## Appendix A: Statistical and Economic Terms

$X$ – Product Quality Characteristic

$L$ – Lower Specification Limit Of $X$

$U$ – Upper Specification Limit Of $X$

$N$ – Lot Size

$n$ – Sample Size

$\overline{x}$ – Sample Mean

$\mu$ – Mean Of The Quality Characteristic $X$

$\sigma^2$ – Variance Of The Quality Characteristic $X$

$m$ – Mean Of The Mean $\mu$

$c$ – Acceptance Number Under Attribute Sampling

$s$ – Number Of Defectives In A Sample Under Attribute Sampling

$K_R$ – Sales Price Of An Item

$K_p$ – Production Cost Of An Item

$K_J$ – Junk Value Of A Scrapping Item = 0 In This Model

$K_A$ – Cost Of Accepting A Defective Item Delivered To The Consumer

$p$ – Fraction Of Items Defective

$p'$ – Minimum Variance Unbiased Estimate Of The Fraction Defective $p$

$1 - \alpha$ – Minimum Probability Of Accepting A Lot Given A Lot Of Acceptable Quality

$1 - \beta$ – Maximum Probability Of Rejecting A Lot Given A Lot Of Rejectable Quality

$C_1$ – Prior Cost Function Associated With The Decision To Accept Outright

$C_2$ – Prior Cost Function Associated With The Decision To Reject Outright and scrap

$p_1$ – Profit Per Item To Accept The Lot Without Sampling

$p_2$ – Profit Per Item To Reject The Lot Outright

$p_3$ – Expected Posterior Profit Per Item For Accepting The Remainder Of The Lot

$p_4$ – Expected Posterior Profit Per Item For Rejecting And Scrapping The Remainder Of The Lot

$p_5$ – Profit Per Item Resulting From Sampling And Scrapping $n$ Units

$K_1'$ – Posterior Cost Function Associated With Acceptance

$K_2'$ – Posterior Cost Function Associated With Rejection

$E(K_1'|\Phi)$ – Expected Posterior Cost Associated With Acceptance

$E(K_2'|\Phi)$ – Expected Posterior Cost Associated With Rejection

$K(n, \Phi_n^{01}, \Phi_n^{02})$ – Cost Equation In Terms Of The Sample Size $n$ And An Upper And Lower Limits Of The Parameter $\Phi_n$.

$\sigma_\mu^2$ – Variance Of The Mean $\mu$ (In This Work $\sigma_\mu$ Is Assumed Known)

$f(x|\mu)$ – Conditional Probability Density Function Of The Quality Characteristic $(X)$ Given $\mu$

$h(\mu)$ Probability Density Function Of The Mean $\mu$

$T(\overline{x}|\mu)$ Conditional Probability Of $\overline{x}$ Given $\mu$

$t(x|\overline{x}, \mu)$ Conditional Probability Density Function Of Individual Observations Given The Sample Mean $\overline{x}$ And Population Mean $\mu$

$k_s$ – Sampling Cost Per Unit

$k_r$ – Rejection Cost Per Unit