VEŘEJNÁ SPRÁVA, ŘÍZENÍ

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THE IMPACT OF INTEGRATED MANAGEMENT SYSTEM ON THE FINANCIAL PERFORMANCE OF ENTERPRISES

Dopad integrovaného systému managementu na finanční ukazatele podniku

Veronika VRZALOVÁ – Kateřina KOVÁŘOVÁ

Ústí nad Labem, Czech Republic

ABSTRAKT: Implementace integrovaného systému managementu přináší organizaci snížení nákladů, materiálových potřeb a práce, zlepšení pověsti, lepší způsobilost obchodních partnerů či široké veřejnosti a navázání nových kontaktů se zákazníky. Současně se tímto způsobem organizace hlásí k trvalému a udržitelnému rozvoji. Tyto výhody se promítají ve zvýšení výkonnosti organizace, která se současně stává efektivnější. Hlavní cíl práce byl zhodnocení ekonomické situace zvolené organizace před a po zavedení integrovaného systému managementu na základě vybraných ukazatelů. Dále v rámci této analýzy byla provedena regrese, s cílem odhalení závislosti právě mezi spotřebou materiálu a tržbami z prodeje zvlášť pro období před integrovaného systému managementu a po zavedení integrovaného systému managementu. Nakonec byla na základě časové řady vytvořena prognóza pro vývoj tržeb z prodeje vlastních výrobků a služeb a spotřebou materiálu a energie. Provedená analýza nepotvrzuje trend zlepšování, spolu s délkou fungování integrovaného systému managementu v podniku. To samé platí i o materiálové spotřebě, která v podniku roste rychleji, než rostou tržby za prodej vlastních výrobků a služeb. I přes tyto okolnosti nemění nic na faktu, že společnost hodnotí implementaci integrovaného systému managementu jako správnou volbu. Svou pozornost by měla více věnovat na své finanční ukazatele, které v posledních letech sledovaného období vykazují nízké hodnoty a klesající tempo růstu oproti letům předchozím.

Klíčová slova: integrovaný systém managementu, ROA, likvidita, zadluženost, tržby.

ABSTRACT: The implementation of an integrated management system brings the business organization reduced costs, lower material and labor requirements, better reputation, better competence of business partners or the general public and new customer contacts. At the same time, the business organization accepts the commitment of sustainable development. These benefits are reflected in into an increased performance of the organization, which at the same time becomes more efficient. The main objective of the paper was to evaluate the economic situation of the selected organization before and after the implementation of the integrated management system on the basis of selected indicators. Furthermore, within this analysis, a regression analysis was performed in order to identify the dependence between material consumption and sales revenue separately for the period before and after the implementation of the integrated management system. Finally, a time series forecast was made for the development of sales of own products and services and material and energy consumption. The performed analysis does not confirm the trend of improvement with the length of time the integrated management system has been in operation in the enterprise. The same applies to

material consumption, which is growing faster than the growth in sales of own products and services. Despite these circumstances, the company considers the implementation of the integrated management system to be the right choice. It should pay more attention to its financial indicators, which show low values and a declining growth rate in the last years of the period under review compared to previous years.

Key words: integrated management system, ROA, liquidity, debt, sales.

INTRODUCTION

In the continuously changing environment businesses operate in today, it is necessary to build a system within the company that can anticipate changes and respond appropriately to them. Therefore, companies try to standardize their internal processes based on international standards [10]. To keep up with the competition, companies often introduce ISO standards into their management [21]. First, companies started to focus on quality management, control, customer requirements, and continuous improvement, which led them to adopt ISO 9001. Later, companies start to perceive the importance of protecting the environment, which made them focus on the ISO 14001 environmental management system. Besides product quality and environmental protection, worker protection became important and hence the implementation of OHSAS 18 001 standard to ensure occupational health and safety of employees [1]. In April 2018, the OHSAS 18 001 was replaced by ISO 45001 and the three years migration was followed.

However, nowadays, the importance and interest in the so-called integrated management system is growing, which most often integrates management quality, environmental management and standards of employee health and safety protection; at the same time, it brings a lot of benefits and savings for the company [21]. The scope of an integrated management system can be extended to other management systems such as information security management system, corporate social responsibility or food safety management system. As the above systems contain several common features and characteristics, their joint integration into an integrated management system is nowadays common and at the same, time the implementation of an integrated management system in an enterprise is considered almost a necessity in the current economic situation. Cost minimization, flexible information system and transparent systems along with excellent performance are the basis for the success of any company. Management quality, environmental management and standards of employee health and safety use similar management methods and principles. [10].

One of the most important arguments that advocates the integration of standards is that management quality, environmental management and health and safety of employees share approximately 80 % of common elements [12]. Even if integration occurs and many areas related to standards converge, each standard has its own specifics that need to be defined and verified separately.

These standards require organizations to define their policies, objectives, programs, establish a legal register, common documentation, provide staff training, specify operational activities, monitoring, measurement, non-compliance corrective and preventive actions, internal audits and management reviews [22]. There is some duplication of effort in implementing these standards. In order to meet the requirements of each standard, a large volume of documentation, written procedures, controls, and other documents are required [24].

The integrated management system serves to reduce these negative effects associated with the implementation of individual standards. An integrated management system, whatever form it takes, should lead to a more efficient system in a company and provide a company with a direction and structure [25]. The level of the resulting integrated management system also depends on the assumption of whether companies integrate three or only two ISO standards, as more standards integrated may just reduce the effectiveness of the system [2].

An integrated management system brings various benefits to a company, which is reflected in increased performance, which at the same time becomes more efficient [12]. The main reasons for implementing an integrated management system include operational benefits, regulatory benefits, marketing, financial and social benefits [16].

Despite the above advantages, companies face some challenges in the inmplementation process. The most common one is the lack of human resources or support from the state and government. Other difficulties associated with integration may be separate functions, lack of resources or individual concerns and distrust of stakeholders in the process of implementing an integrated management system [19].

The effect of the management system, especially in the form of ISO 9001 standards, on financial performance has been investigated in many studies, e.g. [3, 5, 8]. Some study authors conclude that there is a positive relationship between the management system and financial performance of the company, while other studies did not find strong evidence of the existence of this relationship, e.g. [4, 14, 9] and some research has even identified a negative effect on a company´s financial performance, e.g. [13].

Recent studies highlight the mediating role of various variables between management systems and a company's financial performance. According to [5] comprehensive management

system practices have an indirect, positive, but significant effect on an organization's financial performance through competitive strategies. [8] identified key factors of comprehensive management system that contribute to better financial performance (among others): top management, process management, employee quality management, customer and employee focus, knowledge and training, meaning successful organizations they focus primarily on the human aspect of society. [3] also conducted empirical research in this issue, and their results confirm the existence of the direct effect of comprehensive management system on the non-financial performance of a company. This in turn mediates the indirect effect of comprehensive management system on the financial performance of the organization.

Reference [26] adds that an actual improvement in a company´s performance can be observed only 3-6 years after the management system certification. The period for which the companies are certified was also taken into account by research conducted by [15]. It is clear from the results that companies with advanced quality management achieve better long-term financial results than companies whose management system is newly implemented.

The current development trends of modern approaches to management based on continuous systematic improvement lead to the excellence of organizations, as constant search for the most perfect methods, and tools of management of all types of organizations.

Excellence models serve as a basis for the implementation and development of a single quality management system. They are suitable for organizations that already have a robust management system and want to obtain strategic and operational feedback on the current level of performance, process capability of the established management system, preparedness for future challenges.

METHODOLOGY AND AIM OF THE RESEARCH

The aim of the paper is to find out whether a more advanced management system in the form of an integrated management system in a particular company may have an impact on financial indicators in the long term.

For the purposes of the research, a company based in the Czech Republic in the Ústí nad Labem region was selected. The company is part of a multinational concern and is the largest producer of flat glass in Central and Eastern Europe. In the Czech Republic, it employs around 1,700 people. Its sales amount to over CZK 13 billion.

The company's financial performance and earnings were evaluated based on publicly available company's annual reports for the years 1996-2016. These annual reports are very

comprehensive and the company offers the public, employees and current or future partners a great deal of information about its economic situation.

In 2016, the first year for which the annual report is available, the company performed relatively well, helped by the moderate economic growth of 1.8 % as well as the growth of GDP (1.9 %) in the EU. In that year, the company continued its policy of tight cash flow management, cost reduction, rational use of capital expenditure and management of customer risk, due to the potentially uncertain economic outlook. Revenue from product sales increased slightly by 0.6 % in 2016. In terms of personnel, there is also a year-on-year increase in both 2015 and 2016. The average number of employees increased to 1,032 in 2015 and again to 1,050 in 2016. There was also an increase in the average wages of employees, which increased by 5 %, namely by CZK 2,207. The company also provided training and education for its employees in the areas of occupational health and safety, accounting, IT technology, HR, business skills, communication and production logistics. The operating earnings showed a slight increase of CZK 11 million between 2015 and 2016. The earnings, on the other hand, saw a significant decrease from CZK 517 million to CZK 24 million. Therefore, the earnings after tax fell from CZK 709 million in 2015 to CZK 229 million, which is a relatively noticeable loss, but the company was still doing very well and generated a profit. Compared to the preceding year, both the operating and financial earnings increased significantly in 2015, and so did the total earnings after tax. For the calculation of return on assets, current liquidity, total indebtedness and inventory turnover ratio, all data and figures are obtained from the balance sheet and profit and loss account included in the company's statutory annual reports for the period 1996-2016. The resulting value was calculated according to [20]:

- ROA = EAT/asset.
- The ROA indicator compares the earningsprofit with the total assets invested in the business, regardless of whether it was financed by equity or debtexternal capital.
- Current liquidity = current assets/current liabilities
- The current liquidity measures how many times the current liabilities cover the current assets. The recommended value of current liquidity is in the range of 1.5-2.5 [20].
- Inventory turnover periodaround time = inventory/(sales/360).
- The inventory turnover periodaround time expresses the averagemean time of selling the inventory.

- Total indebtedness = debt capitalexternal resources/total assets.
- The total indebtedness measures the extent of coverage of the company assetsfirm property by debt capitalexternal sources. The optimal value is between 30 and 60 %.

The obtained results are analysed and displayed in a form of graphs. All presented graphs are created using MS Excel. Regression analysis and time series analysis was also carried out in this program for the data relating to material and energy consumption and sales of products and services, which were also obtained from the company's annual reports mentioned above. Finally, a time series forecast was produced for the development of sales of own products and services and consumption of materials and energy. Based on the above data, the research question was formulated as follows:

RQ: Will a more advanced management system in the form of an integrated management system bring beneficial long-term financial effects to the company?

The first certified system in the company was the quality management system introduced in 1996. Gradually, this system was expanded in order to include environmental management and occupational health and safety management. The last additional system was the social responsibility system. All these systems were integrated together in 2002 to form an integrated management system, which is recertified every three years. Supervisory audits are then carried out annually in the company [18].

The company implemented its integrated management system based on a process approach, in which processes are divided into four main groups: management processes, customer-focused processes, processes focused on other stakeholders and support processes [17].

The processes that the company adopts from external sources include mainly control and consulting activities in the field of environment, occupational health and safety, fire protection, education etc. The main processes are subdivided into sub-processes to which the relevant regulations also apply. The basic integrated management system documents include Quality, Environmental, Occupational Health and Safety, Corporate Social Responsibility and Major Accident Prevention Policies, Quality Objectives, Environmental Objectives, Corporate Social Responsibility Objectives and Occupational Health and Safety Objectives, Integrated management system Manual, Regulations, Work Procedures, Quality Specifications, External Documents and Other Documents. Integrated management system responsibilities are decentralized and distributed between the different organizational levels of the company.

Planning and defining their processes are an important aspect of increasing the effectiveness of integrated management system. The company then uses management objectives and programs for improvement. The fact that the objectives and programs are being met is reviewed at regular and set intervals [17].

All the obtained data about the company was processed in Word.

RESULTS AND DISCUSSION

There is no clearly defined set of tools for measuring financial performance in terms of an integrated management system [7]. According to [11], the issue of financial performance on an established ISO 9001 management system has been addressed in a number of studies in Malaysia, where the most common ratios of performance assessment included Return on Assets (ROA), Return on Investment (ROI), Return on Equity (ROE), Economic Value Added (EVA) and Cash Flow (CF), with ROA, ROE and EVA being the most influential indicators in these systems. [6] add that financial performance in the context of ISO 9001 in particular is most often assessed based on the indicators - profit, earnings per share, sales growth, elimination of operating expenses and activity.

The study by [11] aimed to investigate the effect of the implemented management system according to ISO 9001 standards on the financial performance of 89 companies in Malaysia based on the indicators of ROA, ROE and CF. For these companies, an improvement in ROA and ROE indicators was noted in relation to the certification implemented, but at the same time, there was no evidence of a direct effect of the standard on the CF of the company.

According to [26], enterprises with a certified management system achieve higher profits than non-certified enterprises and thus show better financial results, while an important aspect for assessing performance improvement in relation to certification is the period of time for which enterprises are certified. Companies that are certified for a longer period of time show better financial and non-financial performance compared to those that are certified for a shorter period of time, in particular benefits such as easier penetration into foreign markets, increased market share, and thus increased sales volume. Furthermore, [26] adds that the actual improvement in the performance of the enterprise can be observed only after 3-6 years after obtaining the certificate.

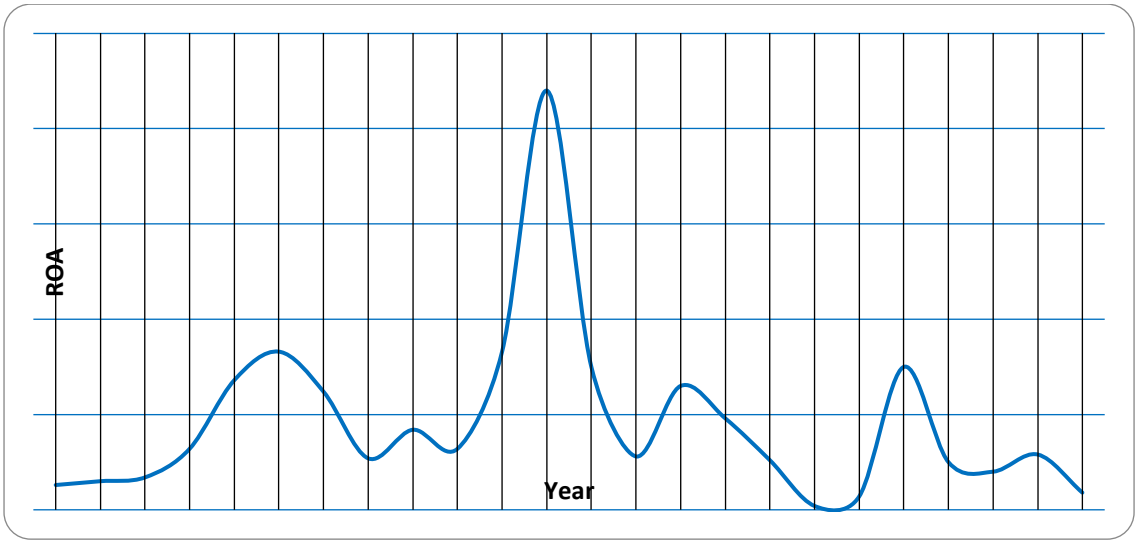
The period of time for which companies are certified was also taken into account in the research conducted by [15]. In this study, large enterprises in Croatia applying management

systems for a long time, were compared with entities that having management systems in use only for a short time. Financial performance was measured using the ratios EBIT, ROA, solvency and liquidity. The results show that companies with mature quality management systems achieve better financial results in the long term than companies whose management system is only in its initial stage [15]. The same applies to material consumption, which should also show significant savings, as argued by [10]. These aspects were also examined for the selected trading company based on published annual reports, where an improvement has been observed since 2002 (the year of the introduction of the integrated management system).

The graph in Figure 1 shows how ROA developed in the selected company over the period under review. It can be seen from Figure 1 that ROA fluctuated quite a lot in the monitored years, particularly in 2007, rather than increasing continuously since 2002.

It should be noted that the average value of ROA in the years 1996-2001 (i.e. before the introduction of the integrated management system) is lower than the value of ROA after its introduction (i.e. after 2002). The average ROA between 1996 and 2001 was 3.62, whereas since 2002, the average was 5.15, which is particularly due to the extremely high value in 2007. The high value in 2007 is probably due to the peak of economic growth, which is related to the sharp drop in 2008, the beginning of the economic crisis [23].

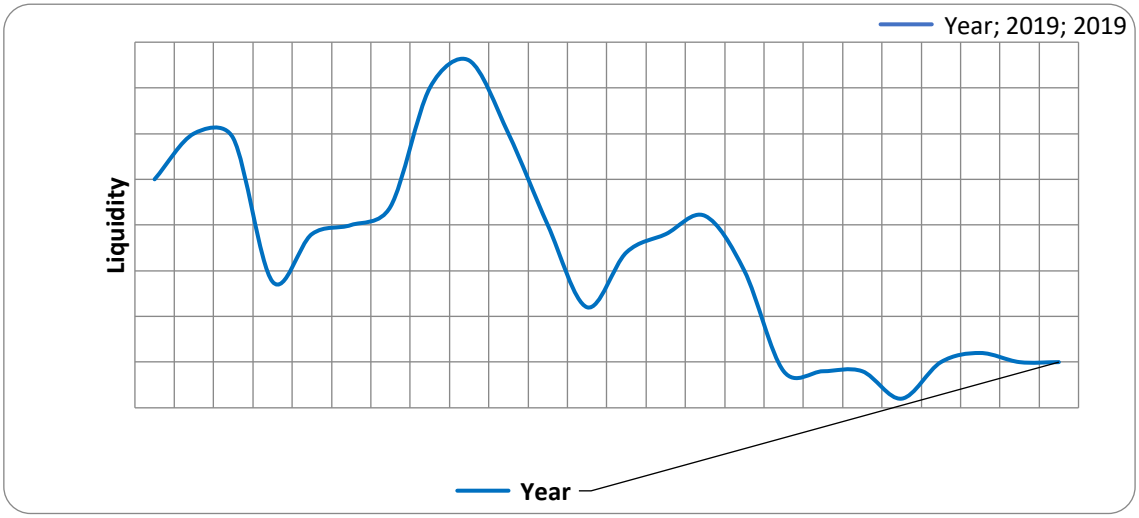
Figure 1: Return on Assets (ROA)



Source: Authors based on company annual reports.

The liquidity ratio provides a company with a picture of whether it is able to pay its short-term liabilities on time. For this purpose, the current liquidity ratio was chosen.

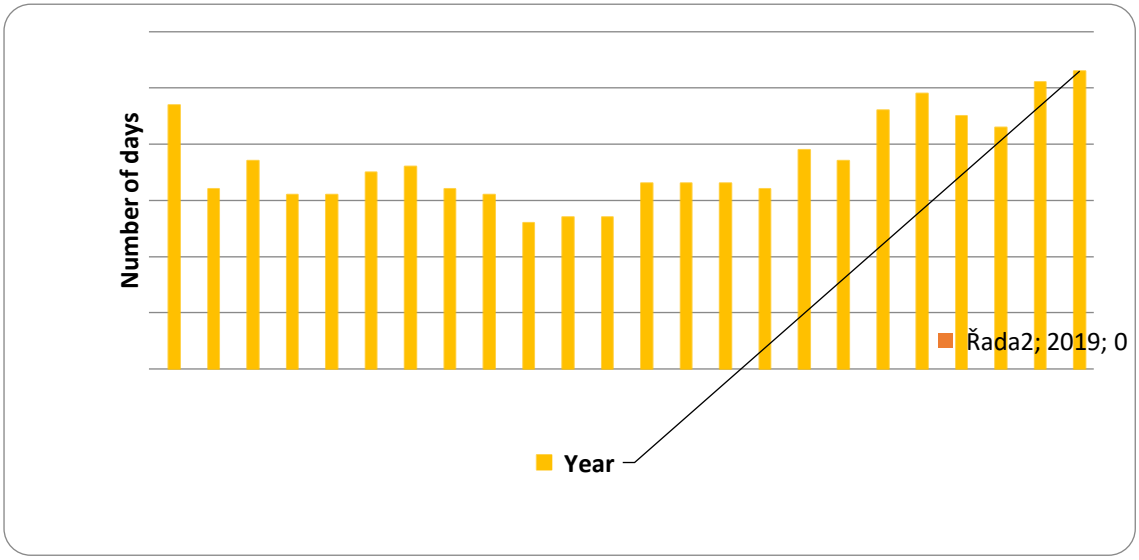
Figure 2: Current liquidity of the company



Source: Authors based on company annual reports.

Figure 2 presents the evolution of current liquidity in the analysed company using a line graph. Figure 2 shows that the company's current liquidity did not reached the recommended values for the entire period since the introduction of the integrated management system in the company, but only in the years 2002, 2006 and 2008- 2010. In the years before the implementation of the integrated management system, i.e. in 2000 and 2001, liquidity also reached the recommended values. In recent years, current liquidity has shown very low values of abound 0.3-0.5, which indicates that the company's assets (current assets) are insufficient to cover short-term liabilities. The liquidity ratio is also affected by inventories, specifically inventory turnover period. The higher the inventory turnover period, the higher the financial cost of maintaining the inventory. This is logically related to liquidity, which is thus reduced and the company does not have sufficient funds to cover its short-term liabilities. Inventory turnover period for each year of the period under review is shown in Figure 3. In the last three years, higher inventory turnover period correspond to low liquidity of the company. Conversely, the years 2003-2005 are characterised by lower inventory turnover period and higher liquidity. In this case, the higher inventory turnover period may be due to the oversaturation of building glass markets, especially in the Eastern market [23].

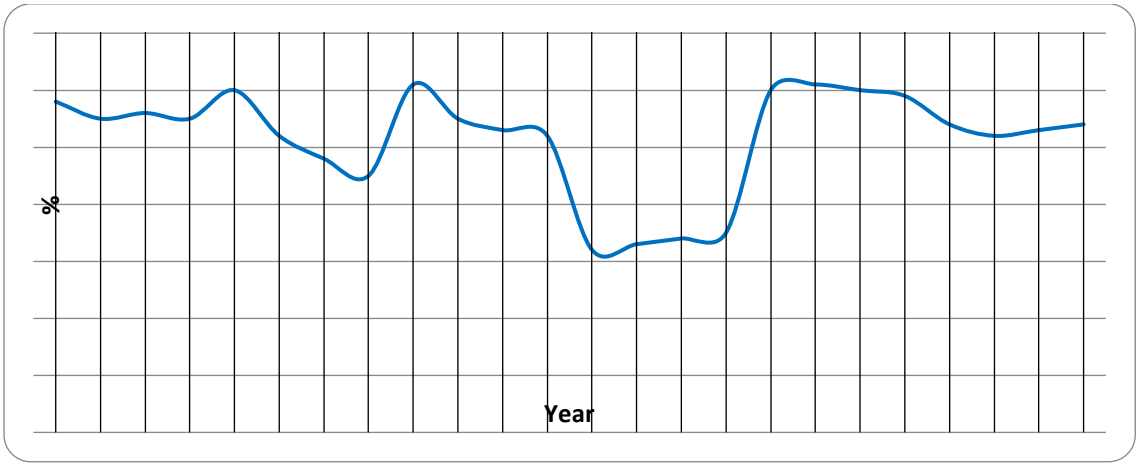
Figure 3: Inventory turnaround time



Source: Authors based on company annual reports.

The overall debt ratio was in an acceptable range throughout the period, i.e. between the recommended 30 % and 60 %. Only in 2013 and 2014, there was a slight fluctuation above this threshold. There are constant fluctuations within the monitored indebtedness and it cannot be said that the overall indebtedness of the company decreased after the introduction of the integrated management system. The lowest indebtedness of the enterprise was reached in 2008-2011 (slightly above 30 %), but then there was again a sharp increase [23]. The whole trend is presented in Figure 4, through a line graph.

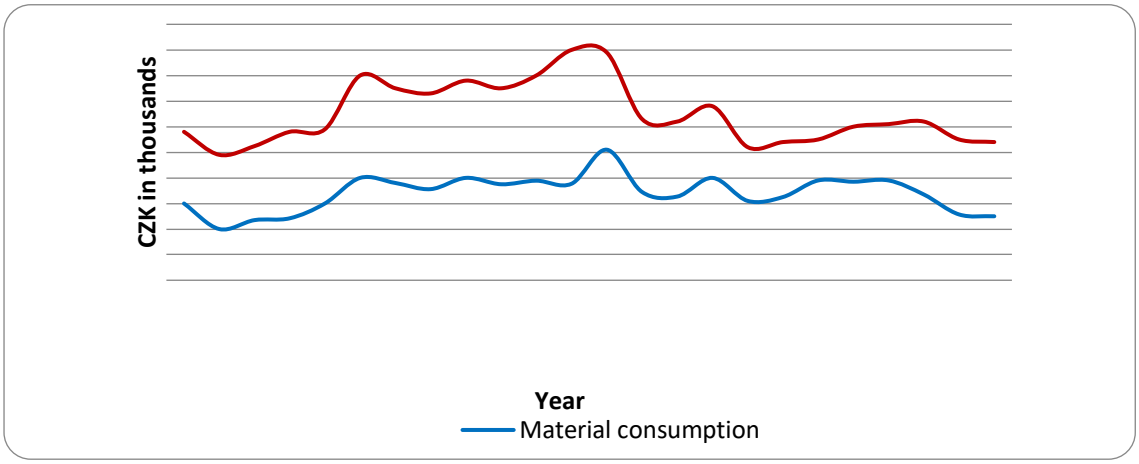
Figure 4: Total debt (%)



Source: Authors based on company annual reports.

The focus is now on the company's material consumption, which does not show an increasing or decreasing trend. However, this may be influenced by the increasing production activity of the enterprise. In order to exclude or confirm this statement, sales of own products and services were included in the analysis of material consumption. The following graph (Figure 5), illustrates the trend in material consumption and sales of goods and services over the period under consideration for the selected enterprise.

Figure 5: Material consumption and sales of own products and services (in thousands)



Source: Authors based on company annual reports.

Figure 5 shows that material consumption follows roughly the same trend as sales of goods and services and that sales exceed material costs in all years of the period considered. However, it cannot be stated that there is a linear increase in sales and the opposite trend in material consumption. The company achieved the highest sales in 2007 (CZK 9,03 billion) and the highest material consumption was achieved a year later, in 2008, with a value of CZK 5,09 billion. To compare material consumption before and after the introduction of the integrated management system in the company, sales were converted to CZK 1 of material consumed. In this comparison, the ratio of material consumption to sales revenue before the introduction of the integrated management system in the enterprise is better. Here, there are 2.066 CZK of sales revenue from the sale of own products and services per CZK of consumed material [23]. The individual data are presented in Table 1 below.

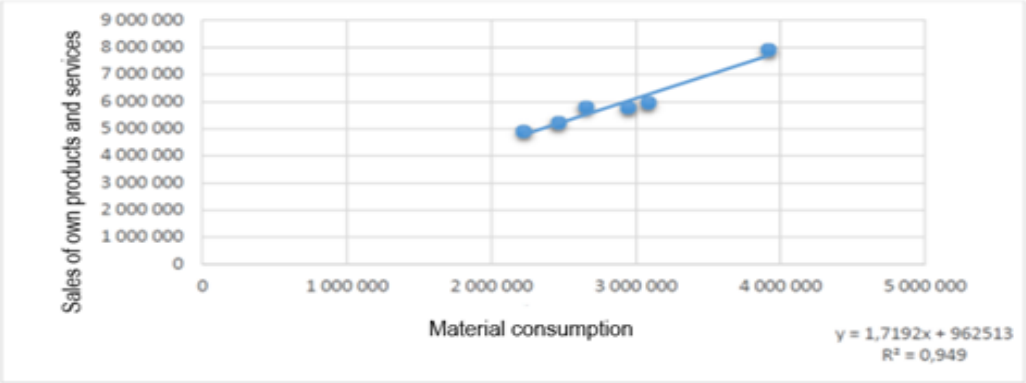
Table 1: Material consumption and sales of products and services before and after the implementation of the integrated management system

Sales of products and services per CZK of material consumed	
Before the implementation of the integreted management system	**After the implementation of the integreted management system**
2,066 CZK	***1,822 CZK***

Source: Authors based on company annual reports.

Furthermore, regression analysis was performed to determine the relationship between material consumption and sales revenue separately for the period before and after the implementation of the integrated management system. For the situation before the implementation of the integrated management system, a linear regression line was chosen with the function prescription y = 1.7192x + 962513. The model found captures 94.9 % of the variability of the variable Y. The correlation coefficient is 97.4 %, which shows a high dependence between material and energy consumption and sales of own products and services. The p-value is 0.099 %, i.e. the value is less than 5 % and hence the resulting model is significant (Figure 6).

Figure 6: Regression of material consumption and sales revenue on product sales before the implementation of the integrated management system

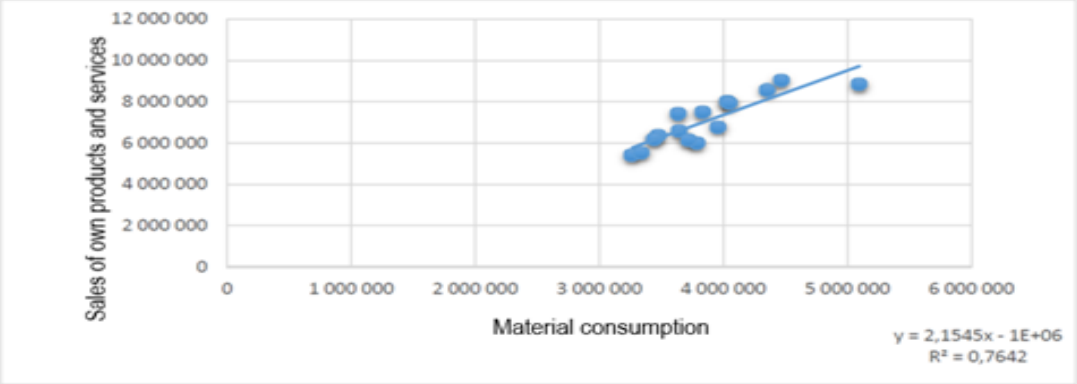


Source: Authors based on company annual reports.

After the introduction of the integrated management system in the company, the situation changed as follows: Again, a linear regression line was chosen. The prescription of the linear function is y = 2.1545x - 1E+06. The model found captures 87.4 % of the variability of the

variable Y. The correlation coefficient is 76.4 %, which reflects the dependence between material and energy consumption and sales revenue from sales of own products and services after the implementation of the integrated management system, but unfortunately, on average, there is an increase in material consumption, so this lower dependence does not reflect the trend of decreasing material consumption. The p-value in this case is also below the 5 % threshold, namely 0.002 %; therefore, the model is highly significant (Figure 7).

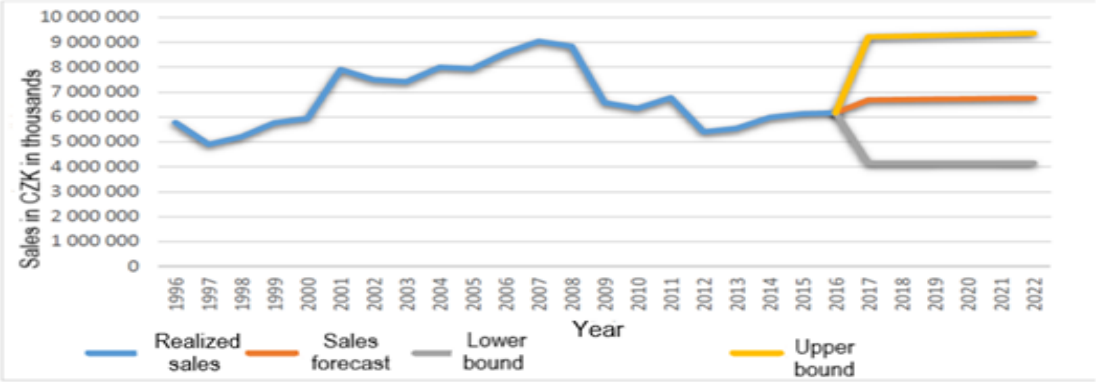
Figure 7: Regression of material consumption and product sales revenue after implementation of the integrated management system



Source: Authors.

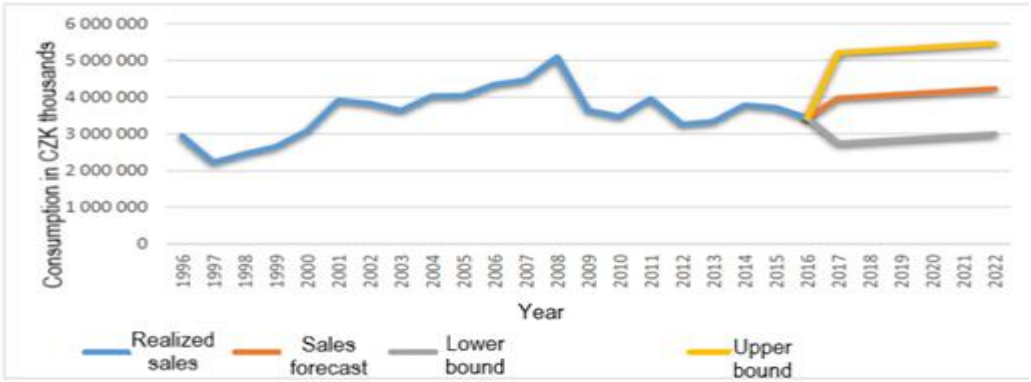
Finally, based on the time series, a forecast was made for the development of both monitored variables for the years 2017-2022. In terms of sales, a very moderate growth is most likely to occur here, while the growth of material consumption is more pronounced. Thus, the trend towards a smaller contribution of sales per unit of material and energy consumed is expected to deepen further. The forecast including lower and upper confidence limits is graphically represented in Figures 8 and 9.

Figure 8: Time series – sales of own products and services



Source: Authors based on company annual reports.

Figure 9: Time series - material and energy consumption



Source: Authors based on company annual reports.

CONCLUSION

The analysis of the economic performance of the company after the introduction of the integrated quality management system did not show as positive results as expected or described in the literature. The analysis of the return on assets, liquidity and total indebtedness of the enterprise does not confirm the above trend of improvement, together with the length of operation of the integrated management system in the enterprise. The same applies to material consumption, which is growing faster than the growth in sales of own products and services. The other ratios examined, i.e. total sales, a number of employees, the average wage of employees, total assets, equity and earnings after tax, grew over the five-year period under review, but at a lower rate than in the five-year period before the implementation of the integrated management system. These inconsistent results may be due to external factors that

cannot be influenced by the enterprise but only mitigated using the integrated management system. In 2007, the economy was at its peak, which explains the high figures in that year, but then a downturn began, with the economic crisis hitting the automotive and construction industries in particular, which had a major impact on the company's business. In that year, demand began to fall at the same time, and the prices of building glass products fell significantly. The increasing consumption of materials can be attributed to the almost annual expansion of production and the establishment of new branches throughout Europe. Furthermore, the period after 2002 was characterised by a recession in the construction industry, rising oil prices and the appreciation of the Czech crown. The company exports around 72 % of its products and was thus negatively affected by the appreciation of the Czech crown. Especially in the eastern market, there was an oversupply of glass on the market during the period under review, and the company thus decided to strengthen sales through marketing and promotion and to pursue a path of improving quality and service.

Even these circumstances do not change the fact that the company evaluates the implementation of the integrated management system as the right step, which has brought more benefits and financial savings than losses, and thus strengthened its competitive position on the market, as well as its reputation among the general public and its own employees. In the future, the company should adhere to its established policy, i.e. sustainable development and streamlining of production, which brings success to the company, and the single integrated management system implemented for the whole company will certainly contribute to this. It should pay more attention to its financial indicators, which in the last years of the period under review show low values and a declining growth rate compared to preceding years.

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ADDRESS & ©

doc. Ing. Kateřina KOVÁŘOVÁ, Ph.D.
Katedra ekonomie a managementu
Fakulta sociálně ekonomická
Univerzita Jana Evangelisty Purkyně
Moskevská 54, 400 96 Ústí nad Labem
Czech Republic
kovarovak@g.ujep.cz

Ing. Veronika VRZALOVÁ
Katedra ekonomie a managementu
Fakulta sociálně ekonomická
Univerzita Jana Evangelisty Purkyně
Moskevská 54, 400 96 Ústí nad Labem
Czech Republic
St16203@students.ujep.cz