STATISTICAL MODELLING OF STAFF SURVIVAL TIME IN SERVICE AT CHUKA UNIVERSITY

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DECLARATION AND RECOMMENDATION

Declaration

This Thesis is my original work and has not been presented for the conferment of degree or award of diploma in any other University.

Signature: _____ Date: 22/10/2024

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Recommendation

This Thesis has been examined, passed and submitted with our approval as university Supervisor

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DEDICATION

I dedicate this work to my family members and friends for their unlimited support and encouragement while carrying out my research. I'm so grateful, God bless you.

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ABSTRACT

Statistical Modeling of Staff Survival Time in Service at Chuka University focuses on addressing the rate of staff attrition in public universities in Kenya, particularly in Chuka University. Staff attrition is identified as a major challenge affecting the education sector globally and in Kenya. Several studies have estimated the staff attrition using other statistical methods, however fewer studies have used the method of survival analysis. Understanding the survival time is crucial for the university's planning and management, particularly for future recruitment needs. By determining how long employees typically remain in their positions, the university can better anticipate when vacancies may occur and prepare accordingly. The objective of this study was to fit a statistical model of staff survival time in service at Chuka University. The data used in this study was extracted from the Chuka University Human Resource. The data comprised of all staff who had been employed at Chuka University from the period of 2012 to 2023 including those who had exited the service. In this study, methods of survival analysis that were used are the Kaplan Meier and log rank test, the Cox-proportional hazard model and the Accelerated Failure Time models (Weibull AFT Model). The cox proportional regression model was employed to study the effect of the covariates (age, gender, marital status, salary, level of education, level of experience, terms of service, motivating factors and job groups) on the survival time of the staff at Chuka University. To compare the survival rate of different groups of staff, the study employed the use of Kaplan Meier estimator that shows the median curves of these groups. To test if a difference exists in survival time between two or more independent groups, this study applied log-rank test. The R software was utilized to conduct all the data analysis. The results on the Univariate Cox PH Model showed that the covariates, gender, age group, terms of employment, staff category, highest qualification and Job group were statistically significant at 5% level of significance except for the Marital status which was insignificant associated with the survival time of staff at Chuka University. The study was able to predict the probability of survival of staff using the covariates. The findings from the study showed that the male staff have high survival probability compared to their female counterparts: the younger employees between the age of 18-25 stay in service for fewer years compared to those between the age of 26-35 and 36-50. Further results indicated that, The Weibull AFT model give the best model fit with more precise estimates that had small standard errors compared to the Cox Proportional Hazard Model. Chuka University’s Human Resource Management will use these findings to make informed decisions and implement strategies to improve staff retention and more effective recruitment strategies. Therefore, the University management should strengthen measures that can improve the employment security of all categories of employees with lower survival rates.