

## **A Predictive Machine Learning Model of the Survival of Female-led and Co-Led Small and Medium Enterprises in the UK**

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**Abstract :** This research sheds light on female entrepreneurs by providing new insights on the survival predictions of companies led by females in the UK. This study aims to build a predictive machine learning model of the survival of female-led & co-led small & medium enterprises (SMEs) in the UK over the period 2000-2020. The predictive model built utilised a combination of financial and non-financial features related to both companies and their directors to predict SMEs' survival. These features were studied in terms of their contribution to the resultant predictive model. Five machine learning models are used in the modelling: Decision tree, AdaBoost, Naïve Bayes, Logistic regression and SVM. The AdaBoost model had the highest performance of the five models, with an accuracy of 73% and an AUC of 80%. The results show high feature importance in predicting companies' survival for company size, management experience, financial performance, industry, region, and females' percentage in management.

**Keywords :** company survival, entrepreneurship, females, machine learning, SMEs

**Conference Title :** ICFS 2024 : International Conference on Finance and Software

**Conference Location :** Berlin, Germany

**Conference Dates :** July 22-23, 2024