

Tutorial 03

Investment Choices & Financial Constraints

Exercise 01

Part A: Define the following terms in one or two sentences each. (6 pts)

1. Agricultural Investment
2. Payback Period
3. Net Present Value (NPV), also state the decision rule.

Part B: True or False. Circle your answer and justify briefly.

	Statement	T / F	Justification
1	A shorter Payback Period is always preferable.		
2	A negative NPV means the investment is profitable.		
3	Cash flow problems arise because farm income and expenses occur at exactly the same time.		
4	Leasing equipment reduces the upfront capital requirement.		
5	Crop insurance is a strategy to overcome production risk.		

Exercise 02

Mr. Karim manages a 40-hectare vegetable farm. He is considering installing a drip irrigation system. The total investment is 7,800,000 DA. Expected annual benefits:

- Water savings (reduced pumping costs): 975,000 DA/year
- Increase in crop yield value: 1,170,000 DA/year
- Annual maintenance cost: 195,000 DA/year

Expected lifespan: 10 years. Discount rate: 9%

Discount factors at 9%:

Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
0.917	0.842	0.772	0.708	0.650	0.596	0.547	0.502	0.460	0.422

1. Calculate the annual net benefit (cash inflow) of the system. **(Annual net benefit = savings + additional yield – maintenance)**

- Calculate the Payback Period. Should Mr. Karim proceed? Justify. (**Payback Period = Initial Investment ÷ Annual Net Cash Inflow**).
- Complete the NPV table below. Conclude whether the investment should be accepted.
- If the discount rate were 15% instead of 9%, would you expect the NPV to be higher or lower? Explain without recalculating.

Year	Cash Flow (DA)	Discount Factor	Present Value (DA)	Cumulative PV (DA)
0	- 7,800,000	1.000		
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
	NPV =			

Exercise 03

Farida recently inherited a 30-hectare wheat farm. She wants to buy a combine harvester for 9,750,000 DA. The bank refused her loan application (no collateral, no revenue history). She harvests in July but cannot pay her input suppliers in January. Tomato prices collapsed last season, making her hesitate about diversifying. A friend suggests she join a local agricultural cooperative.

- Identify the three financial constraints Farida faces. For each one, name the type of constraint and quote the relevant detail from the case.

	Type of Financial Constraint	Detail from the case that illustrates it
1		
2		
3		

- How can joining a cooperative specifically help Farida address two of these constraints? Give one concrete benefit for each.