The Impact of Quality Management Systems on Financial Situation of SMEs Operating in Group Purchasing Organizations

GRZEGORZ ZIMON
Department of Finance, Banking and Accounting
Rzeszow University of Technology
Al. Powstancow Warszawy 12, Rzeszow 35-959
Poland
gzimon@prz.edu.pl

Abstract: -In order to improve their financial condition small and medium-sized enterprises combine and operate together in various types of multi-stakeholder organizations. Cooperation, for example, within units functioning as group purchasing organization (GPOs) is a great chance for them to improve their performance and financial safety. This is due primarily to the economies of scale in the joint purchases and establishing cooperation and exchange of experiences between group participants. An additional factor that should increase the benefits of companies operating in GPOs are quality management systems. The introduction of such systems should improve control in all areas of business management, which in turn should reduce costs and improve financial results in the long run. The aim of the article is to analyze and assess the financial condition of enterprises operating within group purchasing organizations that have implemented and used standardized quality management systems.

Key-Words: - financial situation, quality management, SMEs, group purchasing organization
JEL Classification: G3;L15;L00

1 Introduction

Increasing competition and trade conflicts that appear in different regions, increase the risk of financial problems in a company. Most often this applies to small and medium-sized enterprises, regardless of the branch where they operate. In a situation when payment jams occur and a powerful investor ceases to pay its liabilities, small and medium enterprises become the first victims. In many studies conducted around the world one can find information that the most bankruptcies are recorded in these groups of enterprises. This is very often caused by the fact that these units do not create any provisions in the event of a deterioration of financial liquidity. They usually operate day by day and often managers of such units are forced to urge their contractors with payment, despite the fact that the payment deadline has not yet expired. To improve their financial situation and operational security, such enterprises are merging and acting together under various types of multi-stakeholder organizations. Working together, for instance, in group purchasing organizations (GPOs), is fashionable and brings many benefits, which include reducing costs of operations, improving financial condition, increasing sales, improving management efficiency and, above all, financial liquidity [1,2,3,4,5,6,7,8]. Joining this type of organization is the first step companies should take to increase their competitive position in the market [9]. Working together and using the economies of scale gives a lot of opportunities for a company to fight for the client. Enterprises obtain low prices of purchased goods, materials and advantageous trade credits, which is the basic weapon in the fight for the client.[10,11,12,13,14]. Managers of enterprises, in spite of a joint action within multi-entity organizations, should continue to try to introduce various types of tools and methods that lead to an improvement in the company financial results. One of the solutions which is to improve the company management process is an introduction of appropriate quality management systems. The introduction of quality management systems should definitely have the positive impact on the efficiency of asset management in the enterprise and on relationships with contractors [15,16,17]. The introduction of appropriate quality management systems may become an element that will make the contractors choose such an entity [18,19]. In addition, an introduction of quality management systems facilitates the control process in the enterprise, which will also positively affect the company financial results. For small and medium enterprises, even a slight improvement in financial results is very important. They become more credible in relations with banks. Strengthening the control process, market position, sales level and improvement of the financial situation may become the factor that will allow the company to obtain favorable bank loans on favorable terms. A bank loan along with a trade credit are the most important financing sources for an enterprise, therefore it is important for the entity to maintain a position that will guarantee a possibility of obtaining a new bank loan at any time or increasing the limit of the existing loan. The aim of the article is to assess the financial situation of commercial enterprises operating in purchasing groups using quality management systems.

2 Quality Management in Companies Operating within Group Purchasing Organizations

According to the authors, an introduction of quality management systems should affect positively the financial situation of individuals, despite the fact that in the first stage of the process it requires large amounts of work and financial resources. This is the biggest barrier for small enterprises. In the group of companies analyzed using quality management systems, turnover over PLN 30 million reaches 18 out of 21 units. The remaining three companies receive revenues in the range of PLN 15-20 million. However, it should be remembered that an introduction of quality management systems should improve the efficiency of business management and improve the quality of service for contractors.

An implementation of the requirements of standardized quality management systems also leads to the organization of basic processes and minimization of signalling errors and mistakes (20,21). Enterprises are obliged to develop well-thought-out procedures, implement improvement actions and carry out regular system reviews (22,23). Quality management is an additional review, control of activities carried out by the company. These are both actions described in the system procedures (audits, quality records, corrective and preventive actions, etc.) and operational procedures (production, logistics, sales, finances or marketing, etc.).(24) Therefore, they should increase employees' involvement in individual processes and minimize losses resulting from employees' negligence. The final result of the reviews should be a program of actions improving all areas of the organization operation both in the short and long time horizon (25). Quality management systems should after carrying out activities improving individual areas of the enterprise. The simplest tool that will allow assessing what benefits resulted from the use of quality management systems is the assessment of the company's financial situation.

Most often, the financial situation is examined in four areas:

- Financial liquidity
- Profitability
- Efficiency
- Indebtedness

In addition, it is worth comparing the change in the dynamics of sales revenues and the costs of the core business.

The table below presents the possibilities of introducing quality management systems in individual areas of corporate finance management.

Table 1. The possibilities of introducing quality management systems in individual areas of corporate finance management

Area	Advantages
Financial liquidity	Faster cash flow Faster turnover of receivables compared to the rotation of liabilities towards suppliers
Profitability	Costs reduction, increase in sales and profits increase
Management efficiency	Faster collection of receivables Inventory level optimization Limitations of overdue liabilities Increase in profits and increase in equity
Indebtedness	

Source: author's own research

Incomes and expenses were excluded from the table since they are the effect of quality management systems in the areas discussed and presented in table 1. On the basis of table 1, it can be noted that the orderly and systematic control in operations related to sales, debt collection, settlement of liabilities, inventory management allows primarily reducing costs. The high quality of the services provided is an opportunity to increase sales. A decline in costs of sales increase should be reflected in the financial results. The increase in profits is an opportunity for changes in the structure of enterprise financing and changes in short-term financing for the increase of a long-term company, e.g. long-term loans. In addition, an increase in equity is an opportunity to improve financial liquidity. The increase in profits will primarily be reflected in the results of profitability ratios.

In these five areas, an analysis will be carried out of the impact of quality management systems on the financial position of traders. A detailed analysis area is shown in the figure 1 below:

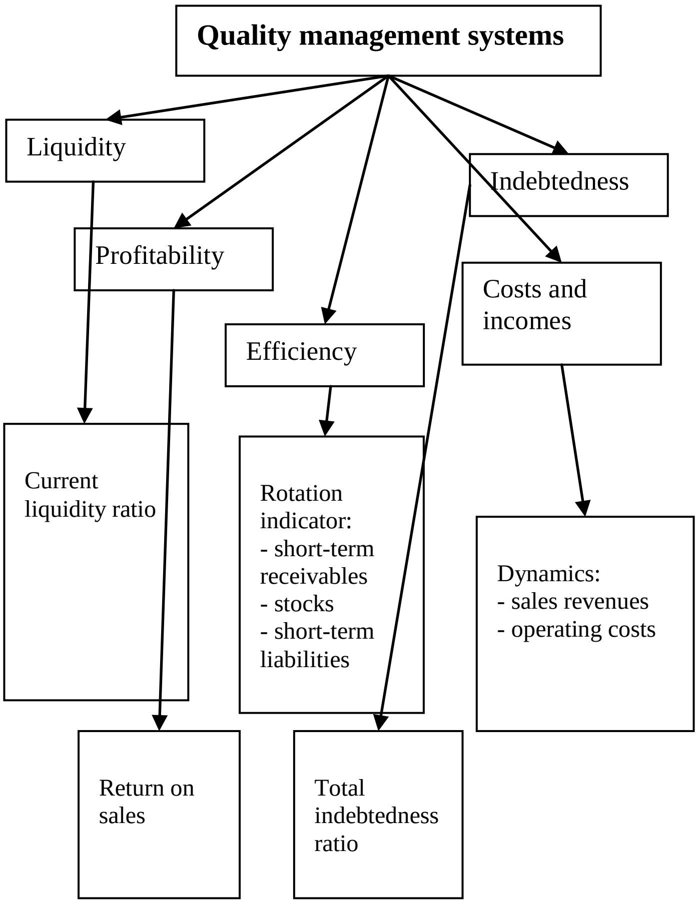

Fig.1. The impact of quality management systems on particular groups for assessing the financial situation.

There are some possibilities to improve financial liquidity in the case of joining purchasing groups. Working together and using the economies of scale, joint purchases, benchmarking, mutual transactions certainly allow optimizing the level of financial liquidity [22] and minimizing the risk of the inability to settle current liabilities. An additional factor that should limit the errors occurring in the area of financial liquidity management is the introduction of standardized quality management systems that can exert a positive influence on receivables from customers, inventories and current liabilities. The most important elements that shape the level of financial liquidity. The idea of standardized quality management systems is to increase the effectiveness and efficiency of the company operations by implementing process management, standardizing activities to minimize errors, reduce costs, optimize logistics operations and more control over key processes [23,24,25,26].Quality management systems should, therefore, have a positive effect on financial liquidity. The purpose of the article is to determine the impact of quality management systems on the financial liquidity of companies operating in purchasing groups. The research was carried out on a group of 38 Polish commercial enterprises operating in the purchasing group operating in the construction industry. The research period covered the years 2014-2016.

Basic indicators from particular areas were selected for the analysis of the financial situation. This is due to the fact that small enterprises do not have departments dealing with financial analysis, controlling. The use of basic indicators gives an opportunity to perform a quick assessment in principle to every business manager.

3 Research Methodology

The research group included 73 enterprises operating in two Polish branch group purchasing organisations. The groups evaluated are the only GPOs operating in this branch in Poland. They gather 80 enterprises, and 73 entities were analyzed. There are many other purchasing groups associated with this branch, but they also include units from other industries. The enterprises were divided into units that implemented standardized quality management systems (mainly according to ISO 9001), it is a group of 21 enterprises. The second group consists of 52 companies that have not decided to use quality management systems. Using the appropriate financial measures derived from the ratio analysis and appropriate statistical methods, the financial standing of enterprises was assessed. The analysis was made on the basis of financial data for the years 2015-2017. The analyses of financial ratios and statistical methods were used as the basic research tools. In tables of descriptive statistics characterizing the distribution of indicators in both groups in particular years there were such measures as: average, standard deviation, median and minimum and maximum.

4 Results

The basic measure of financial liquidity according to the ratio analysis is the current financial liquidity rate. Table 2 presents the average results for current financial liquidity ratios.

Table 2. Average results for current financial liquidity ratios

Enterprises not using quality management systems	$\bar{x}$	Me	*s*	min	max	p
2015	3.28	2.33	2.60	1.10	15.0	
2016	3.40	2.10	2.29	1.02	11.8	
2017	3.18	1.91	2.55	0.90	8.05	
Enterprises using quality management systems	$\bar{x}$	Me	*s*	min	max	
2015	3.22	3.16	1.21	1.20	5.4	0.7002
2016	3.15	3.05	1.33	1.20	9.0	0.7903
2017	2.61	2.28	0.98	1.30	6.2	0.4907

Source: author's own study

The companies using quality management systems achieve definitely higher results here. The results for the liquidity ratio in 2015 and 2016 were definitely higher in the group of companies applying quality management systems (Me). The difference between the two groups was close to the level of statistical significance (*p*).
The second element of the area analyzed is strongly related to financial liquidity because it relates to the level of indebtedness. Table 3 presents the results for the general debt ratio.

Table 3. Average results of debt ratios in the enterprises analyzed

Indebtedness ratio	Enterprises using quality management systems		Enterprises not using quality management systems	
	$\bar{x}$	Me	$\bar{x}$	Me
2015	0.48	0.47	0.51	0.49
2016	0.49	0.50	0.53	0.51
2017	0.47	0.48	0.55	0.52

Source: author's own study

The analysis conducted showed that in enterprises using quality management systems, the level of indebtedness does not exceed 50%. The confirmation of these results are the results of high financial liquidity in this group of enterprises. In the enterprises analyzed, therefore, the financing of liabilities for equity is limited. The increase in equity may mean the appearance of profits in enterprises that are not fully paid to the owners only stay in the enterprise.

Another element that was compared was about the dynamics of sales revenues and the dynamics of costs. The details are presented in table 4 below.

Table 4. Dynamics of sales revenues and development activity costs

	Enterprises using quality management systems (n=21)		Enterprises not using quality management systems (n=52)	
Measure for the years 2017-2015	**Faster revenue growth over costs**	**Faster revenue growth over costs**	**A faster cost reduction compared to revenues**	**A faster cost reduction compared to costs**
Enterprises not using quality management systems	21	0	0	0
Enterprises not using quality management systems	46	2	3	1

Source: author's own study

The analysis presented clearly indicates the existence of profits in the analyzed period in the assessed enterprises. In several cases, in companies that do not apply quality management systems, a deterioration in the ratio of revenues compared to costs was observed. Then the profitability ratios were analyzed, details are presented in table 5below.

Table 5. Profitability of sales

Return on sales	Enterprises using quality management systems (n=21)	Enterprises not using quality management systems (n=52)
	$\bar{x}$	$\bar{x}$
2017	0.07	0.06
2016	0.08	0.08
2015	0.09	0.08

Source: author's own study

The analysis conducted showed slight differences in the profitability of sales in the analyzed enterprises. The introduction of quality management systems does not allow obtaining such benefits that will cause a high increase in profitability. This is primarily due to the fact that in general, in the business enterprises in the structure of costs of operations, the largest share, often accounting for approximately 90% of the cost, is occupied by the item value of goods sold at the purchase price. The influence of quality management systems on the price of purchased goods or materials resulting from negotiations on the line producer of the central unit of the group cannot be documented. The impact of quality management systems is in turn visible in the remaining group of costs, whose share in the overall structure is small.

The further part of the analysis was to answer the question whether the introduction of quality management systems had a significant impact on the basic elements shaping the level of enterprise management efficiency. The first element that was examined was the analysis of the rotation of short-term receivables. The results for the receivables turnover ratio in the years 2015-2017 were higher in the group of enterprises that do not use quality management systems. The difference between the two groups was close to the level of statistical significance (p = 0.0802 for 2016, p = 0.0781 for 2017 and p = 0.0711 for 2015). Detailed results are presented in table 6.

Table 6. Average results for receivables turnover rates in days

Debt rotation indicator in days	Enterprises not using quality management systems (n=52)					Enterprises using quality management systems (n=21)				
	$\bar{x}$	Me	s	min	max	$\bar{x}$	Me	s	min	max
2015	70.4	74.4	24.1	18	127	60.5	63.8	22.9	23	97
2016	72.5	75.1	20.5	14	119	58.1	60.4	18.5	25	108
2017	80.1	78.9	2.3	9	140	50.8	54.2	21.5	15	90

Source: author's own study

The next indicator concerned the dates of repayment of liabilities, the ratio of liabilities turnover in days. The detailed results are presented in table 4. The results for the liabilities turnover ratio in days in 2015-2017 were higher in the group of enterprises that do not use quality management systems. The difference between the two groups was close to the statistical significance level only in 2016 (p = 0.0812 for 2016). The detailed results are presented in table 7.

Table 7. Average results for the liabilities turnover ratio in days

Debt rotation indicator in days	Enterprises not using quality management systems (n=52)					Enterprises using quality management systems (n=21)				
	$\bar{x}$	Me	s	min	max	$\bar{x}$	Me	s	min	max
2015	66.1	60.8	32.1	10	128	50.9	48.2	19,2	18	86
2016	74.5	69.5	27.3	16	139	54.3	51.6	16.2	36	98
2017	70.2	63.1	19.9	22	123	57.1	53.8	17.3	28	80

Source: author's own study

The last of the analyzed items directly affecting financial liquidity were inventories. in the case of inventory turnover in days, no statistically significant differences were observed. Average results in particular years are presented in table 8.

Table 8. Average results for the inventory turnover ratio in days**.**

Inventory turnover ratio in days	Enterprises not using quality management systems (n=52)	Enterprises using quality management systems (n=21)
2015	71	73
2016	75	72
2017	70	70

Source: author's own study

The next step to determine the impact of quality management systems on the financial liquidity of enterprises was to examine the correlation between individual indicators. The analysis was carried out for data from 2015-2017, determining the Spearman rank correlation coefficient matrix (R) between pairs of indicators. Financial liquidity is closely connected with the level of liabilities in a very strong way:

• 2015, (R = -0.94)

• 2016, (R = -0.90)

• 2017, (R = -0,91)

Of course, the negative sign of coefficients results from the negative significance of the level of liabilities. In view of such a strong correlation, it can be stated that the most important impact on the management of financial liquidity of enterprises is not the individual current assets but short-term liabilities.

5 Conclusion

The research carried out on a group of 73 operating companies showed that the financial situation of entities applying quality management systems was beneficial. However, compared to companies that do not use quality management systems, there are few areas where the use of quality management systems improves the element. An important observation is the fact that quality management systems are popular in medium-sized units generating turnover above about PLN 40 million (about EUR 8 million). Smaller individuals rather do not use such methods as they consider them unnecessary. The most important influence of quality management systems is observed in the area related to the management of receivables from customers and liabilities to suppliers. The efficiency of managing receivables and liabilities is improved. In the case of inventory management, there were no significant differences. The improvement in the efficiency of managing receivables and liabilities resulted in a decrease in over-liquidity. A decrease in the level of liquidity allowed reducing the level of costs, however their share in the structure is small, which is why it has little impact on profitability results. Profitability ratios are at a similar level. When assessing the level of indebtedness, the lower results of the debt ratio are obtained by entities using quality management systems.

To sum up, a small company is reluctant to apply quality management systems. However, the use of such systems is a great opportunity to improve management efficiency. It may seem that in the long run, the positive effects that result from the use of quality management systems may translate into a visible increase in profitability, i.e. this element of the court is the most important for business owners.

References:

[1] F. Schotanus, J. Telgen, and L. de Boer,L, Critical success factors for managing purchasing groups, *Journal of Purchasing & Supply Management* 16, 2010, pp.51-60.

[2] J. Nollet, and M.Beaulieu, *Should an organization join a purchasing group?* Supply Chain Managament, Volume 10, Issue 1, 2005, pp.11-17.

[3] W. Doucett, Influences on member commitment to group purchasing organizations, *Journal of Business Research*, Volume 40, Issue 3, November 1997. pp. 183-189 https://doi.org/10.1016/S0148-2963(96)00234-2.

[4] R.D. Blair, and C.P. Durrance, Group purchasing organizations, monopsony, and antitrust Policy, *Managerial and Decision Economics* , 2014, Volume 35, Issue 7, 2013.

[5] M. Chalkley, and I. Sanchez, Collective Purchasing of Health Care A2 -Culyer, Anthony J, *Encyclopedia of Health Economics*, Elsevier, San Diego, 2014, pp. 108-110.

[6] G. Zimon G., Model branżowej grupy zakupowej w przemyśle chemicznym, Przemysl Chemiczny,Volume 97, Issue 11, November 2018, pp. 1808-1810.

[7] R. Inderest, C. Wey, Buyer power and supplier incentives, *European Economic Review*, *Volume 51, Issue 3*, April 2007, pp. 647-667.

[8] Li, L., Cooperative purchasing and preactive inventory sharing - Channel balancing and performance improvement, *European Journal of Operational Research* 278, 2019, pp. 738–751.

[9] G. Zimon, and D. Zimon**,** The Impact of Quality Management Systems on Financial Liquidity in Companies in Group Purchasing Organizations, *WSEAS Transactions on Business and Economics*, Volume 16, 2019, pp. 163-170.

[10] O.S. Mikelsen, and J.S. Arlbjørn, *Purchasing consortia: when money does not make the whole talk*, *International Journal of Procurement Management* , Volume 8, Issue 3 , 2015, pp.326-343.

[11] F. Rozemeijer, How to manage corporate purchasing synergy in a decentralised company? Towards design rules for managing and organising purchasing synergy in decentralised companies. *European Journal of Purchasing and Supply Management* 6 (1),2000, pp. 5–12.

[12] G. Zimon , The Influence of a Branch Group Purchasing Organization on the Development of Small and Medium-sized Enterprises, *Eurasian Business Perspectives* 11/2, 2019, pp. 145-153.

[13] F. Schotanus, and J. Telgen, Developing a typology of organisational forms of cooperative purchasing, *Journal of Purchasing and Supply Management*, 13, 2007, pp. 53-68.

[14] G. Zimon, The impact of quality management on inventories in commercial enterprises operating within group purchasing organizations, *Problems and Perspectives in*

Management, Volume 17, Issue 3, 2019, pp.362-369.

[15] L.M.C.M. Fonseca, J.P. Domingues, P.B. Machado, and M. Calderón, Management system certification benefits: where do we stand?. *Journal of Industrial Engineering and Management*, *10*(3), 2017, pp.476-494.

[16] A. P. Kakouris, and E. Sfakianaki, Impacts of ISO 9000 on Greek SMEs business performance. *International Journal of Quality & Reliability Management*, *35*(10), 2018, pp.2248-2271.

[17] D. Zimon, Influence of Quality Management System on Improving Processes in Small and Medium-Sized Organizations, *Quality – Access to Success*, Vol. 17, No. 150, 2016, pp. 61-64.

[18] G. Zimon, An assessment of financial liquidity of Polish pressure aluminum casting houses, *METAL 2018 - 27th International Conference on Metallurgy and Materials, Conference Proceedings*, 2018, pp. 2128-2133.

[19] G. Zimon, and D.Zimon, An assessment of the influence of nominalized quality management systems on the level of receivables in enterprises operating in branch group purchasing organizations, *Quality - Access to Success*, Volume 20, Issue 169, 2019, pp. 47-51.

[20] M. Zizka, P. Budaj, and P. Madzík, The adequacy of an organisation's measurement system in quality management. *Quality Access to Success*, 17(155), 2016, pp.60-62.

[21] D.I Levine, and M.W Toffel,. Quality management and job quality: How the ISO 9001 standard for quality management systems affects employees and employers. *Management Science*, 56(6), 2010, pp.978-996. http://dx.doi.org/10.1287/mnsc.1100.1159.

[22] L.M, Fonseca, and J.P Domingues, Empirical research of the ISO 9001: 2015 transition process in Portugal: Motivations, benefits, and success factors. *Quality Innovation Prosperity*, *22*(2), 2018, pp. 16-46.

[23] K. Zgodavova, M. Kisela, and A. Sutoova, Intelligent approaches for an organisation's management system change. *The TQM Journal*, 28(5), 2016, pp.760-773. https://doi.org/10.1108/TQM-10-2015-0130.

[24] D. Zimon, and G. Zimon, The Impact of Implementation of Standardized Quality Management Systems on Management of Liabilities in Group Purchasing Organizations , *QUALITY INNOVATION PROSPERITY-KVALITA INOVACIA PROSPERITA*, Volume: 23, Issue: 1, 2019, pp. 60-73.

[25] S. Dellana, and J. Kros, J, ISO 9001 and supply chain quality in the USA. *International Journal of Productivity and Performance Management*, *67*(2), 2018, pp. 297-317.