# Business Intelligence Report: Titanic Survival Prediction

## Introduction

This report focuses on the survival prediction of Titanic passengers using a classification model implemented via Decision Trees. The data has been processed using Weka, highlighting key attributes, data quality issues, and model performance metrics.

## Part 1: Attribute Analysis

The following attributes were used in the Titanic dataset for survival prediction:

1. Cabin: Cabin Number (Nominal) - 687 missing values

2. Age: Age of the passenger (Numeric) - Missing values

## Relevant Attributes

The classification analysis primarily focused on attributes such as passenger class, age, fare, number of relatives, port of embarkation, and gender. Missing values and anomalies were addressed during preprocessing.

A screenshot of a computer

AI-generated content may be incorrect.

## Data Preprocessing

The data preprocessing phase involved: 1) Handling missing values, 2) Ensuring proper data types for attributes, and 3) Identifying and mitigating anomalies.

Preprocessed training data was used to train the model in Weka.

A screenshot of a computer

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.

## Model Evaluation

Key performance metrics of the Decision Tree model:

1. Accuracy: 78.764%

2. F1 Measure: 0.697A black text with black letters

AI-generated content may be incorrect.

3. Tree Details: Unpruned with 2 objectsA diagram of a network

AI-generated content may be incorrect.

## Rules Extracted from the Decision Tree

The following rules were derived from the unpruned decision tree:  
- A male passenger in first class, with a low fare, aged 21-40, having few relatives, and embarking from (S) port, is likely not to survive (Class = 0).  
- A male passenger in first class, with a low fare, aged 21-40, having few relatives, and embarking from (C) port, is likely to survive (Class = 1).  
- A male passenger in second class, aged 21-40, is likely not to survive (Class = 0).  
- A female passenger in first class with few relatives is likely to survive (Class = 1).  
- A female passenger in third class, aged 21-40, with few relatives, embarking from (S) port, is likely to survive (Class = 1).

## Prediction Results

After applying the test instances to the trained model, the following predictions were made:  
- Total instances in the test file: 418  
- Number of persons predicted to survive (Class = 1): 159  
- Number of persons predicted not to survive (Class = 0): 259  
- Percentage of predicted survival: 38%

A screenshot of a computer

AI-generated content may be incorrect.