Portfolio optimization

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November 8, 2024

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Optimization of Porfolio 1

For the portfolio 1, we are given next input data (see Table 1):

Table 1: Input data for Portfolio 1

| project	profit	cost	risk	dependence
Skynex	247466.87	27300.76	0.51	-
Xylofy	106129.52	52228.68	0.56	-
Mavira	181011.45	16161.93	0.62	-
Pulsea	190618.41	56282.10	0.14	-
Zentra	177994.35	46959.16	0.44	-
Blythe	164685.35	36101.67	0.75	-
Genexy	114814.06	33573.86	0.20	9
Prisma	123172.90	20619.13	0.22	-
Qorex	204580.62	15875.19	0.84	-
Lunify	89281.11	54370.63	0.29	-

Based on the provided data, the model managed to find next solution that satisfies all of the constraints of the problem (see Table 2):

Table 2: Advised projects to invest for Portfolio 1

project	profit	cost	risk	dependence
Skynex	247466.87	27300.76	0.51	-
Mavira	181011.45	16161.93	0.62	-
Pulsea	190618.41	56282.10	0.14	-
Zentra	177994.35	46959.16	0.44	-
Genexy	114814.06	33573.86	0.20	9
Prisma	123172.90	20619.13	0.22	-
Qorex	204580.62	15875.19	0.84	-
Lunify	89281.11	54370.63	0.29	-
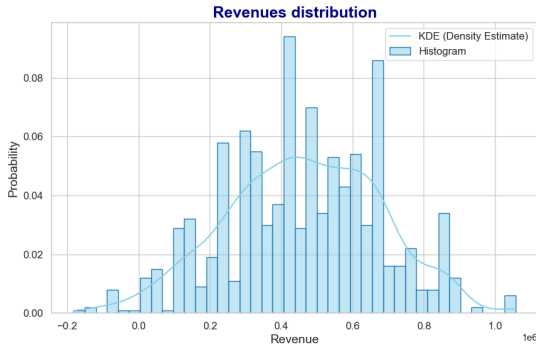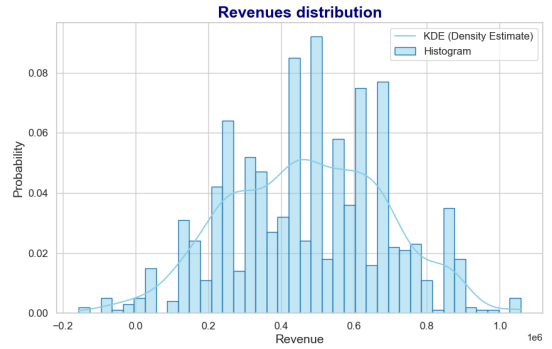
(a) Distribution of revenues on a train set (b) Distribution of revenues on a test set

Figure 1: Distribution of revenues given provided solution

As you can see from the plot (see Figure 1), the revenues on the test approximately follow the train set (if there are enough of scenarios). With given solution, we managed to get expected revenue of 463228.68€.. Expected value of the perfect information is 133506.26€ and price of stochastic solution is 155941.68€.

The portfolio uses 271142.76/300000€ from budget.

Optimization of Porfolio 2

For the portfolio 2, we are given next input data (see Table 3):

Table 3: Input data for Portfolio 2

| project	profit	cost	risk	dependence
Nexla	727800.17	57898.27	0.11	2,3,4
Verily	204953.94	50266.41	0.16	1,3,4
Zapira	207355.70	35908.18	0.58	-
Bluza	79348.65	65820.90	0.85	-
Klyro	194687.76	29130.24	0.75	-
Lymba	158987.15	31717.69	0.34	-
Fynq	97249.35	11648.62	0.45	-
Jovix	89150.20	32373.68	0.29	-
Astera	163437.11	12660.05	0.39	-
Nuvy	133639.37	46982.21	0.76	9

Based on the provided data, the model managed to find next solution that satisfies all of the constraints of the problem (see Table 4):

Table 4: Advised projects to invest for Portfolio 2

project	profit	cost	risk	dependence
Nexla	727800.17	57898.27	0.11	2,3,4
Verily	204953.94	50266.41	0.16	1,3,4
Zapira	207355.70	35908.18	0.58	-
Bluza	79348.65	65820.90	0.85	-
Lymba	158987.15	31717.69	0.34	-
Fynq	97249.35	11648.62	0.45	-
Jovix	89150.20	32373.68	0.29	-
Astera	163437.11	12660.05	0.39	-
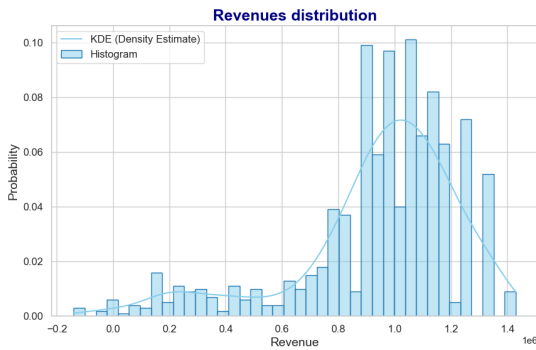
(a) Distribution of revenues on a train set
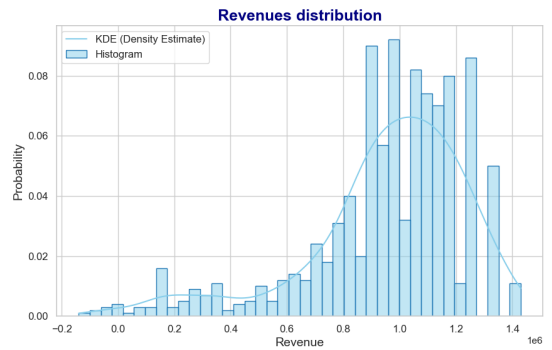
(b) Distribution of revenues on a test set

Figure 2: Distribution of revenues given provided solution

As you can see from the plot (see Figure 2), the revenues on the test approximately follow the train set (if there are enough of scenarios). With given solution, we managed to get expected revenue of 945738.43€.. Expected value of the perfect information is 69716.44€ and price of stochastic solution is 121421.45€.

The portfolio uses 298293.8/300000€ from budget.

Optimization of Porfolio 3

For the portfolio 3, we are given next input data (see Table 5):

Table 5: Input data for Portfolio 3

| project	profit	cost	risk	dependence
Vynix	243664.88	54929.48	0.53	3,4
Qubix	115459.08	47943.37	0.30	-
Tekly	237963.97	67753.88	0.08	-
Fyntra	136496.11	22655.23	0.40	-
Zybel	171600.41	57321.27	0.14	-
Lytrica	119700.07	21645.84	0.78	-
Glimzy	84728.29	60433.69	0.10	9
Snapra	128857.63	34572.04	0.73	-
Twivio	168676.85	57601.56	0.39	-
Klyra	172713.57	16612.40	0.29	-

Based on the provided data, the model managed to find next solution that satisfies all of the constraints of the problem (see Table 6):

Table 6: Advised projects to invest for Portfolio 3

project	profit	cost	risk	dependence
Vynix	243664.88	54929.48	0.53	3,4
Tekly	237963.97	67753.88	0.08	-
Fyntra	136496.11	22655.23	0.40	-
Zybel	171600.41	57321.27	0.14	-
Lytrica	119700.07	21645.84	0.78	-
Twivio	168676.85	57601.56	0.39	-
Klyra	172713.57	16612.40	0.29	-
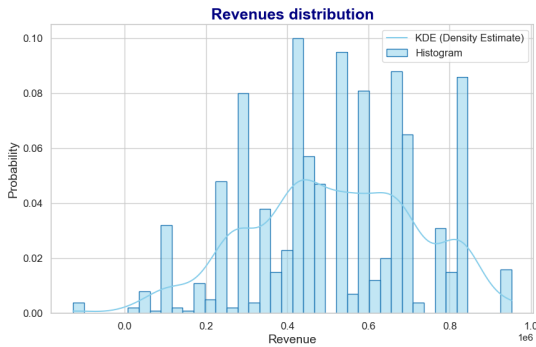
(a) Distribution of revenues on a train set
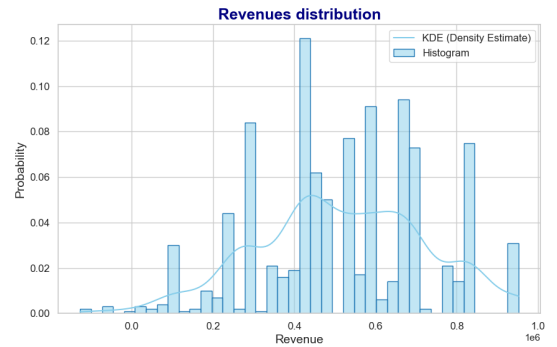
(b) Distribution of revenues on a test set

Figure 3: Distribution of revenues given provided solution

As you can see from the plot (see Figure 3), the revenues on the test approximately follow the train set (if there are enough of scenarios). With given solution, we managed to get expected revenue of 514344.73€.. Expected value of the perfect information is 142655.42€ and price of stochastic solution is 32499.25€.

The portfolio uses 298519.66/300000€ from budget.

Optimization of Porfolio 4

For the portfolio 4, we are given next input data (see Table 7):

Table 7: Input data for Portfolio 4

| project	profit	cost	risk	dependence
Nexify	311155.44	64363.35	0.60	2,7
Blipzy	151022.84	23983.36	0.81	-
Quorix	129620.05	65805.98	0.08	-
Vyral	198087.00	23804.06	0.74	8
Hublit	185598.12	39154.23	0.76	-
Fluxion	90760.82	28036.21	0.71	-
Snaggle	218004.98	18498.93	0.42	5,10
Aerify	141632.49	52165.79	0.33	-
Pivalt	102781.75	34762.00	0.76	-
Syncra	185179.25	40048.50	0.17	-

Based on the provided data, the model managed to find next solution that satisfies all of the constraints of the problem (see Table 8):

Table 8: Advised projects to invest for Portfolio 4

project	profit	cost	risk	dependence
Nexify	311155.44	64363.35	0.60	2,7
Blipzy	151022.84	23983.36	0.81	-
Vyral	198087.00	23804.06	0.74	8
Hublit	185598.12	39154.23	0.76	-
Snaggle	218004.98	18498.93	0.42	5,10
Aerify	141632.49	52165.79	0.33	-
Syncra	185179.25	40048.50	0.17	-
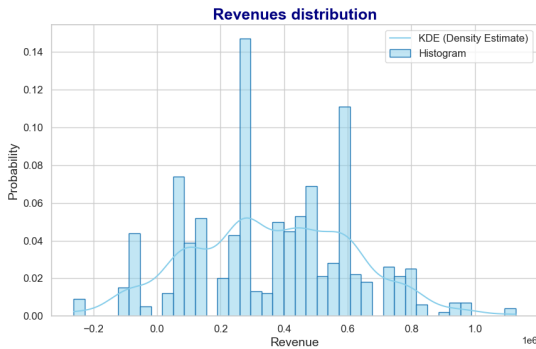
(a) Distribution of revenues on a train set
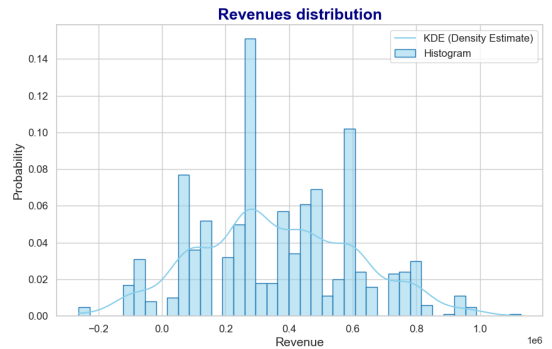
(b) Distribution of revenues on a test set

Figure 4: Distribution of revenues given provided solution

As you can see from the plot (see Figure 4), the revenues on the test approximately follow the train set (if there are enough of scenarios). With given solution, we managed to get expected revenue of 364576.31€.. Expected value of the perfect information is 163587.07€ and price of stochastic solution is 158107.12€.

The portfolio uses 262018.22/300000€ from budget.

Optimization of Porfolio 5

For the portfolio 5, we are given next input data (see Table 9):

Table 9: Input data for Portfolio 5

| project	profit	cost	risk	dependence
Zapify	238602.81	69958.87	0.30	-
Flexora	161743.87	66862.98	0.52	-
Jynko	69786.03	40887.86	0.23	-
Boldra	193787.77	25939.65	0.36	3
Wavixa	121797.39	52354.06	0.26	-
Lumixa	121720.70	13258.79	0.16	-
Ryzon	112140.38	55632.92	0.36	-
Tivara	114674.25	67855.11	0.23	-
Cyvex	98270.70	52653.50	0.64	1,2
Opnix	118121.10	32857.14	0.85	-

Based on the provided data, the model managed to find next solution that satisfies all of the constraints of the problem (see Table 10):

Table 10: Advised projects to invest for Portfolio 5

project	profit	cost	risk	dependence
Zapify	238602.81	69958.87	0.30	-
Jynko	69786.03	40887.86	0.23	-
Boldra	193787.77	25939.65	0.36	3
Wavixa	121797.39	52354.06	0.26	-
Lumixa	121720.70	13258.79	0.16	-
Tivara	114674.25	67855.11	0.23	-
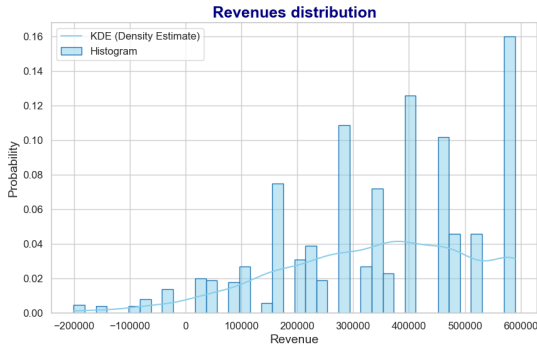
(a) Distribution of revenues on a train set
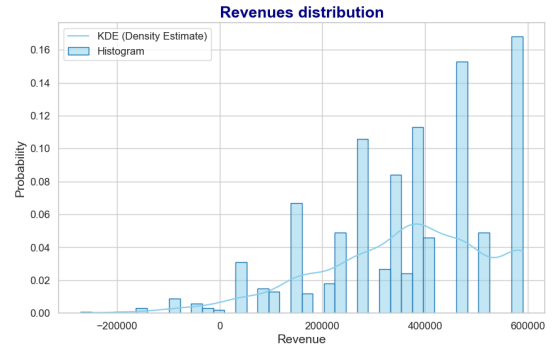
(b) Distribution of revenues on a test set

Figure 5: Distribution of revenues given provided solution

As you can see from the plot (see Figure 5), the revenues on the test approximately follow the train set (if there are enough of scenarios). With given solution, we managed to get expected revenue of 346638.17€.. Expected value of the perfect information is 140152.75€ and price of stochastic solution is 8570.31€.

The portfolio uses 270254.34/300000€ from budget.