Hence call price for a Quanto option

$$= S_0 N(d_1) - e^{-rT} N(d_2)$$

where $d_1 = \dfrac{\ln\frac{S}{K} + [(r_f - \rho\sigma_s\sigma_f) + \frac{\sigma_s^2}{2}]T}{\sigma_s\sqrt{T}}$

$d_2 = d_1 - \sigma_s\sqrt{T}$

$$\frac{\partial d_1}{\partial S_0} = \frac{\left(\frac{\cancel{K}}{S_0}\right)\left(\frac{1}{\cancel{K}}\right)}{\sigma_s\sqrt{T}} = \frac{1}{S_0\sigma_s\sqrt{T}}$$

$$\frac{\partial d_2}{\partial S_0} = \frac{\partial d_1}{\partial S} = \frac{1}{S_0\sigma_s\sqrt{T}}$$

$\therefore$ The delta $= \dfrac{\partial C}{\partial S_0} = \left(N(d_1) + S_0\dfrac{\partial N(d_1)}{\partial S_0}\right) - e^{-rT}K\left(\dfrac{\partial N(d_2)}{\partial S_0}\right)$

$$= N(d_1) + S_0\, n(d_1) \times \frac{\partial(d_1)}{\partial S_0} - Ke^{-rT} n(d_2)\frac{\partial(d_2)}{\partial S_0}$$

$$= N(d_1) + \frac{n(d_1)}{\sigma_s\sqrt{T}} - \frac{Ke^{-rT} n(d_2)}{S_0\sigma_s\sqrt{T}}$$