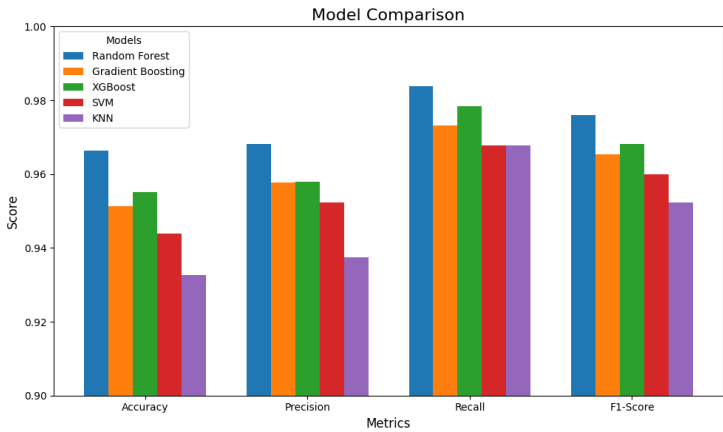
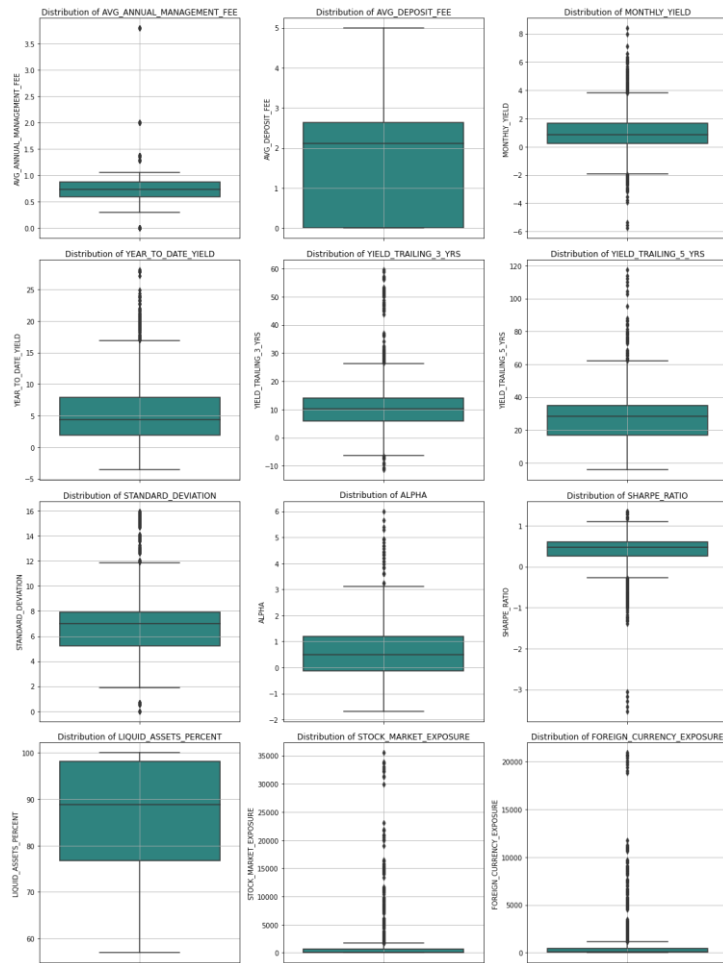
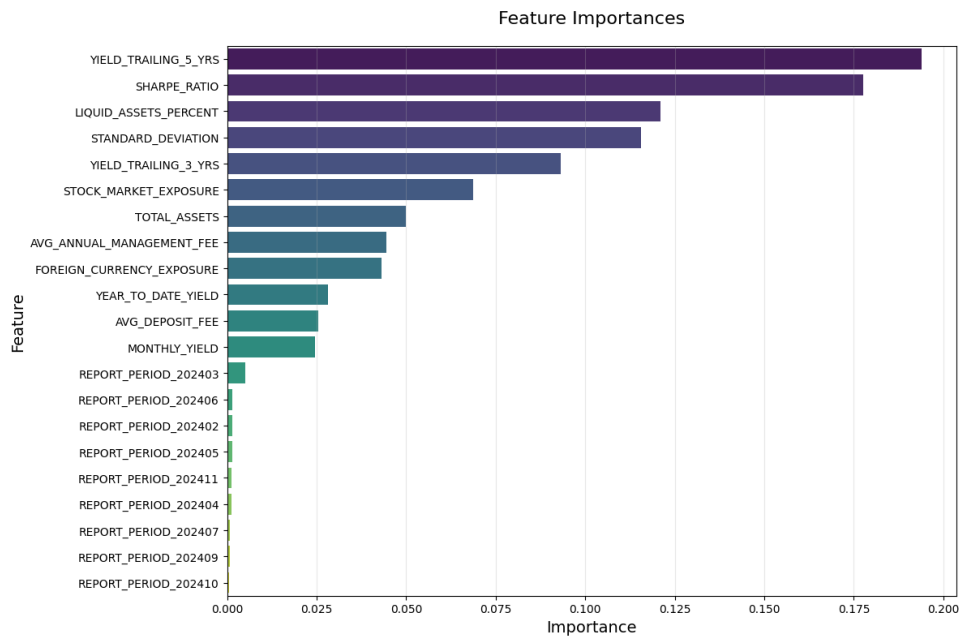


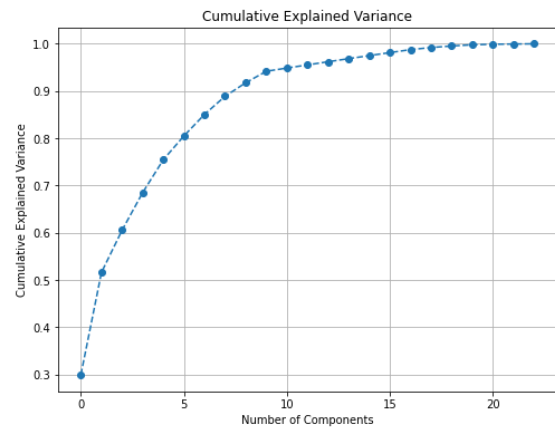
	Fold 1	Fold 2	Fold 3	Fold 4	Fold 5	Fold 6	Fold 7	Fold 8	Fold 9	Fold 10	Mean Accuracy
Random Forest	0.962617	0.962617	0.934579	1.000000	0.971963	0.981132	0.952830	0.962264	0.952830	0.933962	0.961479
XGBoost	0.981308	0.971963	0.943925	0.971963	0.953271	0.981132	0.952830	0.971698	0.943396	0.971698	0.964318
Gradient Boosting	0.971963	0.962617	0.943925	1.000000	0.953271	0.981132	0.952830	0.962264	0.971698	0.962264	0.966196
SVM	0.962617	0.953271	0.943925	0.962617	0.943925	0.962264	0.952830	0.933962	0.943396	0.952830	0.951164
KNN	0.971963	0.915888	0.906542	0.943925	0.953271	0.933962	0.924528	0.915094	0.933962	0.905660	0.930480

	Model	Accuracy	Precision	Recall	F1-Score
0	Random Forest	0.966292	0.968254	0.983871	0.976000
2	XGBoost	0.955056	0.957895	0.978495	0.968085
1	Gradient Boosting	0.951311	0.957672	0.973118	0.965333
3	SVM	0.943820	0.952381	0.967742	0.960000
4	KNN	0.932584	0.937500	0.967742	0.952381



	Feature	Importance
6	YIELD_TRAILING_5_YRS	0.193891
8	SHARPE_RATIO	0.177706
9	LIQUID_ASSETS_PERCENT	0.121093
7	STANDARD_DEVIATION	0.115679
5	YIELD_TRAILING_3_YRS	0.093174
10	STOCK_MARKET_EXPOSURE	0.068670
0	TOTAL_ASSETS	0.049874
1	AVG_ANNUAL_MANAGEMENT_FEE	0.044453
11	FOREIGN_CURRENCY_EXPOSURE	0.043154
4	YEAR_TO_DATE_YIELD	0.028269
2	AVG_DEPOSIT_FEE	0.025416
3	MONTHLY_YIELD	0.024506
13	REPORT_PERIOD_202403	0.005006
16	REPORT_PERIOD_202406	0.001457
12	REPORT_PERIOD_202402	0.001420
15	REPORT_PERIOD_202405	0.001406
20	REPORT_PERIOD_202411	0.001301
14	REPORT_PERIOD_202404	0.001205
17	REPORT_PERIOD_202407	0.000896
18	REPORT_PERIOD_202409	0.000823



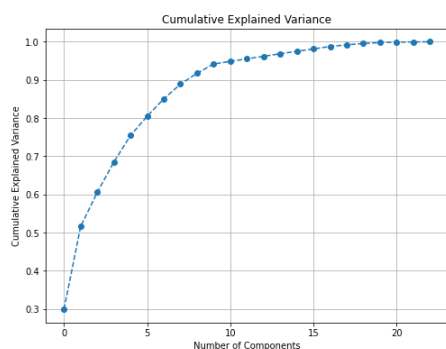
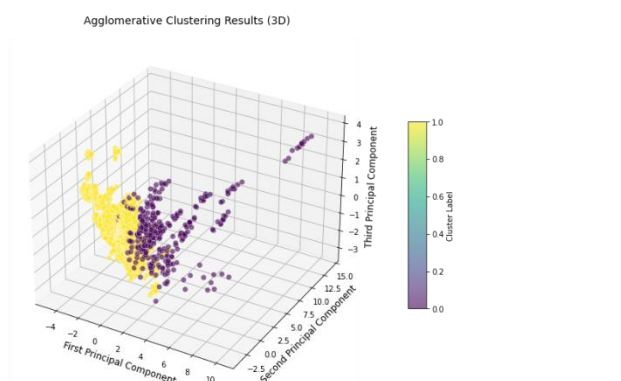
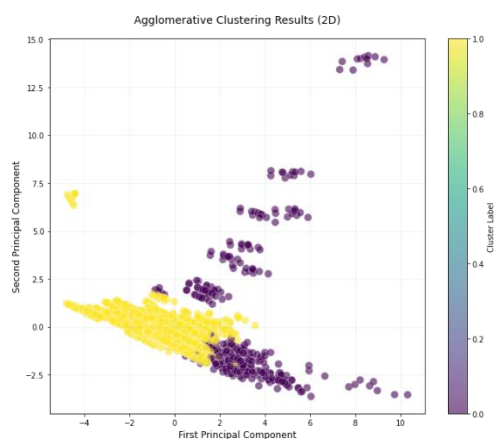
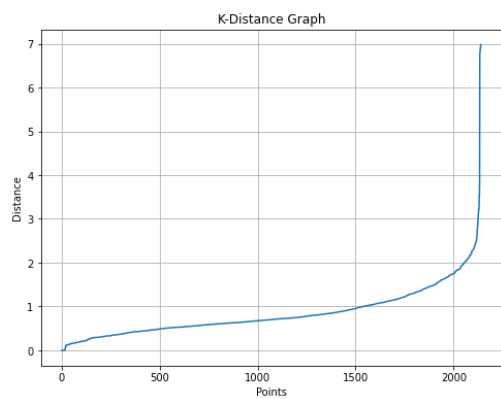
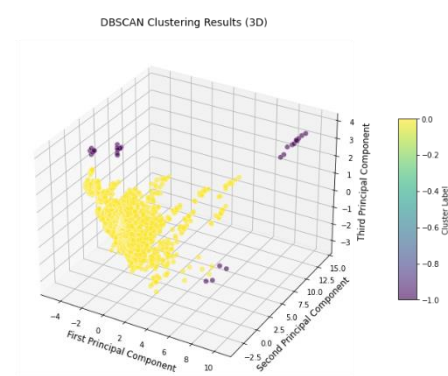
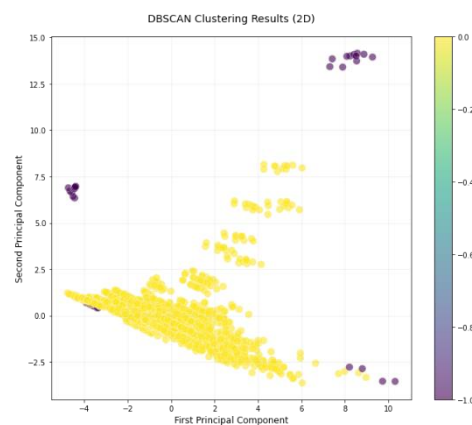
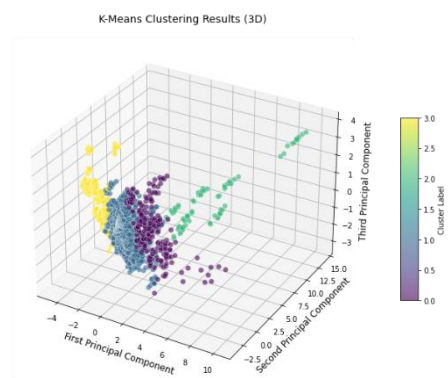
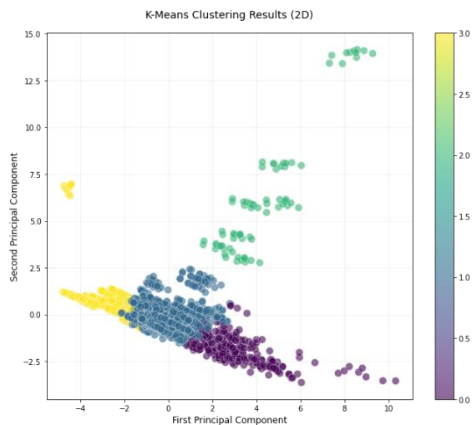
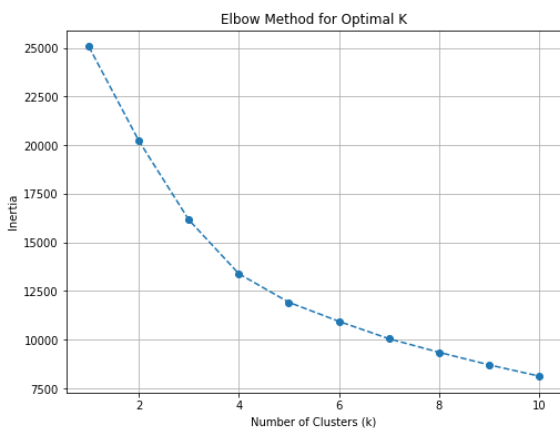


```
In [119...
pca.explained_variance_ratio_

Out[119... array([0.29924359, 0.21676654, 0.08933669, 0.07966759, 0.06944125,
0.05041226, 0.04562255, 0.03844909, 0.02856813, 0.02433861,
0.00684889, 0.00667697, 0.00665271, 0.00658113, 0.00641817,
0.00634714, 0.00631463, 0.00444409, 0.00332343, 0.00246855,
0.00117025, 0.00048986, 0.00041785])
```

```
In [120...
cumulative_variance_ratio

Out[120... array([0.29924359, 0.51601014, 0.60534683, 0.68501442, 0.75445567,
0.80486793, 0.85049048, 0.88893957, 0.9175077 , 0.94184631,
0.9486952 , 0.95537218, 0.96202489, 0.96860602, 0.97502419,
0.98137133, 0.98768596, 0.99213005, 0.99545348, 0.99792203,
0.99909229, 0.99958215, 1.
])
```

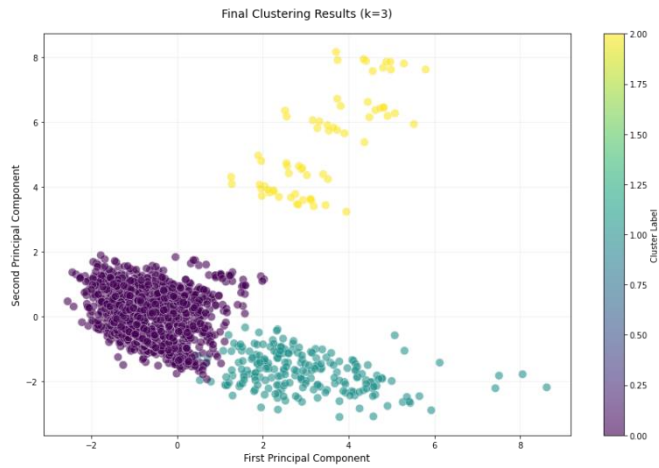
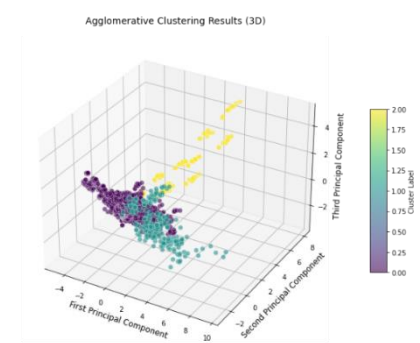
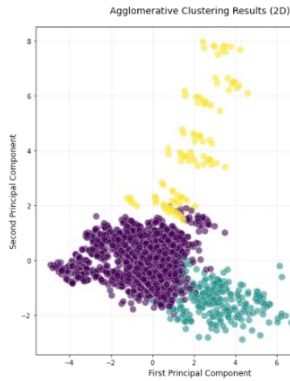
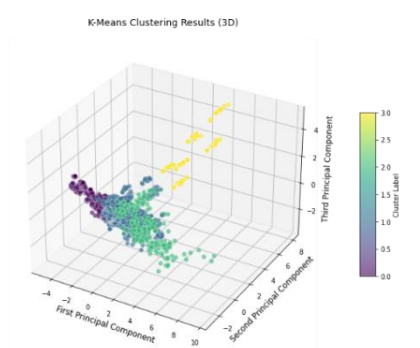
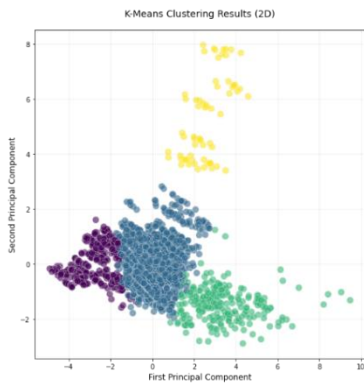
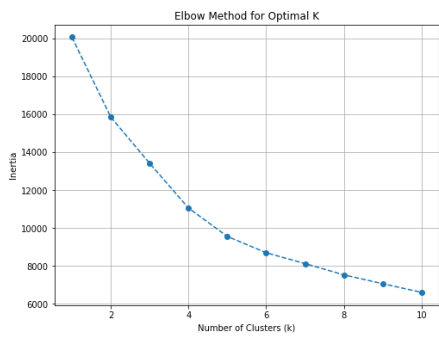


```
cumulative_variance_ratio_inliers
```

```
array([0.34315481, 0.51518776, 0.61609478, 0.71141217, 0.78823668,
0.8475728 , 0.90099143, 0.94396027, 0.97836427, 0.99523948,
0.99861904, 0.999487 , 1.
])
```

```
pca_inliers.explained_variance_ratio_
```

```
array([0.34315481, 0.17203296, 0.10090702, 0.09531739, 0.07682451,
0.05933612, 0.05341862, 0.04296885, 0.034404 , 0.01687521,
0.00337957, 0.00086796, 0.000513
])
```



Group the average by the cluster labels

```
X_analysis = X_inliers.groupby('clusters').mean()
X_analysis
```

	TOTAL_ASSETS	AVG_ANNUAL_MANAGEMENT_FEE	AVG_DEPOSIT_FEE	MONTHLY_YIELD	YEAR_TO_DATE_YIELD	YIELD_TRAILING_3_YRS	YIELD_TRAILING_5_YRS	STANDARD_DEVIATION	ALPHA	SHARPE_RATIO	LIQUID_ASSETS_PERCENT	STOCK_MARKET_EXPOSURE	FOREIGN_CURRENCY_EXPOSURE
clusters													
0	983.467069	0.720002	1.810387	0.913706	5.114954	10.454765	28.308760	6.980028	0.670070	0.490797	85.98247	376.234161	271.283107
1	1105.646743	0.762163	1.488028	2.326055	12.871284	25.735104	55.500860	12.489530	1.156697	0.668360	94.94724	1083.939404	675.084072
2	29714.469545	0.763333	2.235000	1.024091	5.876212	14.238939	37.011818	7.284545	1.600000	0.664697	71.0636	13359.720606	7531.771061

	TOTAL_ASSETS	AVG_ANNUAL_MANAGEMENT_FEE	AVG_DEPOSIT_FEE	MONTHLY_YIELD	YEAR_TO_DATE_YIELD	YIELD_TRAILING_3_YRS	YIELD_TRAILING_5_YRS	STANDARD_DEVIATION	ALPHA	SHARPE_RATIO	LIQUID_ASSETS_PERCENT	STOCK_MARKET_EXPOSURE	FOREIGN_CURRENCY_EXPOSURE
count	1652.000000	1652.000000	1652.000000	1652.000000	1652.000000	1652.000000	1652.000000	1652.000000	1652.000000	1652.000000	1652.000000	1652.000000	1652.000000
mean	2147.438820	0.727296	1.784812	1.104492	6.168902	12.622361	32.244764	7.719235	0.771438	0.521176	86.569444	988.334553	614.637111
std	6062.078266	0.194114	1.075360	1.531706	4.808745	7.661912	12.264092	2.313099	0.844952	0.140980	10.603109	2754.713094	1565.719233
min	0.000000	0.000000	0.000000	-5.770000	-3.550000	-4.450000	10.060000	3.980000	-1.680000	0.120000	56.900000	0.000000	0.000000
25%	66.167500	0.600000	1.080000	0.300000	2.970000	10.230000	28.230000	7.000000	0.480000	0.470000	76.700000	16.725000	13.922500
50%	345.595000	0.747683	2.110000	1.070000	4.785000	10.230000	28.230000	7.000000	0.480000	0.470000	88.000000	182.035000	116.580000
75%	1840.237500	0.830000	2.230000	1.860000	8.662500	13.522500	33.177500	7.660000	0.960000	0.570000	97.900000	720.627500	518.390000
max	46406.280000	2.000000	4.990000	8.400000	28.120000	57.220000	110.200000	15.970000	5.400000	1.320000	100.000000	23142.120000	11764.600000

