

Performance Attribution Analysis

The performance of a fund is usually expressed in terms of its total returns. The excess return compared to a benchmark can either be due to chance (of selecting the growing industries) or the ability of the fund manager to select and effectively allocate the portfolio's assets to the right security.

Performance attribution interprets how portfolio managers achieve their performance and **measure the sources of value added to a portfolio**. To determine success, these managers seek to outperform their scheme returns with respect to a benchmark. This excess return with respect to the benchmark is called **active return**. A fund manager's skill is generating returns that are not attributable to any obvious reason like sector driven performance or market capitalization driven gains.

Performance Attribution = Allocation Effect + Selection Effect + Interaction Effect

- **Allocation Effect** - It measures the portfolio manager's ability to effectively allocate the portfolio's assets to various segments. A segment refers to assets or securities that are grouped within a certain classification such as Equity, Fixed, or Technology. Positive allocation occurs when the portfolio is over weighted in a segment that outperforms the benchmark and underweighted in a segment that underperforms the benchmark and vice versa for negative allocation.
- **Selection Effect** - It measures the portfolio manager's ability to select securities within a given segment relative to a benchmark. The weight of the segment in the portfolio determines the size of the effect—the larger the segment, the larger the effect is, positive or negative.
- **Interaction Effect** - It measures the combined impact of an investment manager's selection and allocation decisions within a segment. For example, if an investment manager had superior selection and over weighted that particular segment, the interaction effect is positive. If an investment manager had superior selection, but underweighted that segment, the interaction effect is negative. For a better understanding, refer to the following table:

Segment Weight	Segment Return	
	Portfolio Return > Benchmark Return	Portfolio Return < Benchmark Return
Portfolio Weight > Benchmark Weight	+	-
Portfolio Weight < Benchmark Weight	-	+

Methodology for Performance Attribution (Returns Based)

Arithmetic Approach –

- Relies on arithmetic approach to calculate active return
- Arithmetic excess return is the profit in excess of a benchmark fund expressed as a percentage of the initial amount invested

Geometric Approach –

- Relies on geometric approach to calculate active return
- Geometric Excess return is the profit in excess of the benchmark fund expressed as a percentage of the final value of the benchmark fund

Example to show the difference between two approaches

Arithmetic

Market start value = \$1,000,000

Market end value = \$1,070,000

Hence, profit = \$70,000

Fund return = 7%

Benchmark Return = 5%

Added value = Fund return – Benchmark return = 7% - 5% = 2%

Geometric

Added Value = (Fund Return - Benchmark Return) / Benchmark Return = (\$1,070,000 - \$1,050,000) / \$1,050,000
= \$20,000 / \$1,050,000 = 1.9 %