

## ABSTRACT

Volatility is an important instrument in stock options. That is because volatility has a strong relationship with the price of stock options. By determining the value of the volatility in the future, then we can know the price of the option in the future. One way to determine the value of volatility using data from existing volatility is called implied volatility. Implied volatility can be determined by equating the theoretical price to the market price. Black-Scholes model is one of the theoretical model to determine the price of stock option. Implicit function of the theoretical price to the market price, it can be determined the value of the volatility.

To optimize the value of volatility, particle swarm's optimization is used (psa) as optimization algorithm. Searching with PSO is based on the intelligence of fowl in the search for food sources. There is speed and position in the search using PSO for every particle in finding the optimal value.

The Value of implied volatility method and particle swarms optimization is showing that the resulting volatility value is optimum volatility and convergent. The closer distance between lowerbound and upperbound, the faster the value heading to convergent.

**Keyword :** *Implied Volatility, Black-Scholes, Particle Swarms Optimization*