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THE FORECASTING OF INTELLECTUAL CAPITAL INDEXES OF UKRAINE

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Nowadays the ability of the national economy to create and use effectively intellectual capital increasingly determines the economic strength of the nation and its welfare. However, in order to manage intellectual capital strategically and use it effectively, it is necessary to have reliable comprehensive estimates of its volume and dynamics as well as key components of intellectual capital.

The main indexes of intellectual capital development are [1–3]:

x_1 – Human Capital Index;

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x_2 – Innovation Index;

x_3 – Opportunity Index;

x_4 – Finance Capital Index;

x_5 –Market Capitalization Index.

Today Ukraine has low values of intellectual capital development in comparison with EU countries [1–3]. To evaluate prospects and trends of the indices development that describes the intellectual capital of the country, it is necessary to build forecasting models.

Let's analyze the major trends in development of Intellectual Capital Indices for 2016–2017 using simple methods of forecasting. Forecasted Intellectual Capital Indices in Ukraine in 2016 and 2017 are shown in the table 1.

Table 1

Forecasted Intellectual Capital Indices in Ukraine

Year	Y - Human Capital Index	Y' method of two extreme points	Y' method of two middle points of the group	Y' method of average growth rate	Y' method of average absolute growth
1	2	3	4	5	6
Human Capital Index					
2010	80.71	81.01	80.99	80.71	80.71
2011	80.11	80.11	79.61	79.79	79.81
2012	78.01	79.21	78.24	78.88	81.52
2013	73.71	78.31	76.86	77.98	79.98
2014	72.41	77.41	75.49	77.09	81.37
2015	76.21	76.51	74.11	76.21	80.12
2016	-	75.61	72.74	75.34	81.24
2017	-	74.71	71.36	74.48	80.23
m.a.p.e.		3.09 %	3.89 %	3.89 %	0.41%
Innovation Index					
2010	35.90	34.89	35.54	35.90	35.90
2011	35.00	35.00	35.67	36.01	36.01

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Table 1 (continued)

1	2	3	4	5	6
2012	36.10	35.11	35.80	36.12	35.91
2013	35.80	35.22	35.93	36.23	35.90
2014	36.30	35.33	36.05	36.34	35.90
2015	36.45	35.44	36.18	36.45	35.90
2016	-	35.55	36.31	36.56	35.90
2017	-	35.66	36.44	36.67	35.90
m.a.p.e.		2.52 %	1.10 %	0.85 %	0.17 %
Opportunity Index					
2010	5.13	5.03	5.00	5.13	5.13
2011	4.93	4.93	4.96	5.03	5.03
2012	4.81	4.83	4.91	4.93	5.14
2013	4.94	4.74	4.87	4.84	5.13
2014	4.74	4.64	4.82	4.74	5.13
2015	4.65	4.55	4.78	4.65	5.13
2016	-	4.45	4.73	4.56	5.13
2017	-	4.35	4.69	4.47	5.13
m.a.p.e.		2.18 %	2.22 %	1.34 %	6.74 %
Finance Capital Index					
2010	6.10	5.87	6.23	6.10	6.10
2011	6.30	6.30	6.53	6.48	6.53
2012	7.19	6.73	6.84	6.88	6.28
2013	7.59	7.16	7.14	7.31	6.18
2014	7.42	7.58	7.45	7.76	6.13
2015	8.24	8.01	7.75	8.24	6.11
2016	-	8.44	8.06	8.75	6.11
2017	-	8.87	8.36	9.29	6.10
m.a.p.e.		4.17 %	4.57 %	3.09 %	9.46 %
Market Capitalization Index					
2010	40.10	38.60	38.15	40.10	40.10

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Table 1 (end)

1	2	3	4	5	6
2011	39.60	39.60	39.47	41.05	41.10
2012	38.70	40.60	40.78	42.03	41.10
2013	44.00	41.60	42.10	43.03	41.10
2014	45.10	42.60	43.42	44.05	41.10
2015	45.10	43.60	44.73	45.10	41.10
2016	-	44.60	46.05	46.17	41.10
2017	-	45.60	47.37	47.27	41.10
m.a.p.e		4.59 %	3.89 %	3.36 %	0.76 %

The mean absolute percent error (m.a.p.e.) is used to answer how big forecast error of valid values for time series. The results of error forecasting indicate that to analyze possible trends of Intellectual Capital Index, Innovation Index and Market Capitalization Index development Average Absolute Growth Method should be used, because this method gives the smallest error not exceeding 1%. For further analysis of possible trends of Intellectual Capital Index, Innovation Index and Market Capitalization Index development in 2016 and 2017, the best result will be obtained with the average growth rate.

The graphs of Intellectual Capital Indices trends from 2010 to 2017 with the most accurate model are shown in Figure 1.

In conclusion it should be noted that forecasted values of major Intellectual Capital Indices are crucial for Ukrainian economic development in 2016–2017. The situation in Ukrainian economy won't improve without reform in coming years and Ukraine will remain in the group of underdeveloped countries. To develop an effective strategy to manage intellectual capital in Ukraine it is necessary to focus on the experience of advanced European countries.

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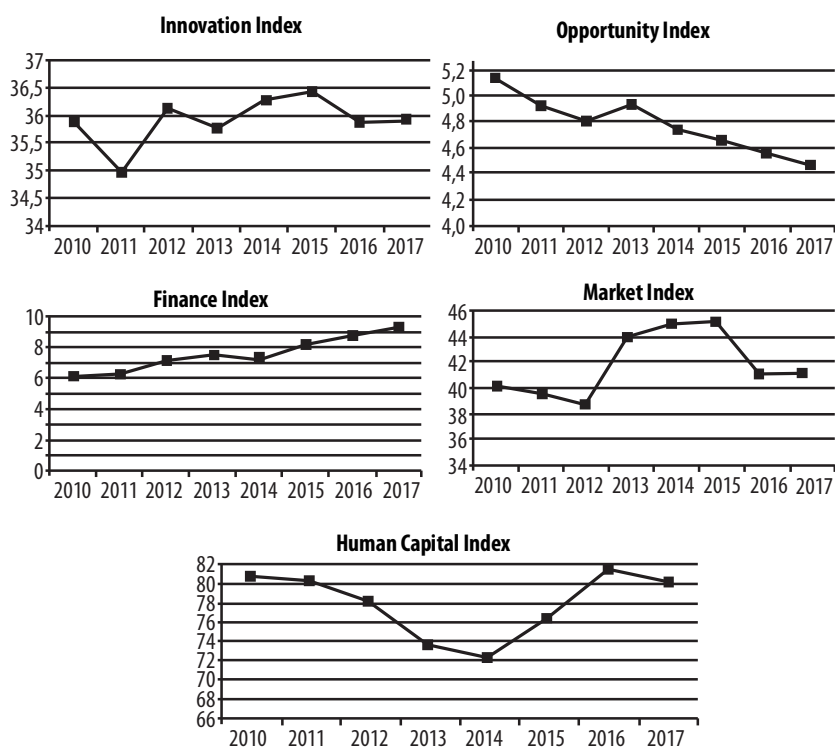


Fig. 1. Trends of Intellectual Capital Indices in Ukraine from 2010 to 2017

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