Class exercise

XYZ Supermarkets is a regional grocery chain with multiple outlets. The company sources bulk grocery products, including premium organic rice, from a wholesale supplier. Due to fluctuating demand, storage constraints, and cash flow considerations, XYZ Supermarkets must decide on the optimal order quantity that minimizes costs while leveraging quantity discounts.

However, the company faces several challenges:

Limited warehouse space – storing excessive stock increases operational difficulties.

Cash flow constraints – large purchases tie up working capital.

Perishability concerns – organic rice has a shelf life, increasing the risk of spoilage.

Competitive pricing – discounts help improve margins but may lead to overstocking.

The below given the discounting data.

Order quantity	Price per bag (50 kg bag) $
0-999	80
1000-4999	75
5000+	70

Given data for XYZ Supermarkets:

Annual Demand (D): 20,000 bags; Ordering Cost (S): $200 per order; Holding Cost (H): 15% of the unit cost;

Challenges in Decision-Making

Warehouse Limitation:

The company's maximum storage capacity at any time is 3,000 bags.

Ordering 5,000 bags at once to get the best price is infeasible.

Cash Flow Constraint:

Ordering 5,000 bags requires an immediate payment of $350,000.

The company’s available liquidity is only $250,000, making bulk purchasing challenging.

Product Shelf Life:

The rice has a 6-month shelf life, and the demand pattern shows that selling 5,000 bags within that time frame is risky.

The risk of spoilage increases holding costs beyond the basic calculation.

Who will get more benefits ? Retailer (XYZ) or supplier