

**Table 1 Financial performance index system of listed companies**

<i>Indicator</i>	<i>Variable meaning</i>	<i>Variable meaning</i>	<i>Variable meaning</i>
Main financial indicators	EPS $X_1$	Non-operating profit $X_5$	Current assets $X_9$
	Sales revenue $X_2$	Net profit $X_6$	Total liabilities $X_{10}$
	Operating income $X_3$	Net profit (after deducting non-recurring gains and losses) $X_7$	Shareholders' equity $X_{11}$
	Operating profit $X_4$	Total assets $X_8$	Weighted return on net assets $X_{12}$
Solvency	Quick ratio $X_{13}$	Equity ratio $X_{17}$	Capital ratio $X_{21}$
	Cash ratio $X_{14}$	Ratio of shareholders' equity to fixed assets $X_{18}$	Capital immobilization ratio $X_{22}$
	Interest coverage ratio $X_{15}$	Debt equity ratio $X_{19}$	
	Debt assets ratio $X_{16}$	Fixed assets net value ratio $X_{20}$	
Development ability	Sales revenue growth rate $X_{23}$	Net assets growth rate $X_{24}$	Total assets growth rate $X_{25}$
	Main operating profit rate $X_{26}$	Cost of sales ratio $X_{30}$	Return on assets $X_{34}$
Profitability	Rate of return on total assets $X_{27}$	Net sales rate $X_{31}$	Major business profit ratio $X_{35}$
	Ratio of profits to cost and expense $X_{28}$	Return on equity $X_{32}$	
	Operating profit rate $X_{29}$	Return on net assets $X_{33}$	
Operational ability	Receivables turnover ratio $X_{36}$	Current assets turnover $X_{39}$	Ratio of net operating cash flow to liabilities $X_{42}$
	Fixed assets turnover $X_{37}$	Ratio of net operating cash flow to sales revenue $X_{40}$	Cash flow ratio $X_{43}$
	Total assets turnover ratio $X_{38}$	Return on operating cash flow of assets $X_{41}$	

**Table 2 Principal Component Analysis**

<i>Component part</i>	<i>Eigenvalue</i>	<i>Variance contribution rate (%)</i>	<i>Cumulative variance contribution rate (%)</i>
<i>PC<sub>1</sub></i>	8.020	18.653	18.653
<i>PC<sub>2</sub></i>	5.960	13.861	32.514
<i>PC<sub>3</sub></i>	3.774	8.777	41.291
<i>PC<sub>4</sub></i>	2.873	6.681	47.972
<i>PC<sub>5</sub></i>	2.101	4.886	52.858
<i>PC<sub>6</sub></i>	1.937	4.506	57.364
<i>PC<sub>7</sub></i>	1.530	3.560	60.924
<i>PC<sub>8</sub></i>	1.390	3.233	64.157
<i>PC<sub>9</sub></i>	1.215	2.826	68.983
<i>PC<sub>10</sub></i>	1.074	2.497	73.480
<i>PC<sub>11</sub></i>	1.038	2.414	78.894
<i>PC<sub>12</sub></i>	1.004	2.335	84.229
<i>PC<sub>13</sub></i>	0.988	2.298	86.527
...	...	...	...
<i>PC<sub>43</sub></i>	0.002	0.005	100.000

**Table 3 PCA scores of selected listed companies in 2020**

<i>Company code</i>	<i>stf</i>	<i>Idx</i>	<i>Company code</i>	<i>stf</i>	<i>Idx</i>
000004	0.4053978	3	002120	-0.2038430	4
000005	-0.338319	4	002121	-0.1946560	4
000006	0.3987311	3	002414	1.4465339	2
...	...	...	...	...	...
000010	0.0961938	3	002178	-0.5390419	5

**Table 4 K-means clustering**

<i>Label</i>	<i>Opinion rating</i>	<i>Clustering centroid</i>
1	very good	5.01089102
2	good	1.58459852
3	fair	0.32453921
4	poor	-0.19435375
5	very poor	-0.79265740

**Table 5 Distribution of ratings of sample companies**

<i>Label</i>	<i>Number of companies</i>	<i>Number of companies including ST/*ST</i>
1	11	0
2	46	0
3	347	3

4	828	13
5	99	21

**Table 6 Discussion on layer settings of the CNN model**

<i>The number of the convolutional layers</i>	<i>The number of the Max-pool layers</i>	<i>The average training accuracy</i>	<i>The average testing accuracy</i>
1	1	54.60%	54.01%
2	2	72.98%	71.06%
3	3	98.89%	95.55%
4	3	100%	91.41%

**Table 7 Parameters of contrast models**

<i>Model</i>	<i>Parameters</i>	<i>Value</i>
Decision Tree	Maximum number of splits	100
LDA	Preset	<i>Linear discriminant</i>
Boosted Tree	Maximum number of splits	20
	Learning rate	0.1
SVM	Kernel function	<i>RBF</i>
SVM	Kernel function	<i>Linear</i>
KNN	Fold	10
BP	Number of hidden layer nodes	12
	Learning rate	0.01
LSTM	Batch size	8
	Learning rate	0.0005
CNN	Batch size	8
	Learning rate	0.0005

**Table 8 Comparison of evaluation indexes of model prediction results**

<i>Experimental model</i>	<i>The average training accuracy</i>	<i>The average testing accuracy</i>
Decision Tree	87.3%	85.25%
LDA model	89.9%	90.75%
Boosted Tree	89.6%	89.75%
RBF SVM model	79.91%	79.25%
Linear SVM model	95.4%	89.67%
KNN model	84.53%	79.75%
BP model	85.5%	82.81%
LSTM model	95.81%	92.75%
CNN model	98.89%	95.55%