ENTREPRENEURSHIP
for Computer Science and Engineering

Lecture 7:

Financial Intelligence
(Part III: Bookkeeping and Ledgers)
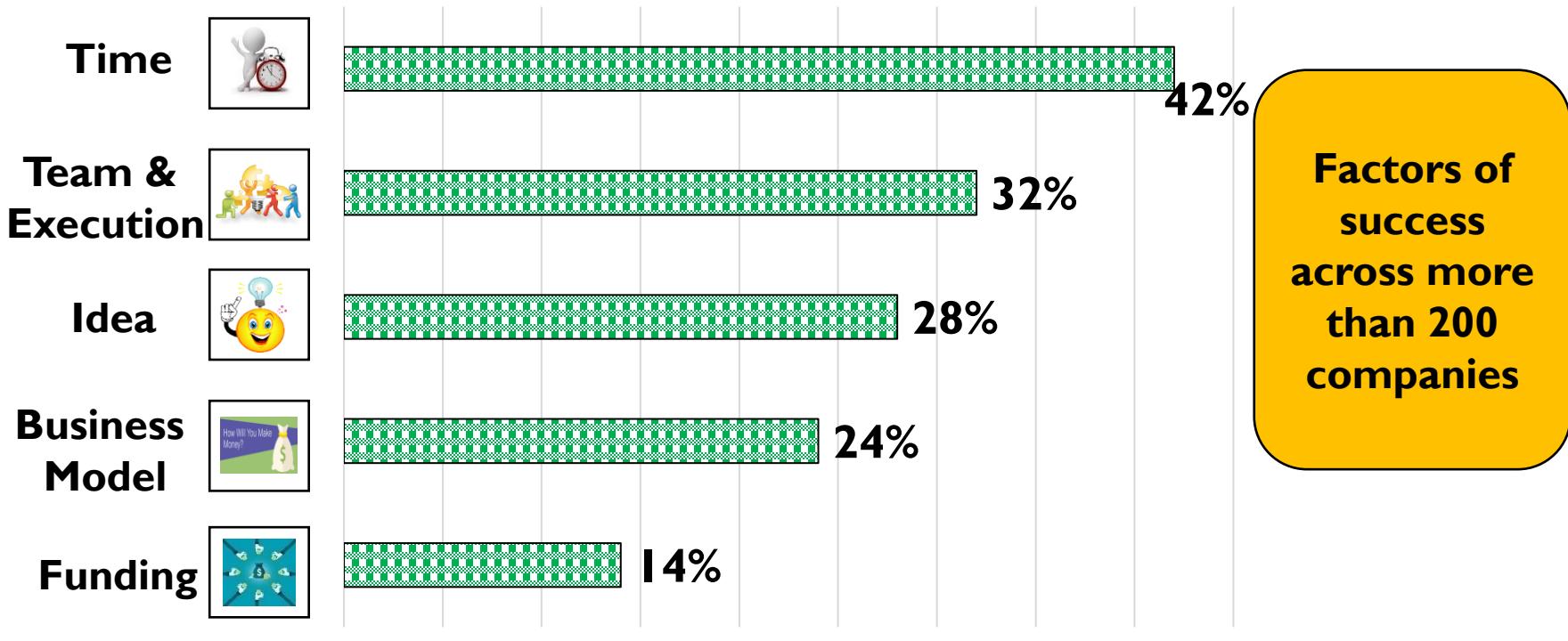
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Outline

- Last Session:
  - Calculate the Cost of Customer Acquisition (CoCA)

- This lecture
  - Types of Accounting
  - Financial statements
    - Income statement, retained earnings, balance sheet, and cash flow statement
  - The Depreciation and Amortization Processes
  - Bookkeeping and Ledgers

- Announcements:
  - Course website: *https://www.m-zakeri.ir/Entrep/*
  - My lab: *https://www.m-zakeri.ir/lab*
  - Book template:
    - *https://github.com/m-zakeri/Entrep/tree/main/docs/assignments/book*

Recap: What makes startups succeed?

- Factors of success

Time		42%
Team & Execution		32%
Idea		28%
Business Model		24%
Funding		14%

Factors of success across more than 200 companies

[Based on a study by IdeaLab]

https://www.idealab.com/

Why Financial Intelligence?
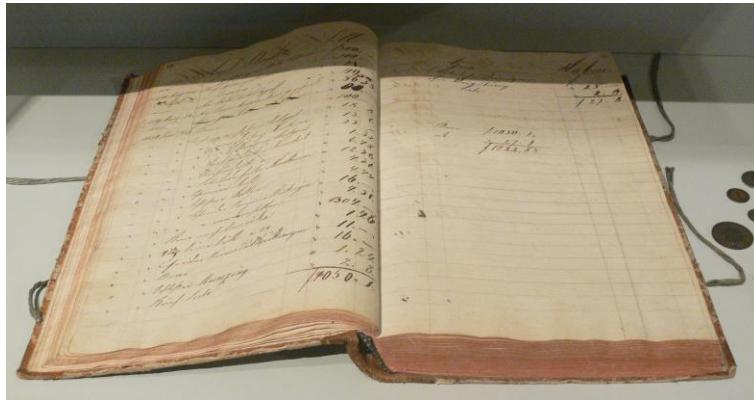
- **Finance** and **accounting** together make the language of business.

- They allow you to answer basic questions, alongside *controlling*, *evaluating*, and *planning* operations
  - What does my company own?
  - How much does it owe others?
  - How well did (or will) its operations go?
  - How does it (or should) get the cash to fund itself?

- You need to be able to **interpret** at least *core financial statements,* which will enable you to control, evaluate, and plan operations accordingly
  - We will refer to this process as *financial intelligence (accounting)*
  - **Financial accounting** is a branch of accounting concerned with the summary, analysis, and reporting of financial transactions related to a business.

Recall: Financial Statements صورت‌های مالی

- Financial reports are crucial for entrepreneurs because they track how your business is performing.

- They can help you make **informed decisions** about the future of your company and show you how to become more efficient.

- Four components of financial statements:
  - **Income Statement**
  - **Balance Sheet**
  - **Cash Flow Statement**
  - **Retained earnings (changes in equity)**

Recall: Financial Statements صورت‌های مالی

- **Income Statement** سود و زیان: An income statement shows the *revenue*, *expenses*, and ultimately the amount of *profit* or loss generated by a business, for a *specific reporting period*.
- **Balance Sheet** ترازنامه: The balance sheet reports a business's assets, liabilities, and equity at a specific point in time.
  - A company owns and what it owes on a single day/month/year.
- **Cash Flow Statement** جریان وجوه نقد: Your **cash** flow statement offers a summary of the cash and **cash** equivalents coming into and going out of your business.
- **Retained earnings (changes in equity)** سود انباشته : It shows how the distribution of income and transfer of *dividends* سود سهام affects the wealth of shareholders in the company.
  - Profits of previous years that are accumulated till the current period.

Bookkeeping

To satisfy the *accounting equation*

What is Bookkeeping?

- Bookkeeping دفترداری is a process of **recording business transactions** chronologically, systematically, and scientifically in a separate set of books.

- Bookkeeping is the first stage of accounting.

- This stage of accounting is mechanical and repetitive in nature.

- The person in an organization who is employed to perform bookkeeping functions is usually called the **bookkeeper.**
  - Write the **daybooks** (**journals**)
    - which contain records of sales, purchases, receipts, and payments
  - Document each financial transaction, whether cash or credit, into the correct daybook
    - Petty cash تنخواه book, suppliers ledger, customer ledger, etc.

Essential Features of Bookkeeping

- Bookkeeping is an art as well as a science

- Recording and classifying business transactions

- Recording in a separate set of books

- Recording in terms of money

- Recording chronologically

- Recording in a systematic manner

- Bookkeeping helps in understanding the financial performance and position of the business.

- Read more:

  - https://www.learnsignal.com/blog/introduction-to-bookkeeping/

Bookkeeping Process

- Bookkeeping as a process includes the following steps:
    1. Identifying the transactions of financial character
    2. Measuring the transactions in terms of money
    3. Recording the transaction in the books of original entry (account)
    4. **Posting** the transaction into the ledger
    5. Balancing the account opened in the ledger
    6. Preparing the trial balance
        - Checks the sum of debits against the sum of credits.
        - *https://www.sepidarsystem.com/blog/trial-balance/*

Bookkeeping *vs.* Accounting

- Bookkeeping differs from accounting.
    - It is a part of accounting.
    - Based on transactions recorded and classified in bookkeeping, the final accounts are prepared in accounting.

BASIS OF DIFFERENCE	BOOKKEEPING	ACCOUNTING
Scope	Scope of Book-keeping is narrow.	Scope of Accounting is broad.
Nature	The function of book-keeping is clerical and routine type in nature. Book-keeping includes recording business transactions, posting them into ledger and balancing of accounts.	The function of accounting is analytical. Accounting includes not only the preparation of records, but also the preparation of summary statements and reports, their analysis, interpretation, and communicating the results to the users.
Stages	It is the first stage of Accounting. The work of bookkeeping starts when a business transaction takes place.	It is the second stage of Accounting. The work of accounting starts where the work of bookkeeping ends.

Bookkeeping *vs.* Accounting

- Bookkeeping differs from accounting.

BASIS OF DIFFERENCE	BOOKKEEPING	ACCOUNTING
Who Perform	This work is done by a person called a bookkeeper.	This work is performed by a person called accountants.
Personal Judgement	The work of bookkeeping is performed according to the rule and regulations. Hence, there is no need to take personal judgement by a book-keeper.	The work of accounting is analytical in nature. Hence, the accountant has to take personal judgement
Special ability and Knowledge	For book-keeping special knowledge and ability is not required. In present time, the work of book-keeping is done on computers.	For accounting special knowledge and ability is required. It is due to this fact that company appoints only those accountants who have greater degree of skill and specialization in accounting that is Chartered Accountants.
Knowledge of Financial Positions	Book-keeping does not throw any light on the financial position of the business.	Accounting ascertains the financial position of the business.

Bookkeeping *vs.* Accounting

- Bookkeeping differs from accounting.
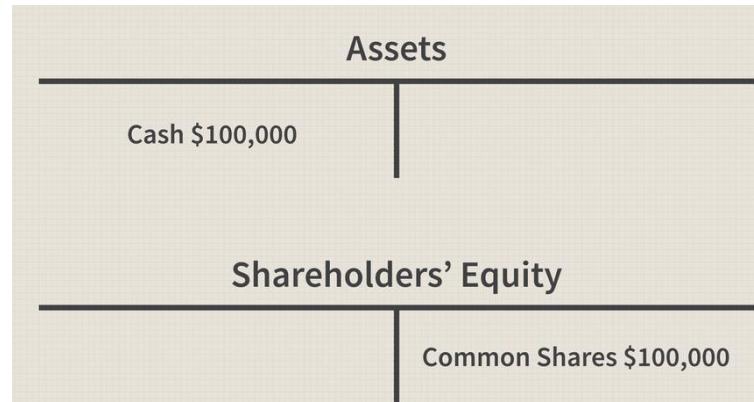
BASIS OF DIFFERENCE	BOOKKEEPING	ACCOUNTING
Dependency	Book-keeping has to depend on accounting to make the records more effective and useful.	Accounting has to depend on book-keeping to get the record information on time.
Responsibility	A bookkeeper is not responsible for accounting work.	An accountant is responsible for book-keeping work. It is because the task of book-keeping is done under his supervision.

Types of Bookkeeping Systems

- **Single-Entry System**: A straightforward system where only one entry is made for each transaction.
  - Suitable for small businesses or personal finances, but has its limitations.

- **Double-Entry System**: This system is the industry standard, with every transaction recorded twice (as a debit and a credit).
  - Provides a clearer financial picture and is used by most businesses.
  - The double-entry system records two sides, known as debit بدهکار and credit بستانکار
  - Following the principle that for every debit there must be an equal and opposite credit.
  - The **balance sheet** is based on the double-entry accounting system, where the total assets of a company are equal to the total liabilities and shareholder equity.
  - Double-entry accounting was a key calculative technology responsible for the **birth of capitalism**.
  - In a double-entry accounting system, credits are offset by debits in a **general ledger** دفتر کل or **T-account**.

General Ledger and T-Account

- The credits and debits are recorded in a **general ledger**, which has a format that resembles the letter **"T"**, with a heading at the top and credits and debits below.
  - The major components of the **balance sheet**—*assets, liabilities*, and *shareholders' equity*—can be reflected in a T-account.

Assets	
Cash $100,000	

Shareholders' Equity	
	Common Shares $100,000

General Ledger

- General ledger accounts encompass transaction data needed to produce an income statement, balance sheet, and other financial reports.

- A simple example of what a double-entry general ledger may look like.

Date	Description	Account	Debit	Credit
01/03	Purchase: Company X	Inventory	$2,000	
	Check to Company X	A/P		$2,000
01/08	Electricity payment	Expenses	$300	
	Payment to electricity	Cash		$300
01/15	Employee payroll	Salaries	$10,000	
	Payroll checks	Cash		$10,000
01/17	Rent	Rents	$3,000	
	Check for rent	Cash		$3,000

Chart of accounts

- Every transaction that occurs in a business can be recorded as a credit in one account and a debit in another.

- Whether a debit reflects an increase or a decrease and whether a credit reflects a decrease or an increase depends on the **type of account**.

Account	Debit	Credit
Asset	Increase	Decrease
Expenses	Increase	Decrease
Liabilities	Decrease	Increase
Equity	Decrease	Increase
Revenue	Decrease	Increase

Double Entry Bookkeeping with Python

- Python Accounting is a double-entry bookkeeping Python library.
    - https://python-accounting.readthedocs.io/en/latest/index.html

```
asset_account = Account(
    name="Asset Account",
    account_type=Account.AccountType.NON_CURRENT_ASSET,
    currency_id=currency.id,
    entity_id=entity.id,
)
revenue_account = Account(
    name="Revenue Account",
    account_type=Account.AccountType.OPERATING_REVENUE,
    currency_id=currency.id,
    entity_id=entity.id,
)
```

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```
client_invoice = ClientInvoice(
    narration="Client Invoice Transaction",
    transaction_date=datetime.now(),
    account_id=client_account.id,
    entity_id=entity.id,
)
client_invoice_line_item = LineItem(
    narration="Client Invoice line item",
    account_id=revenue_account.id,
    amount=50,
    quantity=3,
    tax_id=output_tax.id,
    entity_id=entity.id,
)
session.add(client_invoice)
session.add(client_invoice_line_item)
session.flush()
```

Double Entry Bookkeeping with Python

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```python
session.add_all([tax_account,
    bank_account,
    revenue_account,
    asset_account])
session.commit()


cashflow_statememt = BalanceSheet(session)
print(cashflow_statememt)
```

```
                Test Entity
              Cashflow Statement
For the period: 01, Jan 2024 to 23, Feb 2024

Operating Cash Flow
    Net Profit                       100.0000
    Receivables                      -70.0000
    Payables                         120.0000
    Taxation                          20.0000
                                 _____
Total Operating Cash Flow            170.0000


Investment Cash Flow
    Non Current Assets              -120.0000
                                 _____
Total Investment Cash Flow         -120.0000


Financing Cash Flow
    Equity                             0.0000
                                 _____
Total Financing Cash Flow            0.0000


Net Cash Flow
    Beginning Cash Balance             0.0000
    Net Cash Flow                     50.0000
                                 _____
Ending Cash Balance                  50.0000
                                 ===============

                                 _____
Cashbook Balance                     50.0000
                                 ===============
```

Summary: Bookkeeping *vs.* Accounting

- Key differences
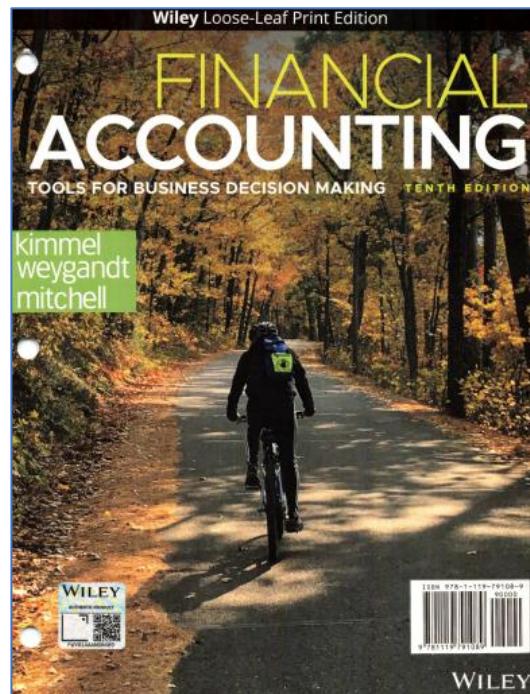
Aspect	Bookkeeping	Accounting
Purpose	Record transactions	Interpret and analyze transactions
Scope	Narrow, transactional	Broad, analytical and strategic
Output	Ledgers, journals, trial balances	Financial statements, reports, audits
Skill/Training	Associate degree or vocational skills	Bachelor's degree, CPA, advanced training
Decision-making	Provides raw data	Informs business decisions

Ethics in Financial Reporting

- Recognize an ethical situation and the ethical issues involved.

- Identify and analyze the principal elements of the situation.

- Identify the alternatives and weigh the impact of each alternative on various stakeholders.

Reading Exercise

- Read **Chapters 1, 2, and 4** of the "Financial Accounting: Tools for Business Decision-Making" book
    - 2022 by Paul D. Kimmel *et al.*

- Read *SepidarSystem* blogs and tutorials:
    - https://www.sepidarsystem.com/blog/financial-statements-and-notes/

Next Class

- The Lean approach and Minimum Viable Product