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
$\bar{X}$ – 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

\( F(K'_1 \Phi) \) – Expected Posterior Cost Associated With Acceptance