Deepthi K.S. “Modelling and analysis of reliability data using bathtub shaped failure rate distributions.” Thesis. Research & Post Graduate Department of Statistics, St. Thomas’ College (Autonomous), University of Calicut, 2020.

8.2 Future Work

On the basis of the present study some important questions are: If the distribution of system lifetime is Bathtub shaped failure rate model, identification of change points (from decreasing to constant and constant to increasing), is crucial to the system engineering. In industry burn in process, the change point estimation is very important to separate week and strong components, before send into market. We can answer questions like, how long the burn-in process needs to be continued? What is the period of useful life? etc. In inventory theory, the number of inventory to be kept for repair or replacement can be decided according to the failure behavior.

Possible future works are to (i) provide a review of known upside-down bathtub shaped distributions; (ii) develop the problem of classical and Bayesian estimation of stress-strength reliability life distribution based on upper record values; (iii) develop time-dependent stress-strength reliability models subject to random stresses at random time cycles. Each run of the system changes the power of the system over time; (iv) examine ICXTTT transformation ordering and express the hazard ordering, likelihood ratio ordering and mean residual ordering, their mutual relationships and expressions for the ICXTTT transform in terms of these ordering; (v) derive the upper and lower bounds for the optimal burn-in time. It is also desirable to study on MCMC methods for censored data, regression issues with covariates.