\$801,987	\$963,703	\$1,182,898
Working Capital	\$612,067	\$696,371	\$853,167	\$955,447	\$1,491,629
Owners' Equity	\$988,675	\$996,486	\$1,637,894	\$1,724,113	\$2,424,636
Current Ratio	1.50	1.55	1.65	1.70	2.06
Quick Ratio	1.49	1.53	1.64	1.67	2.03
Return on Assets	16%	15%	23%	27%	28%
Return on Equity	46%	48%	49%	56%	49%
Return on Sales	3.5%	3.1%	4.7%	5.1%	5.2%
Debt-to-Equity Ratio	173%	177%	111%	109%	77%

Cash flow analysis

- ❑ A **construction company** is totally **dependent** on maintaining a **sufficient level of cash** to finance its **daily operations**.
- ❑ If adequate cash reserves are **not maintained**, the company must either
 1. Borrow from lending institutions or
 2. Default on its obligations.
 - ❖ If the **cost of borrowing** was **not included** in a project budget, the **interest charges** on borrowed cash may **significantly erode** the **anticipated profit**.

The cash flow cycle within the company is illustrated in Figure 4.12.

FIGURE 4.12 Cash Flow Cycle



Cash flow analysis

- ❑ Project expenditures and receivables are estimated for each month, and the difference between expenses and receivables determines the net cash flow requirements, as illustrated in Figure 4.13

FIGURE 4.13 Cash Flow Analysis for Job #1

	Estimate	January	February	March	April	May	June	July	August	September	October	November
Total Job Revenue												
Total Draw	\$1,000,000	\$60,000	\$80,000	\$100,000	\$120,000	\$140,000	\$150,000	\$120,000	\$100,000	\$80,000	\$50,000	
Retainage	\$50,000	\$(3,000)	\$(4,000)	\$(5,000)	\$(6,000)	\$(7,000)	\$(7,500)	\$(6,000)	\$(5,000)	\$(4,000)	\$(2,500)	
Net Receipt	\$1,000,000		\$57,000	\$76,000	\$95,000	\$114,000	\$133,000	\$142,500	\$114,000	\$95,000	\$76,000	\$97,500
Direct Job Costs												
Labor	\$25,500	\$1,530	\$2,040	\$2,550	\$3,060	\$3,570	\$3,825	\$3,060	\$2,550	\$2,040	\$1,275	
Material	\$176,700	\$10,602	\$14,136	\$17,670	\$21,204	\$24,738	\$26,505	\$21,204	\$17,670	\$14,136	\$8,835	
Subcontractor	\$632,000	\$37,920	\$50,560	\$63,200	\$75,840	\$88,480	\$94,800	\$75,840	\$63,200	\$50,560	\$31,600	
Equipment	\$10,700	\$642	\$856	\$1,070	\$1,284	\$1,498	\$1,605	\$1,284	\$1,070	\$856	\$535	
Total Direct Job Costs	\$844,900	\$50,694	\$67,592	\$84,490	\$101,388	\$118,286	\$126,735	\$101,388	\$84,490	\$67,592	\$42,245	
Net Job Cash Flow		\$(50,694)	\$(10,592)	\$(8,490)	\$(6,388)	\$(4,286)	\$6,265	\$41,112	\$29,510	\$27,408	\$33,755	\$97,500
Cumulative Cash Flow	\$155,100	\$(50,694)	\$(61,286)	\$(69,776)	\$(76,164)	\$(80,450)	\$(74,185)	\$(33,073)	\$(3,563)	\$23,845	\$57,600	\$155,100

Cash flow analysis

- ❑ A plot of the cumulative cash flow requirements for the project is shown in Figure 4.14.
- ❑ Note that cash flow for Job #1 is negative during the early months of the project and positive during the later months.

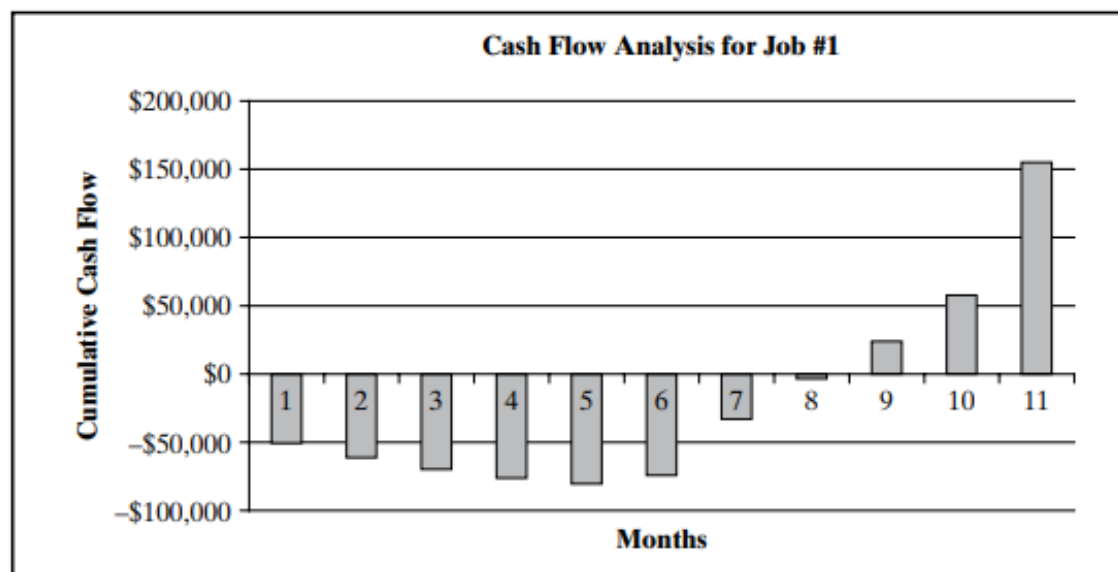


FIGURE 4.14 Cumulative Cash Flow for Job #1

Cash flow analysis

- ❑ The monthly cash flow requirements for each project are summed in a spreadsheet, as shown in Figure 4.15, to determine overall cash requirements for the company.

FIGURE 4.15 Company Cash Flow Analysis

Projects	January	February	March	April	May	June	July	August	September	October
Beginning Balance	\$200,000	\$186,306	\$22,714	\$(95,776)	\$(137,164)	\$(125,950)	\$(163,185)	\$(134,073)	\$(127,563)	\$(80,855)
<u>In Process:</u>										
Job #1	\$(50,694)	\$(10,592)	\$(8,490)	\$(6,388)	\$(4,286)	\$6,265	\$41,112	\$29,510	\$27,408	\$33,755
Job #2	\$120,000	\$—	\$—	\$—	\$—	\$—	\$—	\$—	\$—	\$—
Job #3	\$(48,000)	\$(22,000)	\$(15,000)	\$20,000	\$45,000	\$1,500	\$65,000	\$—	\$—	\$—
Job #4	\$—	\$(40,000)	\$(25,000)	\$(10,000)	\$5,000	\$15,000	\$26,000	\$30,000	\$35,000	\$50,000
Job #5	\$—	\$(56,000)	\$(35,000)	\$(10,000)	\$500	\$25,000	\$35,000	\$26,000	\$35,000	\$28,000
<u>Projected New Jobs:</u>										
Job #6	\$—	\$—	\$—	\$—	\$—	\$(50,000)	\$(35,000)	\$(20,000)	\$(5,000)	\$6,000
Job #7	\$—	\$—	\$—	\$—	\$—	\$—	\$(40,000)	\$(15,000)	\$(10,000)	\$4,000
Job #8	\$—	\$—	\$—	\$—	\$—	\$—	\$(28,000)	\$(9,000)	\$(700)	\$5,000
Net Cash Flow	\$21,306	\$(128,592)	\$(83,490)	\$(6,388)	\$46,214	\$(2,235)	\$64,112	\$41,510	\$81,708	\$126,755
Total Cash Available	\$221,306	\$57,714	\$(60,776)	\$(102,164)	\$(90,950)	\$(128,185)	\$(99,073)	\$(92,563)	\$(45,855)	\$45,900
Operating Expenses	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000
Ending Cash Balance	\$186,306	\$22,714	\$(95,776)	\$(137,164)	\$(125,950)	\$(163,185)	\$(134,073)	\$(127,563)	\$(80,855)	\$10,900

Using Financial Data

Using financial data

- ❑ **Following over 30 years** of researching, identifying, and cataloging the causes of construction business failures and participating in the resolution of hundreds of distressed firms, the authors **discovered a remarkable truth**.
- ❑ **Many construction company failures** were predictable, and, in many cases, the **in-house accounting staff** saw it coming two **or three years before** it happened.
- ❑ A key reason **some contractors** experienced financial trouble was the **lack of listening** to the **CFO** or **accounting staff** who tried to sound the alarm **before disaster struck**.

Using financial data

- ❑ Construction business failures **don't happen overnight**; they can take years.
- ❑ In the hundreds of failures the authors have studied,
most of the **CFOs warned management** about financial issues, problems, or exposures before they occurred.
 - ❖ To which management often reacted by saying,
 - ✓ “You don’t understand” or
 - ✓ “You don’t know what you are talking about,” or
 - ✓ “It’s just that one bad job” or
 - ✓ “that unreasonable owner” or
 - ✓ “that unbuildable design.”

These managers saw the problem as an “event,” but it was a “symptom.”

Using financial data

❑ To provide an analogy:

it is like a person in the boiler room of a ship calling the captain to tell him or her that the ship is leaking, and the captain on deck responding,

“Everything looks good from here.”

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Construction Business Financial Reality: Financial Self-Analysis

- ☐ Many contractors are working in an **information vacuum**.
- ☐ **Many complain** that even in **good times** they are **never sure** their organization is performing at **optimum levels**.
- ☐ Some contractors state **difficulty** in defining and judging their **own performance** because they **do not know** the **margins** for similar contractors.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Managing the financial self-analysis process

- ❑ The **first step** is collecting and compiling the required financial data listed in **Table 5.1**.
- ❑ This information is taken **directly from the company's annual financial statements** prepared by the firm's **independent outside accountants**;
 - it is **not recommended** to use internally **prepared statements** unless **all five years** are internally prepared.
- ❖ The information is to be transcribed directly from the **most recent five years** of annual statement available and **recorded on a spreadsheet**.
- ❖ A **three-year study** is the minimum length one can learn from;
 - five years is preferred, and
 - any **duration longer** than five years does **not appear to enhance** the evaluation.

Managing the financial self-analysis process

Table 5.1 Key to Data Required for Financial Self-Analysis

<i>Financial Data</i>	<i>Description</i>
Year	Plan year-5; plan year-4; plan year-3; etc.
Sales	Total sales for each year
GP	Gross profit
GP/S	Gross profit divided by sales
G&A	General and administrative expenses (overhead)
G&A/S	General and administrative expenses divided by sales
NP OPS	Net profit from operations
NP/S	Net profit divided by sales
NNP	Net net profit (includes profit from other sources)
NNP/S	Net net profit divided by sales
Cash	Cash plus any securities such as CDs
AR	Accounts receivable
AP	Accounts payable
AR-AP	Accounts receivable minus accounts payable
Cash+AR-AP	Cash plus accounts receivable minus accounts payable
CIEB	Cost In excess of billings
BIEC	Billings in excess of cost
BIEC-CIEB	Billings in excess of cost minus cost in excess of billings
Debt	Total debt
Cash+(AR-AP)-Debt	Cash plus (accounts receivable minus accounts payable) minus debt

Managing the financial self-analysis process

- ☐ The **ratios** are calculated from the **formulas in the sample financial self-analysis calculation** sheet shown in Table 5.2.
- ☐ Both the data collection and the calculations of the ratios
 1. Can be assigned to the accounting department or
 2. Can be carried out by executive staff if **confidentiality** is a concern for any reason.
- ☐ It should be noted that a major concern throughout this process is transcription error; therefore, it is prudent to have a **second person double-check the data**.
- ☐ As time progresses, the financial analysis can be easily **updated** and used in **subsequent years**.

Managing the financial self-analysis process

Table 5.2 Financial Self-Analysis Calculation Sheet

	A	B	C	D	E	F	G	H
1								
2		YEAR -5	YEAR -4	YEAR -3	YEAR -2	YEAR -1	5-YEAR AVERAGE	2-YEAR AVERAGE
3	Sales						SUM (B3 to F3)/5	(E3+F3)/2
4	GP						SUM (B4 to F4)/5	(E4+F4)/2
5	GP/S	B4/B3	C4/C3	D4/D3	E4/E3	F4/F3	SUM (B5 to F5)/5	(E5+F5)/2
6	G&A						SUM (B6 to F6)/5	(E6+F6)/2
7	G&A/S	B6/B3	C6/C3	D6/D3	E6/E3	F6/F3	SUM (B7 to F7)/5	(E7+F7)/2
8	NP						SUM (B8 to F8)/5	(E8+F8)/2
9	NP/S	B8/B3	C8/C3	D8/D3	E8/E3	F8/F3	SUM (B9 to F9)/5	(E9+F9)/2
10	Cash						SUM (B10 to F10)/5	(E10+F10)/2
11	AR						SUM (B11 to F11)/5	(E11+F11)/2
12	AP						SUM (B12 to F12)/5	(E12+F12)/2
13	AR-AP	B11-B12	C11-C12	D11-D12	E11-E12	F11-F12	SUM (B13 to F13)/5	(E13+F13)/2
14	Cash+AR-AP	B10+B13	C10+C13	D10+D13	E10+E13	F10+F13	SUM (B14 to F14)/5	(E14+F14)/2
15	CIEB						SUM (B15 to F15)/5	(E15+F15)/2
16	BIEC						SUM (B16 to F16)/5	(E16+F16)/2
17	BIEC-CIEB	B16-B15	C16-C15	D16-D15	E16-E15	F16-F15	SUM (B17 to F17)/5	(E17+F17)/2
18	Debt						SUM (B18 to F18)/5	(E18+F18)/2
19	Cash+(AR-AP)-D	B14-B18	C14-C18	D14-D18	E14-E18	F14-F18	SUM (B19 to F19)/5	(E19+F19)/2

Using the information

☐ **Financial performance** is the starting point.

❖ A **number of other topics** also should be on the agenda and discussed in detail.

☐ These include but are not limited to:

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Using the information

❑ These include but are not limited to:

- ❖ The company's current market position.
- ❖ What does available work look like for the next year or two?
- ❖ How does the company compare with its competition and what are its competitive advantages and disadvantages?
- ❖ Are current operations/production optimized and to your satisfaction?
- ❖ Is the structure of the organization suitable to its current workload, and will it remain the same or change if you plan to grow?
- ❖ Is there a clear chain of command and do all the people in the organization understand the reporting chain and their responsibilities?

Using the information

- ❑ Next are a **couple of examples** to illustrate some of the potential benefits gained from applying **financial self-analysis**.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Using the information

- ❑ *Example 1: A construction firm using the financial self-analysis program noted that that their overhead had increased steadily over the five years at a greater rate than sales had increased.*
- ❖ They determined that the increases were **not a result of any added categories**, but that most line **items had grown annually**.
 - ✓ They considered **inflation** too, but the rate was **far greater**.
 - ❖ The group **reviewed every item** carefully, and reduced overhead where possible.
 - ❖ They then decided to keep a closer eye on **monthly expenses**.
 - ❖ In one year, overhead expenses were **reduced** to the **five-year average**.
 - ❖ The **self-analysis exposed the problem**, and the solution was obvious and easy.
 - ❖ In the **second year**, sales improved a little resulting in the general and administrative overhead to sales **ratio decreasing even further**.
 - ❖ **Nonfinancial managers** can learn from this effort.

Using the information

- ❑ *Example 2: In another case, a contractor discovered net profit was decreasing slightly but steadily over the prior two years, while overhead expenses were consistent, indicating a deterioration in gross profit margin.*
- ❖ This is **far more serious** than the previous case because it indicates a **problem in operations/production**, which can be much **harder to rectify** than controlling general and administrative expenses.
 - ❖ After a serious discussion with all concerned parties, they realized that a **number of new field superintendents** with **limited experience** were promoted during the **company's rapid growth** over the two years, and they were **not producing the work as profitably** as the more experienced superintendents.
 - ❖ The **principals** concluded that **further growth** would be a **mistake** and could put their **entire operation** in **jeopardy**.

Using the information

❑ Example 2:

- ❖ They **cut down** the volume by taking **no new work for six months** and instead concentrated their efforts on an **intensive training program** for new superintendents.
- ❖ They decided that **sales should not grow** until the organization **returned to the average gross profit margin** they had experienced in **four out of the five previous years**.
- ❖ Their goal was **achieved in nine months**, and was **further exceeded** the **following year** when their gross profit percentage went up by **1.5% compared** to their five-year average.
- ❖ In this example, the **owners** of the construction company were **unaware** of the problem until they **performed the financial self-analysis**.
- ❖ They made the **common error of thinking** the slippage in profit was the price to **pay for growth**.

Using the information

❑ Example 2:

- ❖ The owners fell into the trap of believing it was something they called “**growing pains**” until they realized that their **future success was in jeopardy**.
- ❖ The financial self-analysis allowed **near-immediate discovery** of the problem, which helped focus the **company’s energy on the solution**.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Measuring Financial Risk

Measuring financial risk

❑ The focus of this section is

1. On the **measurement** of financial risk and performance in construction companies and
2. To look for **early warning indicators** of financial distress.

❑ Spending over a decade assisting financially distressed construction companies, the authors are strong **advocates** of recognizing and avoiding the causes of business failure.

❖ In our experience, many **contractors** who thought they had a **minor cash flow problem** were **shocked to discover the depth and seriousness** of their financial difficulty when it finally came to light.

❑ With that being said, it comes as no surprise that the construction industry has the **second-highest business failure rate** in the country, after the restaurant business.

Measuring financial risk

- ☐ **Financial data** that will be discussed in this section should be **taken from financial statements** prepared by an **independent outside** accountant or accounting firm.
- ☐ These statements can be reviewed, audited, or otherwise qualified.
- ☐ What matters is that statements be **consistent**.
- ☐ Data from **internally prepared** financial statements are **not recommended**.

Traditional financial performance measures

- ❑ A construction company may evaluate its financial performance using various **standardized financial ratios**.
- ❑ This includes examining the organization's
 1. gross profit,
 2. net profit,
 3. equity, and
 4. capital structure.
- ❖ However, these standard ratios **alone** do **not** **adequately** **reveal** the **performance** of the organization.

Traditional financial performance measures

- ❑ Gross profit is the amount earned in the production of the work **before general and administrative costs** are deducted.
- ❑ Net profit is the amount made **after** subtracting **all general and administrative** costs from the gross profit.
- ❑ Both gross profit and net profit do **not accurately report** an organization's financial performance,

as there is **no standard for measuring** either of these measures consistently in the **construction industry**.
 - ❖ There is **no agreement** regarding **which costs are to be charged directly** to projects and which are general and administrative overhead costs.
 - ❖ As a result, **comparisons** of gross profits and net profits **cannot** be used as accurate measurements of a construction company's financial performance.

Traditional financial performance measures

- ❑ Equity, which is the **company's assets after** subtracting all associated debts, is a significant measurement **anchoring the capital structure** that underpins the company and supports credit facilities that provide **cash flow during peak needs**.
- ❑ Capital structure is the **organization's unique combination** of debt and equity used to **finance its overall operations and growth**.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Traditional financial performance measures

- ❑ Equity **alone** is **not an absolute indicator** of an organization's financial performance.
- ❑ Moreover, the capital structures of construction companies **differ significantly** by **type of work performed**.
 - ❖ **Highway contractors** who own their equipment have different capital structures than a **building contractor** who subcontracts a great deal of their work.
 - ✓ Therefore, **equity** and **capital** structure are also insufficient measures of a construction company's financial performance.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

The R-Score formula

- ❑ This led the authors to develop the **R-score formula**, which:
 - ❖ Measures an organization's current financial performance;
 - ❖ Compares an organization's current performance to past performance; and
 - ❖ Identifies an organization's current financial risks, strengths, and weaknesses.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

The R-Score formula

- ❑ As noted previously, **changes** in one **financial ratio** inevitably **change other ratios**.
- ❑ The problems of **different bookkeeping methods** and **treatment of work in progress**

suggest that gross ratios

rather than **ratios found internally** should be used.

❖ The **significant standard financial** ratio categories are

1. Turnover,
2. Profit, and
3. Debt ratios.

✓ Ratios are **selected from these categories** that are least affected by **internal bookkeeping methods**.

The R-Score formula

□ These are explained below as the **three key elements** of the R-score formula:

1 Sales-to-Total Assets:

- ❖ This is known as the **turnover ratio** and is a measure of operational efficiency.
- ❖ The **higher** the ratio, the **more efficient** the utilization of assets.
- ❖ The ratio is a composite of
 1. Receivable management,
 2. Inventory management,
 3. Fixed asset management, and
 4. Liquidity management.
 - ✓ The ratio is the **relative efficiency** with which the **construction firm** uses its resources to generate output

The R-Score formula

❑ These are explained below as the **three key elements** of the R-score formula:

1 Sales-to-Total Assets:



مدیریت مالی، حسابداری و هزینه در پروژه ها و سازمان های پروژه محور
مدیریت مالی: آنالیز گزارشات مالی در سازمان پروژه محور

Assets to revenues ratio (دارایی کل به درآمد)

❑ Measurement of **how efficiently** the company is **using its assets**

❑ Also known as the **assets to sales ratio**.

❑ *Assets to Revenues (assets to sale ratio) = $\frac{\text{Total Assets}}{\text{Revenues}}$*

❖ The recommended range for the ratio varies from industry to industry.



مدیریت مالی، حسابداری و هزینه در پروژه ها و سازمان های پروژه محور
مدیریت مالی: آنالیز گزارشات مالی در سازمان پروژه محور

Typical Assets to revenues for construction industry

Typical Assets to Revenues Ratios
(percentages)

Industry Sector	Median	Range
Single-Family Residential	30	18-50
Commercial	30	20-55
Heavy and Highway	46	34-62
Specialty Trades	33	25-45

❑ Companies with assets to revenues ratios significantly lower than other companies:

❖ May be performing too much work for their assets
✓ Which may be a sign of pending financial difficulties if left uncorrected.

❑ Companies with assets to revenues ratios significantly higher than other companies:

❖ Are underutilizing their assets and should consider taking on more work.

❑ Heavy and highway have a **higher median** assets to revenues ratio because of:

❖ Its extensive investment in construction equipment.

The R-Score formula

❑ These are explained below as the **three key elements** of the R-score formula:

2 Net Profit-to-Sales:

- ❖ This is known as the **net profit margin** and is a measure of **operating efficiency** after all costs and expenses have been accounted for.
- ❖ While the **external marketplace** affects the sales-to-assets and net profit margins,
they largely capture an organization's **internal management efficiency**.

The R-Score formula

❑ These are explained below as the **three key elements** of the R-score formula:

2 Net Profit-to-Sales:

مدیریت مالی، حسابداری و هزینه در پروژه ها و سازمان های پروژه محور
مدیریت مالی: آنالیز گزارشات مالی در سازمان پروژه محور

Profit margin (بازده فروش یا بازده درآمد)

- ❑ Also known as the **return on revenues** or **return on sales**.
- ❑ **Percentage of the revenues that becomes profit** and may be measured:
 - ❖ **Before income taxes**
 - ✓ $\text{Pretax PM} = \frac{\text{Net Profit Before Taxes}}{\text{Revenues}}$
 - Highway, residential, and specialty contractors: $4\% < \text{Ideal} < 6\%$
 - Commercial contractors: $2\% < \text{Ideal} < 3\%$

By: Alavipour, PhD, PMP, CMIT www.dralavipour.com ذکر مطالب فوق تنها در صورت ذکر منبع بلامانع است. 67

مدیریت مالی، حسابداری و هزینه در پروژه ها و سازمان های پروژه محور
مدیریت مالی: آنالیز گزارشات مالی در سازمان پروژه محور

Profit margin (بازده فروش یا بازده درآمد)

- ❑ Also known as the **return on revenues** or **return on sales**.
- ❑ **Percentage of the revenues that becomes profit** and may be measured:
 - ❖ **After income taxes**
 - ✓ $\text{After-tax PM} = \frac{\text{Net Profit After Taxes}}{\text{Revenues}}$

Typical After-Tax Profit Margins (percentages)

Industry Sector	Median	Range
Single-Family Residential	3.0	7.5-0.8
Commercial	1.9	8.1-0.5
Heavy and Highway	2.8	6.6-0.7
Specialty Trades	2.3	5.9-0.5

By: Alavipour, PhD, PMP, CMIT www.dralavipour.com ذکر مطالب فوق تنها در صورت ذکر منبع بلامانع است. 68

The R-Score formula

❑ These are explained below as the **three key elements** of the R-score formula:

3 Total Liabilities-to-Equity:

- ❖ This is known as the **debt ratio** and it tests **long-term liquidity**.
- ❖ The ratio is like debt-to-equity; however,
total liabilities (all debt) are used instead of long-term bank debt
because the latter **can easily be reduced**, temporarily,
particularly at year-end, by
 1. Extending accounts payable or
 2. Substituting short-term borrowing.
- ❖ The ratio is applied here as a measure of the **firm's ability to sustain itself** over the long term.
- ❖ This is a broad ratio **ignoring most internal manipulations** or **differences in bookkeeping methods**
because it **captures all** liabilities and equity not easily manipulated.

The R-Score formula

❑ These are explained below as the **three key elements** of the R-score formula:

3 Total Liabilities-to-Equity:



مدیریت مالی، حسابداری و هزینه در پروژه ها و سازمان های پروژه محور
مدیریت مالی: آنالیز گزارشات مالی در سازمان پروژه محور

Debt to equity ratio (نسبت بدهی کل به ارزش ویژه یا خالص)

❑ The **debt to equity** ratio is a **measurement** of the **risk** in the company **all creditors** are taking compared to the **risk** the **company's owners** are taking.

❑ $Debt\ to\ Equity = \frac{Total\ Liabilities}{Net\ Worth}$

❖ **Less than 1: Company is reluctant to debt financing:**

✓ The company is **not using debt** to **expand** the business.

❖ **Less than 2: Desired ratio**

❖ **More than 2: Care should be taken**

✓ One begins to **question** whether the **company can service its debt**, **particularity** during a **downturn** in the industry.

❖ **Less than 3: At least**

✓ **Recommended** by Financial Management Association



مدیریت مالی، حسابداری و هزینه در پروژه ها و سازمان های پروژه محور
مدیریت مالی: آنالیز گزارشات مالی در سازمان پروژه محور

Debt to equity ratio – Example

Example: Determine the **debt to equity ratio** for the commercial construction company in Figures. What insight does this give you into the company's financial operations?

LIABILITIES			
Current Liabilities			
Accounts Payable-Trade	325,458	228,585	
Accounts Payable-Retention	22,546	18,254	
Billings in Excess of Costs and Profits	5,218	11,562	
Notes Payable	15,514	45,250	
Accrued Payables	15,648	16,658	
Accrued Taxes	10,521	8,254	
Accrued Vacation	3,564	3,002	
Capital Lease Payable	0	0	
Warranty Reserves	0	0	
Other Current Liabilities	25,438	35,648	
Total Current Liabilities	423,907	367,213	
Long-Term Liabilities	153,215	99,073	
Total Liabilities	577,122	466,286	

OWNER'S EQUITY			
Capital Stock	10,000	10,000	
Retained Earnings	436,917	358,904	
Current Period Net Income	0	0	
Total Equity	446,917	368,904	
Total Liabilities and Equity	1,024,039	835,190	

Solution:

Debt to equity Ratio = $\$577,122 / \$446,917 = 1.29 < 1.4$ and between 0.5 and 2.8

The debt to equity ratio is slightly below the median for a commercial construction company. Because the ratio is **less than 2**, it appears that the company **will be able to service its debt**.

If needed, may be able to obtain **additional financing** through debt.

The R-Score formula

- ❑ The **three key elements** shown were **combined to develop** the risk factor score (R-score formula),
an **effective** and **comprehensive** financial risk management formula.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

The R-Score formula – Development

❑ The authors define **AP** as the portion of profits that can be

1. Taken out of the company or
2. Applied to business expansions

without materially affecting the financial foundation of the firm in its existing operations.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

The R-Score formula – Development

□ The formula for AP is:

where

NP/S is net profit/sales,

TL is total liabilities, and

TA is total assets.

$$AP = \left(1 - NP/S - \left(10 \left(TL / (TL + TA) \right) \times (NP / S) \right) \right)$$

The R-Score formula – Development

□ However, “**real earning power (REP)**” of the company can be determined by multiplying the AP by the asset turnover ratio of sales to total assets (S/TA).

❖ The formula for REP is:

where $REP = (AP) (S/TA)$

AP is available profit and S/TA is sales/total assets.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

The R-Score formula – Development

- ❑ To determine the **overall financial risk** of a company, its debt structure must be considered.
- ❑ Combining the **firm's debt ratio** of total liabilities to equity **with REP**, also referred to as the **financial “risk factor,”** represents the **financial risk** of the company at the present time.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

The R-Score formula – Development

□ The R-score formula is:

where

R is risk factor and TL/E is total liability/equity

$$R = (\text{Available Profit}) \times (\text{Real Earning Power}) \times (\text{Debt Structure})$$

And can be used as:

$$R = \left(1 - NP/S - \left(10 \left(TL / (TL + TA) \right) (NP/S) \right) \right) (S/TA) (TL/E)$$

Financial Distress – Turnaround Management

Financial distress – turnaround management

- ❑ When the **construction market is growing**, the industry prospers; however, when the market declines, the industry **suffers reductions in profits** and exposure to loss.
 - ❑ The reason is that **growth requires** additional overhead expenses in the form of **personnel and resources** which are usually brought on as **permanent fixed costs**.
 - ❖ When the **market declines**, it is extremely difficult to reduce fixed overhead because the **company cannot eliminate** half a person or half a truck.
- As discussed in this course, the construction business model of permanent fixed overhead is one cause of the industry's boom and bust cycle.*

Financial distress – turnaround management

□ This raises the following question:

If a firm **earns a certain percentage of profit** putting X amount of work in place in a year,

shouldn't it earn about the same percentage of profit the following year when it puts in place, **perhaps 15% less work**?

Most construction companies don't.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Financial distress – turnaround management

❑ Profitability.

- ❖ Whenever there is **less work**, margins suffer because the **selling price** of construction **goes down** as the industry shifts into a “**buyer’s market**.”
- ❖ No type of construction was spared in prior downturns because **contractors with limited experience** in other types of projects or in **different geographic** areas went **after work** they were not familiar with.
- ❖ **Many were successful** in capturing that work because they were **aided in their pricing** by a lack of experience or limited local knowledge.
- ❖ When the **market shrinks**,
competition increases and the selling price deteriorates for every type of work
as many construction companies **fight for work of any type, anywhere, and almost at any price.**

Financial distress – turnaround management

❑ The “Compression” Dynamic.

- ❖ The **domino effect** of the downward pressure applied to construction pricing by **large contractors** during **market contractions (downturns)**.
- ❖ What often happens in a downturn is as follows:
 - ✓ **Larger construction** companies, desperate to keep their people busy, **aggressively go after smaller** projects than they normally would.
 - ✓ This takes **work away from other firms**, forcing them to **go after smaller** projects than they normally would too, through **midsize firms** and finally **down to small firms**.
 - ✓ With their **greater capitalization**, big contractors are able to use **aggressive pricing to take smaller jobs** and/or **expand geographically** by moving into markets they do not normally compete in.
 - ✓ The **lowest level** in this avalanche, the **smallest contractors**, have nowhere to turn to and some are driven out of business.

Financial distress – turnaround management

❑ Defense Strategy.

- ❖ **Contractors** need to **understand this dynamic** which happens every downturn and should therefore be expected.
- ❖ **Cutting overhead** proportionally to the amount of the market decline enables you to **produce a lesser amount of work** at a profit.
 - ✓ If there is **less work available** and a **firm attempts to maintain its sales volume**,
it will have to **take the work off its competitors** who are trying to do the same thing.

Financial distress – turnaround management

❑ Defense Strategy.

- ❖ Compression causes **industry-wide losses** which is **partly the reason** that construction is the industry with the **second highest business failure rate** in the country –

a **failure rate that always accelerates** during declining market cycles.

- ❖ This has been **happening for decades** and has **not been recognized** because it was an **unidentified dynamic** for many contractors.

Now that we **know about it**, we **can deal with it**.

Financial distress – turnaround management

❑ The **most popular choice** in a declining market –

chasing work while profits are spiraling down –

exposes an organization to **serious risks**.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Financial distress – turnaround management

❑ In a **declining market**, diminished profits

may **not be enough** to cover a losing project, and

a **losing project** is an increased possibility

because of the **aggressive pricing** trying to capture the **much-needed work**.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Financial distress – turnaround management

❑ Even during a growing market,

construction is a **low-profit business**

with the ever-present possibility of a **losing project** in **both** good and bad markets.

❖ This exposure is **compounded when,**

motivated by the **need for work,**

a **firm decides to**

1. Go after work in **unfamiliar territory** and/or
2. Pursue work of a **slightly different type or size** than the organization is experienced with, which increases project **risk exponentially**

Overhead management

❑ **One of the reasons** the failure rate goes up in a declining market is that many construction enterprises **wait too long** before reducing overhead.

❖ Many have tried to keep people busy by

1. **Traveling far and wide,**

2. Taking work outside the organization's experience and core capabilities,

but that often **magnified underperformance** and, in too many cases, **resulted in losses**.

Overhead management

□ During many years of turnaround work we have often heard:

- ❖ “What choice did I have?” Or
- ❖ “I had to keep my people busy,” or
- ❖ “no one can make money during a downturn.”
 - ✓ For **those determined to maintain** sales or to reduce sales as little as possible in a declining market, these statements are true, and we fully understand and admire the determination to retain not just some, but all, employees.
 - This said, can they **afford the cost**? *When maintaining high sales while profits are spiraling down*, there is an exponentially **increasing risk of business failure**, at which point the company may lose all employees, **not just some**.

Overhead management

- ❑ It is **human nature** to resist giving up hard-earned growth gained at great effort.
- ❖ Consider the reality: **Why can't a construction** enterprise increase their sales by say **10% or 20% any time they care to?**
 - ✓ Because you can only **grow as fast as the market grows**.
 - ✓ **Severe adjustments** in pricing will be forced into the marketplace and **idled excess people and resources** will need to be paid for or discontinued.
 - ✓ **Everyone seems to agree** that growth requires an **increase in overhead**, but they do **not seem to agree** that the reciprocal is true.

The reciprocal is that negative growth (a reduction in sales) requires a reduction in overhead.

Mini case study

- ❑ The Case: A successful **self-performing steel fabricator and erector** was doing about **four million dollar of work per year** when the 2008–2012 construction market downturn hit his company.
- ❑ This young contractor experienced the cancellation of a **million dollars of backlog within a 30-day period** because his clients on several projects lost their bank funding.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Mini case study

- ☐ The **contractor contacted us** to discuss his circumstances, **explaining that larger contractors** were taking work in **his market below his costs** just to keep some of their people busy.
- ☐ **He said** his remaining backlog was uncertain and that he could **not see any work on the horizon** that he might be able to get for **anything but a loss**.
- ☐ He said he did **not have enough work** on hand to make a profit with the size of organization he was trying to maintain.
- ☐ He was **not sure how long** he could continue to **lose money** and thought out loud that the **time** may have already passed.

Mini case study

❑ The Choice:

- ❖ We discussed his circumstances in detail and **just by listening** to himself he eventually said, *“I don’t think I can make it and I am afraid this may bankrupt me.”* He wanted to know what we thought.
- ❖ We told him that we did **not know enough** about his business or his financial condition to advise him but **what we did know** is that it **seldom makes business sense** to put work in place for a **loss for any length of time**.

Mini case study

❑ The Choice:

- ❖ He asked, *“If I quit now do you think when the market recovers I might be able to go back into business?”*
- ❖ We told him it should be possible, but to do that he would have to
 - ❖ Finish the work on hand,
 - ❖ Satisfy the customers and designers, and
 - ❖ Avoid bankruptcy which would complicate matters going forward.
- ❖ For his idea to work, he needed to **conserve cash**, which meant he would have to **stop losing money** as quickly as possible by **cutting all costs** **except** the people and resources required to finish the work on hand, as **rapidly as possible**.
 - ✓ If he could **not stop the losses**, then reducing them was critical.

Mini case study

❑ The Decision:

- ❖ This **contractor initially** wanted to stand and fight, take cheap work, and try to ride-it-out, but his calculations and his gut told him **he would end up in bankruptcy**.
- ❖ He made the **monumentally difficult decision** to
 1. Shut down his business immediately,
 2. Reducing overhead costs and
 3. Keeping just enough resources to complete the work on hand.

It took almost **a year to complete** the projects.

Mini case study

❑ The Decision:

❖ He wanted to keep his equipment, but that would have caused ongoing storage and maintenance costs

because the office and shop were rented; so everything was liquidated.

❖ When the work on hand was completed, the young contractor took a job with a local general contractor who was glad to have him even after explaining his desire to go back into business in the future if possible.

✓ They agreed to a two-year commitment.

Mini case study

❑ The Decision:

- ❖ Being employed in construction, he was **able to keep abreast** of industry developments, and
three years later his market leveled out and **began a slow recovery**.
- ❖ He parted employment amicably and was able to **restart his business**.
- ❖ He started small at first **primarily brokering work**, but a year later was able to **move to larger offices** with a shop and fabrication yard.
- ❖ **By 2019**, he was doing \$7.5 million a year with 50 employees, a 15-men fabrication department, and record profits.

Mini case study

❑ The Lesson:

- ❖ This case study is **not intended to recommend a course** of action but instead to describe the “**compression**” concept in illustrative detail.



Figure 13.1 Downsizing is a deliberate shrinkage of a company's overhead in anticipation of a decline in volume.

Timing of downsizing

- ❑ **Timing** is one of the reasons the **business failure** rate goes up in a declining market.
- ❑ If a construction enterprise **waits too long** before reducing overhead, its financial condition weakens.
- ❑ That makes it **vulnerable if the downturn drags** on and hinders its financial ability to fully participate when the market rebounds.
 - ❖ Many have said, “If I am forced to reduce overhead at some point during a downturn I might as well have cut it sooner.”

Construction market realities

- ❑ The **US economy** has been **cyclical for as long as anyone** can remember.
- ❑ The **US construction market** follows and lags the economy; it has been **cyclical** since **at least World War II**, and **continues to be cyclical**, with periods of growth followed by periods of declining markets.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Construction market realities

❑ Conclusions also include:

- ❖ A growing construction market reduces competition; A declining market increases competition
- ❖ A growing market fosters increases in profits; A declining market causes decreases in profits
- ❖ In a growing market, human and other resources become scarce; In a declining market, underutilized human and other resources have a continuing cost
- ❖ A consistent growing market becomes a “sellers’ market” and the selling price of construction goes up.
 - ✓ A declining market quickly becomes a “buyers’ market” and the selling price of construction goes down.

Construction market realities

❑ **Construction enterprises** generally make more money in good markets

than they make or **lose in downturns**, and

because the **length of growth periods** has been longer than the downturns, most **come out ahead**.

❖ However, that “**cost of doing business**” includes the risk of business failure,

as demonstrated by our industry having the **second highest failure rate in the nation**.

The **business model** must be **modified** to a process that allows construction organizations to **prosper in both** good markets and bad markets.

Construction market realities

- ❑ It makes **no sense** that a growing company that has been **profitable**, for example, at eight, then nine, then \$10 million in **sales** would **automatically lose money** if it is **forced back** to nine or eight million dollars by a **decline in the market**.
- ❖ **Quite the opposite may be true:** if the company
 1. Reduces its overhead,
 2. Focuses on its core strengths,
 3. Not pursuing some risky and potential losing projects,that may actually **help its profitability** so it can come out **strong and ready to participate** once the market rebounds.

Challenges during growth markets

- ❑ **When** the construction market finally **turns up (begins to recover)** after the typically lag period of 12–18 months,
the **margins or profits** usually **do not recover** for at least another 12–24 months.
- ❖ In some cases, following a **long downturn**, the recovery may be even longer.
 - ✓ In general, **profit margins** in the construction industry **do not recover** until the “**construction put in place**,” measured in dollars,
returns to at least 90% of the amount it was before the downturn.

Challenges during growth markets

❑ During recovery,

most, if not all,

construction enterprises **intend to grow back** to at least the size they were before the downturn.

❖ They will then **face the risks** associated with growth and particularly risks associated with the **rate of growth**.

✓ As the **market improves**, one would expect a **seller's market to develop**;

however, that **often does not happen** until the market **returns to within 90%** of the prior market.

Challenges during growth markets

- ❑ An **unfortunate number** of construction companies continue to **experience adverse effects** during a good market.
 - ❖ Construction companies of every size **who take on more work than they can efficiently handle** generally experience financial distress or worse.
 - ✓ This is significant because **even** the largest, oldest, and most sophisticated construction companies in the world are **not immune**.
Simply said, “If they can get into trouble, anyone can.”

Challenges during growth markets

❑ **Prior to the 2008–2012 market,**

downturn most contractors had been **growing rapidly** over the **previous years**.

❖ Contractors that did **not enjoy the rebound** in margins during the **good market**

were typically trying to **capture more than their share** of the market,

growing beyond their organization's **capability**.

✓ This led to the recognition that it can be **difficult** for a construction enterprise to project how much work they can effectively perform and finance

during growth markets.

Challenges during growth markets

❑ **Rapid growth** puts a strain on a company's people and systems

because sustained growth does **not allow** for reasonable training periods.

❖ Of even greater concern, **continued growth** does not give an organization a chance to test new people or systems

before these replacements are integrated.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Challenges during growth markets

❑ If performance deteriorates,

its **discovery** occurs after the addition of volume and people,

so **corrective measures** are more difficult with existing people and systems stretched and with overworked managers

coping with the largest volume than the enterprise has ever handled.

Some companies are unable to recover from this scenario.

Too many organizations grow so rapidly they can't measure performance until it is too late.

Challenges during growth markets

- ❑ **Growth consumes cash** in upfront investments because construction enterprises put the work in place and **wait for their money**.
- ❖ It can take **weeks and often longer** for the **owner to approve and complete payments**.
 - ✓ If a company is **continuously putting work** in place in each subsequent accounting period, they can **eventually run out of cash and credit**.
 - It is critical (and difficult) for contractors to **accurately project how much** they can effectively perform and finance.

*Discussed elsewhere, an effective way to measure the extent of financial risk is to calculate the **organization's R-score**.*

If the trend is **upward**, management should **carefully examine** the company's exposure.

Challenges during growth markets

- ❑ **Managing** a closely held construction company is like **driving a truck up a hill**.
 - ❖ The **steeper the grade**, the more strain on the truck and its engine, suspension, and drive train.
 - ❖ In the case of a company, the **strain is inflicted** on the employees, systems, and finances.
 - ❖ A truck, **starting up a hill** from a level roadway, will find it **easier compared to starting** on a grade and **increasing the slope**.
 - ❖ Additionally, **separate short climbs** are much **easier** on the truck, than sustaining continuous uphill progress.
 - ✓ When trucks attempt a **steep and long hill**, they are laboring to gain forward progress, and in **some cases they actually stop**.

Challenges during growth markets

- ❑ **When** a construction organization embarks on a **steep climb**, with a growth rate exceeding 15% yearly, there will be **strain** on its **resources**.
- ❖ During periods of **continuous growth**, the strain is sustained and magnified, sometimes to a **breaking point**.
 - ✓ **Mild and inconsistent** strain on company resources may **increase efficiency and profitability**.
 - Subjecting resources to **severe or continuous strain** encourages inefficiency, deterioration, and potential failure.
 - There are **fundamental financial constraints** to profit and growth.

Challenges during growth markets

- ❑ The **management of growth** requires careful balancing of **sales objectives** with the firm's operating efficiency and financial resources.
- ❖ The trick is to determine **what sales growth rate** is **consistent** with the realities of the organization and marketplace.
- ❖ Companies have **limits** in abilities, capital, and available resources.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Indicators of financial distress

- ☐ There are a **number of indicators** that can warn of financial distress within a construction organization.
- ☐ The **following are ten common financial distress** warning signs;
a company enduring a **combination of three or more items** listed below may be **experiencing**,
or on the road to experiencing, financial distress (Figure 7.1).

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Indicators of financial distress



Figure 7.1 The ten common financial distress warning signs.

Indicators of financial distress

- 1 **Disproportionate Increase in Overhead:** Companies that are increasing in overhead often claim, "It's because we're growing." However, a problem arises, for example, when a contractor performed \$20 million of work the previous year with a certain overhead and this year overhead is up 30%, but volume is only up 20%. This scenario can even be worse when downsizing, for example, if a company's sales are down 20% with little or no change in overhead. Overhead changes need to be proportionate to work.
- 2 **Increase in Turnover in Personnel:** Unexplained departures of key people "in the know" can be an indicator of distress when combined with some of the other indicators on this list. When senior staff members leave the organization, the contractor loses valuable institutional knowledge. It can be a sign that those leaving the company think they are on a "sinking ship."
- 3 **Late Accounting Information:** When the accounting information does not come out on time, it may be because the numbers are not adding up, and the preparers are looking for more data or "massaging" the data. There may be a legitimate reason for the delays, but there is also a risk that something else may be happening.
- 4 **Late Project Financial Information:** Some of the information we get in our industry may be delayed in project timelines; however, if the delay is later than usual, it is worth further investigation. And when the information is received for an active project, any major swings in job profit, whether positive or negative, demand immediate explanation.
- 5 **Unexpected Borrowing:** Whether for working capital, equipment, or expansion, all borrowing activity should be foreseeable and planned for. Unexpected borrowing is often an indicator of financial distress. Why the sudden need for cash?.
- 6 **Increase in Internal Disputes:** Underperformance breeds discontentment. Internal disputes may be inevitable; however, they can impact employee morale and productivity. If disputes are increasing, something may be wrong.

pour
BUTE

Indicators of financial distress

- 7 ***Decrease in the Quality of the Work:*** During financial stress, the dedication of employees to quality work output suffers. Cutting corners on quality may be a sign of desperation.
- 8 ***Too Many Excuses:*** If more things are going wrong and fewer people can provide the reasons, financial performance is probably slipping too.
- 9 ***Departures in the Accounting Staff:*** Of the hundreds of companies in jeopardy studied by the authors, more than 40% experienced the CFO or senior staff in the accounting department leave within one to three years prior to failure. It is fair to say that if the CFO or senior accounting staff leaves unexpectedly, it is likely that there is some form of financial difficulty within the company.
- 10 ***Inadequate Time to Perform Key Functions Well:*** The tasks in a company generally follow a timeline for completion. If a company's internal performance functions such as administration and management begin to fall behind, and tasks are delayed or incomplete, it should raise a red flag. This does not mean that working six days or long hours are unusual. However, if there is limited time dedicated to cover baseline activities due to more time spent with attorneys, outside accountants, or consultants, it may be an indicator of trouble.

Reengineering for the survival phase

- ❑ As discussed in earlier sections, there are **three key functional areas** in the construction business.
- ❑ An **understanding of the dynamics** of the construction business is a **prerequisite** to taking **corrective action** during unsatisfactory trends and “survival mode.”
 - 1. Marketing and sales – getting the work:** In survival mode, this is generally put on the back burner.
 - 2. Operations or production – doing the work:** In survival mode, this is usually all that matters.
 - 3. Administration and accounting – measurement of performance:** In survival, there is arguably no need to worry about this function; we already know that performance is unsatisfactory.

Reengineering for the survival phase

❑ To reverse unsatisfactory performance, timing is critical.

❖ Therefore, contractors must **concentrate on operations**,
the only area that can **provide cash flow and profit**.

✓ Profit for construction companies is **directly proportional** to the
attention afforded to field operations.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Reengineering for the survival phase

- ❑ In the following sections, the authors provide five recommendations for contractors to consider for **successful turnaround management**.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Reengineering for the survival phase

1. Serving the Financial Statement

- ❖ When business is **going well**, a construction firm can be measured by its **financial statements**.
 - ✓ In contrast, **during survival mode**, financial statements are of **limited concern** because the firm **may not last another year**.
- ❖ In **normal times**, long-term value is **more critical** than short-term profit.
 - ✓ In contrast, **during survival mode**, to return to stability in fiscal matters, the **contractor must operate** the business in what may seem like a reckless manner, **driving profits first**, not long-term value.
 - For instance, a **contractor will consume equipment** by various means, including using less-than-ideal equipment for jobs to **cut costs** simply because said equipment is available.

Reengineering for the survival phase

2. Managing Volume

- ❖ Understanding an **organization's optimum volume** is critical to success.
- ❖ In rebounding markets, many companies commit to **more work** and **get stretched thin**, resulting in **less profits**.
- ❖ An **honest appraisal** of an organization's optimum capacity and capabilities is necessary to determine **how much work the company** can effectively manage **profitably**.
 - ✓ When existing, trusted, and proven **field supervision** is **fully employed**, a construction organization is **at capacity**.
 - ✓ When an influx of work requires promotion of **untested people** or **when new hires are not trained** by or are not supervised by trusted employees, an **organization has exceeded its capacity**, exposing itself to **performance risk**.

Reengineering for the survival phase

3. Building Cash

- ❖ **Survival activities** put bank credit in jeopardy, so **cash needs to be protected**.
 - ✓ In extreme cases, one may consider **reducing deposits with banks owed to**, and placing new funds with a banking institution where **there is no debt**.
 - ✓ Depending on the **severity of the situation**, the **bank holding the debt** may **offset the firm's funds** on deposit with them.
- ❖ **Additional bond credit** may not be available but will not be needed for a while because as **backlog gets completed** it will **not be replaced** until the downsize target is met.
 - ✓ Depending on the depth of the situation, a **reduction in volume of 25%–50%** may be necessary.
 - ✓ If more than a 50% reduction is indicated, the **firm may not be worth saving**.

Reengineering for the survival phase

4. Reducing Staff

- ❖ **Reducing staff** is arguably the **most difficult decision**, especially for small to medium-sized companies.
 - ✓ At the same time, if **staff is not reduced**, the company **may bankrupt** and **all employees will lose their jobs**.
 - ✓ **One recommendation** is to not lay off the field staff early on, in part because the projects need to be completed.
- ❖ **Overhead costs** need to be reduced and staff will be the primary area of layoffs, unfortunately.
 - ✓ With the reduction in size, **fewer marketing personnel**, if any, are needed.
 - ✓ The same goes for **accounting and administrative** personnel.

Morale will be an issue so it is critical that leadership in the office and in the field explains to the remaining employees how the recovery plan will work.

Reengineering for the survival phase

5. Reducing Assets

❖ Cash needs are primary, and while there may be the **inclination to sell off the old equipment**, that does not generate much.

✓ Selling **newer equipment** raises more cash.

✓ **Replacing equipment** with lease or rental also improves cash flow.

❖ These are **drastic** but often necessary moves in **survival mode** because selling assets generates

1. Much needed cash,
2. Reduces debt, or
3. Both.

Financial risk management

- ❑ For the **skilled construction professional**, the **odds of mistakes** such as occurrences outside your control or just bad luck are **fairly small**.
- ❖ However, some of these things happening with **bad timing** could put a business into **financial distress**, which is obviously a **serious penalty**.
 - ✓ In construction, we **face these risks every day** and do not get to opt out of them.
 - However, we do **get to hone our skills** at recognizing, measuring, and managing risk.
 - One critical **risk control option** is establishing liquidity reserves to counter the **eventuality when all else fails**.

Banking and Finance

☐ When you get a **banker who believes in you**,
you can accomplish **incredible things**.

– Debbi Fields, “The benefits of making your banker your friend”

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Banking and finance

- ❑ Money may be the **root of all evil**, as some say,
but **lack of** it is undoubtedly the cause of many **doomed construction projects, bankrupt contractors, and failed owners.**
- ❑ Indeed, the **US Small Business Administration (SBA)** has said that **shortage of capital** is one of the main reasons for business failure,
along with lack of proper management.

Sources of financing

☐ Your business plan projects

1. How much money you need to get started,
2. When you expect to become profitable,
3. How you will repay any loans, and
4. The amount you need in a line of credit to use when your cash is temporarily short.

These projections will be necessary in establishing your banking relationships.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Sources of financing

- ☐ You may have **accumulated enough assets** to start and operate your business **without borrowing money**

but if not,

here are some of the practical sources of financing:

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Sources of financing

□ SBA

- ❖ This government agency has a **number of loan programs** for **small business**.
- ❖ The loans are made and administered by the **participating banks** and partially **guaranteed by the SBA**.
- ❖ Rates can be a bit **higher than on standard loans**
but the SBA's backing allows banks to make loans to borrowers who would **not qualify otherwise**.

Sources of financing

❑ Community banks

- ❖ Smaller, **regional banks** that generally offer **personalized service**.
- ❖ You can take your **banker to breakfast or lunch** now and then, and develop a **congenial relationship** that will serve you well.
- ❖ Community banks make **long- and short-term loans** that will likely suit your needs.
- ❖ Their **loan limits** are lower than the large banks'
but this should **not affect** your construction business loan needs.

Sources of financing

❑ Mega banks

- ❖ The banking industry is **consolidating**,
making it **harder** to develop an **ongoing relationship**
with a **designated loan officer** who will know who you are
when you call.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Sources of financing

☐ Credit cards

- ❖ Many **start-up businesses** are financed through credit cards.
- ❖ This method will **not serve your needs** well over the **longer term**, and **interest rates** can be very **high** after the typical “**come-on**” period is over.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Sources of financing

☐ Private lender

- ❖ You may have a **friend or business associate** who is willing to lend you money.
- ❖ But doing business with friends **risks the relationship** altogether if things don't go as planned.
- ❖ Approach the loan strictly as a business transaction by **having loan documents** drawn up by a **lawyer** and **signed** by you and **your lender**.
- ❖ Abide by the **terms of the agreement**.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Sources of financing

❑ Family loan

- ❖ Borrowing from a family member is **similar to going to a friend** for money, but with worse possible outcomes.
- ❖ A **bad financial experience** involving your family can have **far-reaching consequences**

but if you must take this route,

follow the procedures described for a private lender above.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Sources of financing

☐ Sale of investments

- ❖ Your real estate, stocks, bonds, and other assets can be a source of financing **without the payback burden.**

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Sources of financing

❑ Home equity

- ❖ Banks offer a line of credit based on a **percentage (60 to 80 percent)** of your **equity in your home**, usually with reasonable repayment terms.
- ❖ The **risk of losing the home** you and your family live in is a strong reason to avoid this kind of loan.
 - ✓ However, **many other loan types** require your **personal guarantee** as well, which may include your **real estate assets**.
- ❖ Home equity loan **fees and rates** are comparatively low.

Sources of financing

☐ Cash value of life insurance

- ❖ You usually may borrow **against any cash value** in your **life insurance policies** with minimum payback consequences.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Sources of financing

☐ IRA or former employer retirement fund or 401(k)

- ❖ These are good sources of funds with **no repayment requirement**.
- ❖ You may have to **pay income tax** and a **penalty if you cash out** of a plan.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Borrowing criteria

- ☐ Lenders **considering loan applications** typically weigh these four factors (the four Cs).

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Borrowing criteria

1. Credit

- ❖ How well have you **handled** credit in the **past**, both personal and business?
- ❖ **Evidence** of the importance placed on your credit **experience by lenders** is the **trend in retail credit**

to base lending decisions almost solely on the applicant's "credit score,"

as established by one or more of the **national credit reporting agencies**.

Borrowing criteria

2. Character

- ❖ An **evaluation** of your standing in the **community** and **how you've handled** responsibilities and obligations in all areas of your life.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Borrowing criteria

3. Capacity

❖ What **backup systems** do you have in place to rely on **when things don't go as planned**?

✓ Say the **economy slumps** and your **customers quit** building for a while.

✓ How will you survive?

❖ In making this evaluation, your lender will consider all of your

1. Assets,
2. Income, and
3. Expenses, and
4. Your contingency plan for bad times.

Borrowing criteria

4. Collateral

- ❖ Your lender will probably require **collateral to secure** your loan.
- ❖ **Qualifying assets** include
 - ✓ Stocks and other securities,
 - ✓ Real estate,
 - ✓ Business equipment, and
 - ✓ Your firm's accounts receivable.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Managing credit

☐ Be prudent in borrowing.

- ❖ Keep **long-term borrowing** in line with realistic **earnings projections**.
- ❖ If you have a **line of credit**,
 - peg repayment** of any drawdown to a **known receivable** that is due within thirty days.
- ❖ If you find yourself borrowing **short-term money** to cover **operating expenses** over longer periods of time, **you're heading for trouble**.
 - ✓ Always know where the **repayment money** is coming from, and when.

Exercises

1. Develop a chart of accounts for a construction company that primarily performs design-build projects.
2. The company wishes to track income and cost by project and to keep separate records for design and construction services.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE



مدیریت کسب و کار در صنعت ساخت (Construction Business Management)

ماژول ۲: مدیریت کسب و کار

بخش پنجم: مدیریت ریسک

ارائه دهنده:

سید محمدرضا علوی پور

(PhD, PMP, CMIT)

CMAA Authorized Trainer

دانشگاه Illinois Tech آمریکا



What we will learn?

- ☐ Risk Factors
- ☐ Early Signs
- ☐ Risk Management
- ☐ Risk Management Strategies
- ☐ Insurance
- ☐ Bonding
- ☐ Exercises

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Risk Factors

Risk factors

❑ Today's construction risk environment is dramatically different than it was in the past, and **risk factors** are mutating just enough to be **almost unrecognizable**.

❖ In **addition to project risks**, inherent construction risks can result from **changes** in

the contractor's typical project size, type, geographic area, key personnel, and/or managerial maturity.

✓ The **cyclical nature** of the **construction market** also magnifies the risk of project and contractor failure.

These risks are most pronounced and arise regularly in a recovering market:

1 Shortage of Skilled Labor Risk:

- ❖ Following a construction market **decline**, a **number of workers** leave the industry.
 - ✓ Therefore, when the industry **starts to grow again**, companies are short on skilled labor and
may **not be able** to complete quality work on **time and on budget**.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

2 Company Growth Risk:

- ❖ After an **economic recession**, the **market begins to grow** again.
- ❖ At such a time, **growth is always welcome** and **rarely** seen as a major cause of **impending failure**.
 - ❖ However, research reveals when a construction company **expands in size**, it requires **careful management decisions** to **reduce the risks inherent in changes**.
 - ✓ **Growth** itself **impacts failure** and the potential for **financial distress**.

3 Subcontractor Risk:

- ❖ Subcontractors are a fundamental part of the construction process and are subject to most of the **same market changes** as general contractors (e.g., labor shortages, material price escalation).

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

4 Capital Risk:

- ❖ Secured equipment loans, unsecured working capital credit, and surety credit for bid, payment, and performance bonds are **vital to the growing** construction enterprise.
- ❖ **Long durations of market downturns** can financially **weaken some companies** and impact their **credit worthiness**.
- ❖ A **construction company** may show **positive income** on its financial statement, and **then suddenly** experience a **financial crisis** due to a **lack of cash** and **limited borrowing power**.
- ❖ A **considerable number** of construction companies **exit** the business because they **run out of credit**.

5 Commodity Risk:

- ❖ Construction is a **custom service** and **product** that some project owners are beginning to think of as a **commodity**, causing some to believe that all construction companies perform alike.
 - ✓ This, in turn, **encourages owners** to be **less discriminate** about contractor selection and to **think of price** as the **single key differentiator**.
 - ✓ This is one of the reasons **profit margins are low**,
when compared to the **historic norms**.
- ❖ When **buyers** of construction services believe a product is a **commodity**, they generally **expect to pay less**.

6 Contract Risk:

- ❖ In this **highly competitive** growth market, **contract terms** concerning the **responsibility of each party** to the agreement are **changing**.
 - ✓ Construction buyers (owners) and designers **attempt to shift risk** in varying directions.
 - ✓ At the same time, **case law (court rulings concerning construction disputes)** sometimes **further cloud the issue** of which party is responsible.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

7 Change Risk:

- ❖ When a firm **expands in size**, it **gradually evolves** into a **different organization**.
 - ✓ Change always has **risks associated with it**.
 - For example, growth-related changes impact
 1. The amount of capital required,
 2. The time and attention management can spend on multiple projects, and
 3. The expertise required to complete new types of projects.

8 Accounts Receivable Risk:

- ❖ Accounts receivable are an **asset** but unfortunately cannot be used to pay bills.
- ❖ There are any **number of failed construction** enterprises that **may have survived** if they had all the money that was owed to them.
- ❖ **Poor management** of accounts receivable including managing the payment process is one of the **major risks** in the construction business.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

9 Innovation Risk:

❖ **Advancements** in field and office technology, and developments in project funding methods, introduce **potential risk initially**.

- ✓ Selecting and implementing new technology can significantly **consume management's time** and attention;

if the **selected** innovation **does not perform as expected**,

that time **investment can be costly**.

- ✓ **New methods** (e.g., construction methods, public-private financing) are **initially risky** simply because project stakeholders have **limited experience** with them.

Early Signs

❑ **While** most owners, construction managers, designers, contractors may complain when a **project goes bad**,

many express some variation of

“I had a bad feeling about this for months” or

“All the signs were there, but I was hoping for the best,”

so they may **not** always be **totally surprised**.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Early signs

❑ Some early signs of trouble before default include

- (1) complaints from suppliers or subcontractors about unpaid invoices, partial or late payments,
- (2) contractors asking for advance payment or help making payroll,
- (3) unexplained cuts in crew size,
- (4) declining work quality,
- (5) overbilling of quantities or percentage of work completed,
- (6) unusual requests for payment of materials ordered and stored off-site, and
- (7) changes in foremen, supervisors, or middle management.

Long-term employees can often sense trouble early on and may leave for other opportunities.

Risk Management

Risk management

❑ As discussed in this course, **construction is a risky business**, and risk management is an **essential responsibility** in managing a construction company.

❖ This includes

1. The risks encountered by being a **business enterprise** as well as
2. The risks associated with **constructing projects**.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Risk management

- ❑ **Depending** on how the contract is priced (lump sum, unit price, or cost plus), the **construction company** may have assumed the **risk** of obtaining the needed materials, labor, and equipment within an **agreed price** and **completing the project** by the contractual completion date.
- ❖ Some of this risk may be **transferred contractually** to **subcontractors**,
but **much of the risk remains** with the general contractor.
- ✓ In addition, the construction company incurs the **risk** of
 1. Subcontractor bankruptcy and
 2. Poor workmanship**when using subcontractors.**

Risk management

- ❑ The **major business risks** faced by most construction companies are
 - ❖ **Health and safety** of its employees while working on the job or at another location,
 - ❖ **Injury or property loss** to third parties as a result of company activities,
 - ❖ **Damage or loss** to construction work in place
but **not yet accepted** by the owner, and
 - ❖ **Loss of or damage** to its vehicles and construction equipment.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

- ❑ **These risks and liabilities** are so great that most construction firms **must purchase insurance policies** to protect, or partially protect, themselves against financial loss that may result from these risks.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Risk Management Strategies

Risk management strategies

- ☐ Because construction is a **risky business**, risk management is a **major responsibility** of the **leaders** of a construction firm.
- ☐ The major risk categories are
 1. People
 2. Property
 3. Process

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Risk management strategies

❑ Risk management involves

1. Identifying each risk,
2. Assessing the potential impact on company assets, and
3. Selecting an appropriate management strategy,

as illustrated in Figure 3.1

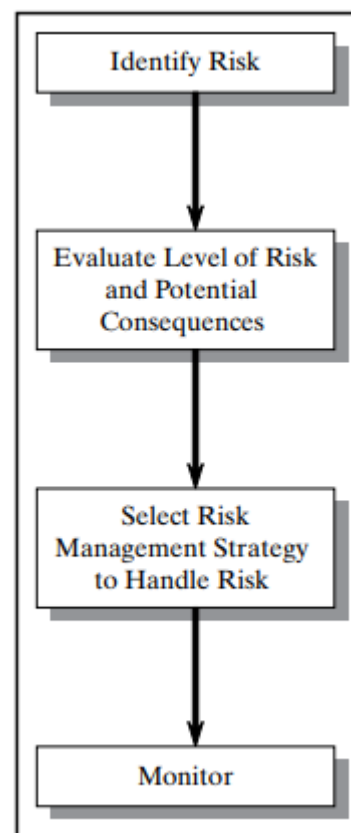


FIGURE 3.1 Risk Management

Risk management strategies

- ☐ Once **strategies** have been **selected**, it is important to monitor the results obtained.
- ☐ **Some** construction firms have a **full-time risk manager**,
while in other companies, risk management is a **part-time responsibility**,
often assigned to the company safety director.

The overall objective of risk management is to reduce the cost of doing business

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Risk management strategies

□ In general, there are **three alternative strategies** for managing a risk:

1. Avoid the risk
2. Accept the risk
3. Transfer the risk

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Risk management strategies

- ❑ Sometimes a **project is too risky** to undertake, and a construction firm may choose **not to compete** for it.
 - ❖ This is an **example of avoiding** the risk.
- ❑ In another project, the construction firm may choose to **accept the risk and include** an appropriate **contingency in its proposal**.
- ❑ Risk transfer occurs **through contracts**, either by
 1. Language in the construction contract or subcontracts, or
 2. Insurance contracts purchased from insurance companies.
 - ❖ Requiring **surety bonds from subcontractors** is another form of risk transfer

Insurance

Insurance contracts

- ❑ Insurance policies are **two-party contracts** under which the insurer promises, for a fee or premium, to **assume financial responsibility** for specified losses or liabilities of the insured for a specified period of time.
- ❖ Some policies are written with **deductible amounts** that are the responsibility of the **insured**.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Insurance contracts

- ❑ **One of the most important** areas with respect to insurance policies is to be absolutely certain that the **named insured is correctly shown**.
 - ❖ If an **individual company** is doing business, it should be so **named on the policy**.
 - ❖ **Corporate entities** must be named.
 - ❖ **Joint ventures** or **partnerships** must be named.
- ❑ **Just because** the individual members of a joint venture have insurance, it does **not mean** that the joint venture is insured unless it is specifically identified in the policies.

Insurance contracts

- ❑ Insurance companies are **rated by the A.M.**
 - ❖ Best Company, using the ratings shown in Figure 3.2.
 - ✓ Most construction companies select insurance companies that are rated A or better, but in some circumstances insurance companies rated as B++ or B+ may be used.
 - ✓ Using lower-rated companies is not recommended.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

FIGURE 3.2 Insurance Company Ratings

Insurance Company Rating Scale used by A. M. Best Company	
Ratings	Categories
<i>Secure Ratings:</i>	
A++ and A+	Superior
A and A-	Excellent
B++ and B+	Very Good
<i>Vulnerable Ratings:</i>	
B and B-	Fair
C++ and C+	Marginal
C and C-	Weak
D	Poor

Insurance agents

- ❑ Because construction insurance is **specialized and complex**, construction companies rely on insurance **brokers or agents** who are familiar with the risks faced in the construction industry and understand the **types of insurance coverage needed** by a construction company.
 - ❖ These **insurance agents** help the company leaders to develop a comprehensive **insurance program** and to procure the needed policies **at competitive prices**.
 - ❖ **Insurance cost** may account for up to 20 percent of a construction company's total overhead cost, so it must be **carefully managed**.

Insurance agents

- ❑ When **selecting an insurance agent**, a construction company should select an individual or a firm that has **extensive knowledge** of
 1. The construction industry and
 2. The risks and challenges faced by construction companies.

- ❑ The job of the insurance agent is to be a **source of information** regarding
 - ❖ The types of insurance products on the market,
 - ❖ The suitability of specific insurance companies,
 - ❖ The anticipated cost of various levels of coverage, and
 - ❖ The use of deductibles.

Insurance agents

❑ Good insurance agents will provide the following services:

❖ Program administration

- ✓ Monitor the **insurance industry** and keep the construction company **appraised** of changes or trends.
- ✓ Assess **construction insurers** with respect to **service and cost**.
- ✓ Review insurance **policy language** to ensure that the construction firm has the **desired coverage**.

Insurance agents

❑ **Good insurance agents** will provide the following services:

❖ **Risk management**

- ✓ Assist the construction firm in the development of a **risk management plan**.
- ✓ Respond to **coverage questions** and any **new risk exposure**.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Insurance agents

❑ Good insurance agents will provide the following services:

❖ Claim support

- ✓ Act as **liaison** between the construction firm and the insurance company on any **claims issues**.
- ✓ Review **coverage issues** and, if necessary, **negotiate** with the insurance company on **behalf of the construction firm**.

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

Insurance types

□ Let's now discuss the **major types of construction insurance**.

❖ Typical insurance policies can be grouped into four areas:

1. Property insurance for the construction project
2. Property insurance for the construction company's property
3. Liability insurance
4. Business insurance

Prepared by Dr. Alavipour
DO NOT DISTRIBUTE

موسسه مهندسی و مدیریت ساخت علوی پور (ACEMI)

دفتر آموزش



تهران، بلوار فردوس شرق، مجتمع آبگینه، طبقه سوم اداری، واحد C42



+۹۸ ۲۱ ۴۶ ۱۰۰ ۴۴۵



+۹۸ ۲۱ ۴۶ ۱۰۰ ۴۵۰



info@dralavipour.com



www.dralavipour.com



@alavipour_pm



@acemi_social



@alavipour_pm



@IRANACEMI

