

## APPENDICES

Appendix A

Table A.1

**Gross domestic R&D expenditure of the world 2016-2020**

No	State	2016			2017			2018			2019			2020		
		GDP (\$ bn.)	Share of R&D expenditure in GDP, %	Gross domestic R&D expenses (\$bn)	GDP (\$ bn.)	Share of R&D expenditure in GDP, %	Gross domestic R&D expenses (\$bn)	GDP (\$ bn.)	Share of R&D expenditure in GDP, %	Gross domestic R&D expenses (\$bn)	GDP (\$ bn.)	Share of R&D expenditure in GDP, %	Gross domestic R&D expenses (\$bn)	GDP (\$ bn.)	Share of R&D expenditure in GDP, %	Gross domestic R&D expenses (\$bn)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	USA	17 950,0	2,77	496,84	18237	2,81	512,46	18638	2,83	527,46	19569	3,1	602,1	21569	3,5	620,5
2	China	19390	1,92	372,81	20669,7	1,94	400,99	21951,3	1,96	429,54	22568,1	1,98	436,5	23654,1	2,1	452,1
3	Japan	4830,0	3,41	164,59	4854,2	3,55	172,32	4883,3	3,50	173,36	4985,6	3,6	175,8	5124,3	3,8	152,6
4	Germany	3841,0	2,92	112,16	3 906,3	2,88	112,50	3961,0	2,84	112,49	4152,3	2,9	115,9	4256,4	3,1	117,2
5	South Korea	1849,0	4,04	74,70	1 898,9	4,26	80,89	1955,9	4,29	83,91	1985,4	4,5	85,1	2015,3	4,6	86,2
6	India	7965,0	0,85	67,70	8570,3	0,85	72,85	9221,7	0,84	77,46	9532,4	0,91	78,9	9658,5	1,2	81,5
7	France	2647,0	2,26	59,82	2681,4	2,24	60,06	2716,3	2,24	60,84	2945,2	2,36	62,5	3102,1	2,4	3124,1
8	Russia	3718,0	1,50	55,77	3688,3	1,50	55,32	3728,8	1,50	55,93	3854,1	1,6	57,34	4125,1	1,9	4256,2
9	UK	2679,0	1,78	47,69	2727,2	1,75	47,73	2757,2	1,75	48,25	2856,2	1,81	51,3	2965,2	1,95	3002,1
10	Brazil	3192,0	1,21	38,62	3086,7	1,20	37,04	3102,1	1,20	37,22	3125,2	1,3	38,1	3251,4	1,4	3254,2
11	Australia	1489,0	2,39	35,59	1532,2	2,30	35,24	1573,5	2,30	36,19	1654,2	2,4	38,5	1712,5	2,51	39,1
12	Canada	1632,0	1,79	29,21	1651,6	1,80	29,73	1683,0	1,80	30,29	1715,2	1,91	33,2	1765,9	2	34,2
13	Italy	2171,0	1,27	27,57	2188,4	1,27	27,79	2208,1	1,27	28,04	2351,1	1,45	29,5	2587,6	1,58	30,1
14	Taiwan	1099,0	2,35	25,83	1110,0	2,40	26,64	1128,9	2,45	27,66	1156,6	2,8	28,1	1250,6	3,0	29,1
15	Spain	1615,0	1,30	21,00	1665,1	1,27	21,15	1701,7	1,27	21,61	1820,2	1,4	21,8	1852,4	1,45	22,5

**MONOGRAPH**

(End of Table A.1)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
16	Netherlands	832.6	2.16	17.98	846.8	2.10	17.78	860.3	2.10	18.07	875.4	2.7	18.9	880.2	2.75	19.5
17	Sweden	474.4	3.40	16.13	491.5	3.28	16.12	504.3	3.30	16.64	552.4	3.2	17.1	558.6	3.21	17.6
18	Turkey	1599.0	0.86	13.67	1641.4	0.92	15.10	1690.7	0.92	15.55	1758.2	1.1	16.1	1832	1.3	16.5
19	Switzerland	482.3	2.90	13.99	487.1	2.96	14.42	493.5	2.98	14.71	503.2	3.1	15.1	521.3	3.2	15.8
20	Singapore	471.9	2.60	12.27	479.9	2.60	12.48	490.5	2.60	12.75	493.6	2.7	13.1	501.3	2.8	13.5
21	Austria	404.3	2.84	11.48	410.0	3.00	12.30	414.9	3.00	12.45	421.5	3.2	13.5	425.6	3.25	14
22	Israel	281.9	3.95	11.14	289.8	4.10	11.88	298.5	4.10	12.24	301.2	4.11	12.65	321.5	4.12	14.2
23	Belgium	494.1	2.24	11.07	501.0	2.35	11.77	508.0	2.35	11.94	521.4	2.45	12.3	532.3	4.6	12.8
24	Mexico	2227.0	0.45	10.02	2273.8	0.50	11.37	2326.1	0.50	11.63	2569.2	0.6	11.9	2658.1	0.65	11.89
25	Iran	1371.0	0.90	12.34	1432.7	0.75	10.75	1491.4	0.75	11.19	1587.1	0.85	11.5	1598.6	0.9	11.8
26	Malaysia	815.6	1.10	8.97	850.7	1.25	10.63	889.8	1.25	11.12	901.3	1.65	11.9	921.5	1.8	12.5
27	Poland	1005.0	0.90	9.04	1036.2	0.89	9.22	1071.4	0.90	9.64	1125.1	0.98	9.9	1135.1	0.99	10.2
28	Indonesia	2842.0	0.30	8.53	2981.3	0.30	8.94	3139.3	0.30	9.42	3215.2	0.31	9.5	3298.2	0.36	9.62
29	Qatar	319.8	2.70	8.63	328.1	2.50	8.20	339.3	2.50	8.48	341.2	2.6	8.9	368.7	2.85	378.9
30	Denmark	258.7	2.98	7.71	261.3	3.02	7.89	264.9	3.04	8.05	270.5	3.08	8.09	280.5	3.1	8.12
31	Finland	225.0	3.55	7.99	227.0	3.50	7.94	229.3	3.50	8.03	301.5	3.61	8.5	305.8	3.7	8.9
32	Saudi Arabia	1683.0	0.40	6.73	1703.2	0.40	6.81	1737.3	0.45	7.82	1852.1	0.6	8.2	1869.5	0.72	8.32
33	Egypt	1048.0	0.43	4.51	1087.8	0.60	6.13	1131.3	0.60	6.79	1165.8	0.75	7.2	1198.9	0.78	7.6
34	Czech Re.	332.5	1.88	6.25	340.8	1.80	6.13	350.0	1.85	6.48	364.2	1.98	7.24	378.5	2.1	7.85
35	Norway	356.2	1.65	5.88	359.0	1.70	6.10	363.4	1.75	6.36	384.5	1.8	7.1	392.3	1.94	7.5
36	South Africa	723.5	0.95	6.87	724.2	0.85	6.16	730.0	0.85	6.20	762.5	0.9	7.21	782.6	0.98	7.6
37	Pakistan	931.0	0.75	6.98	974.8	0.60	5.85	1023.5	0.60	6.14	1069.8	0.61	6.85	1103.2	0.75	7.1
38	Argentina	972.0	0.62	6.03	954.5	0.58	5.54	980.3	0.56	5.49	1025.1	0.62	6.8	1068.9	0.89	7.5
39	Ireland	257.4	1.72	4.43	270.0	1.72	4.64	278.7	1.75	4.88	289.6	1.89	5.6	302.6	2.1	6.3
40	Bangladesh	577.0	0.70	4.04	616.8	0.70	4.32	659.4	0.70	4.62	721.5	0.81	5.98	752.5	0.85	6.7
	Top 40	97042.2	1.92	1862.58	100037.0	1.93	1931.58	103476.9	1.93	1996.94	2054.6	2.1	2065.8	2105.5	2.4	2156.9
	Rest of world	15920.2	0.40	63.90	16305.8	0.41	67.22	16805.4	0.41	69.36	17598.1	0.54	71.5	18653.1	0.68	82.5
	Global R&D	112962.1	1.71	1926.48	116342.8	1.72	1998.80	120282.3	1.72	2066.30	124568.1	1.89	2156.5	126843.2	2.1	2265.8

**Note.** Author's investigation.

Appendix B

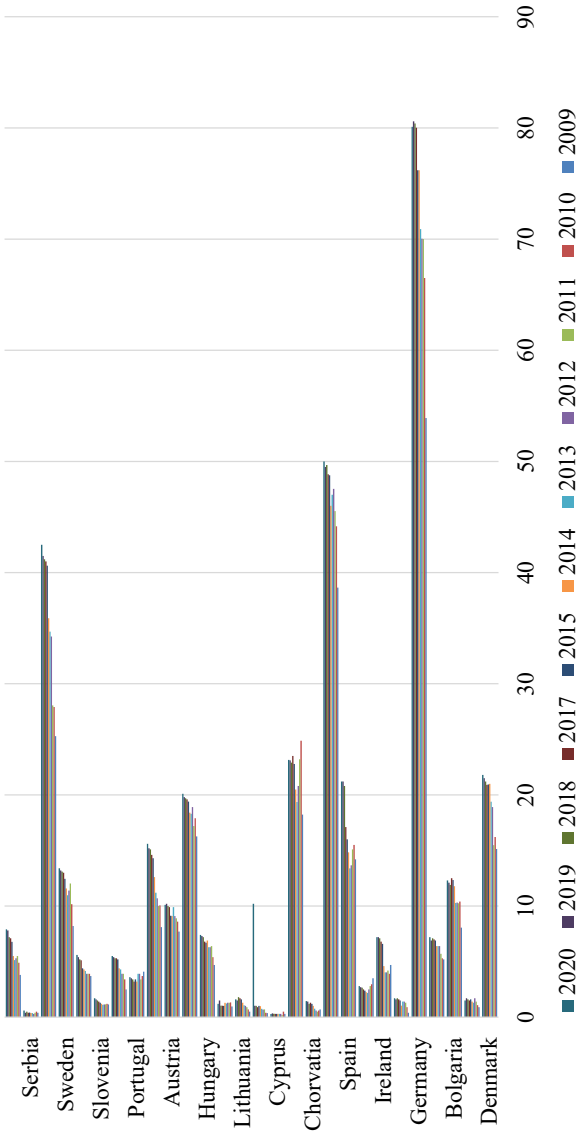


Figure B.1. Dynamics of trade volumes of the high-tech group of goods in 2009-2019, million euros  
(author's investigation)

**MONOGRAPH**

Table B.1

**List of leading countries of the Global Innovation Index in 2015-2020**

<b>Ranking position</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
1	Switzerland	Switzerland	Switzerland	Switzerland	Switzerland
2	UK	Sweden	Sweden	Netherlands	Sweden
3	Sweden	UK	Netherlands	Sweden	USA
4	Netherlands	USA	USA	UK	Netherlands
5	USA	Finland	UK	Singapore	UK
6	Finland	Singapore	Denmark	USA	Finland
7	Singapore	Ireland	Singapore	Finland	Denmark
8	Ireland	Denmark	Finland	Denmark	Singapore
9	Luxembourg	Netherlands	Germany	Germany	Germany
10	Denmark	Germany	Ireland	Ireland	Israel
11	Honkong	South Korea	South Korea	Israel	South Korea
12	Germany	Luxembourg	Luxembourg	South Korea	Ireland
13	Iceland	Iceland	Iceland	Japan	Honkong
14	South Korea	Honkong	Japan	Honkong	China
15	New Zeland	Canada	France	Luxembourg	Japan
16	Canada	Japan	Honkong	France	France
43	Saudi Arabia	Russia	Туреччина	Ukraine	Tailand
47	UAE	Croatia	В'єтнам	Chile	Ukraine
48	Russia	Romania	Montenegro	Moldova	Georgia
49	Maurikii	Saudi Arabia	Qatar	Romania	Turkey
50	Qatar	Qatar	Ukraine	Turkey	Romania
51	Costa-Rica	Montenegro	Tailand	Qatar	Chile
56	Northern Macedonia	Ukraine	Quveit	Mexico	Mexico
64	Ukraine	Georgia	Maurikii	Brazil	Armenia

*Note. Author's investigation.*

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## APPENDIXES

### Appendix C

Table B.1

#### 25 largest pharmaceutical and biotechnology companies in the world

No	Name	Country of origin
1	Johnson&Johnson	USA
2	Pfizer	USA
3	Novartis	Switzerland
4	Roche Holding	Switzerland
5	Sanofi	France
6	Merck&Co.	USA
7	Bayer	Germany
8	GlaxoSmithKline	UK
9	Gilead Sciences	USA
10	Amgen	Switzerland
11	Allergan	USA
12	AbbVie	USA
13	McKesson	USA
14	AstraZeneca	UK
15	Abbott Laboratories	USA
16	Teva Pharmaceuticals	Israel
17	Eli Lilly & Co.	USA
18	Cardinal Health	USA
19	Bristol-Myers Squibb	USA
20	Merck	USA
21	Novo Nordisk	Denmark
22	Biogen Idec	Denmark
23	Celgene	USA
24	AmerisourceBergen	USA
25	Astellas Pharma	Japan

*Note.* Author's investigation

Appendix D

**Calculations of taxonomy coefficients for the investigated enterprises**

*(calculated by the author based on research results)*

NVP "Electron-Karat" SE PJSC "Concern-Electron".

$$C_{2013} = \sqrt{(0,86 - 1,19)^2 + (0,96 - 1,08)^2 + (0,83 - 1,3)^2} = 0,6;$$

$$C_{2014} = \sqrt{(0,8 - 1,19)^2 + (0,96 - 1,08)^2 + (0,87 - 1,3)^2} = 0,6;$$

$$C_{2015} = \sqrt{(1,19 - 1,19)^2 + (0,96 - 1,08)^2 + (0,78 - 1,3)^2} = 0,53;$$

$$C_{2016} = \sqrt{(1 - 1,19)^2 + (1,02 - 1,08)^2 + (0,83 - 1,3)^2} = 0,54;$$

$$C_{2017} = \sqrt{(1,1 - 1,19)^2 + (0,96 - 1,08)^2 + (1,3 - 1,3)^2} = 0,09;$$

$$C_{2018} = \sqrt{(1,02 - 1,19)^2 + (1,08 - 1,08)^2 + (1,3 - 1,3)^2} = 0,17;$$

$$C_{2019} = \sqrt{(1,03 - 1,19)^2 + (1,08 - 1,08)^2 + (1,3 - 1,3)^2} = 0,16.$$

Distance: {0,6; 0,6; 0,53; 0,54; 0,09; 0,17; 0,16}

Find a taxonomic index of development

$K_i = 1 - d$

$d = C_{io} / C_o$ ,  $C_o = C_o \text{ av.} + 2 \times S_o$

$C_o \text{ av.} = \frac{1}{m} \sum_{i=1}^m C_{io}$ , де  $m$  – період часу,

$$S_o = \sqrt{\frac{1}{m} \sum_{i=1}^m (C_{io} - C_o \text{ cep.})^2}.$$

Measure av distance:

$$C_o \text{ cep.} = \frac{1}{7} (0,6 + 0,6 + 0,53 + 0,54 + 0,09 + 0,17 + 0,16) = 0,38.$$

Find:

$$S_o = \sqrt{\frac{1}{7} (0,6 - 0,38)^2 + (0,6 - 0,38)^2 + (0,53 - 0,38)^2 + (0,54 - 0,38)^2 + (0,09 - 0,38)^2 + (0,17 - 0,38)^2 + (0,16 - 0,38)^2} = 0,21.$$

## APPENDIXES

### PJSC "Lviv Electric Lamp Plant "Iskra"

$$C_{2013} = \sqrt{(1,29 - 1,29)^2 + (0,89 - 1,06)^2 + (0,88 - 1,03)^2} = 0,23;$$

$$C_{2014} = \sqrt{(1,26 - 1,29)^2 + (1,02 - 1,06)^2 + (1,02 - 1,03)^2} = 0,06;$$

$$C_{2015} = \sqrt{(0,83 - 1,29)^2 + (1,05 - 1,06)^2 + (1,02 - 1,03)^2} = 0,037;$$

$$C_{2016} = \sqrt{(0,81 - 1,29)^2 + (1,06 - 1,06)^2 + (1,02 - 1,03)^2} = 0,23;$$

$$C_{2017} = \sqrt{(0,81 - 1,29)^2 + (0,96 - 1,06)^2 + (1,02 - 1,03)^2} = 0,48;$$

$$C_{2018} = \sqrt{(0,97 - 1,29)^2 + (1,02 - 1,06)^2 + (1,02 - 1,03)^2} = 0,32;$$

$$C_{2019} = \sqrt{(1,02 - 1,29)^2 + (1 - 1,06)^2 + (1,03 - 1,03)^2} = 0,27.$$

Distance: {0,23; 0,06; 0,037; 0,23; 0,48; 0,32; 0,27}.

Find a taxonomic index of development

$$Ki = 1 - d,$$

$$d = C_{io} / C_o$$

$$C_o = C_o \text{ av.} + 2 \times S_o,$$

$$S_o = \sqrt{\frac{1}{m} \sum_{i=1}^m (C_{io} - C_o \text{ cep.})^2}.$$

Measure av distance:

$$C_o \text{ av.} = \frac{1}{7} (0,23 + 0,06 + 0,037 + 0,23 + 0,48 + 0,32 + 0,27) = 0,23.$$

Find:

$$S_o = \sqrt{\frac{1}{7} ((0,23 - 0,23)^2 + (0,06 - 0,23)^2 + (0,037 - 0,23)^2 + (0,23 - 0,23)^2 + (0,48 - 0,23)^2 + (0,32 - 0,23)^2 + (0,27 - 0,23)^2)} = 0,14.$$

### LLC "OSP Corporation Vatra"

$$C_{2013} = \sqrt{(1,2 - 1,4)^2 + (0,9 - 1,13)^2 + (1,25 - 1,25)^2} = 0,09;$$

$$C_{2014} = \sqrt{(1,4 - 1,4)^2 + (0,8 - 1,13)^2 + (1 - 1,25)^2} = 0,18;$$

$$C_{2015} = \sqrt{(1,4 - 1,4)^2 + (0,9 - 1,13)^2 + (1 - 1,25)^2} = 0,11;$$

$$C_{2016} = \sqrt{(0,9 - 1,4)^2 + (1,06 - 1,13)^2 + (1 - 1,25)^2} = 0,3;$$

$$C_{2017} = \sqrt{(1,7 - 1,4)^2 + (1,06 - 1,13)^2 + (1,25 - 1,25)^2} = 0,1;$$

$$C_{2018} = \sqrt{(0,9 - 1,4)^2 + (1,13 - 1,13)^2 + (1 - 1,25)^2} = 0,31;$$

$$C_{2019} = \sqrt{(0,9 - 1,4)^2 + (1,06 - 1,13)^2 + (1 - 1,25)^2} = 0,31.$$

Distance: {0,09; 0,18; 0,11; 0,3; 0,1; 0,31; 0,31}

Find a taxonomic index of development  $K_i = 1 - d$

$d = C_{io} / C_o$   $C_o = C_o \text{ cep.} + 2 \times S_o$

$$C_o \text{ av.} = \frac{1}{m} \sum_{i=1}^m C_{io}, \text{ where } m \text{ is the time period,}$$

$$S_o = \sqrt{\frac{1}{m} \sum_{i=1}^m (C_{io} - C_o \text{ cep.})^2}$$

Measure av distance:

$$C_o \text{ av.} = \frac{1}{7} (0,09 + 0,18 + 0,11 + 0,3 + 0,1 + 0,31 + 0,31) = 0,2.$$

Find:

$$S_o = \sqrt{\frac{1}{7} ((0,09 - 0,2)^2 + (0,18 - 0,2)^2 + (0,11 - 0,2)^2 + (0,3 - 0,2)^2 + (0,1 - 0,2)^2 + (0,31 - 0,2)^2 + (0,31 - 0,2)^2)} = 0,096.$$

APPENDIXES

Table D 1

**Information support for calculating the taxonomy coefficient  
for enterprises of the «Electric machines and equipment  
and their parts» and «Chemical products» groups**

Period	The share of income from the sale of a high-tech product in the total income, %		Coefficient of autonomy		Equity maneuverability ratio	
	Eletron Concern	Polimer Electron Plant	Eletron Concern	Polimer Electron Plant	Eletron Concern	Polimer Electron Plant
1	2	3	4	5	6	7
2013	1,5	1,5	0,8	0,6	0,2	0,2
2014	2,5	3	0,7	0,7	0,2	0,2
2015	2,5	4,5	0,8	0,8	0,2	0,1
2016	3,7	2,8	0,8	0,8	0,3	0,1
2017	5,2	4,2	0,89	0,8	0,3	0,2
2018	10,4	4,3	0,9	0,8	0,3	0,2
2019	9,8	4,1	0,9	0,9	0,3	0,2
c/d	c	c	c	c	c	c
Av value	5,1	3,5	0,83	0,77	0,26	0,17

Table D 2

**Calculation of the benchmark vector  
by enterprises of the «Chemical products»  
and «Electric machines and equipment and their parts» groups**

Period	Vector-etalon index $Z_{ij} = \frac{X_i}{X_c}$ ,					
	Eletron Concern			Polimer Electron Plant		
1	2	3	4	5	6	7
2013	0,29	0,96	0,76	0,43	0,78	1,18
2014	0,49	0,84	0,76	0,86	0,91	1,18
2015	0,49	0,96	0,76	1,3	1,03	0,59
2016	0,73	0,96	1,15	0,8	1,03	0,59
2017	1,02	1,07	1,15	1,2	1,03	1,18
2018	<b>2,03</b>	1,08	1,15	<b>1,23</b>	1,03	1,18
2019	1,92	<b>1,08</b>	<b>1,15</b>	1,17	<b>1,17</b>	<b>1,18</b>
Vector-etalon Eletron Concern (2,03; 1,08; 1,15)				Vector-etalon Polimer Electron Plant (1,23; 1,17; 1,18)		

We determine the distance between individual observation periods (SIO) and the reference vector:

$$C_{io} = \sqrt{\sum_{i=1}^m (Z_{ij} - Z_{oj})^2},$$

де  $Z_{ij}$  – standardized matrix index;

$Z_{oj}$  – vector-etalon value.

Lviv REMA Plant Ltd

$$C_{2013} = \sqrt{(0,29 - 2,03)^2 + (0,96 - 1,08)^2 + (0,76 - 1,15)^2} = 1,78;$$

$$C_{2014} = \sqrt{(0,49 - 2,03)^2 + (0,84 - 1,08)^2 + (0,76 - 1,15)^2} = 1,6;$$

$$C_{2015} = \sqrt{(0,49 - 2,03)^2 + (0,96 - 1,08)^2 + (0,76 - 1,15)^2} = 1,59;$$

$$C_{2016} = \sqrt{(0,73 - 2,03)^2 + (0,96 - 1,08)^2 + (1,15 - 1,15)^2} = 1,3;$$

$$C_{2017} = \sqrt{(1,02 - 2,03)^2 + (1,07 - 1,08)^2 + (1,15 - 1,15)^2} = 1,01;$$

$$C_{2018} = \sqrt{(2,03 - 2,03)^2 + (1,08 - 1,08)^2 + (1,15 - 1,15)^2} = 0;$$

$$C_{2019} = \sqrt{(1,92 - 2,03)^2 + (1,08 - 1,08)^2 + (1,3 - 1,3)^2} = 0,11;$$

Distance: {1.78; 1,6; 1,59; 1,3; 1,01; 0; 0,11}.

Find a taxonomic index of development

$K_i = 1 - d$ .

$d = C_{io} / C_o$

$C_o = C_o \text{ av.} + 2 \times S_o$

$C_o \text{ av.} = \frac{1}{m} \sum_{i=1}^m C_{io}$ , where  $m$  is the time period.

$$S_o = \sqrt{\frac{1}{m} \sum_{i=1}^m (C_{io} - C_o \text{ av.})^2}$$

Measure av distance:

$$C_o \text{ av.} = \frac{1}{7} (1,78 + 1,6 + 1,59 + 1,3 + 1,01 + 0 + 0,11) = 1,06.$$

Find:

$$S_o = \sqrt{\frac{1}{7} ((1,78 - 1,06)^2 + (1,6 - 1,06)^2 + (1,59 - 1,06)^2 + (1,3 - 1,06)^2 + (1,01 - 1,06)^2 + (0 - 1,06)^2 + (0,11 - 1,06)^2)} = 0,77.$$

## APPENDIXES

### «Polymer-Electron» plant

$$C_{2013} = \sqrt{(0,43 - 1,23)^2 + (0,78 - 1,17)^2 + (1,18 - 1,18)^2} = 0,89;$$

$$C_{2014} = \sqrt{(0,86 - 1,23)^2 + (0,91 - 1,17)^2 + (1,18 - 1,18)^2} = 0,46;$$

$$C_{2015} = \sqrt{(1,3 - 1,23)^2 + (1,03 - 1,17)^2 + (0,59 - 1,18)^2} = 0,61;$$

$$C_{2016} = \sqrt{(0,8 - 1,23)^2 + (1,03 - 1,17)^2 + (0,59 - 1,18)^2} = 0,74;$$

$$C_{2017} = \sqrt{(1,2 - 1,23)^2 + (1,03 - 1,17)^2 + (1,18 - 1,18)^2} = 0,14;$$

$$C_{2018} = \sqrt{(1,23 - 1,23)^2 + (1,03 - 1,17)^2 + (1,18 - 1,18)^2} = 0,14;$$

$$C_{2019} = \sqrt{(1,17 - 1,23)^2 + (1,17 - 1,17)^2 + (1,18 - 1,18)^2} = 0,06.$$

Distance: {0,89; 0,46; 0,61; 0,74; 0,14; 0,14; 0,06}.

Find a taxonomic index of development

$$Co = Co_{cep.} + 2 \times So,$$

$$Co_{av.} = \frac{1}{m} \sum_{i=1}^m C_{io}, \text{ where } m \text{ is the time period.}$$

$$So = \sqrt{\frac{1}{m} \sum_{i=1}^m (C_{io} - Co_{cep.})^2}$$

$$Co_{av.} = \frac{1}{7} (0,89 + 0,46 + 0,61 + 0,74 + 0,14 + 0,14 + 0,06) = 0,43.$$

$$So = \sqrt{\frac{1}{7} ((0,89 - 0,43)^2 + (0,46 - 0,43)^2 + (0,61 - 0,43)^2 + (0,74 - 0,43)^2 + (0,14 - 0,43)^2 + (0,14 - 0,43)^2 + (0,06 - 0,43)^2)} = 0,28.$$

Table D 3

**Information support for the calculation of the taxonomy coefficient for the enterprises of the «Pharmaceutical products» group**

Period	The share of income from the sale of a high-tech product in the total income, %		Coefficient of autonomy		Equity maneuverability ratio	
	Borshagivskii PJSC	Farmak PJSC	Borshagivskii PJSC	Farmak PJS	Borshagivskii PJSC	Farmak PJS
1	2	3	4	5	6	7
2013	13,8	15,9	0,8	0,8	0,3	0,3
2014	15	17	0,78	0,82	0,25	0,25
2015	12,9	16,9	0,69	0,83	0,31	0,3
2016	15,9	16,8	0,71	0,81	0,32	0,35
2017	15,8	18,2	0,75	0,79	0,31	0,32
2018	16	15,3	0,75	0,79	0,32	0,32
2019	18	16,7	0,75	0,8	0,32	0,33
c/d	c	c	c	c	c	c
Av value	15,38	16,7	0,75	0,81	0,3	0,31

Table D.4

**Calculation of the benchmark vector by the enterprises of the group «Pharmaceutical products»**

Period	Vector-etalon index $Z_{ij} = \frac{X_i}{X_c}$					
	Borshagivskii PJSC			Farmak PJSC		
1	2	3	4	5	6	7
2013	0,9	<b>1,07</b>	1	0,95	0,99	0,97
2014	0,98	1,04	0,83	1,02	1,01	0,8
2015	0,84	0,92	1,03	1,01	<b>1,02</b>	0,97
2016	1,03	0,95	1,07	1,01	1	<b>1,13</b>
2017	1,03	1	1,03	<b>1,09</b>	0,98	1,03
2018	1,04	1	1,07	0,92	0,98	1,03
2019	<b>1,17</b>	<b>1</b>	<b>1,07</b>	1	0,99	1,06
Vector-etalon Borshagivskii PJSC (1,17; 1,07; 1,07)				Vector-etalon Farmak PJSC (1,13; 1,02; 1,09)		

We determine the distance between individual observation periods ( $C_{io}$ ) and the reference vector:

$$C_{io} = \sqrt{\sum_{i=1}^m (Z_{ij} - Z_{oj})^2}$$

## APPENDIXES

where  $Z_{ij}$  – denotes the value of the standardized matrix;  
 $Z_{0j}$  – denotes the value of the reference vector.

### PJSC «Borshchagiv chemical and pharmaceutical plants»

$$C_{2013} = \sqrt{(0,9 - 1,17)^2 + (1,07 - 1,07)^2 + (1 - 1,07)^2} = 0,28;$$

$$C_{2014} = \sqrt{(0,98 - 1,17)^2 + (1,04 - 1,07)^2 + (0,83 - 1,07)^2} = 0,32;$$

$$C_{2015} = \sqrt{(0,84 - 1,17)^2 + (0,9 - 1,07)^2 + (1,03 - 1,07)^2} = 0,38;$$

$$C_{2016} = \sqrt{(1,03 - 1,17)^2 + (0,95 - 1,07)^2 + (1,07 - 1,07)^2} = 0,13;$$

$$C_{2017} = \sqrt{(1,03 - 1,17)^2 + (1 - 1,07)^2 + (1,03 - 1,07)^2} = 0,17;$$

$$C_{2018} = \sqrt{(1,04 - 1,17)^2 + (1 - 1,07)^2 + (1,07 - 1,07)^2} = 0,16;$$

$$C_{2019} = \sqrt{(1,17 - 1,17)^2 + (1 - 1,07)^2 + (1,07 - 1,07)^2} = 0,07.$$

Distance: {0,28; 0,32; 0,38; 0,13; 0,17; 0,16; 0,07}.

Find a taxonomic index of development:

$$K_i = 1 - d,$$

$$d = C_{io} / C_o,$$

$$C_o = C_o \text{ av.} + 2 \times S_o,$$

$$C_o \text{ av.} = \frac{1}{m} \sum_{i=1}^m C_{io}, \text{ where } m \text{ is the time period.}$$

$$S_o = \sqrt{\frac{1}{m} \sum_{i=1}^m (C_{io} - C_o \text{ av.})^2}.$$

Measure av distance:

$$C_o \text{ av.} = \frac{1}{7} (0,28 + 0,32 + 0,38 + 0,13 + 0,17 + 0,16 + 0,07) = 0,22.$$

Find:

$$S_o = \sqrt{\frac{1}{7} ((0,28 - 0,22)^2 + (0,32 - 0,22)^2 + (0,38 - 0,22)^2 + (0,13 - 0,22)^2 + (0,17 - 0,22)^2 + (0,16 - 0,22)^2 + (0,07 - 0,22)^2)} = 0,14.$$

**Calculation of the benchmark vector by enterprises  
of the «Pharmaceutical products» group**

Period	Vector-etalon index $Z_{ij} = \frac{X_i}{X_c}$					
	Borshagivskii PJSC			Farmak PJSC		
1	2	3	4	5	6	7
2013	0,9	<b>1,07</b>	1	0,95	0,99	0,97
2014	0,98	1,04	0,83	1,02	1,01	0,8
2015	0,84	0,92	1,03	1,01	<b>1,02</b>	0,97
2016	1,03	0,95	1,07	1,01	1	<b>1,13</b>
2017	1,03	1	1,03	<b>1,09</b>	0,98	1,03
2018	1,04	1	1,07	0,92	0,98	1,03
2019	<b>1,17</b>	<b>1</b>	<b>1,07</b>	1	0,99	1,06
Vector-etalon Borshagivskii PJSC (1,17; 1,07; 1,07)				Vector-etalon Farmak PJSC (1,09; 1,02; 1,13)		

$$C_{2013} = \sqrt{(0,95 - 1,09)^2 + (0,99 - 1,02)^2 + (0,97 - 1,13)^2} = 0,55;$$

$$C_{2014} = \sqrt{(1,02 - 1,09)^2 + (1,01 - 1,02)^2 + (0,8 - 1,13)^2} = 0,34;$$

$$C_{2015} = \sqrt{(1,01 - 1,09)^2 + (1,02 - 1,02)^2 + (0,97 - 1,13)^2} = 0,18;$$

$$C_{2016} = \sqrt{(1,01 - 1,09)^2 + (1 - 1,02)^2 + (1,13 - 1,13)^2} = 0,1;$$

$$C_{2017} = \sqrt{(1,09 - 1,09)^2 + (0,98 - 1,02)^2 + (1,03 - 1,13)^2} = 0,12;$$

$$C_{2018} = \sqrt{(0,92 - 1,09)^2 + (0,98 - 1,02)^2 + (1,03 - 1,13)^2} = 0,18;$$

$$C_{2019} = \sqrt{(1 - 1,07)^2 + (0,99 - 1,02)^2 + (1,06 - 1,13)^2} = 0,14.$$

Distance: {0,55; 0,34; 0,18; 0,1; 0,12; 0,18; 0,14}.

Find a taxonomic index of development:

$$K_i = 1 - d,$$

$$d = C_{io} / C_o,$$

$$C_o = C_o \text{ av.} + 2 \times S_o,$$

$$C_o \text{ av.} = \frac{1}{m} \sum_{i=1}^m C_{io}, \text{ where } m \text{ is the time period}$$

## APPENDIXES

$$So = \sqrt{\frac{1}{m} \sum_{i=1}^m (Cio - Co cep.)^2}.$$

Measure av distance

$$Co cep. = \frac{1}{7} (0,55+0,34+0,18+0,1+0,12+0,18+0,14) = 0,23$$

Find:

$$So = \sqrt{\frac{1}{7} ((0,55 - 0,23)^2 + (0,34 - 0,23)^2 + (0,18 - 0,23)^2 + (0,1 - 0,23)^2 + (0,12 - 0,23)^2 + (0,18 - 0,23)^2 + (0,14 - 0,23)^2)} = 0,16.$$

Table D 6

### Ltd. «Expomobile and KO»

Period	Vector-etalon index $Z_{ij} = \frac{X_i}{X_c}$		
	2	3	4
2013	0,5	0,9	1,03
2014	0,5	1,2	1,07
2015	<b>1</b>	1,1	<b>1,07</b>
2016	0,5	1,1	1,03
2017	0,5	0,9	0,86
2018	0,4	0,9	0,86
2019	0,5	0,9	1,03
Vector-etalon {1; 0,88; 0,32;}			

Define in terms of years.

Distance: {1,14; 1,54; 1,32}

Find a taxonomic index of development  $K_i = 1-d$ :

$$K_{i_{2012}} = 1-0,64=0,36;$$

$$K_{i_{2013}} = 1-0,86=0,14;$$

$$K_{i_{2014}} = 1-0,74=0,26;$$

$$K_{i_{2012}} = 1-0,93=0,07;$$

$$K_{i_{2013}} = 1-0,61=0,39;$$

$$K_{i_{2014}} = 1-0,49=0,51;$$

$$K_{i_{2015}} = 1-0,61=0,39.$$

Appendix E

**Indicators of the vectors «Resource capabilities»,  
«Personnel capabilities», «Commercial capabilities»  
and «Financial capabilities of the studied enterprises»**  
*(calculated by the author)*

Table E 1

**Indicators of the «Resource capabilities» vector**

No	Indexes	Sensitivity ratio, k	Indicator value								Rating							
			1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
1	Depreciation rate of fixed assets	1,25	0,6	0,5	0,5	0,4	0,65	0,6	0,4	0,3	4	3	3	2	5	4	2	1
2	Depreciation rate. intangible assets	1,3	0,5	0,8	0,7	0,5	0,4	0,4	0,5	0,5	2	3	2	3	1	1	2	2
3	Profitability of production, %	1,3	20	17	10	15	25	32	45	20	4	6	3	5	3	2	1	4

$$P_j(1)=1,25 \times 4 + 1,30 \times 2 + 1,30 \times 4 = 5 + 2,6 + 2,6 = 10,2;$$

$$P_j(2)=1,25 \times 3 + 1,30 \times 3 + 1,30 \times 6 = 3,75 + 2,6 + 7,8 = 14,15;$$

$$P_j(3)= 1,25 \times 2 + 1,30 \times 2 + 1,30 \times 1 = 2,5 + 2,6 + 1,3 = 6,1;$$

$$P_j(4)=1,25 \times 1 + 1,30 \times 2 + 1,30 \times 5 = 1,25 + 2,6 + 6,5 = 10,35;$$

$$P_j(5)=1,25 \times 5 + 1,30 \times 1 + 1,30 \times 3 = 7,5 + 1,3 + 3,9 = 12,7;$$

$$P_j(6)=1,25 \times 4 + 1,30 \times 1 + 1,30 \times 2 = 5 + 1,3 + 2,6 = 8,9;$$

$$P_j(7)=1,25 \times 2 + 1,30 \times 2 + 1,30 \times 1 = 2,5 + 2,6 + 1,3 = 6,4;$$

$$P_j(7)= 1,25 \times 1 + 1,30 \times 2 + 1,30 \times 4 = 1,25 + 2,6 + 5,2 = 9,05.$$

$$B_k(1)=100-(10,2-3) \frac{100}{3(8-1)} = 40,24;$$

$$B_k(2)=100-(14,5-3) \frac{100}{3(8-1)} = 4,55;$$

$$B_k(3)=100-(6,1-3) \frac{100}{3(8-1)} = 79,3;$$

## APPENDIXES

$$Bk(4)=100-(10,35-3) \frac{100}{3(8-1)} =38,95;$$

$$Bk(5)=100-(12,7-3) \frac{100}{3(8-1)} =19,49;$$

$$Bk(6)=100-(8,9-3) \frac{100}{3(8-1)} =51,03;$$

$$Bk(7)=100-(6,4-3) \frac{100}{3(8-1)} =71,78;$$

$$Bk(8)=100-(9,05-3) \frac{100}{3(8-1)} =59,7.$$

Table E 2

### Indicators of the «Personnel opportunities» vector

No	Indexes	Sensitivity ratio, k	Indicator value								Rating							
			1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
1	Number of employees with higher education, %	1,15	80	60	50	50	70	75	23	60	1	4	5	5	3	2	6	4
2	Age of personnel up to 45 years, %	1,15	60	40	30	55	40	45	62	65	2	5	7	3	6	4	1	1
3	Effectiveness of the organizational structure of management, points	1,25	10	8	6	7	6	9	31	8	2	4	6	5	6	3	1	4
4	The level of innovation of the staff	1,1	60	45	25	35	25	55	45	25	1	3	5	6	5	2	4	6

$$Pj(1)=1,15 \times 1 + 1,15 \times 2 + 1,25 \times 2 + 1,1 \times 1 = 1,15 + 2,3 + 2,5 + 1,1 = 7,5;$$

$$Pj(2)=1,15 \times 4 + 1,15 \times 5 + 1,25 \times 4 + 1,1 \times 3 = 4,6 + 5,75 + 5 + 3,3 = 18,65;$$

$$Pj(3)=1,15 \times 5 + 1,15 \times 7 + 1,25 \times 6 + 1,1 \times 5 = 5,75 + 8,05 + 7,5 = 21,3;$$

$$Pj(4)=1,15 \times 5 + 1,15 \times 3 + 1,25 \times 5 + 1,1 \times 6 = 5,75 + 3,45 + 6,25 + 6,6 = 22,05;$$

$$Pj(5)=1,15 \times 3 + 1,15 \times 6 + 1,25 \times 6 + 1,1 \times 5 = 3,45 + 6,9 + 7,2 + 5,5 = 23,05;$$

$$Pj(6)=1,15 \times 2 + 1,15 \times 4 + 1,25 \times 3 + 1,1 \times 2 = 2,3 + 4,6 + 3,45 + 2,2 = 12,55;$$

$$Pj(7)=1,15 \times 6 + 1,15 \times 1 + 1,25 \times 1 + 1,1 \times 4 = 6,9 + 1,15 + 1,25 + 4,4 = 13,7;$$

$$Pj(8)=1,15 \times 4 + 1,15 \times 1 + 1,25 \times 4 + 1,1 \times 6 = 4,6 + 1,15 + 5 + 6,6 = 17,39.$$

$$Bk(1)=100-(7,5-4) \frac{100}{4(8-1)} =82,5;$$

$$Bk(2)=100-(18,75-4) \frac{100}{4(8-1)} =26,25;$$

$$Bk(3)=100-(21,3-4) \frac{100}{4(8-1)} =13,5;$$

$$Bk(4)=100-(22,5-4) \frac{100}{4(8-1)} =7,5;$$

$$Bk(5)=100-(23,5-4) \frac{100}{4(8-1)} =2,5;$$

$$Bk(6)=100-(12,55-4) \frac{100}{4(8-1)} =57,25;$$

$$Bk(7)=100-(13,7-4) \frac{100}{4(8-1)} =51,5;$$

$$Bk(8)=100-(17,39-4) \frac{100}{4(8-1)} =46,44.$$

Table E 3

**Indicators of the «Commercial Opportunities» vector**

No	Indexes	Sensitivity ratio, k	Indicator value								Rating							
			1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
1	Export volume,%	1,25	10	21	10	3	11	20	23	-	5	2	5	6	4	3	1	8
2	Level of business diversification, %	1,15	5	35	12	5	25	45	57	10	5	3	7	8	4	2	1	7
3	Costs for innovative activity, %	1,2	20	15	20	10	14	25	31	2	3	4	5	6	5	2	1	8
4	The specific share of the high-tech product in the volume of output, %	1,25	70	15	5	15	30	30	45	2	1	6	7	4	4	3	2	8

$$Pj(1)=1,25 \times 5 + 1,15 \times 5 + 1,2 \times 3 + 1,25 \times 1 = 6,25 + 5,75 + 3,6 + 1,25 = 16,85;$$

$$Pj(2)=1,25 \times 2 + 1,15 \times 3 + 1,2 \times 4 + 1,25 \times 6 = 2,5 + 3,45 + 4,8 + 7,5 = 18,25;$$

$$Pj(3)=1,25 \times 5 + 1,15 \times 7 + 1,2 \times 5 + 1,25 \times 5 = 6,25 + 8,05 + 6 + 6,25 = 19,05;$$

$$Pj(4)=1,25 \times 6 + 1,15 \times 6 + 1,2 \times 6 + 1,25 \times 4 = 7,5 + 6,9 + 7,2 + 5 = 23,6;$$

## APPENDIXES

$$Pj(5)=1,25 \times 4 + 1,15 \times 4 + 1,2 \times 5 + 1,25 \times 4 = 5 + 4,6 + 6 + 5 = 20,6;$$

$$Pj(6)=1,25 \times 3 + 1,15 \times 2 + 1,2 \times 2 + 1,25 \times 3 = 3,75 + 2,3 + 3,75 + 2,4 = 12,2;$$

$$Pj(7)=1,25 \times 1 + 1,15 \times 1 + 1,2 \times 1 + 1,25 \times 2 = 1,25 + 1,15 + 1,2 + 2,5 = 6,1;$$

$$Pj(8)=1,25 \times 8 + 1,15 \times 7 + 1,2 \times 8 + 1,25 \times 8 = 10 + 8,05 + 9,6 = 17,65.$$

$$Bk(1)=100-(16,85-4) \frac{100}{4(8-1)} = 35,75;$$

$$Bk(2)=100-(15,25-4) \frac{100}{4(8-1)} = 43,75;$$

$$Bk(3)=100-(19,05-4) \frac{100}{4(8-1)} = 24,75;$$

$$Bk(4)=100-(23,6-4) \frac{100}{4(8-1)} = 2;$$

$$Bk(5)=100-(20,6-4) \frac{100}{4(8-1)} = 17;$$

$$Bk(6)=100-(12,2-4) \frac{100}{4(8-1)} = 58;$$

$$Bk(7)=100-(6,1-4) \frac{100}{4(8-1)} = 89,5;$$

$$Bk(8)=100-(17,65-4) \frac{100}{4(8-1)} = 31,4.$$

Table E 4

### Indicators of the «Financial Opportunities» vector

No	Indexes	Sensitivity ratio, k	Indicator value								Rating							
			1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
1	Ratio of current and non-current assets	1,1	0,08	5,67	0,5	0,5	0,09	6,4	7,4	1,6	6	3	4	4	5	2	1	3
2	Coefficient of financial autonomy	1,25	0,67	0,33	0,5	0,2	0,5	0,7	0,6	0,7	2	6	3	5	4	1	3	1
3	Financial leverage ratio	1,15	2,04	1,99	2	2,5	1,7	2,1	1,5	1,3	2	3	3	5	6	1	4	7

**MONOGRAPH**

(End of Table E.4)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
4	Total liquidity ratio	1,2	1,09	1,31	1,05	1,5	2,1	1,8	1,6	1,8	5	3	4	4	6	1	2	2
5	Coefficient of total payment capacity	1,05	2,71	0,5	0,7	0,1	1,8	2,8	3,1	3,5	3	5	7	8	4	2	2	1

$$P_j(1) = 1,1 \times 6 + 1,25 \times 2 + 1,15 \times 2 + 1,2 \times 5 + 1,15 \times 3 = 6,6 + 2,5 + 2,3 + 6 + 3,45 = 20,85;$$

$$P_j(2) = 1,1 \times 3 + 1,25 \times 6 + 1,15 \times 3 + 1,2 \times 3 + 1,15 \times 5 = 3,3 + 7,6 + 3,45 + 3,6 + 5,75 = 23,7;$$

$$P_j(3) = 1,1 \times 4 + 1,25 \times 3 + 1,15 \times 3 + 1,2 \times 4 + 1,15 \times 7 = 4,4 + 3,75 + 3,45 + 4,8 + 8,05 = 24,45;$$

$$P_j(4) = 1,1 \times 4 + 1,25 \times 5 + 1,15 \times 5 + 1,2 \times 4 + 1,15 \times 6 = 4,4 + 6,25 + 3,45 + 4,8 + 6,9 = 25,8;$$

$$P_j(5) = 1,1 \times 5 + 1,25 \times 4 + 1,15 \times 6 + 1,2 \times 6 + 1,15 \times 4 = 5,5 + 5 + 6,9 + 7,2 + 4,6 = 29,2;$$

$$P_j(6) = 1,1 \times 2 + 1,25 \times 1 + 1,15 \times 1 + 1,2 \times 1 + 1,15 \times 2 = 2,2 + 1,25 + 1,15 + 4,8 + 2,3 = 11,7;$$

$$P_j(7) = 1,1 \times 1 + 1,25 \times 3 + 1,15 \times 4 + 1,2 \times 2 + 1,15 \times 1 = 1,1 + 3,75 + 4,6 + 1,15 + 2,4 = 13;$$

$$P_j(8) = 1,1 \times 3 + 1,25 \times 6 + 1,15 \times 3 + 1,2 \times 3 + 1,15 \times 5 = 3,3 + 7,5 + 3,45 + 3,6 = 17,55.$$

$$B_k(1) = 100 - (20,85 - 5) \frac{100}{5(8-1)} = 100 - 63,4 = 36,6;$$

$$B_k(2) = 100 - (23,7 - 5) \frac{100}{5(8-1)} = 25,2;$$

$$B_k(3) = 100 - (24,45 - 5) \frac{100}{5(8-1)} = 2,75;$$

$$B_k(4) = 100 - (25,8 - 5) \frac{100}{5(8-1)} = 16,8;$$

$$B_k(5) = 100 - (29,2 - 5) \frac{100}{5(8-1)} = 2;$$

$$B_k(6) = 100 - (11,7 - 5) \frac{100}{5(8-1)} = 73,2;$$

$$B_k(7) = 100 - (13 - 5) \frac{100}{5(8-1)} = 68;$$

$$B_k(8) = 100 - (17,55 - 5) \frac{100}{5(8-1)} = 49,68.$$

## APPENDIXES

### Appendix F

#### Determination of local vectors for the studied domestic enterprises (calculated by the author)

Table F 1

#### Information support for local vector calculation PJSC «Lviv Electric Lamp Plant «Iskra».

$U_{c.av.ec} = \sqrt[9]{9216} = 2,76$	$a_{11} = 1+2+2+3+2+4+4+3+2=23$
$U_{av.scient} = \sqrt[9]{7776} = 2,7$	$a_{12} = 4+1+3+3+2+3+3+3+2=24$
$U_{av.fin} = \sqrt[9]{1728} = 2,29$	$a_{13} = 4+3+1+3+3+4+4+4+3=27$
$U_{av.mark} = \sqrt[9]{2592} = 2,39$	$a_{14} = 3+3+3+1+3+4+4+4+3=28$
$U_{av.resc} = \sqrt[9]{874} = 2,12$	$a_{15} = 4+4+4+4+1+4+4+4+3=32$
$U_{av.soc} = \sqrt[9]{34560} = 3,19$	$a_{16} = 2+3+2+2+2+1+3+3+1=19$
$U_{av.ecol} = \sqrt[9]{34560} = 3,19$	$a_{17} = 2+3+2+2+2+3+1+3+1=19$
$U_{av.integr} = \sqrt[9]{25920} = 3,09$	$a_{18} = 3+3+2+2+2+3+3+1+1=19$
$U_{av.brand} = \sqrt[9]{108} = 1,68$	$a_{19} = 4+4+3+3+3+5+5+5+1=33$

$$\sum_i^T U_i cep. = 2,76+2,7+2,29+2,39+2,12+3,19+3,19+3,09+1,68=23,41;$$

$$\lambda_{max} = 0,13 \times 23 + 0,11 \times 24 + 0,097 \times 27 + 0,1 \times 28 + 0,09 \times 32 + 0,14 \times 19 + 0,14 \times 19 + 0,13 \times 19 + 0,07 \times 33 = 2,99 + 2,88 + 2,6 + 2,8 + 2,88 + 2,99 + 2,66 + 2,47 + 2,31 = 26,89;$$

$$I_y = \frac{\lambda_{max} - n}{n - 1},$$

$$I_y = \frac{26,89 - 9}{9 - 1} = 2,23.$$

Table F 2

**Information support for local vector calculation  
Lviv REMA Plant Ltd**

$U_{av.ec} = \sqrt[9]{41472} = 3,26$	$a_{11} = 1+2+3+3+1+2+2+2+3=19$
$U_{av.scient} = \sqrt[9]{18432} = 2,98$	$a_{12} = 4+1+3+3+2+2+2+2+2=19$
$U_{av.fin} = \sqrt[9]{3888} = 2,5$	$a_{13} = 3+3+1+3+2+4+4+3+3=26$
$U_{av.mark} = \sqrt[9]{27628} = 3,11$	$a_{14} = 3+3+3+1+2+4+4+3+3=26$
$U_{av.resc} = \sqrt[9]{3888} = 2,5$	$a_{15} = 5+4+4+4+1+4+4+4+3=33$
$U_{av.soc} = \sqrt[9]{9216} = 2,75$	$a_{16} = 4+4+2+2+2+1+3+3+2=23$
$U_{av.ecol} = \sqrt[9]{9216} = 2,75$	$a_{17} = 4+4+2+2+2+3+1+3+2=24$
$U_{av.integr} = \sqrt[9]{5184} = 2,59$	$a_{18} = 4+4+3+3+2+3+3+1+2=25$
$U_{av.brand} = \sqrt[9]{1296} = 2,2$	$a_{19} = 3+4+3+3+3+4+4+4+1=29$

$$\sum_i^T U_i \text{cep.} = 3,26+2,98+2,5+3,11+2,5+2,75+2,75+2,59+2,2=24,64;$$

$$\lambda_{\max} = 0,13 \times 19 + 0,12 \times 19 + 0,1 \times 26 + 0,13 \times 26 + 0,1 \times 33 + 0,11 \times 23 + 0,11 \times 24 + 0,1 \times 25 + 0,09 \times 29 = 2,47 + 2,28 + 2,6 + 3,38 + 3,3 + 2,53 + 2,64 + 2,5 + 2,61 = 24,31;$$

$$I_y = \frac{24,31 - 9}{9 - 1} = 1,9.$$

Table F 3

**Information support for local vector calculation «Polymer-Electron» plant**

$U_{av.ec} = \sqrt[9]{18462} = 2,98$	$a_{11} = 1+4+3+2+2+4+4+3+2=25$
$U_{av.scient} = \sqrt[9]{4608} = 2,55$	$a_{12} = 2+1+2+3+2+4+4+4+3=25$
$U_{av.fin} = \sqrt[9]{1728} = 2,29$	$a_{13} = 3+4+1+3+3+4+4+3+3=28$
$U_{av.mark} = \sqrt[9]{5184} = 2,59$	$a_{14} = 4+3+3+1+3+4+4+4+3=29$
$U_{av.resc} = \sqrt[9]{1296} = 2,22$	$a_{15} = 4+4+4+4+1+5+5+5+3=35$
$U_{av.soc} = \sqrt[9]{57600} = 3,38$	$a_{16} = 2+2+2+2+2+1+3+3+4=21$
$U_{av.ecol} = \sqrt[9]{57600} = 3,38$	$a_{17} = 2+2+2+2+2+3+1+3+2=19$
$U_{av.integr} = \sqrt[9]{25920} = 3,09$	$a_{18} = 3+2+3+2+3+3+3+1+2=22$
$U_{c.av.brand} = \sqrt[9]{2592} = 2,39$	$a_{19} = 4+3+3+3+3+5+5+4+1=31$

**APPENDIXES**

$$\sum_i^T U_i \text{cep.} = 2,98+2,55+2,29+2,59+2,22+3,38+3,38+3,09+2,39=19,89;$$

$$\lambda_{\max} = 0,15 \times 25 + 0,13 \times 25 + 0,12 \times 28 + 0,13 \times 29 + 0,11 \times 35 + 0,17 \times 21 + 0,17 \times 19 + 0,16 \times 22 + 0,12 \times 31 = 3,75 + 3,25 + 3,36 + 3,77 + 3,85 + 3,57 + 3,23 + 3,52 + 3,72 = 22,02;$$

$$I_y = \frac{22,02 - 9}{9 - 1} = 1,62.$$

Table F 4

**Information support for local vector calculation  
«Borshchagiv Chemical and Pharmaceutical Plant» PJSC**

$U_{\text{av. ec}} = \sqrt[3]{18432} = 2,98$	$a_{11} = 1+5+3+3+2+4+4+3+2=27$
$U_{\text{av scient}} = \sqrt[3]{43200} = 3,27$	$a_{12} = 4+1+3+3+2+4+3+3+2=25$
$U_{\text{c av fin}} = \sqrt[3]{19440} = 3$	$a_{13} = 4+3+1+3+3+4+5+4+3=30$
$U_{\text{av mark}} = \sqrt[3]{5184} = 2,59$	$a_{14} = 3+5+3+1+3+4+4+4+3=30$
$U_{\text{av resc}} = \sqrt[3]{1728} = 2,29$	$a_{15} = 4+4+5+4+1+4+5+4+3=34$
$U_{\text{c av soc}} = \sqrt[3]{184320} = 3,84$	$a_{16} = 4+3+3+2+2+1+3+3+3=24$
$U_{\text{av ecol}} = \sqrt[3]{86400} = 3,54$	$a_{17} = 2+4+4+2+4+3+1+3+2=25$
$U_{\text{av integr}} = \sqrt[3]{25920} = 3,09$	$a_{18} = 3+3+3+3+2+3+3+1+2=23$
$U_{\text{av brand}} = \sqrt[3]{1296} = 2,2$	$a_{19} = 4+4+4+4+3+5+5+5+1=35$

$$\sum_i^T U_i \text{cep.} = 2,98+3,27+3+2,59+2,29+3,84+3,54+3,09+2,2=26,9;$$

$$\lambda_{\max} = 0,11 \times 27 + 0,12 \times 25 + 0,11 \times 30 + 0,096 \times 30 + 0,085 \times 34 + 0,14 \times 24 + 0,13 \times 25 + 0,11 \times 23 + 0,08 \times 35 = 2,97 + 3 + 3,3 + 2,88 + 2,89 + 3,34 + 3,25 + 3,36 + 3,25 + 2,53 + 2,8 = 33,57;$$

$$I_y = \frac{33,57 - 9}{9 - 1} = 3,07.$$

Table F 5

**Information support for local vector calculation Farmak PJSC**

$U_{av.ec} = \sqrt[9]{25920} = 3,09$	$a_{i1} = 1+4+2+2+2+3+3+3+4=24$
$U_{av.scient} = \sqrt[9]{43200} = 3,27$	$a_{i2} = 3+1+2+2+1+3+4+3+4=23$
$U_{av.fin} = \sqrt[9]{2160} = 2,35$	$a_{i3} = 4+4+1+3+3+4+4+3+3=29$
$U_{av.mark} = \sqrt[9]{1152} = 2,19$	$a_{i4} = 4+4+3+1+3+4+4+4+3=30$
$U_{av.resc} = \sqrt[9]{4050} = 2,52$	$a_{i5} = 4+5+5+4+1+5+5+4+3=36$
$U_{av.soc} = \sqrt[9]{32400} = 3,17$	$a_{i6} = 3+3+2+2+3+1+3+3+4=24$
$U_{av.ecol} = \sqrt[9]{32400} = 3,17$	$a_{i7} = 3+3+2+2+3+3+1+3+2=22$
$U_{av.integr} = \sqrt[9]{24300} = 3,07$	$a_{i8} = 3+3+3+2+5+3+3+1+2=25$
$U_{av.brand} = \sqrt[9]{6912} = 2,67$	$a_{i9} = 5+5+3+3+5+5+5+4+1=38$

$$\sum_i^T U_i \text{ cep.} = 3,09+3,27+2,35+2,19+2,52+3,17+3,17+3,07+2,67=25,5;$$

$$\lambda_{\max} = 0,12 \times 24 + 0,13 \times 23 + 0,09 \times 29 + 0,086 \times 30 + 0,1 \times 36 + 0,12 \times 24 + 0,12 \times 22 + 0,12 \times 25 + 0,12 \times 38 = 2,88 + 2,99 + 2,61 + 2,58 + 3,6 + 2,64 + 3 + 4,56 + 2,88 = 27,74;$$

$$I_y = \frac{27,74 - 9}{9 - 1} = 2,34.$$

Table F 6

**Information support for local vector calculation  
LLC «OSP Corporation Vatra»**

$U_{av.ec} = \sqrt[9]{9216} = 2,76$	$a_{i1} = 1+2+2+3+2+4+4+3+2=23$
$U_{av.scient} = \sqrt[9]{7776} = 2,7$	$a_{i2} = 4+1+3+3+2+3+3+3+2=24$
$U_{av.fin} = \sqrt[9]{1728} = 2,29$	$a_{i3} = 4+3+1+3+3+4+4+4+3=27$
$U_{av.mark} = \sqrt[9]{2592} = 2,39$	$a_{i4} = 3+3+3+1+3+4+4+4+3=28$
$U_{av.resc} = \sqrt[9]{874} = 2,12$	$a_{i5} = 4+4+4+4+1+4+4+4+3=32$
$U_{av.soc} = \sqrt[9]{34560} = 3,19$	$a_{i6} = 2+3+2+2+2+1+3+3+1=19$
$U_{av.ecol} = \sqrt[9]{34560} = 3,19$	$a_{i7} = 2+3+2+2+2+3+1+3+1=20$
$U_{av.integr} = \sqrt[9]{25920} = 3,09$	$a_{i8} = 3+3+2+2+2+3+3+1+1=19$
$U_{av.brand} = \sqrt[9]{108} = 1,68$	$a_{i9} = 4+4+3+3+3+4+4+4+1=29$

**APPENDIXES**

$$\sum_i^T U_i \text{ cep.} = 2,76+2,7+2,29+2,39+2,12+3,19+3,19+3,09+1,68=23,41;$$

$$\lambda_{\max} = 0,13 \times 23 + 0,11 \times 24 + 0,1 \times 27 + 0,12 \times 28 + 0,15 \times 32 + 0,13 \times 19 + 0,13 \times 19 + 0,13 \times 19 + 0,$$

$$1 \times 33 = 2,99 + 2,64 + 2,7 + 2,88 + 3,36 + 16 + 9,5 + 4,37 + 2,47 + 3,3 = 26,64;$$

$$I_y = \frac{\lambda_{\max} - n}{n - 1},$$

$$I_y = \frac{26,34 - 9}{9 - 1} = 2,2.$$

Table F 7

**Information support for local vector calculation  
Ltd. «Expomobile and KO»**

$U_{\text{av. ec}} = \sqrt[9]{18462} = 2,98$	$a_{11} = 1+4+3+2+2+4+4+3+2=25$
$U_{\text{av scient}} = \sqrt[9]{4608} = 2,31$	$a_{12} = 2+2+2+3+2+4+4+4+1=21$
$U_{\text{av fin}} = \sqrt[9]{1728} = 3,1$	$a_{13} = 3+4+5+3+3+4+4+3+3=32$
$U_{\text{av mark}} = \sqrt[9]{5184} = 2,89$	$a_{14} = 4+3+3+1+3+5+4+4+3=30$
$U_{\text{av resc}} = \sqrt[9]{1296} = 2,45$	$a_{15} = 4+4+4+4+1+5+5+5+3=35$
$U_{\text{av soc}} = \sqrt[9]{57600} = 3,38$	$a_{16} = 2+2+2+2+2+1+3+3+4=21$
$U_{\text{av ecol}} = \sqrt[9]{57600} = 2,56$	$a_{17} = 2+2+2+3+2+3+1+3+2=20$
$U_{\text{av integr}} = \sqrt[9]{25920} = 3,09$	$a_{18} = 3+2+3+2+3+3+3+1+2=22$
$U_{\text{av brand}} = \sqrt[9]{2592} = 2,52$	$a_{19} = 4+5+3+3+3+5+5+4+1=33$

$$\sum_i^T U_i \text{ cep.} = 2,98+2,31+3,1+2,89+2,45+3,38+2,56+3,09+2,52=22,18;$$

$$\lambda_{\max} = 0,13 \times 25 + 0,11 \times 21 + 0,13 \times 32 + 0,12 \times 30 + 0,11 \times 35 + 0,15 \times 21 + 0,11 \times 20 + 0,12 \times 22 + 0,11 \times 33 = 3,25 + 2,31 + 4,16 + 3,6 + 3,85 + 3,15 + 2,2 + 2,64 + 3,3 = 25,21;$$

$$I_y = \frac{25,21 - 9}{9 - 1} = 2,02.$$

**Calculation of the local priority vector  
of the subfactors of each criterion in the model**  
*(calculated by the author)*

Scientific	Economic	Financial
$V_{11} = \sqrt[6]{0,0009} = 0,3$	$V_{21} = \sqrt[5]{0,018} = 0,45$	$V_{31} = \sqrt[7]{0,006} = 0,48$
$V_{12} = \sqrt[6]{0,025} = 0,54$	$V_{22} = \sqrt[5]{0,12} = 0,65$	$V_{32} = \sqrt[7]{0,0125} = 0,53$
$V_{13} = \sqrt[6]{0,049} = 0,6$	$V_{23} = \sqrt[5]{0,048} = 0,54$	$V_{33} = \sqrt[7]{0,03} = 0,61$
$V_{14} = \sqrt[6]{0,0016} = 0,34$	$V_{24} = \sqrt[5]{0,009} = 0,39$	$V_{34} = \sqrt[7]{0,008} = 0,5$
$V_{15} = \sqrt[6]{0,061} = 0,63$	$V_{25} = \sqrt[5]{0,048} = 0,54$	$V_{35} = \sqrt[7]{0,11} = 0,73$
$V_{16} = \sqrt[6]{0,0735} = 0,65$		$V_{36} = \sqrt[7]{0,017} = 0,56$
		$V_{37} = \sqrt[7]{0,001} = 0,37$
Marketing	Resources	Social
$V_{41} = \sqrt[7]{0,038} = 0,63$	$V_{51} = \sqrt[8]{0,05} = 0,69$	$V_{61} = \sqrt[5]{0,06} = 0,57$
$V_{42} = \sqrt[7]{0,005} = 0,47$	$V_{52} = \sqrt[8]{0,005} = 0,52$	$V_{62} = \sqrt[5]{0,126} = 0,66$
$V_{43} = \sqrt[7]{0,05} = 0,65$	$V_{53} = \sqrt[8]{0,01} = 0,56$	$V_{63} = \sqrt[5]{0,024} = 0,47$
$V_{44} = \sqrt[7]{0,01} = 0,52$	$V_{54} = \sqrt[8]{0,016} = 0,6$	$V_{64} = \sqrt[5]{0,084} = 0,6$
$V_{45} = \sqrt[7]{0,002} = 0,41$	$V_{55} = \sqrt[8]{0,0003} = 0,36$	$V_{65} = \sqrt[5]{0,147} = 0,68$
$V_{46} = \sqrt[7]{0,011} = 0,53$	$V_{56} = \sqrt[8]{0,0002} = 0,34$	
$V_{47} = \sqrt[7]{0,006} = 0,48$	$V_{57} = \sqrt[8]{0,001} = 0,42$	
	$V_{58} = \sqrt[8]{0,001} = 0,42$	
Ecological	Integration	Brand
$V_{71} = \sqrt[3]{0,16} = 0,54$	$V_{81} = \sqrt[5]{0,17} = 0,7$	$V_{91} = \sqrt[4]{0,245} = 0,7$
$V_{72} = \sqrt[3]{0,3} = 0,67$	$V_{82} = \sqrt[5]{0,024} = 0,47$	$V_{92} = \sqrt[4]{0,18} = 0,65$
$V_{73} = \sqrt[3]{0,42} = 0,75$	$V_{83} = \sqrt[5]{0,09} = 0,62$	$V_{93} = \sqrt[4]{0,096} = 0,56$
	$V_{84} = \sqrt[5]{0,06} = 0,57$	$V_{94} = \sqrt[4]{0,045} = 0,46$
	$V_{85} = \sqrt[5]{0,126} = 0,66$	

**APPENDIXES**

Table F 9

<b>(Zij) PJSC "Lviv Electric Lamp Plant "Iskra".</b>		
<b>Scientific</b>	<b>Economic</b>	<b>Financial</b>
$Z_{11} = \frac{0,1}{0,12} = 0,83$	$Z_{21} = \frac{0,17}{0,13} = 1,3$	$Z_{31} = \frac{0,13}{0,097} = 1,36$
$Z_{12} = \frac{0,18}{0,13} = 1,2$	$Z_{22} = \frac{0,25}{0,13} = 1,92$	$Z_{32} = \frac{0,14}{0,097} = 1,4$
$Z_{13} = \frac{0,2}{0,12} = 1,67$	$Z_{23} = \frac{0,21}{0,12} = 1,6$	$Z_{33} = \frac{0,16}{0,096} = 1,6$
$Z_{14} = \frac{0,11}{0,12} = 0,92$	$Z_{24} = \frac{0,15}{0,13} = 1,15$	$Z_{34} = \frac{0,13}{0,097} = 1,3$
$Z_{15} = \frac{0,21}{0,12} = 1,7$	$Z_{25} = \frac{0,21}{0,13} = 1,6$	$Z_{35} = \frac{0,2}{0,097} = 2,06$
$Z_{16} = \frac{0,21}{0,12} = 1,7$		$Z_{36} = \frac{0,15}{0,097} = 1,56$
		$Z_{37} = \frac{0,1}{0,097} = 1,04$
<b>Marketing</b>	<b>Resources</b>	<b>Social</b>
$Z_{41} = \frac{0,17}{0,1} = 1,7$	$Z_{51} = \frac{0,18}{0,09} = 2$	$Z_{61} = \frac{0,19}{0,14} = 1,35$
$Z_{42} = \frac{0,13}{0,1} = 1,3$	$Z_{52} = \frac{0,13}{0,09} = 1,4$	$Z_{62} = \frac{0,22}{0,14} = 1,57$
$Z_{43} = \frac{0,18}{0,1} = 1,8$	$Z_{53} = \frac{0,14}{0,09} = 1,56$	$Z_{63} = \frac{0,16}{0,14} = 1,14$
$Z_{44} = \frac{0,14}{0,1} = 1,4$	$Z_{54} = \frac{0,15}{0,09} = 1,67$	$Z_{64} = \frac{0,2}{0,14} = 1,43$
$Z_{45} = \frac{0,11}{0,1} = 1,1$	$Z_{55} = \frac{0,1}{0,09} = 1,1$	$Z_{65} = \frac{0,23}{0,14} = 1,57$
$Z_{36} = \frac{0,14}{0,1} = 1,53$	$Z_{46} = \frac{0,1}{0,09} = 1,1$	
$Z_{37} = \frac{0,13}{0,1} = 1,42$	$Z_{47} = \frac{0,11}{0,09} = 1,22$	
	$Z_{48} = \frac{0,11}{0,09} = 1,22$	

**MONOGRAPH**

Ecological	Integration	Brand
$Z_{71} = \frac{0,27}{0,14} = 1,92$ $Z_{72} = \frac{0,34}{0,14} = 2,42$ $Z_{71} = \frac{0,38}{0,14} = 2,71$	$Z_{81} = \frac{0,23}{0,13} = 1,76$ $Z_{82} = \frac{0,16}{0,13} = 1,23$ $Z_{83} = \frac{0,21}{0,13} = 1,6$ $Z_{81} = \frac{0,19}{0,13} = 1,46$ $Z_{81} = \frac{0,22}{0,13} = 1,69$	$Z_{91} = \frac{0,29}{0,07} = 4,16$ $Z_{92} = \frac{0,27}{0,07} = 4,16$ $Z_{93} = \frac{0,24}{0,07} = 3,6$ $Z_{94} = \frac{0,19}{0,07} = 2,9$

Table F 10

(Zij) Lviv REMA Plant Ltd		
Scientific	Economic	Financial
$Z_{11} = \frac{0,1}{0,12} = 0,83$ $Z_{12} = \frac{0,18}{0,13} = 1,2$ $Z_{13} = \frac{0,2}{0,12} = 1,67$ $Z_{14} = \frac{0,11}{0,12} = 0,92$ $Z_{15} = \frac{0,21}{0,12} = 1,7$ $Z_{16} = \frac{0,21}{0,12} = 1,7$	$Z_{21} = \frac{0,17}{0,13} = 1,3$ $Z_{22} = \frac{0,25}{0,13} = 1,92$ $Z_{23} = \frac{0,21}{0,12} = 1,6$ $Z_{24} = \frac{0,15}{0,13} = 1,15$ $Z_{25} = \frac{0,21}{0,13} = 1,6$	$Z_{31} = \frac{0,13}{0,01} = 1,3$ $Z_{32} = \frac{0,14}{0,01} = 1,4$ $Z_{33} = \frac{0,16}{0,01} = 1,6$ $Z_{34} = \frac{0,13}{0,01} = 1,3$ $Z_{35} = \frac{0,2}{0,01} = 2$ $Z_{36} = \frac{0,15}{0,01} = 1,5$ $Z_{37} = \frac{0,1}{0,1} = 1$

## APPENDIXES

Marketing	Resources	Social
$Z_{41} = \frac{0,17}{0,13} = 1,3$ $Z_{42} = \frac{0,13}{0,13} = 1$ $Z_{43} = \frac{0,18}{0,13} = 1,8$ $Z_{44} = \frac{0,14}{0,13} = 1,38$ $Z_{45} = \frac{0,11}{0,13} = 0,85$ $Z_{36} = \frac{0,14}{0,13} = 1,08$ $Z_{37} = \frac{0,13}{0,13} = 1$	$Z_{51} = \frac{0,18}{0,1} = 1,8$ $Z_{52} = \frac{0,13}{0,1} = 1,3$ $Z_{53} = \frac{0,14}{0,1} = 1,4$ $Z_{54} = \frac{0,15}{0,1} = 1,5$ $Z_{55} = \frac{0,1}{0,1} = 1$ $Z_{46} = \frac{0,1}{0,1} = 1$ $Z_{47} = \frac{0,11}{0,1} = 1,1$ $Z_{48} = \frac{0,11}{0,1} = 1,1$	$Z_{61} = \frac{0,19}{0,11} = 1,72$ $Z_{62} = \frac{0,22}{0,11} = 1,94$ $Z_{63} = \frac{0,16}{0,11} = 1,45$ $Z_{64} = \frac{0,2}{0,11} = 1,18$ $Z_{65} = \frac{0,23}{0,11} = 1,57$
Ecological	Integration	Brand
$Z_{71} = \frac{0,27}{0,11} = 2,45$ $Z_{72} = \frac{0,34}{0,11} = 3,04$ $Z_{71} = \frac{0,38}{0,11} = 3,45$	$Z_{81} = \frac{0,23}{0,1} = 2,3$ $Z_{82} = \frac{0,16}{0,1} = 1,6$ $Z_{83} = \frac{0,21}{0,1} = 2,1$ $Z_{81} = \frac{0,19}{0,1} = 1,9$ $Z_{81} = \frac{0,22}{0,1} = 2,2$	$Z_{91} = \frac{0,29}{0,09} = 3,22$ $Z_{92} = \frac{0,27}{0,09} = 3$ $Z_{93} = \frac{0,24}{0,09} = 2,7$ $Z_{94} = \frac{0,19}{0,09} = 2,1$

**MONOGRAPH**

<b>(Zij) JV "Polymer-Electron"</b>		
<b>Scientific</b>	<b>Economic</b>	<b>Financial</b>
$Z_{11} = \frac{0,1}{0,15} = 0,6$ $Z_{12} = \frac{0,18}{0,15} = 1,2$ $Z_{13} = \frac{0,2}{0,15} = 1,3$ $Z_{14} = \frac{0,11}{0,15} = 0,73$ $Z_{15} = \frac{0,21}{0,15} = 1,4$ $Z_{16} = \frac{0,21}{0,15} = 1,7$	$Z_{21} = \frac{0,17}{0,13} = 1,3$ $Z_{22} = \frac{0,25}{0,13} = 1,92$ $Z_{23} = \frac{0,21}{0,12} = 1,6$ $Z_{24} = \frac{0,15}{0,13} = 1,15$ $Z_{25} = \frac{0,21}{0,13} = 1,6$	$Z_{31} = \frac{0,13}{0,12} = 1,08$ $Z_{32} = \frac{0,14}{0,12} = 1,2$ $Z_{33} = \frac{0,16}{0,12} = 1,6$ $Z_{34} = \frac{0,13}{0,12} = 1,3$ $Z_{35} = \frac{0,2}{0,12} = 1,67$ $Z_{36} = \frac{0,15}{0,12} = 1,25$ $Z_{37} = \frac{0,1}{0,12} = 0,83$
<b>Marketing</b>	<b>Resources</b>	<b>Social</b>
$Z_{41} = \frac{0,17}{0,13} = 1,3$ $Z_{42} = \frac{0,13}{0,13} = 1$ $Z_{43} = \frac{0,18}{0,13} = 1,8$ $Z_{44} = \frac{0,14}{0,13} = 1,38$ $Z_{45} = \frac{0,11}{0,13} = 0,85$ $Z_{46} = \frac{0,14}{0,13} = 1,08$ $Z_{47} = \frac{0,13}{0,13} = 1$	$Z_{51} = \frac{0,18}{0,11} = 1,63$ $Z_{52} = \frac{0,13}{0,11} = 1,18$ $Z_{53} = \frac{0,14}{0,11} = 1,27$ $Z_{54} = \frac{0,15}{0,11} = 1,36$ $Z_{55} = \frac{0,1}{0,11} = 0,9$ $Z_{46} = \frac{0,1}{0,11} = 0,9$ $Z_{47} = \frac{0,11}{0,11} = 1$ $Z_{48} = \frac{0,11}{0,11} = 1$	$Z_{61} = \frac{0,19}{0,17} = 1,72$ $Z_{62} = \frac{0,22}{0,17} = 1,94$ $Z_{63} = \frac{0,16}{0,17} = 1,45$ $Z_{64} = \frac{0,2}{0,17} = 1,18$ $Z_{65} = \frac{0,23}{0,17} = 1,57$

## APPENDIXES

Ecological	Integration	Brand
$Z_{71} = \frac{0,27}{0,17} = 1,6$ $Z_{72} = \frac{0,34}{0,17} = 2$ $Z_{73} = \frac{0,38}{0,17} = 2,23$	$Z_{81} = \frac{0,23}{0,16} = 2,3$ $Z_{82} = \frac{0,16}{0,16} = 1$ $Z_{83} = \frac{0,21}{0,16} = 1,3$ $Z_{81} = \frac{0,19}{0,16} = 1,19$ $Z_{81} = \frac{0,22}{0,16} = 1,3$	$Z_{91} = \frac{0,29}{0,09} = 3,22$ $Z_{92} = \frac{0,27}{0,09} = 3$ $Z_{93} = \frac{0,24}{0,09} = 2,7$ $Z_{94} = \frac{0,19}{0,09} = 2,1$

Table F 11

(Zij) "Borshchagiv Chemical and Pharmaceutical Plant" PJSC		
Scientific	Economic	Financial
$Z_{11} = \frac{0,1}{0,11} = 1,1$ $Z_{12} = \frac{0,18}{0,11} = 1,6$ $Z_{13} = \frac{0,2}{0,11} = 0,81$ $Z_{14} = \frac{0,11}{0,11} = 1$ $Z_{15} = \frac{0,21}{0,11} = 1,9$ $Z_{16} = \frac{0,21}{0,11} = 1,9$	$Z_{21} = \frac{0,17}{0,096} = 1,7$ $Z_{22} = \frac{0,25}{0,096} = 2,6$ $Z_{23} = \frac{0,21}{0,096} = 2,018$ $Z_{24} = \frac{0,15}{0,096} = 1,5$ $Z_{25} = \frac{0,21}{0,096} = 2,2$	$Z_{31} = \frac{0,13}{0,085} = 1,59$ $Z_{32} = \frac{0,14}{0,085} = 1,5$ $Z_{33} = \frac{0,16}{0,085} = 1,4$ $Z_{34} = \frac{0,13}{0,085} = 1,5$ $Z_{35} = \frac{0,2}{0,085} = 2,35$ $Z_{36} = \frac{0,15}{0,085} = 1,74$ $Z_{37} = \frac{0,1}{0,085} = 1,18$

**MONOGRAPH**

Marketing	Resources	Social
$Z_{41} = \frac{0,17}{0,14} = 1,3$ $Z_{42} = \frac{0,13}{0,14} = 1$ $Z_{43} = \frac{0,18}{0,14} = 1,8$ $Z_{44} = \frac{0,14}{0,14} = 1,38$ $Z_{45} = \frac{0,11}{0,14} = 0,85$ $Z_{36} = \frac{0,14}{0,13} = 1,08$ $Z_{37} = \frac{0,13}{0,13} = 1$	$Z_{51} = \frac{0,18}{0,11} = 1,63$ $Z_{52} = \frac{0,13}{0,11} = 1,18$ $Z_{53} = \frac{0,14}{0,11} = 1,27$ $Z_{54} = \frac{0,15}{0,11} = 1,36$ $Z_{55} = \frac{0,1}{0,11} = 0,9$ $Z_{46} = \frac{0,1}{0,11} = 0,9$ $Z_{47} = \frac{0,11}{0,11} = 1$ $Z_{48} = \frac{0,11}{0,11} = 1$	$Z_{61} = \frac{0,19}{0,17} = 1,11$ $Z_{62} = \frac{0,22}{0,17} = 1,3$ $Z_{63} = \frac{0,16}{0,17} = 0,94$ $Z_{64} = \frac{0,2}{0,17} = 1,18$ $Z_{65} = \frac{0,23}{0,17} = 1,3$
Ecological	Integration	Brand
$Z_{71} = \frac{0,27}{0,17} = 1,6$ $Z_{72} = \frac{0,34}{0,17} = 2$ $Z_{71} = \frac{0,38}{0,17} = 2,23$	$Z_{81} = \frac{0,23}{0,16} = 2,3$ $Z_{82} = \frac{0,16}{0,16} = 1$ $Z_{83} = \frac{0,21}{0,16} = 1,3$ $Z_{81} = \frac{0,19}{0,16} = 1,19$ $Z_{81} = \frac{0,22}{0,16} = 1,3$	$Z_{91} = \frac{0,29}{0,09} = 3,22$ $Z_{92} = \frac{0,27}{0,09} = 3$ $Z_{93} = \frac{0,24}{0,09} = 2,7$ $Z_{94} = \frac{0,19}{0,09} = 2,1$

**APPENDIXES**

Table F 12

<b>(Zij) Farmak PJSC</b>		
<b>Scientific</b>	<b>Economic</b>	<b>Financial</b>
$Z_{11} = \frac{0,1}{0,12} = 0,83$ $Z_{12} = \frac{0,18}{0,12} = 1,5$ $Z_{13} = \frac{0,2}{0,12} = 0,6$ $Z_{14} = \frac{0,11}{0,12} = 0,8$ $Z_{15} = \frac{0,21}{0,12} = 1,75$ $Z_{16} = \frac{0,21}{0,12} = 1,75$	$Z_{21} = \frac{0,17}{0,13} = 1,3$ $Z_{22} = \frac{0,25}{0,13} = 1,92$ $Z_{23} = \frac{0,21}{0,12} = 1,6$ $Z_{24} = \frac{0,15}{0,13} = 1,15$ $Z_{25} = \frac{0,21}{0,13} = 1,6$	$Z_{31} = \frac{0,13}{0,085} = 1,59$ $Z_{32} = \frac{0,14}{0,085} = 1,5$ $Z_{33} = \frac{0,16}{0,085} = 1,4$ $Z_{34} = \frac{0,13}{0,085} = 1,5$ $Z_{35} = \frac{0,2}{0,085} = 2,35$ $Z_{36} = \frac{0,15}{0,085} = 1,74$ $Z_{37} = \frac{0,1}{0,085} = 1,18$
<b>Marketing</b>	<b>Resources</b>	<b>Social</b>
$Z_{41} = \frac{0,17}{0,1} = 1,7$ $Z_{42} = \frac{0,13}{0,1} = 1,3$ $Z_{43} = \frac{0,18}{0,1} = 1,8$ $Z_{44} = \frac{0,14}{0,1} = 1,4$ $Z_{45} = \frac{0,11}{0,1} = 1,1$ $Z_{46} = \frac{0,14}{0,1} = 1,4$ $Z_{47} = \frac{0,13}{0,1} = 1,3$	$Z_{51} = \frac{0,18}{0,12} = 1,5$ $Z_{52} = \frac{0,13}{0,12} = 1,08$ $Z_{53} = \frac{0,14}{0,12} = 1,17$ $Z_{54} = \frac{0,15}{0,12} = 1,26$ $Z_{55} = \frac{0,1}{0,12} = 0,8$ $Z_{46} = \frac{0,1}{0,12} = 0,8$ $Z_{47} = \frac{0,11}{0,12} = 0,9$ $Z_{48} = \frac{0,11}{0,12} = 0,9$	$Z_{61} = \frac{0,19}{0,12} = 1,72$ $Z_{62} = \frac{0,22}{0,12} = 1,94$ $Z_{63} = \frac{0,16}{0,12} = 1,45$ $Z_{64} = \frac{0,2}{0,12} = 1,18$ $Z_{65} = \frac{0,23}{0,12} = 1,57$

**MONOGRAPH**

Ecological	Integration	Brand
$Z_{71} = \frac{0,27}{0,12} = 2,25$ $Z_{72} = \frac{0,34}{0,12} = 2,83$ $Z_{71} = \frac{0,38}{0,12} = 2,23$	$Z_{81} = \frac{0,23}{0,12} = 1,91$ $Z_{82} = \frac{0,16}{0,12} = 1,3$ $Z_{83} = \frac{0,21}{0,12} = 1,8$ $Z_{81} = \frac{0,19}{0,12} = 1,58$ $Z_{81} = \frac{0,22}{0,12} = 1,83$	$Z_{91} = \frac{0,29}{0,1} = 2,9$ $Z_{92} = \frac{0,27}{0,1} = 2,7$ $Z_{93} = \frac{0,24}{0,1} = 2,4$ $Z_{94} = \frac{0,19}{0,1} = 1,9$

Table F 13

<b>(Zij) LLC "OSP Corporation Vatra".</b>		
Scientific and technical	Economic	Financial
$Z_{11} = \frac{0,1}{0,11} = 0,9$ $Z_{12} = \frac{0,18}{0,11} = 1,8$ $Z_{13} = \frac{0,2}{0,11} = 0,8$ $Z_{14} = \frac{0,11}{0,11} = 1$ $Z_{15} = \frac{0,21}{0,11} = 1,9$ $Z_{16} = \frac{0,21}{0,11} = 1,9$	$Z_{21} = \frac{0,18}{0,13} = 1,3$ $Z_{22} = \frac{0,25}{0,13} = 1,9$ $Z_{23} = \frac{0,21}{0,12} = 1,6$ $Z_{24} = \frac{0,15}{0,13} = 1,15$ $Z_{25} = \frac{0,21}{0,13} = 1,6$	$Z_{31} = \frac{0,13}{0,1} = 1,3$ $Z_{32} = \frac{0,14}{0,1} = 1,4$ $Z_{33} = \frac{0,16}{0,1} = 1,6$ $Z_{34} = \frac{0,13}{0,1} = 1,3$ $Z_{35} = \frac{0,2}{0,1} = 2$ $Z_{36} = \frac{0,15}{0,1} = 1,5$ $Z_{37} = \frac{0,1}{0,1} = 1$

## APPENDIXES

Marketing	Resourceful	Social
$Z_{41} = \frac{0,17}{0,12} = 1,7$ $Z_{42} = \frac{0,13}{0,12} = 1,3$ $Z_{43} = \frac{0,18}{0,12} = 1,8$ $Z_{44} = \frac{0,14}{0,12} = 1,4$ $Z_{45} = \frac{0,11}{0,12} = 1,1$ $Z_{36} = \frac{0,14}{0,12} = 1,53$ $Z_{37} = \frac{0,13}{0,12} = 1,42$	$Z_{51} = \frac{0,18}{0,15} = 1,2$ $Z_{52} = \frac{0,13}{0,15} = 0,87$ $Z_{53} = \frac{0,14}{0,15} = 0,9$ $Z_{54} = \frac{0,15}{0,15} = 1$ $Z_{55} = \frac{0,1}{0,15} = 0,67$ $Z_{46} = \frac{0,1}{0,15} = 0,67$ $Z_{47} = \frac{0,11}{0,15} = 0,8$ $Z_{48} = \frac{0,11}{0,15} = 0,8$	$Z_{61} = \frac{0,19}{0,14} = 1,35$ $Z_{62} = \frac{0,22}{0,13} = 1,6$ $Z_{63} = \frac{0,16}{0,13} = 1,7$ $Z_{64} = \frac{0,2}{0,1} = 2$ $Z_{65} = \frac{0,23}{0,14} = 1,6$
Ecological	Integrative	Brand
$Z_{71} = \frac{0,27}{0,13} = 1,9$ $Z_{72} = \frac{0,34}{0,13} = 2,5$ $Z_{71} = \frac{0,38}{0,13} = 2,8$	$Z_{81} = \frac{0,23}{0,13} = 1,76$ $Z_{82} = \frac{0,16}{0,13} = 1,23$ $Z_{83} = \frac{0,21}{0,13} = 1,6$ $Z_{81} = \frac{0,19}{0,13} = 1,46$ $Z_{81} = \frac{0,22}{0,13} = 1,69$	$Z_{91} = \frac{0,29}{0,1} = 2,9$ $Z_{92} = \frac{0,27}{0,1} = 2,7$ $Z_{93} = \frac{0,24}{0,1} = 2,4$ $Z_{94} = \frac{0,19}{0,1} = 1,9$

**MONOGRAPH**

Table F 14

<b>(Zij) Ltd. "Expomobile and KO".</b>		
<b>Scientific</b>	<b>Economical</b>	<b>Financial</b>
$Z_{11} = \frac{0,1}{0,11} = 0,9$ $Z_{12} = \frac{0,18}{0,11} = 1,8$ $Z_{13} = \frac{0,2}{0,11} = 0,8$ $Z_{14} = \frac{0,11}{0,11} = 1$ $Z_{15} = \frac{0,21}{0,11} = 1,9$ $Z_{16} = \frac{0,21}{0,11} = 1,9$	$Z_{21} = \frac{0,18}{0,13} = 1,3$ $Z_{22} = \frac{0,25}{0,13} = 1,9$ $Z_{23} = \frac{0,21}{0,12} = 1,6$ $Z_{24} = \frac{0,15}{0,13} = 1,15$ $Z_{25} = \frac{0,21}{0,13} = 1,6$	$Z_{31} = \frac{0,13}{0,13} = 1$ $Z_{32} = \frac{0,14}{0,13} = 1,1$ $Z_{33} = \frac{0,16}{0,13} = 1,2$ $Z_{34} = \frac{0,13}{0,13} = 1$ $Z_{35} = \frac{0,2}{0,13} = 1,5$ $Z_{36} = \frac{0,15}{0,13} = 1,15$ $Z_{37} = \frac{0,1}{0,13} = 0,76$
<b>Marketing</b>	<b>Resources</b>	<b>Social</b>
$Z_{41} = \frac{0,17}{0,12} = 1,7$ $Z_{42} = \frac{0,13}{0,12} = 1,3$ $Z_{43} = \frac{0,18}{0,12} = 1,8$ $Z_{44} = \frac{0,14}{0,12} = 1,4$ $Z_{45} = \frac{0,11}{0,12} = 1,1$ $Z_{46} = \frac{0,14}{0,12} = 1,53$ $Z_{47} = \frac{0,13}{0,12} = 1,42$	$Z_{51} = \frac{0,18}{0,11} = 1,6$ $Z_{52} = \frac{0,13}{0,11} = 1,18$ $Z_{53} = \frac{0,14}{0,11} = 1,27$ $Z_{54} = \frac{0,15}{0,11} = 1,36$ $Z_{55} = \frac{0,1}{0,11} = 0,9$ $Z_{46} = \frac{0,1}{0,11} = 0,9$ $Z_{47} = \frac{0,11}{0,11} = 1$ $Z_{48} = \frac{0,11}{0,11} = 1$	$Z_{61} = \frac{0,19}{0,15} = 1,2$ $Z_{62} = \frac{0,22}{0,15} = 1,47$ $Z_{63} = \frac{0,16}{0,15} = 1,06$ $Z_{64} = \frac{0,2}{0,15} = 1,3$ $Z_{65} = \frac{0,23}{0,15} = 1,53$

## APPENDIXES

Ecological	Integration	Brand
$Z_{71} = \frac{0,27}{0,11} = 2,45$ $Z_{72} = \frac{0,34}{0,11} = 3,09$ $Z_{71} = \frac{0,38}{0,11} = 3,45$	$Z_{81} = \frac{0,23}{0,12} = 1,8$ $Z_{82} = \frac{0,16}{0,12} = 1,3$ $Z_{83} = \frac{0,21}{0,12} = 1,7$ $Z_{81} = \frac{0,19}{0,12} = 1,5$ $Z_{81} = \frac{0,22}{0,12} = 1,7$	$Z_{91} = \frac{0,29}{0,11} = 2,8$ $Z_{92} = \frac{0,27}{0,11} = 2,6$ $Z_{93} = \frac{0,24}{0,11} = 2,3$ $Z_{94} = \frac{0,19}{0,11} = 1,8$

### Appendix G

Table G 1

**Information support for calculating the priority of the investigated enterprises by the method of paired comparisons (Ui ser)**

No	Enterprises	Criteria		
		Technologies	Market share	Profitability
1	NVP "Electron-Karat" SE PRAJ "Concern-Electron".	$\sqrt[3]{192} = 2,4$	$\sqrt[3]{768} = 3,06$	$\sqrt[3]{126} = 2,24$
2	PJSC "Lviv Electric Lamp Plant "Iskra".	$\sqrt[3]{432} = 2,74$	$\sqrt[3]{1280} = 3,29$	$\sqrt[3]{768} = 3,06$
3	LLC "OSP Corporation Vatra".	$\sqrt[3]{1152} = 3,23$	$\sqrt[3]{1944} = 3,5$	$\sqrt[3]{7776} = 4,45$
4	Lviv REMA Plant Ltd	$\sqrt[3]{324} = 2,6$	$\sqrt[3]{64} = 2$	$\sqrt[3]{192} = 2,4$
5	"Polymer-Electron" plant	$\sqrt[3]{64} = 2$	$\sqrt[3]{96} = 2,14$	$\sqrt[3]{108} = 2,18$
6	"Borshchagiv Chemical and Pharmaceutical Plant" PJSC	$\sqrt[3]{576} = 2,9$	$\sqrt[3]{432} = 2,74$	$\sqrt[3]{576} = 2,9$
7	Farmak PJSC	$\sqrt[3]{576} = 2,9$	$\sqrt[3]{376} = 2,69$	$\sqrt[3]{468} = 2,79$
8	Ltd. "Expomobile and KO".	$\sqrt[3]{576} = 2,9$	$\sqrt[3]{192} = 2,4$	$\sqrt[3]{192} = 2,4$

$$U_{11} = 2,4+2,74+2,6+2+2,9+2,9+3,23+2,9=21,67;$$

$$U_{12} = 3,06+3,29+2+2,14+2,74+2,69+3,5+2,4=21,82;$$

$$U_{13} = 2,24+3,06+2,4+2,18+2,9+2,79+4,45+2,4=22,42.$$