

Technical breakdown of the three return calculation methodologies i.e. TWRR, CAGR and XIRR

1. Time-Weighted Rate of Return (TWRR)

The Manager's Performance Metric

- **Concept:** TWRR measures the compound rate of growth of the underlying portfolio. Its primary function is to eliminate the distorting effects of external cash flows (when a client deposits or withdraws money). Because the portfolio manager cannot control *when* a client moves money in or out, TWRR isolates and measures solely the manager's investment decisions. This is why SEBI mandates it for PMS reporting.
- **Methodology:** The total investment period is broken down into smaller sub-periods, with a new sub-period starting every time there is a cash inflow or outflow. The return for each individual sub-period is calculated, and these returns are then geometrically linked (multiplied together) to determine the return for the entire period.

2. Compound Annual Growth Rate (CAGR)

The Smoothed Point-to-Point Return

- **Concept:** CAGR represents the constant annualized rate of return that would be required for an investment to grow from its initial balance to its final balance, assuming all profits were reinvested. It completely ignores volatility and any interim cash flows, providing a "smoothed" average growth rate over a specific number of years.
- **Methodology:** It requires only three inputs: the beginning value, the ending value, and the total time in years. It is best used for lump-sum investments with no additional deposits or withdrawals.

3. Extended Internal Rate of Return (XIRR)

The Investor's Personal Return

- **Concept:** XIRR is a "money-weighted" return calculation. Unlike TWRR, XIRR heavily accounts for the timing and size of every single cash flow. It calculates the actual personal return the investor experienced, which is influenced by their timing of adding

or withdrawing funds. If a client adds a large sum right before a market rally, their XIRR will be higher than the fund's TWRR.

- **Methodology:** XIRR solves for the single annualized discount rate that makes the Net Present Value (NPV) of all cash inflows and outflows (including the current portfolio value as a final outflow) equal to exactly zero. It handles irregular cash flow dates accurately.

Summary of Differences for the Client:

- Look at **TWRR** to evaluate how well the portfolio manager performed.
- Look at **XIRR** to evaluate how well your actual money performed, factoring in when you added or withdrew capital.
- Look at **CAGR** for a simple, annualized growth rate of a lump-sum amount over multiple years.