**Chapter 5:**

**5.1 Introduction**

This chapter presents a summary of the findings, draws key conclusions based on the results, and provides actionable recommendations. It also highlights potential areas for further research to enhance credit risk modeling.

**5.2 Summary**  
The study analyzed 1,000 credit card accounts in Zimbabwe using survival analysis techniques to model default timing and risk factors. Key findings included a median survival time of 60 months, with unemployed borrowers facing accelerated default risks compared to employed individuals. Non-parametric models like Kaplan-Meier and Nelson-Aalen effectively captured time-dependent hazards, while parametric models (for example Exponential, Weibull AFT) struggled due to rigid assumptions. The Generalized Gamma model emerged as the best parametric fit (AIC = 5,299.25), though machine learning approaches like DeepHit achieved superior predictive accuracy (AUC = 0.77 at 12 months). Borrower-specific factors, such as high balance-to-limit ratios and younger age, were stronger predictors than macroeconomic variables, though inflation and unemployment still influenced default risks. The Cox PH model highlighted violations of proportional hazards assumptions for education and age, suggesting time-varying effects.

**5.3 Conclusions**  
Survival analysis proved effective in modeling credit card default dynamics, particularly in capturing temporal risk patterns and the interplay of individual and macroeconomic factors. Non-parametric and machine learning methods outperformed traditional parametric models, emphasizing the need for flexible frameworks in unstable economies. Borrower-specific behaviors, such as credit utilization and age, were critical predictors, while macroeconomic instability particularly hyperinflation amplified systemic risks. The study underscores the unique challenges of credit risk modeling in Zimbabwe, where extreme inflation overshadowed conventional risk indicators like interest rates.

**5.4 Recommendations**  
Financial institutions should prioritize monitoring balance-to-limit ratios and borrower demographics while adopting advanced models like DeepHit for risk prediction. Policymakers must address macroeconomic instability through inflation control and unemployment reduction, coupled with financial literacy programs for high-risk groups. Researchers should explore hybrid survival models integrating machine learning, investigate time-varying covariate effects, and expand datasets to include behavioral and transactional data. Collaborative efforts between banks and regulators are essential to develop adaptive credit policies responsive to economic fluctuations.

**5.5 Areas of Further Study**  
Future research should extend time horizons to assess long-term default patterns under prolonged economic stress. Incorporating granular behavioral data, such as cash advance frequency or reward usage, could refine risk predictions. Studies on nonlinear interactions between hyperinflation, exchange rate volatility, and default triggers are needed, as is cross-country validation in similar high-risk economies. Additionally, evaluating the impact of regulatory policies such as interest rate on survival probabilities would provide actionable insights for policymakers. Addressing these gaps will advance credit risk modeling in emerging markets and enhance financial resilience.