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Business performance measurement for mechanical engineering and metalworking companies: Case of Latvia

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Abstract

Business performance depends on the manager's competence to take adequate decisions. The professional manager's decision can improve the financial performance and position of the company. Analysis of business performance gives businesses a framework in which can set goals, measure actual performance in comparing with these goals and develop scenario planning to evaluate alternative action. The purpose of this article is to investigate the present performance of companies in the mechanical engineering and metalworking sector, to prepare proposals for management and financial performance improvement in these companies. As a result of the research, the authors have drawn recommendations in order to carry out business performance measurement.

Keywords: Business performance, business activity, financial analysis, mechanical engineering and metalworking sector.
Jel Codes: D220, D240, M110, O14.

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1. Introduction

Metalworking and mechanical engineering industry in Latvia consists of many sectors, covering a wide range of different type of activities, including mechanical engineering, machinery science, metal production, production and installation of fabricated metal products, production of electrical equipment, production of vehicles, production of medical equipment, repair and installation of equipment, devices and other activities. The mechanical engineering and metalworking industry holds a leading place in the Latvian export structure, providing a significant share of total exports of goods.

In a saturated market with a high level of competition, it is essential for companies to plan their business strategy in order to secure a sustainable work and keep job places. The professional manager's decision can improve the business performance and position of the company. The business performance analysis is an essential part of financial analysis that managing directors of companies use to make important decisions with respect to investment and funding issues.

Financial analysis indicated that the profitability indicators for the mechanical engineering and metalworking industries tended to increase in recent years after a sharp fall in 2014. Companies are not able to cope with the negative consequences of the intensification of relations with Russia and the increase in the level of costs in the country.

The authors have applied different methods in the research and other financial calculations such as theoretical sources and statistical data analysis. Quantitative research methods are used to analyse dynamic and structural problems in the industry, and industry's expert interviews are also used.

2. The essence of business performance and its measurement

Financial analysis carried out to support the company's solvency, revenue, profit and the amount of dividends or the company's market value (Brigham, 1989). Management decisions must be based on precise calculations and a comprehensive economic analysis (Rurane, 2005). The company's growth and business performance are evaluated as the net sales, profit, assets value, own capital and total capital changes. The long-term analysis helps to clarify the dynamics of change, whether it is positive, to find out the main problems and predict the company's development strategy (Saksonova, 2006).

Before starting the study of financial indicators, managers must identify problems, set test parameters to formulate the reasons for the change in the business performance. Companies may mainly face such problems as low capital profitability and decrease of financial independence (Van Horn & Vachowicz, 2008). First, sales volume should be assessed for the improvement of business performance. If the sales volume decreases, then it is necessary to examine its causes.

Next, costs are to be considered as a resource that was spent for a particular purpose. Costs such as labour costs or advertising costs are attributable to the payment of goods or services. In defining the costs, it is necessary to define the costs object – it is an activity or product for which the amount of costs or price is determined (Datar & Rajan, 2017).

Corporate executives need to develop a sustainable competitive strategy through effective strategic positioning in the industry. This is achieved through product differentiation or cost leadership strategy (Chapman, 2005). Companies based on the cost leadership strategy offer products and services at an acceptable level of quality and functionality for a specific market segment at a lower cost than the company's competitors.

One of the reasons for the deterioration of the company's business performance is insufficient profit. The profit has an influence on all indicators of financial results (Glen, 2013). Calculation of profit or losses, profitability and accrued capital ratios are used for the analysis of revenue and costs (Parmenter, 2007). The main factors influencing profit are the product price, costs and sales volume.

The other reason for the financial indicators, which describe the company's business performance deteriorating, is investments (investments in production facilities construction, acquisitions of fixed assets, acquisitions of other companies, etc.). Investments can be a cause of the decrease of all indicators—profitability, efficiency, financing stability although at first glance does not appear regularity.

Managers may have a personal interest in the company's development direction. Potential conflicts of company managers and owners, if they are not stipulated in the special agreement, can become a basis for analytical work for these specific purposes (Bernstein, 1993). In practice, the analysis can be started from the previously known 'narrow' places at the company, although in other cases, the 'narrow' places are elucidated above.

In order to develop the company's business strategy, detailed financial analysis of the dynamics of several years must be carried out. Financial analysis, which is based on the balance sheet and profit and losses reports, pays attention to the 'narrow' places in the company's activities and financial position.

Financial analysis is based on absolute and relative indicators. In practice, financial analysis is applied the following groups of indicators:

1. profitability—ability to generate profit;
2. assets utilisation—the company's operating efficiency ratios that show the efficiency;
3. solvency ratios—indicators for the company's independence from external sources of financing;
4. liquidity—short-term solvency (Kolcova & Rjabih, 2007).

The strategic financial analysis differs from the operational analysis not only with different goals and tasks but also with various methodology of the analysis (Mavlutova et al., 2011).

3. Research methodology

For a deeper understanding of the factors of success and failure of business performance of mechanical engineering and metalworking industry, the authors chose to study and compare 71 metalworking industry companies in Latvia, as the majority of the industry is involved in manufacturing of finished metal products, which is 43% of the industry. The selected companies were compiled from 2005 to 2016. Companies were grouped in the following clusters:

1. foreign or domestic, 54 companies (more than 75%) have local capital, while 17 companies have foreign capital in the sample;
2. producers of their own products or providers of services; investigated companies are distributed approximately equal. In total of 71 companies, 37 (or 52%) are developing their products and the remaining 48% are service providers.

To evaluate the business performance of companies, companies were divided into three groups—micro, small and medium/large enterprises. Subsequently, the company's data were compiled from the annual accounts, including fixed assets, securities, current assets, inventories, receivables, cash, equity, current and non-current liabilities, net turnover, costs, EBIT, interest payments, gross profit, net profit, etc. for each year.

It was further determined whether companies in the group are profitable, operating efficiently and solvent, and also determined whether there are such companies in a group whose business performance is significantly different from the group. For financial analysis, the Financial Analysts Association (CFA Institute, 2008) recommends analysing financial ratios as reflected in Table 1.

The company's return on equity or profitability considerably shows the effectiveness of owners who invested capital to gain the profit. Return on sales shows the remaining share of income, which the company's managers can see as the profit from each euro, received from the sales. Thereby, this

profitability ratio shows the effectiveness of company business activity. For the analysis of the efficiency of working capital management in the mechanical engineering and metalworking companies, stock's and debtor's turnover ratios are utilised. For the evaluation of the efficiency of the utilisation of fixed assets, turnover ratio is applicable. Gross profit margin is the most essential indicator that shows the effectiveness of company main activities. The return on assets shows how big profit the company has gained from all assets.

Table 1. Main financial indicators for business performance assessment

Ratio	Formula
Return on assets, ROA	Net profit × 100/ Total assets
Return on equity, ROE	Net profit × 100 / Equity
Pretax margin, ROS	Pretax profit × 100 / Net turnover
Stock turnover	Net turnover/ Stock
Accounts receivable turnover	Net turnover / Debtors
Days of sales outstanding, DSO	Debtors × 360 / Net turnover
Fixed assets turnover	Net turnover/ Long term investments
Gross profit margin	Gross profit × 100/ Net sales
Total assets turnover	Net sales/Total assets
Debt liabilities towards equity, DER	Liabilities / Equity
Return on capital invested, ROI	Net profit × 100/ Investments

Source: CFA Institute, 2008.

It is believed that this direction is one of the more meaningful in financial analysis, despite the fact that the balance sheet constructing principles and reporting deadlines that affect the items in the amounts indicated may distort the results of the analysis (Helfert, 1996). In order to evaluate the business performance of the company more precise within the capital perspective, the ratios mentioned above must be supplemented (see Table 2).

Table 2. Additional indicators for business performance assessment

Ratio	Formula
Total liquidity ratio, CR	Current assets/ Current liabilities
Quick liquidity ratio, QR	Cash + Short-term financial investments + Debtors/ Current liabilities
Debt liabilities towards capital, DR	Liabilities / (Liabilities + Equity)
Interest payment coverage ratio, ICR	Profit before interest and taxes/ Interest payments
Cash ratio	Cash/ Current liabilities
Working capital, WC	Current assets-Current liabilities
Productivity	Net sales/Employees

Source: authors own study.

The essence of liquidity ratio is to evaluate the potential ability of the company to pay current liabilities by using working capital (Savcuk, 2002). Analysing dynamics of this ratio, factors that create mentioned changes must be studied. For instance, if a growth of the liquidity ratio was mainly connected with unreasonable accounts receivable, it cannot characterise company business performance positively. Liability indicators reflect company dependence from borrowed capital and characterise relations between its owners and creditors (Sneidere, 2009).

All company data are compiled in Microsoft Excel but for the purpose of accurate statistical analysis, the statistical program JASP was used. An analysis of variance (ANOVA) test was conducted to determine whether some indicators, such as capital origins or core business, have a significant impact on the average. Dispersion analysis (ANOVA) is one of the statistical methods by which it is possible to study the distribution of data values of certain characteristics. The authors tested two hypotheses to determine the similarity or difference of several groups of indicators. The research hypotheses are as follows:

H1: The capital origin of metalworking companies affects profitability and efficiency.

H2: The core business of the metalworking companies affects profitability and efficiency.

4. Research results

European Economic and Social Committee deliberates mechanical engineering and metalworking industry as one of the most important and affluent sectors because of the production of machinery, manufacturing systems, components and other industrial products related to other industries. The global economy creates threats and opportunities for the mechanical engineering and metalworking industry and its manufacturing sector (McKinsey & Company, 2017).

The mechanical engineering and metalworking industry is one of the most important sectors in the Latvian economy. The development of the industry depends on the sales market and situation in international markets. The primary sales markets of Latvia mechanical engineering and metalworking industry are the Europe Union and Eastern markets (Dienas Bizness, 2016). Experts of the Association of Mechanical Engineering and Metalworking Industry (MASOC, 2016) consider that since the beginning of 2010, certain stabilisation and restoring of growth after the crisis can be observed. Since 2014, indicators were affected negatively due to the economic and political situation in Russia that was followed by a decline of export, as well as a decrease in metal prices. It is important to mention that comparing to Latvia neighbouring countries the development process is much slower.

In order to assess the metalworking industry, business results were calculated 18 indicators from Tables 1 and 2, as the most important of these authors chose return on assets (ROA). The results can be seen in Table 3.

Table 3. Return on assets of the metalworking companies in 2005–2016

	Return on assets (ROA)											
	2005	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Valid	47	52	52	53	57	62	66	67	69	71	71	71
Missing	1	0	0	0	0	0	0	0	0	0	0	0
Mean	10.603	11.513	12.170	11.627	-0.888	3.449	7.867	11.054	0.879	3.680	3.585	1.489
Median	8.995	13.980	10.271	7.397	0.294	2.580	6.445	7.888	9.241	3.587	3.406	3.648
Std. Devia-tion	12.415	24.478	10.978	12.141	15.762	14.772	16.230	13.936	82.166	23.046	18.175	38.120
Skewness	0.025	-2.701	0.333	0.755	-0.662	1.901	1.088	0.739	-7.894	-2.150	0.538	-5.657
Std. Error of Skewness	0.347	0.330	0.330	0.327	0.316	0.304	0.295	0.293	0.289	0.285	0.285	0.285
Kurtosis	0.576	15.857	-0.743	-0.456	2.275	8.864	4.454	1.666	64.452	12.537	5.524	40.741
Std. Error of Kurtosis	0.681	0.650	0.650	0.644	0.623	0.599	0.582	0.578	0.570	0.563	0.563	0.563
Minimum	-22.060	-118.968	-6.382	-6.440	-57.875	-29.490	-30.408	-25.410	-660.861	-121.206	-50.044	-275.758
Maximum	38.654	70.104	36.536	39.394	33.155	75.998	75.028	52.593	64.001	69.528	81.450	59.072

Source: created by the authors.

Analysing the data presented in Table 3, it can be concluded that the ROA of companies has a very large range of results. The lowest indicator is presented in 2009, explained by the economic crisis, whereas the highest results sector was shown in the pre-crisis period in 2006, after the crisis period, the best result was achieved in 2013. From 2014, these indicators are influenced by the external factor—the intensified relations with Russia. The standard deviation indicates that the data scatter has been large from the arithmetic mean, which means that the dataset has been both very successful companies and, conversely, unsuccessful.

The return on assets reflects the company's long-term investment and the use of current assets, as well as the efficiency of the utilisation of financial resources. In order to improve this indicator, companies should considerably review the cost structure, production technologies, organisation of the

working process, employee motivation and qualifications. Return on assets is one of the most important business performance indicators, so it is necessary to find out whether this indicator over the last three years is changing as the size of the metal processing industry changes.

Table 4. Return on assets dispersion or ANOVA analysis of the period from 2014 to 2016

Cases	Sum of squares	df	Mean square	*F*	*p*
Micro-Small-Large	3834.389	2.000	1917.195	2.542	0.081
Residual	158407.984	210.000	754.324		

Source: created by the authors.

Based on the dispersion analysis or ANOVA in Table 4, it was concluded that the return on assets is not significantly different, as $p = 0.081 > 0.05$, which indicates the fact that in this industry, regardless of the size, these indicators do not differ significantly.

The next factor was whether the company provides services or produces a product, and the results are given in Table 5:

Table 5. Impact of type of activity on financial indicators in the independent samples *t*-test for the period 2014–2016.

	t	df	*p*
Total liquidity ratio, CR	−0.698	207.000	0.486
Quick liquidity ratio, QR	−0.118	207.000	0.906
Cash ratio	−1.365	207.000	0.174
Working capital, WC	−2.143	211.000	0.033
Total assets turnover	5.047	211.000	< .001
Fixed assets turnover	3.670	208.000	< .001
Stock turnover	1.274	202.000	0.204
Accounts receivable turnover	0.859	211.000	0.391
Days of sales outstanding, DSO	−1.655	211.000	0.099
Debt liabilities towards capital, DR	2.894	210.000	0.004
Debt liabilities towards equity, DER	1.070	210.000	0.286
Interest payment coverage ratio, ICR	1.643	178.000	0.102
Pretax margin, ROS	1.989	211.000	0.048
Gross profit margin	0.864	211.000	0.389
Return on assets, ROA	3.344	211.000	< .001
Return on equity, ROE	1.308	196.000	0.192
Return on capital invested, ROI	0.032	211.000	0.974
Productivity	0.879	210.000	0.380

Source: created by the authors.

Table 5 reflects the impact of type of activity on the following business performance indicators: networking capital, asset turnover, fixed asset turnover, debt liabilities towards capital, return on sales and return on assets.

Traditional manufacturing business models change, and new models are appearing. Companies must be able to quickly recognise new challenges. The competition will increase in future because of the appearance of new innovative companies. Digitisation is the essence of the next phase of the manufacturing sector development (Encyclopaedia Britannica, 2016).

5. Conclusions

Mechanical engineering and metalworking industry is highly export-oriented, and on average, around 70% of its production is exported. However, business performance and productivity of Latvian companies lagging behind the main competitors.

Different methods of financial analysis could be useful for the evaluation of business performance. These methods differ taking into account complexity and amount of information. The model of analysis should be based on the following financial indicators—profitability, turnover ratios as well as working capital and liability ratios.

During the research, it was found that H1 did not come true, that is, capital origin affects only the accounts receivable turnover and return on capital invested. H2 came true, namely, the type of activity has a significant impact on profitability indicators in the metalworking companies in Latvia.

For further research, it would be necessary to determine whether external factors such as exports have a significant impact on profitability indicators in the metalworking and mechanical engineering companies in Latvia.

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