Though using Assisted Reproductive Technologies (ARTs) can improve oestrus detection, conception and pregnancy success, thus benefit breeding program implementation, empirical evidence of their economic viability is lacking to inform investment decisions in pastoral herds. This study assessed economic viability of using OvSynch and fixed Timed Artificial Insemination (TAI) protocol in Sahiwal upgrading breeding program under two hypothetical cases of best and worst in activity-based money allocations when pastoral herds deploy either optimal or low input husbandry practices. From herd owners' assessment of milk production, best-case scenarios attain on average 10 L/cow/day with optimal husbandry and 5 L/cow/day with low input husbandry. The worst-case scenarios attain 5 L/cow/day with optimal husbandry and 1 L/cow/day with low input husbandry. Benefit- Cost Analysis (BCA) estimated Net Present Value (NPV), Benefit–Cost ratio (BCR) and Internal Rate of Return (IRR) to establish economic viability of using OvSynch and TAI Protocol in pastoral breeding programs. Both best-case scenarios retuned positive NPVs (82,028 and 6,912), BCR values (1.68 and 1.08) and IRR (27.46% and 8.08%) while worst-case scenarios returned negative NPVs (-135,855 and -141,025), BCR values of below 1 (0.87 and 0.66) and IRR values below the minimum rate of returns. These economic parameters were sensitive to price changes in inputs and outputs, under both optimal and low input husbandry practices. Results indicate that using OvSynch and TAI Protocol is a profitable and economically viable investment under optimal husbandry practices but not under low input husbandry practices. By implications, use of OvSynch and TAI Protocol in Sahiwal upgrading breeding programs need be accompanied with improved husbandry practices and de-risking pastoral herd owners from price changes in input and output markets.