

Research on Financial Risk Monitoring of E-commerce Businesses

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Abstract.With the maturity of information technology and the degree of economic globalization, e-commerce business model has evolved from the emerging to mainstream enterprise business model, and the financial risks they face are increasingly complex and diverse. This paper try to use qualitative analysis and quantitative analysis to expand monitoring financial risks of the e-commerce companies, by factor analysis. Finally, Suning Appliance, as the main object, launched empirical research, monitor and prevent the comprehensive risk it faced.

Introduction

As the most rapid pace of development of new business models in China, e-commerce has become the main driving force to promote traditional industry business models and markets transformation. What's more, E-commerce model have a significant impact on people's way of life, and the impact of online sales model is increasingly strong to traditional retail.

Industry monitoring report based on e-commerce market shows that the amount of thee-commerce market transaction in 2014 reached 13.4 billion yuan, up 31.4% over 2013. The largest is B2B e-commerce transactions, which size up to 10 trillion. While the retail e-commerce market got the most rapid growth, up to 49.7%, which trading volume reached 2.82 billion yuan.

Building Financial Risk of E-commerce Business Monitoring Model

By identifying various risks of E-commerce business can be found a single standard is difficult to measure the risk of e-commerce business, so this paper intends to refer the dimensions of Harvard analytical framework. Using factor analysis to process the index system built on the quantitative monitoring of financial risks and accounting risks. Framework. Index System as shown in Table 1.

Table 1 Quantitative Analysis Index System

| Level Indicators | Secondary Indicators | Variable Code |
|---------------------------|--------------------------------------|-----------------|
| Profitability Status | Return on net assets ratio (%) | X ₁ |
| | Return on total assets ratio (%) | X ₂ |
| | Main business profit margin (%) | X ₃ |
| | Cost margin (%) | X ₄ |
| | Return on capital employed (%) | X ₅ |
| Asset quality | Total assets turnover (times) | X ₆ |
| | Accounts receivable turnover (times) | X ₇ |
| | Mobile asset turnover (times) | X ₈ |
| | Inventory turnover (times) | X ₉ |
| Debt risk situation | Assets and liabilities (%) | X ₁₀ |
| | Interest earned multiples | X ₁₁ |
| | Quick ratio (%) | X ₁₂ |
| | Cash flow debt ratio (%) | X ₁₃ |
| | Interest-bearing debt ratio (%) | X ₁₄ |
| Operational growth status | Sales (business) growth rate (%) | X ₁₅ |
| | Capital preservation rate (%) | X ₁₆ |
| | Sales profit growth rate (%) | X ₁₇ |
| | Total assets growth rate (%) | X ₁₈ |
| | Capital accumulation rate (%) | X ₁₉ |

An Empirical Analysis of Monitoring Financial Risk of E-business

Select the raw data and analytical methods

This paper select the highest level of e-commerce from the Shanghai and Shenzhen A-share listed companies as research samples. In order to obtain more standard values, the paper industry will take the e-commerce retail industry average financial indicators in "2014 Corporate Performance evaluation criteria value" included in the study sample. List of concrete samples shown in Table 2.

Table 2 Sample list

| company name | Data Code (6 ticker) |
|--|----------------------|
| Shenzhen Huaqiang Industry Co., Ltd. | 000062 |
| Jiangsu Wujiang China Eastern Silk Market Co., Ltd. | 000301 |
| Rainbow Enterprises (Holdings) Co., Ltd. | 000503 |
| Suning Appliance Group Co., Ltd. | 002024 |
| Zhejiang NetSun Ltd. | 002095 |
| Chengdu Santai Holding Group Co., Ltd. | 002312 |
| Long Group Yangtze River Investment Industry Co., Ltd. | 600119 |
| Pak Holding Co., Ltd. | 600640 |
| Beijing Wangfujing Department Store (Group) Co., Ltd. | 600859 |
| China International Travel Service Co., Ltd. | 601888 |

Research data - Evaluation of determination

This paper get index value of the sample from the Annual Report 2014 and disclosed information. After collected raw data and calculate the index, in order to do further analysis and research, paper uses IBM SPSS Statistic 20 software and follow each step of factor analysis requirements.

Sample e-commerce companies explained variance table is Table 3. Table 3 shows there are five eigenvalues greater than 1, and their cumulative contribution rate is 91.753%, greater than 85%, indicating that five eigenvalues have little data loss, contains a wealth of information, covering a lot of raw data. In order to achieve the desired results, select five factors to explain the effect is a better choice.

Table 3 E-commerce Companies Explained Variance Table

| | Initial eigenvalues | | | Extracting square and loading | | | Rotation square and loading | | |
|----|---------------------|----------|---------|-------------------------------|----------|--------|-----------------------------|----------|--------|
| | total | variance | added | total | variance | added | total | variance | added |
| 1 | 5.044 | 26.548 | 26.548 | 5.044 | 26.548 | 26.548 | 4.694 | 24.703 | 24.703 |
| 2 | 4.737 | 24.934 | 51.482 | 4.737 | 24.934 | 51.482 | 4.360 | 22.948 | 47.651 |
| 3 | 4.490 | 23.632 | 75.113 | 4.490 | 23.632 | 75.113 | 3.708 | 19.518 | 67.169 |
| 4 | 1.750 | 9.210 | 84.323 | 1.750 | 9.210 | 84.323 | 3.179 | 16.731 | 83.900 |
| 5 | 1.412 | 7.430 | 91.753 | 1.412 | 7.430 | 91.753 | 1.492 | 7.853 | 91.753 |
| 6 | 0.483 | 2.540 | 94.293 | | | | | | |
| 7 | 0.480 | 2.527 | 96.820 | | | | | | |
| 8 | 0.299 | 1.573 | 98.393 | | | | | | |
| 9 | 0.190 | 1.002 | 99.395 | | | | | | |
| 10 | 0.065 | 0.341 | 99.736 | | | | | | |
| 11 | 0.034 | 0.177 | 99.913 | | | | | | |
| 12 | 0.009 | 0.045 | 99.958 | | | | | | |
| 13 | 0.006 | 0.030 | 99.988 | | | | | | |
| 14 | 0.002 | 0.012 | 100.000 | | | | | | |
| 15 | 0.000 | 0.000 | 100.000 | | | | | | |
| 16 | 0.000 | 0.000 | 100.000 | | | | | | |
| 17 | 0.000 | 0.000 | 100.000 | | | | | | |
| 18 | 0.000 | 0.000 | 100.000 | | | | | | |
| 19 | 0.000 | 0.000 | 100.000 | | | | | | |

Explain the meaning of each index of correlation and factor common factors

Table 4 is a rear loading twiddle factor matrix, which shows that, after rotation. Five male factor loading tends to differentiation, compared to a more representative when not rotating, can be more fully explain the meaning of the various factors.

In factor Z_1 , the maximum load is X_{19} 、 X_{16} 、 X_{17} 、 X_{15} four indexes related to operating conditions, which reflect the growth and development potential of the enterprise, so it can be defined as the foreground risk factor. Factor Z_2 contain X_1 、 X_6 、 X_3 、 X_{13} 、 X_8 、 X_2 , they relate to the asset and profit. With powerful external competitors, companies will face a reduction in revenue, lower profits, and the low profitability of asset status, so factor 2 can be define as earnings risk factor. Factor Z_3 and variable X_{12} 、 X_9 、 X_{11} 、 X_{14} 、 X_{10} relevant, these indicators jointly reflect whether a company has the ability to repay debt, so defined as debt risk factor. Factor Z_4 represent indicators X_4 、 X_5 , the cost margins and return on capital. Factor Z_5 is index X_7 , on behalf of accounts receivable turnover ratio.

Table 4 sample e-commerce businesses after twiddle factor loading matrix

| variable | ingredient | | | | |
|-----------------|------------|--------|--------|--------|--------|
| | 1 | 2 | 3 | 4 | 5 |
| X ₁ | 0.975 | 0.107 | 0.075 | 0.052 | 0.039 |
| X ₂ | 0.971 | 0.146 | 0.042 | 0.078 | 0.057 |
| X ₃ | -0.951 | 0.073 | -0.238 | -0.016 | 0.056 |
| X ₄ | 0.940 | -0.119 | -0.213 | 0.040 | -0.007 |
| X ₅ | 0.927 | -0.021 | -0.042 | -0.130 | -0.276 |
| X ₆ | 0.159 | 0.910 | -0.074 | 0.283 | 0.032 |
| X ₇ | -0.045 | 0.827 | 0.126 | -0.431 | 0.198 |
| X ₈ | 0.113 | 0.823 | 0.039 | 0.399 | 0.113 |
| X ₉ | -0.177 | 0.821 | 0.000 | -0.014 | -0.363 |
| X ₁₀ | -0.092 | 0.817 | 0.228 | -0.356 | 0.195 |
| X ₁₁ | 0.101 | 0.775 | 0.012 | 0.511 | 0.182 |
| X ₁₂ | -0.052 | -0.169 | -0.923 | 0.244 | 0.085 |
| X ₁₃ | -0.063 | -0.197 | -0.899 | -0.067 | 0.294 |
| X ₁₄ | 0.077 | 0.023 | 0.846 | -0.003 | 0.331 |
| X ₁₅ | -0.068 | -0.162 | 0.741 | -0.588 | 0.174 |
| X ₁₆ | -0.113 | -0.200 | 0.688 | -0.633 | -0.014 |
| X ₁₇ | -0.066 | 0.094 | 0.009 | 0.894 | -0.087 |
| X ₁₈ | 0.035 | -0.039 | -0.351 | 0.853 | 0.137 |
| X ₁₉ | -0.159 | 0.179 | -0.000 | 0.001 | 0.945 |

Calculate the common factor formula

After calculated, the expression of the factor shown in Equation 1-6.

$$Z1 = 0.159 \times X1 + 0.101 \times X2 + 0.113 \times X3 + 0.035 \times X4 - 0.066 \times X5 - 0.045 \times X6 - 0.159 \times X7 - 0.092 \times X8 - 0.063 \times X9 - 0.113 \times X10 + 0.077 \times X11 - 0.052 \times X12 - 0.177 \times X13 - 0.068 \times X14 + 0.940 \times X15 + 0.971 \times X16 - 0.951 \times X17 + 0.927 \times X18 + 0.975 \times X19 \tag{1}$$

$$Z2 = 0.910 \times X1 + 0.775 \times X2 + 0.823 \times X3 - 0.039 \times X4 + 0.094 \times X5 + 0.827 \times X6 + 0.179 \times X7 + 0.817 \times X8 - 0.197 \times X9 - 0.200 \times X10 + 0.023 \times X11 - 0.169 \times X12 + 0.821 \times X13 - 0.162 \times X14 - 0.119 \times X15 + 0.146 \times X16 + 0.073 \times X17 - 0.021 \times X18 + 0.107 \times X19 \tag{2}$$

$$Z3 = -0.074 \times X1 + 0.012 \times X2 + 0.039 \times X3 - 0.351 \times X4 + 0.009 \times X5 + 0.126 \times X6 + 0.000 \times X7 + 0.228 \times X8 - 0.899 \times X9 + 0.688 \times X10 + 0.864 \times X11 - 0.923 \times X12 + 0.000 \times X13 + 0.741 \times X14 - 0.213 \times X15 + 0.042 \times X16 - 0.238 \times X17 - 0.042 \times X18 + 0.075 \times X19 \tag{3}$$

$$Z4 = 0.283 \times X1 + 0.511 \times X2 + 0.399 \times X3 + 0.853 \times X4 + 0.894 \times X5 - 0.431 \times X6 + 0.001 \times X7 - 0.356 \times X8 - 0.067 \times X9 - 0.633 \times X10 - 0.003 \times X11 + 0.244 \times X12 - 0.014 \times X13 - 0.588 \times X14 + 0.040 \times X15 + 0.078 \times X16 - 0.016 \times X17 - 0.130 \times X18 + 0.052 \times X19 \tag{4}$$

$$Z5 = 0.032 \times X1 + 0.182 \times X2 + 0.113 \times X3 + 0.137 \times X4 - 0.087 \times X5 + 0.198 \times X6 + 0.945 \times X7 + 0.195 \times X8 + 0.294 \times X9 - 0.014 \times X10 + 0.331 \times X11 + 0.085 \times X12 - 0.363 \times X13 + 0.174 \times X14 - 0.007 \times X15 + 0.057 \times X16 - 0.000 \times X17 + 0.001 \times X18 + 0.945 \times X19$$

$$X_{16} + 0.056 \times X_{17} - 0.276 \times X_{18} + 0.039 \times X_{19} \quad (5)$$

Then the contribution rate by the main factor in Table 5.4 after rotation respectively is 24.703%, 22.948%, 19.518%, 16.731%, 7.853%, can be monitored as a function of the model:

$$F_1 = 24.703\% \times Z_1 + 22.948\% \times Z_2 + 19.518\% \times Z_3 + 16.731\% \times Z_4 + 7.853\% \times Z_5 \quad (6)$$

Risk Assessment of e-commerce businesses

Substituted the samples into the above six formula, F monitoring scores of various e-commerce enterprise financial risk, and arrange the prediction value from high to low, we can get the results in Table 5.

Table 5 Sample MonitoringScore

| Sample name | F-measure | Ranking |
|--|-----------|---------|
| Chengdu Santai Holding Group Co., Ltd. | 887.14 | 1 |
| Shenzhen Huaqiang Industry Co., Ltd. | 65.61 | 2 |
| Suning Appliance Group Co., Ltd. | 62.38 | 3 |
| Long Group Yangtze River Investment Industry Co., Ltd. | 41.31 | 4 |
| Beijing Wangfujing Department Store (Group) Co., Ltd. | 32.62 | 5 |
| Excellent value | 27.74 | 6 |
| Good value | 24.87 | 7 |
| Average value | 23.46 | 8 |
| Lower value | 17.38 | 9 |
| Jiangsu Wujiang China Eastern Silk Market Co., Ltd. | 17.01 | 10 |
| China International Travel Service Co., Ltd. | 9.66 | 11 |
| Poor value | 6.04 | 12 |
| Pak Holding Co., Ltd. | -22.66 | 13 |
| Zhejiang NetSun Ltd. | -38.07 | 14 |
| Rainbow Enterprises (Holdings) Co., Ltd. | -393.17 | 15 |

Above the table can be learned, Suning Appliance risk monitoring score is 62.38 in the 15 samples selected integrated ranked 3, and the score is higher than the industry best value. In the e-commerce industry, financial risk and accounting risk faced by the Suning Appliance is relatively small, liquidity and risk capital strand breaks will not appear in the short term. The accounting information officially arrived reliable and effective in the hands of accounting information users, corporate profitability conditions, asset quality, debt risk situation and experience growth conditions, are all in a relatively good situation. In the near-term, there are little chance of the outbreak to financial risk and accounting risk.

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