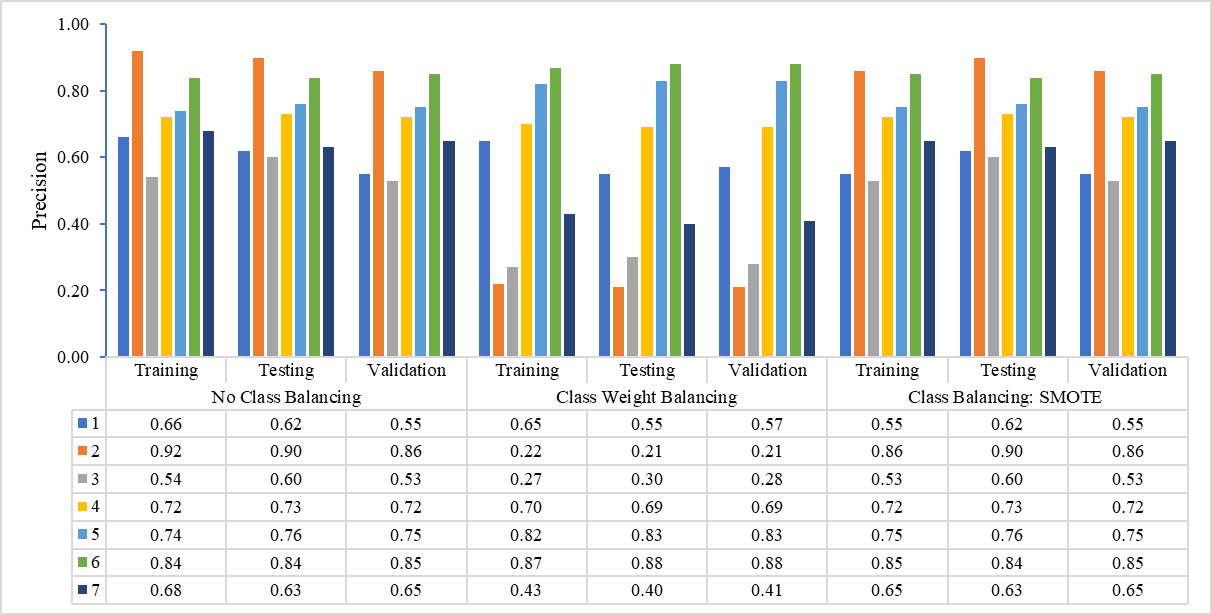
**Cognitive Security: AI-Powered Threat Agent Evaluation for Impact on Assets in Informational Environment**

**9 ML Model Metrics: Precision, Recall and F1-Score**

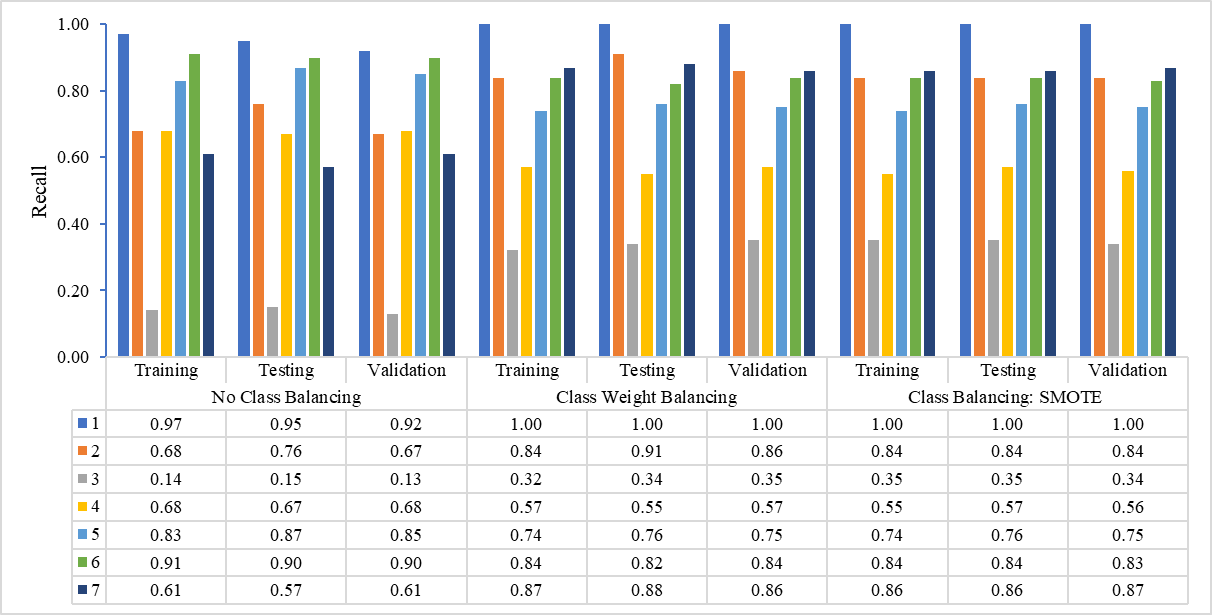
**Model 1 - Logistics Regression (LR):**

1.1 Precision of LR



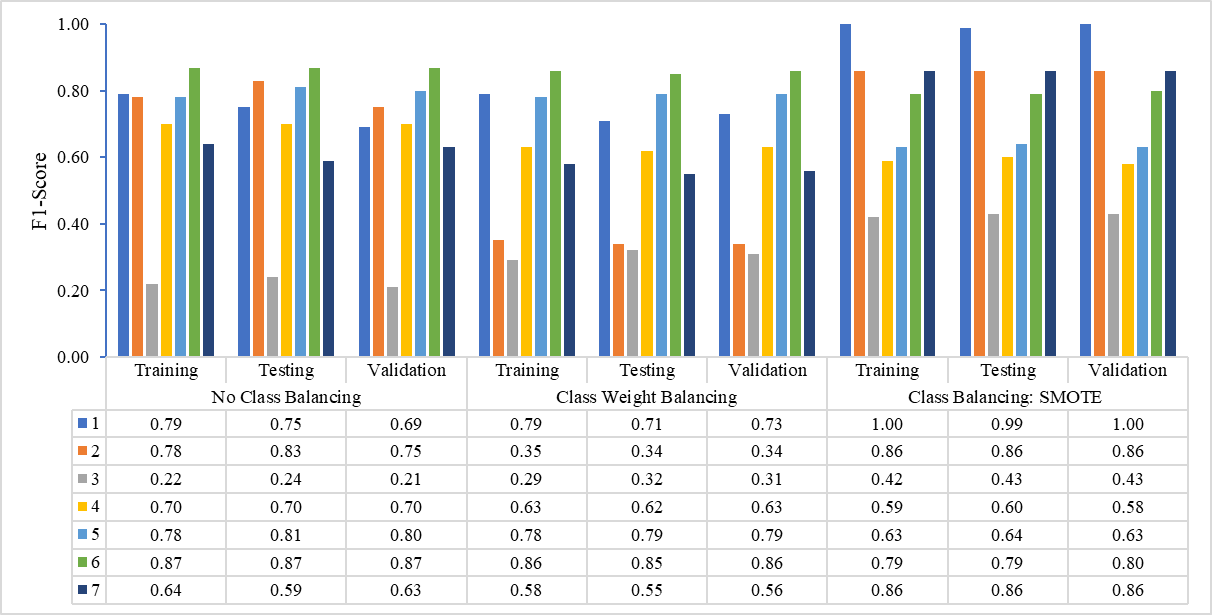
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|  | | | | | | | | | | |
|  | Training | Testing | Validation | Training | Testing | Validation | Training | Testing | Validation |  |
|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

1.2 Recall of LR



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|  | Training | Testing | Validation | Training | Testing | Validation | Training | Testing | Validation |  |
|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

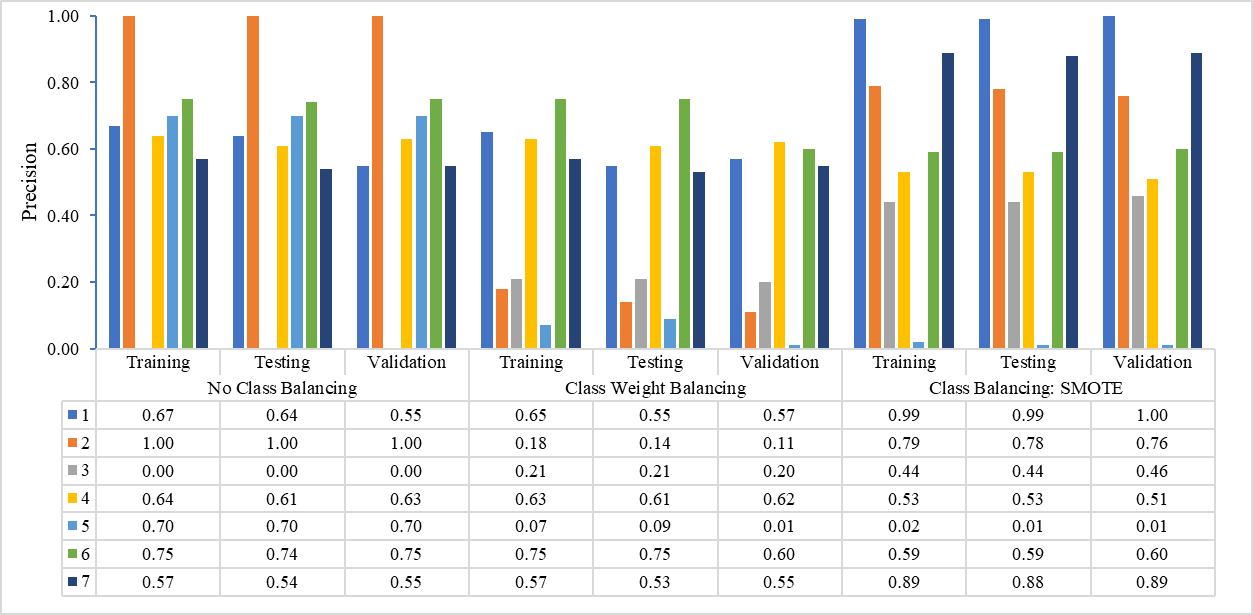
1.3 F1-Score of LR



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|  | Training | Testing | Validation | Training | Testing | Validation | Training | Testing | Validation |  |
|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

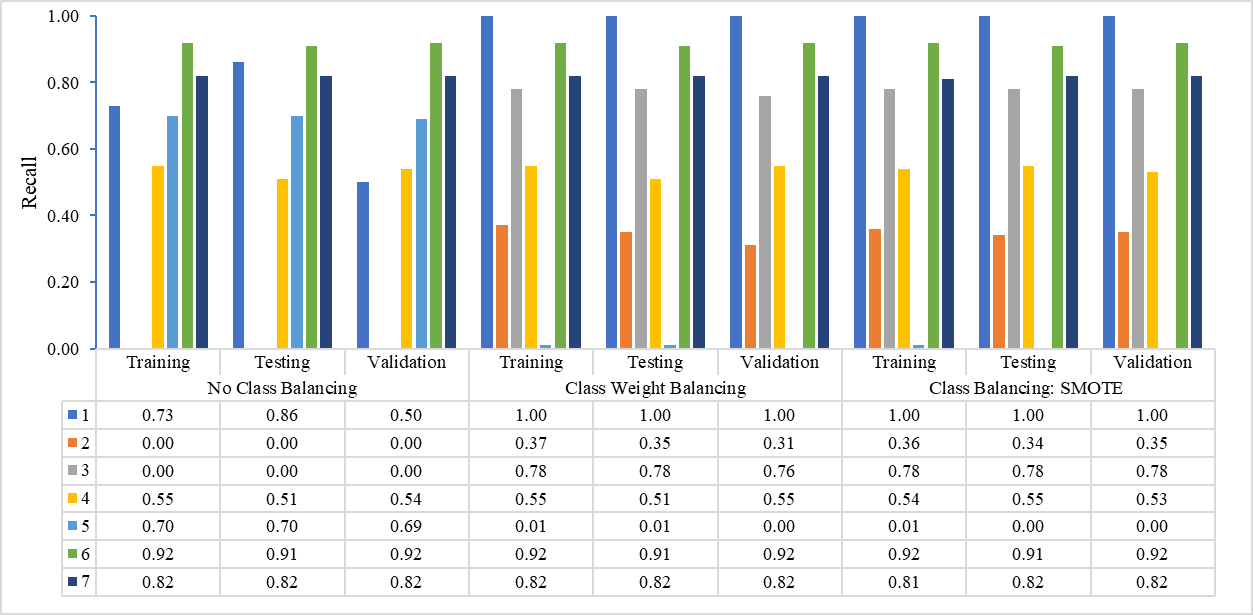
**Model 2 - Gaussian Naïve Bayes (GNB):**

2.1 Precision of GNB



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|  | Training | Testing | Validation | Training | Testing | Validation | Training | Testing | Validation |  |
|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

2.2 Recall of GNB



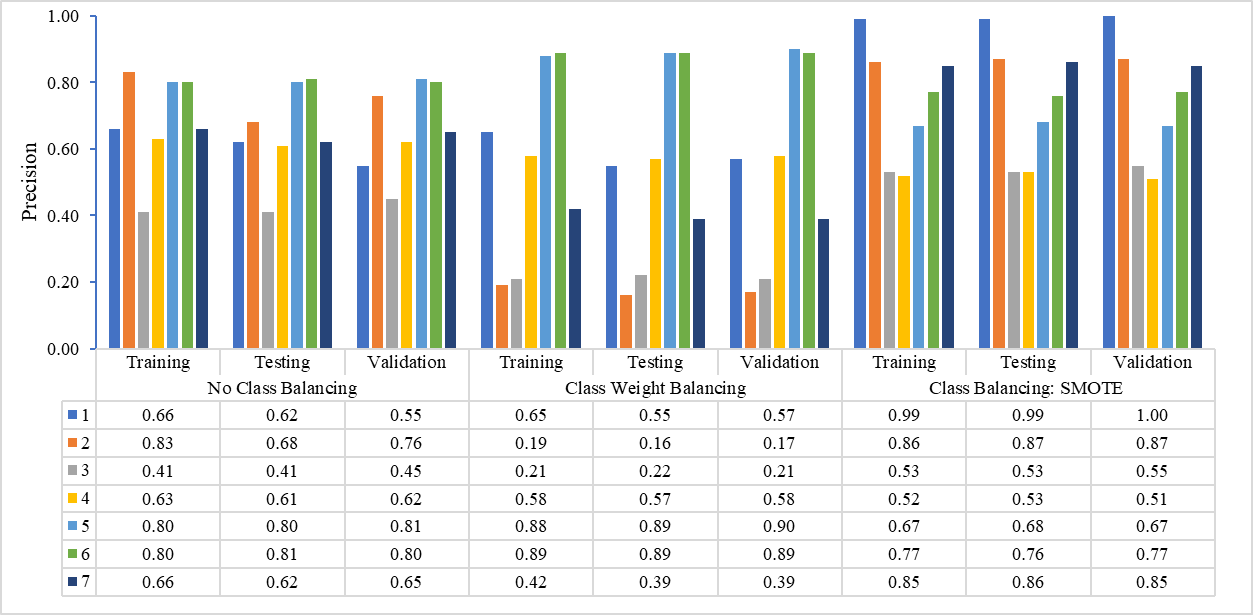
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|  | Training | Testing | Validation | Training | Testing | Validation | Training | Testing | Validation |  |
|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

2.3 F1-Score of GNB

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|  | Training | Testing | Validation | Training | Testing | Validation | Training | Testing | Validation |  |
|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

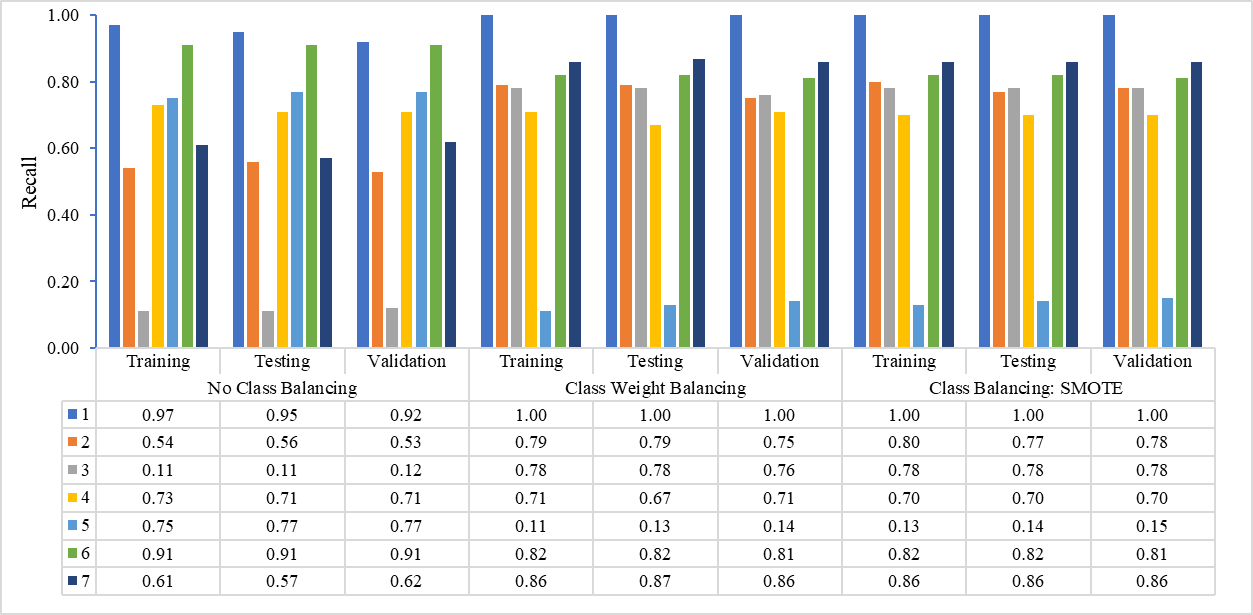
**Model 3 - Support Vector Machine (SVM):**

3.1 Precision of SVM



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|  | Training | Testing | Validation | Training | Testing | Validation | Training | Testing | Validation |  |
|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

3.2 Recall of SVM



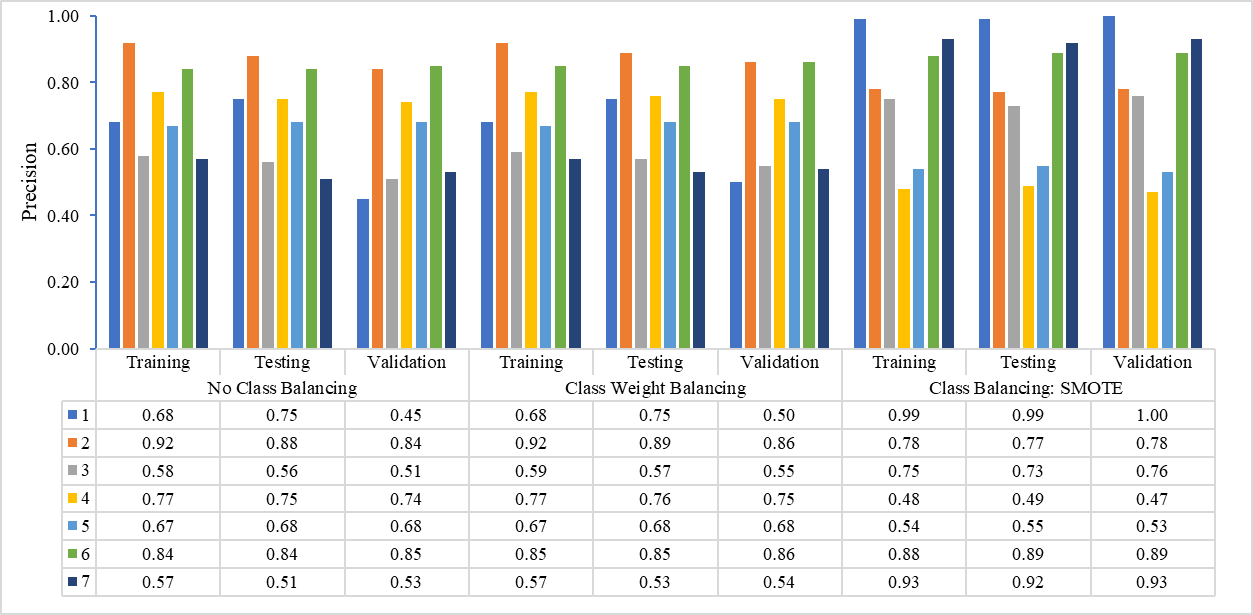
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|  | Training | Testing | Validation | Training | Testing | Validation | Training | Testing | Validation |  |
|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

3.3 F1-Score of SVM

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|  | Training | Testing | Validation | Training | Testing | Validation | Training | Testing | Validation |  |
|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

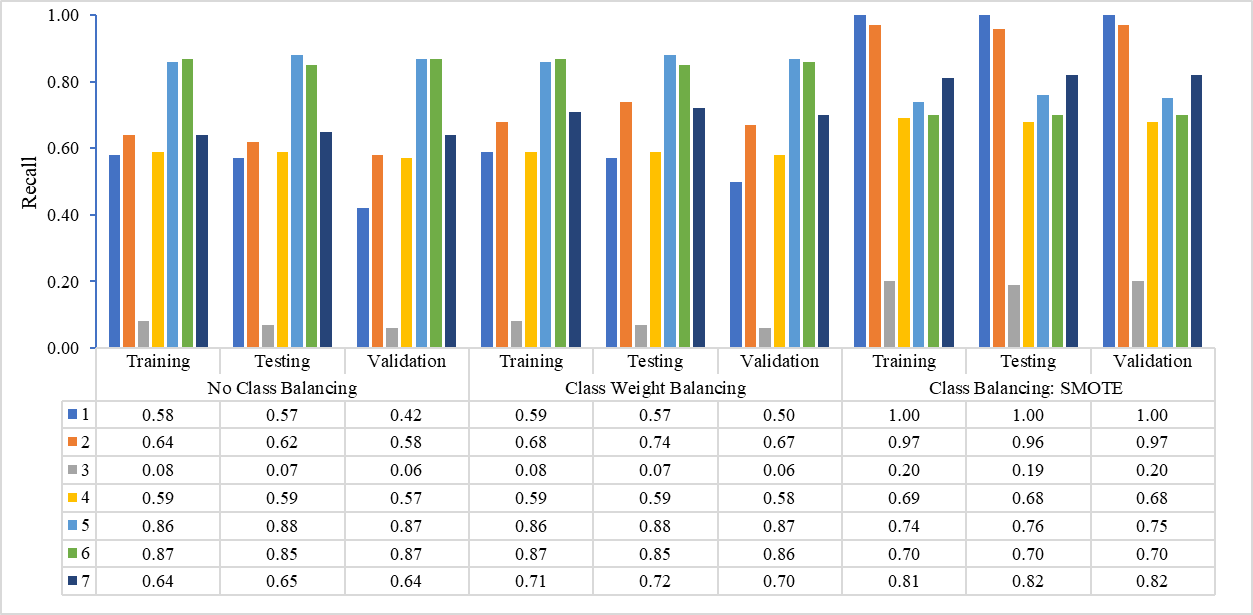
**Model 4 - K-Nearest Neighbours (KNN):**

4.1 Precision of KNN



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|  | Training | Testing | Validation | Training | Testing | Validation | Training | Testing | Validation |  |
|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

4.2 Recall of KNN



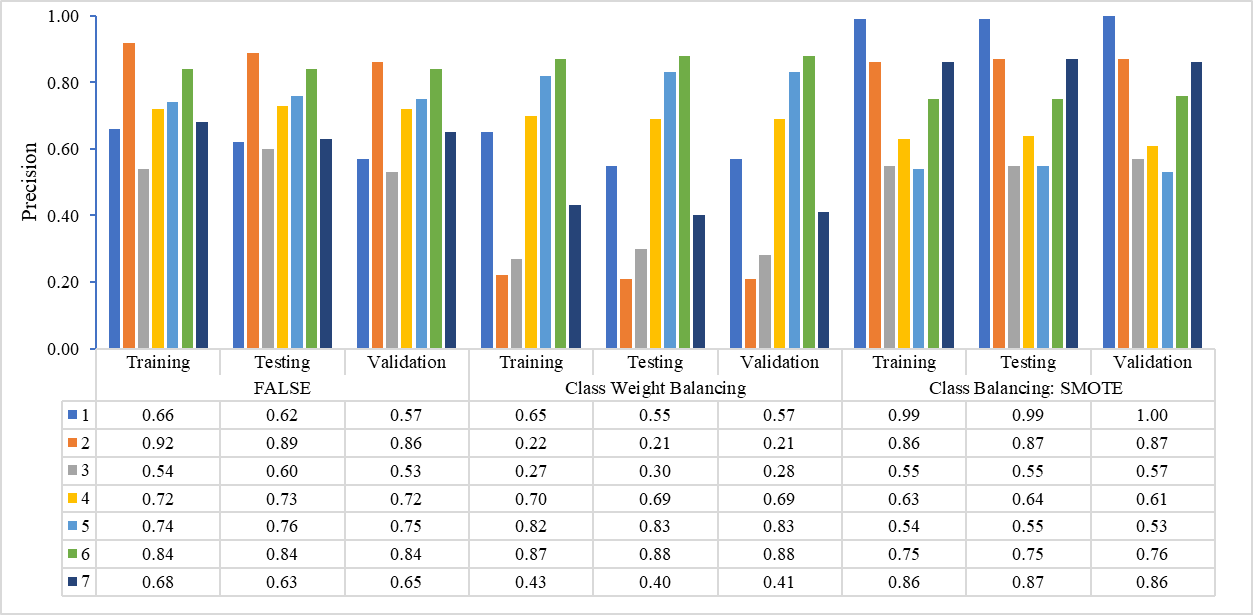
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|  | Training | Testing | Validation | Training | Testing | Validation | Training | Testing | Validation |  |
|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

4.3 F1-Score of KNN

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|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

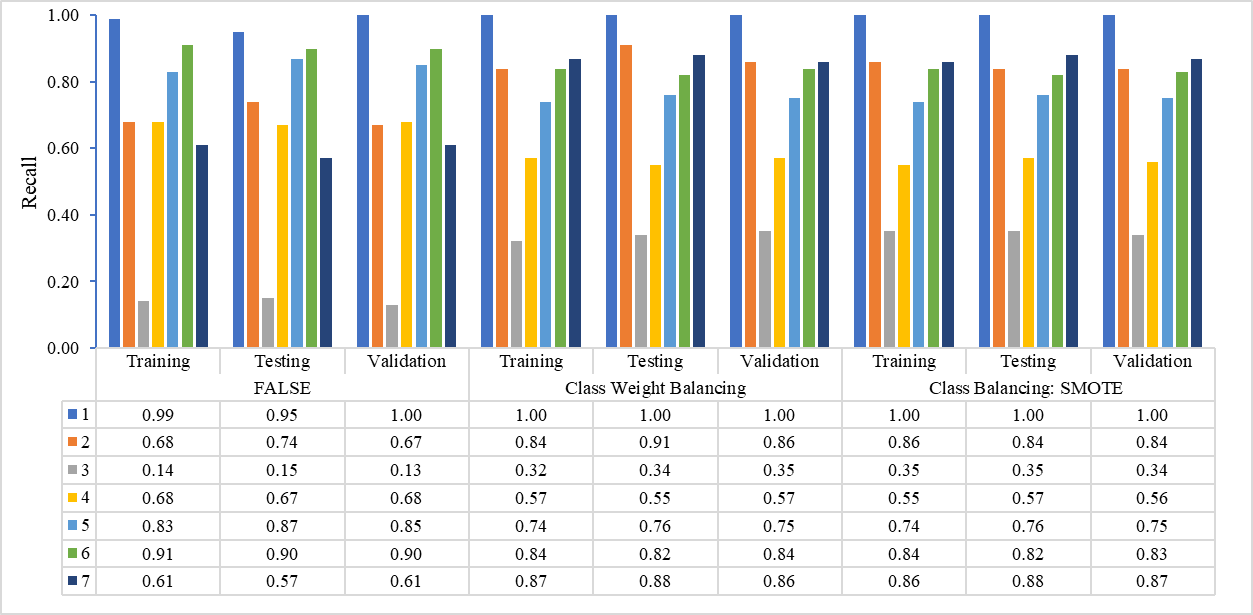
**Model 5 – Decision Tree (DT):**

5.1 Precision of DT



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|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

5.2 Recall of DT



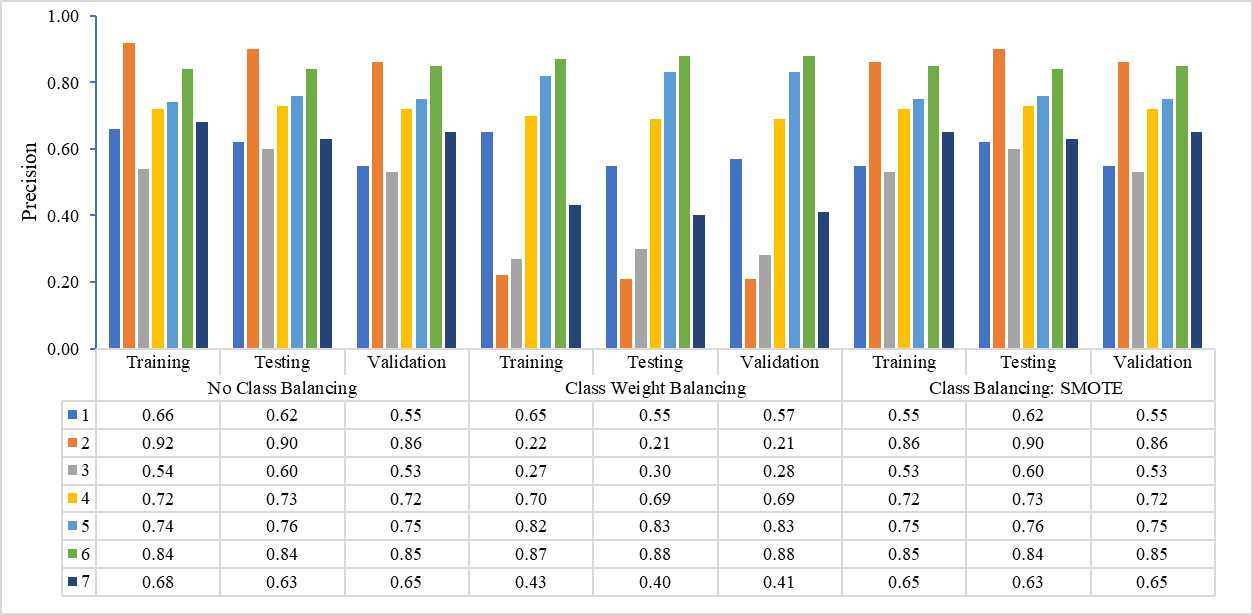
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|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

5.3 F1-Score of DT

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|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

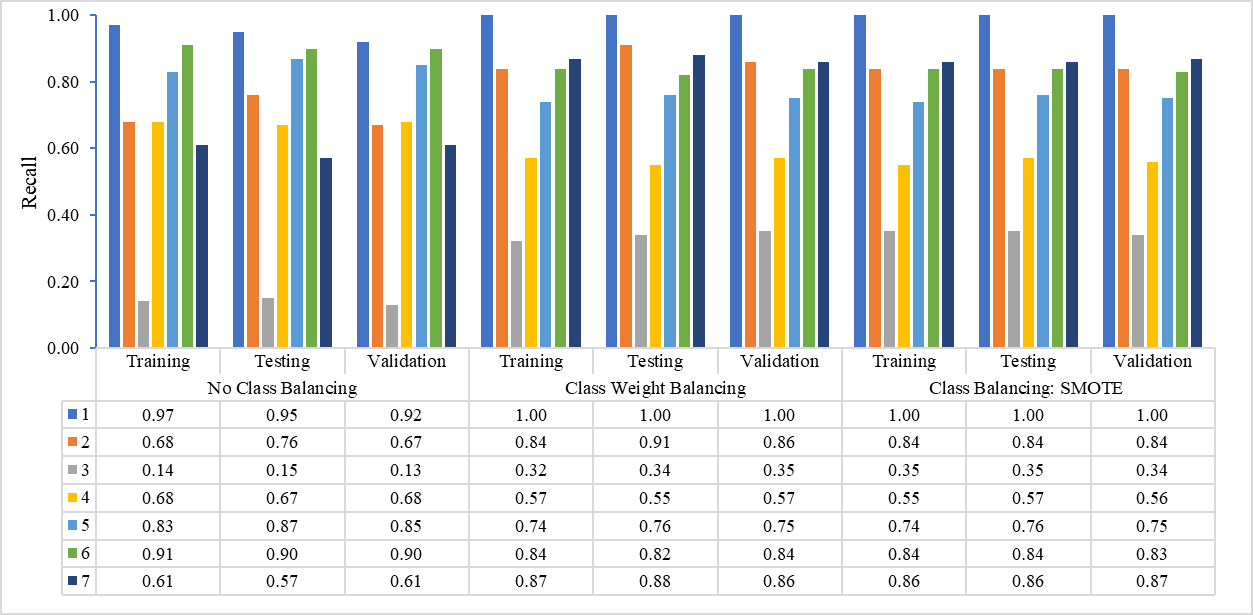
**Model 6 – Random Forest (RF):**

6.1 Precision of RF



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|  | Training | Testing | Validation | Training | Testing | Validation | Training | Testing | Validation |  |
|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

6.2 Recall of RF



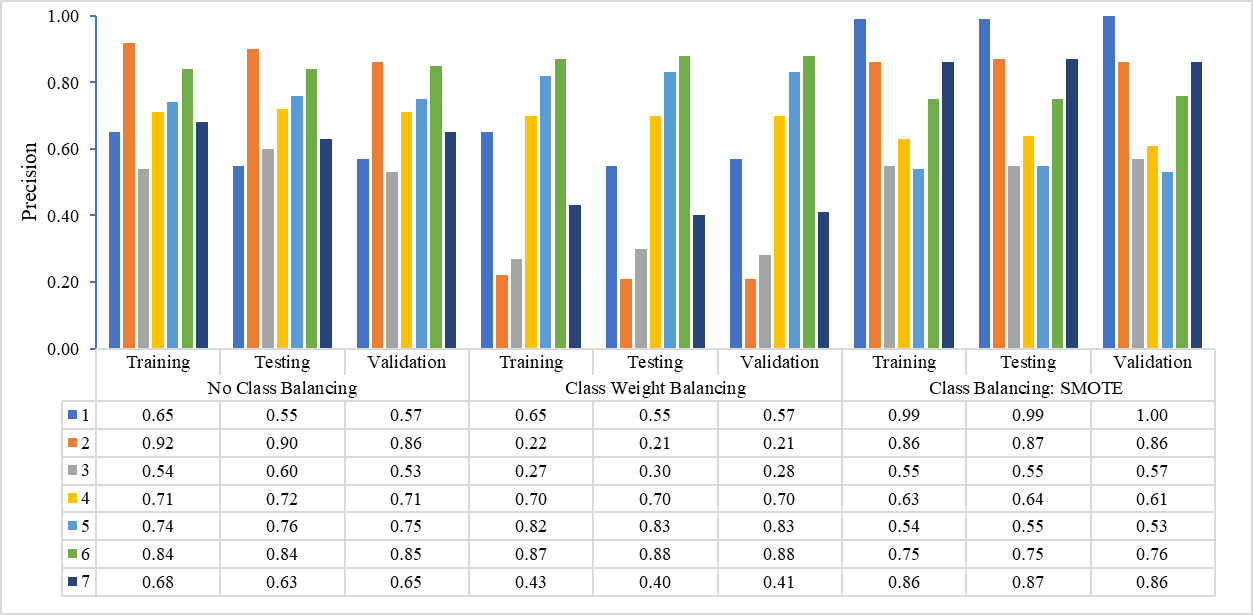
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|  | Training | Testing | Validation | Training | Testing | Validation | Training | Testing | Validation |  |
|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

6.3 F1-Score of RF

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|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

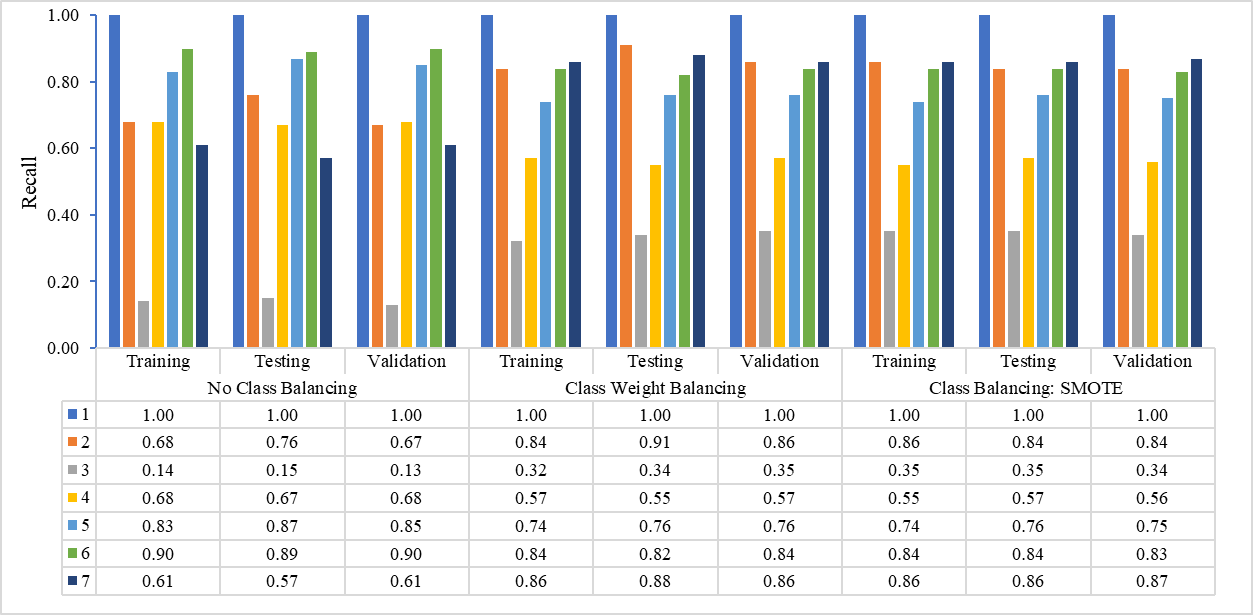
**Model 7 – Gradient Boosting Machine (GBM):**

7.1 Precision of GBM



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|  | Training | Testing | Validation | Training | Testing | Validation | Training | Testing | Validation |  |
|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

7.2 Recall of GBM



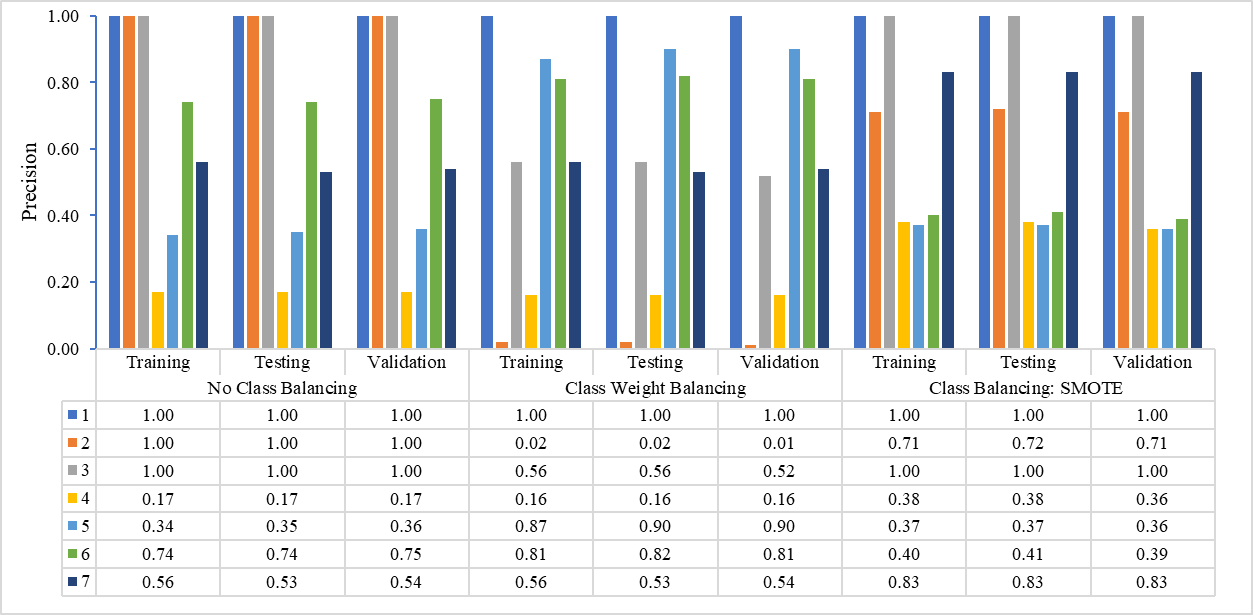
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|  | Training | Testing | Validation | Training | Testing | Validation | Training | Testing | Validation |  |
|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

7.3 F1-Score of GBM

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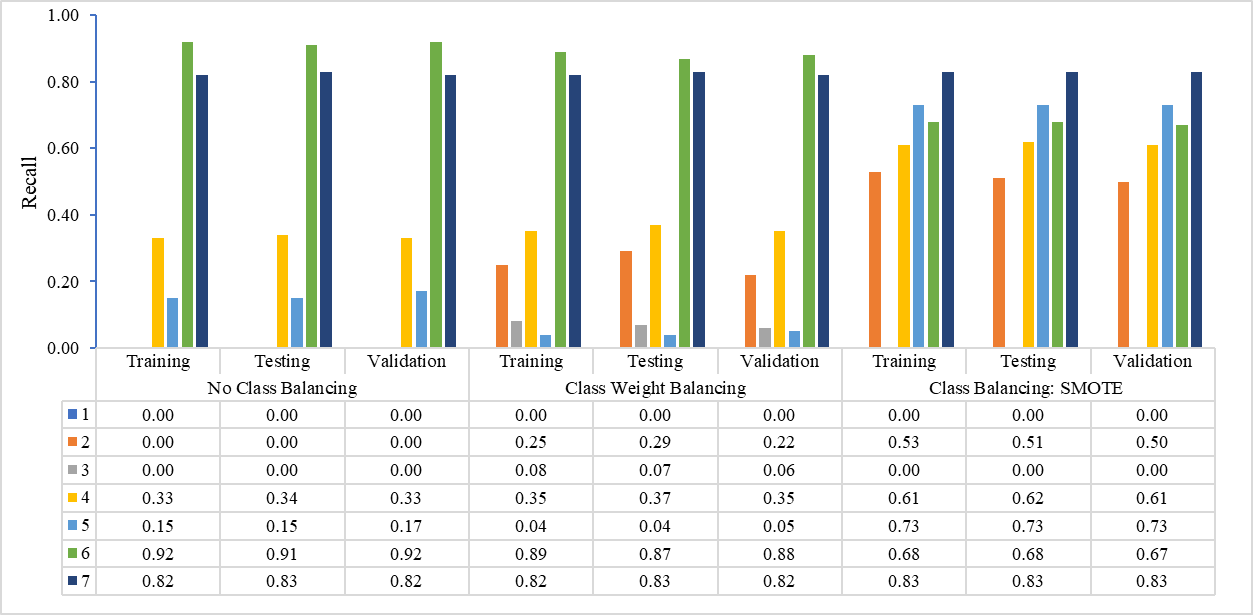
**Model 8 – Adaptive Boosting (AdaBoost):**

8.1 Precision of AdaBoost



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|  | Training | Testing | Validation | Training | Testing | Validation | Training | Testing | Validation |  |
|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

8.2 Recall of AdaBoost



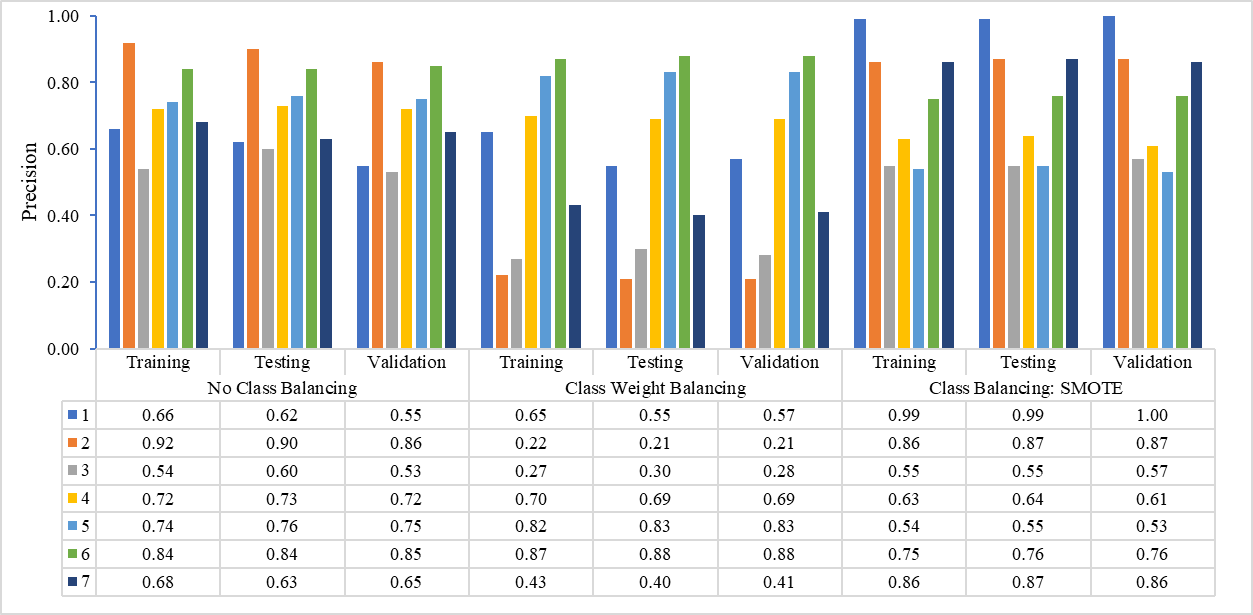
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|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

8.3 F1-Score of AdaBoost

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|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

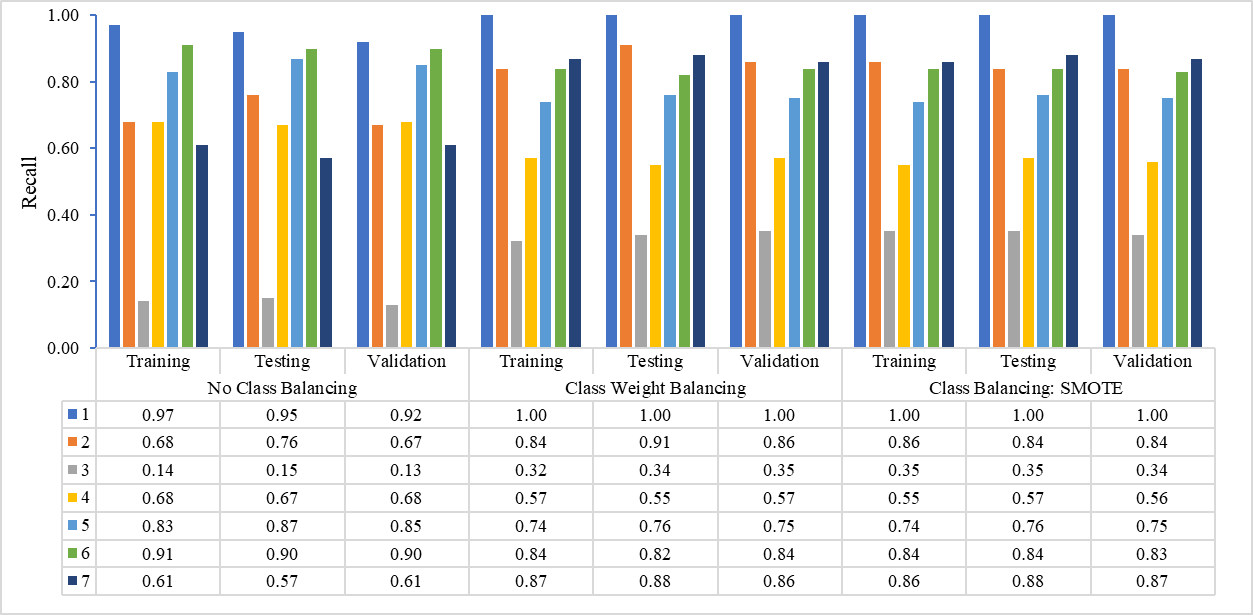
**Model 9 – eXtreme Gradient Boosting (XGBoost):**

9.1 Precision of XGBoost



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|  | Training | Testing | Validation | Training | Testing | Validation | Training | Testing | Validation |  |
|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

9.2 Recall of XGBoost



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|  | Training | Testing | Validation | Training | Testing | Validation | Training | Testing | Validation |  |
|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |

9.3 F1-Score of XGBoost

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|  | Training | Testing | Validation | Training | Testing | Validation | Training | Testing | Validation |  |
|  | No Class Balancing | | | Class Weight Balancing | | | Class Balancing: SMOTE | | | |