Klopman/Salem Equation

$$\Delta E = \underbrace{-\sum_{ab}(q_a + q_b)\beta_{ab}S_{ab}}_{\text{first term}} + \underbrace{\sum_{k<l}\frac{Q_k Q_l}{\varepsilon R_{kl}}}_{\text{second term}} + \underbrace{\sum_{r}^{occ.}\sum_{s}^{unocc.} - \sum_{s}^{occ.}\sum_{r}^{unocc.}\frac{2(\Sigma_{ab}c_{ra}c_{sb}\beta_{ab})^2}{E_r - E_s}}_{\text{third term}}$$

q_a and q_b	electron populations in atomic orbitals a and b
β and S	resonance and overlap integrals
Q_k and Q_l	total charges on atoms k and l
ε	local dielectric constant
R_{kl}	distance between atoms k and l
c_{ra}	coefficient of atomic orbital a in molecular orbital r
c_{sb}	coefficient of atomic orbital b in molecular orbital s
E_r	Energy of molecular orbital r
E_s	Energy of molecular orbital s

Simplified Form

$$\Delta E = \underbrace{-\frac{Q_{nuc}Q_{elec}}{\varepsilon R}}_{\text{second term}} + \underbrace{\frac{2(c_{nuc}c_{elec}\beta)^2}{E_{HOMO} - E_{LUMO}}}_{\text{third term}}$$

Hard nucleophiles have a low-energy HOMO and usually a negative charge
Soft nucleophiles have a high-energy HOMO but no not necessarily have a negative charge

Hard electrophiles have a high-energy LUMO and usually a positive charge
Soft electrophiles have a low-energy LUMO but no not necessarily have a positive charge

A hard-hard reaction is fast because of a large Coulombic attraction - the second term is large and the third term is small

A soft-soft reaction is fast because of a large interaction between the HOMO of the nucleophile and the LUMO of the electrophile - the second term is small and the third term is large

The larger the coefficient the softer the reagent