Total Quality Management,
Vol. 15, No. 2, 173–189, March 2004

Routledge
Taylor & Francis Group

Motivation and Efficiency of Quality Management Systems Implementation: a Study of Lithuanian Organizations

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ABSTRACT *The article presents the results of the study about the motives and efficiency of Quality Management System (hereafter, Quality System—QS) implementation in Lithuanian companies that have obtained ISO 9000 certificates. Thirty-one Lithuanian companies (24% of all certified companies at the time of the research) have presented the answers to the prepared questionnaire. The main purpose of the questionnaire was to find out why Lithuanian companies seek the implementation and certification of QS in accordance with the requirements of the ISO 9000 series of standards and what has changed after the QS implementation. Furthermore the results of the research were compared with similar studies performed in the other European countries. The performed research revealed that the implementation of QS mostly results in the benefits of an intangible nature that are internal to the company. In addition, although the main reasons to start implementing QS are the expectations of the external advantages, the implementation results mostly in the increase of internal benefits such as an improvement in the definition of the responsibilities and obligations of the employees, a decrease in the non-conformities, better communication among the employees, and increased efficiency.*

KEY WORDS: Quality management systems, ISO 9000, total quality management, environmental management system, ISO 14000, competitiveness, efficiency

Introduction

> ... The principal motivation for pursuing quality certificate (ISO 9000) was the ability of the certificate to open customers' doors that were previously closed, or would close, if quality certificate were not achieved ... (Dick, 2000)

The globalization of the world economy together with the expansion of international trade has lead to the processes of quality internationalization becoming a crucial element of companies' competitiveness. Processes of quality internationalization are displayed by wider application of uniform methods, principles and criteria for formation of quality policy, creation of international accreditation, notification and quality certification systems in various countries. Therefore, the strategy of Lithuanian export growth together with the national quality programme give special attention to the development of product quality assurance

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1478-3363 Print/ 1478-3371 Online/04/020173-17
DOI: 10.1080/1478336032000149018

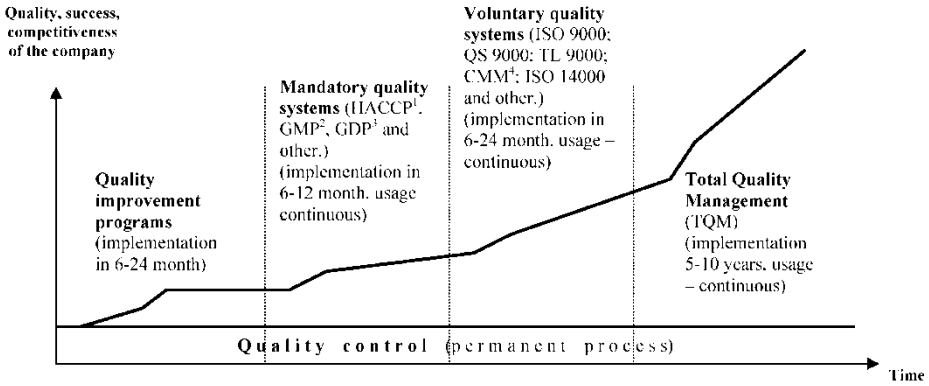

Figure 1. Effectiveness of quality management tools.

Notes: [1]HACCP—Hazard Analysis Critical Control Points
[2]GMP—Good Manufacturing Practice
[3]GDP—Good Distribution Practice
[4]CMM—Capability Maturity Model
[5]The measure of quality, success and competitiveness of the company can be, for example, the decrease in non-conformity of products, the increase in labour productivity and sales volume, new markets conquered, etc.

systems as well as to promotion of the certification of products and quality systems.

The conformation and application of standardized quality system models (ISO 9000) and Total Quality Management (TQM) in the business and other areas are considered to be one of the most important recent phenomena in quality management development and globalisation (Kanji & Asher, 1996; Ruzevicius & Makijovaite, 1998; Dick, 2000; Dale *et al.*, 2001). Figure 1 presents comparative assessment of the effectiveness of various quality management tools. It reflects the fact that TQM and quality system implementation has the highest impact on the quality improvement of companies' operations and products (Adomaitiene & Ruzevicius, 1999). Furthermore, quality system implementation and certification for the most of companies are the last transitive period while creating one or the other model of TQM. Quality systems designed according to the new ISO 9001: 2000 model, which combines the main TQM principles, are more suitable for the achievement of the above purpose.

The standardized models of quality systems were designed as a supplier–client–customer relationship regulation mechanism and as the part of an external quality management idea. The main purpose of quality system implementation is to prove to the customer the Company's ability to control properly all quality factors, which ensure the conformity of certain quality measures to specified requirements. Effectively, operating a quality system allows a reduction in costs, increasing the company's economical stability, competitiveness and prestige, as well as extending the number of customers, meeting better the environmental requirements, etc.

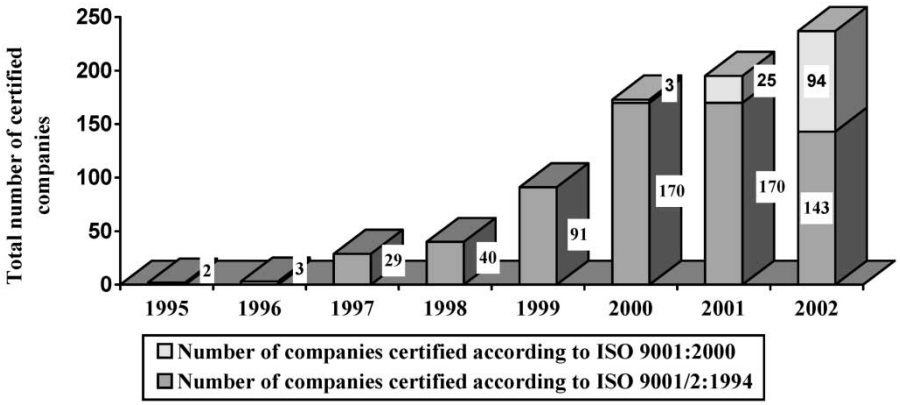

Figure 2. The development of quality management systems in Lithuania (Lithuanian Standardization Department's data on 1st September 2002).

The tendency of considering a certified quality system not as a special distinctive feature of the company, but as a natural and obligatory element of an overall management system is seen in international business. The European Union has announced the certification of quality systems as the strategy for elimination of barriers to free trade. A major proportion of leading western companies have chosen as partners or subcontractors only those firms having certified quality systems. There are about 600 000 certified entities in the world; however, only 237 in Lithuania—that is, about 0.4% of all Lithuanian enterprises (see Figure 2).

Objectives and Methodology of the Study

The objective of the study was to determine the motives that encouraged Lithuanian entities to implement quality systems and evaluate their implementation benefits. The implementation of the quality system is the process requiring not only goodwill efforts but significant financial investment as well. Every company dedicating financial and other recourses to the new project expects a return on those investments. The implementation of a quality system is not the exception. Similar studies in Lithuania have not yet been performed. Therefore, the authors expect that the results of their study would be interesting to quality managers as well as to those companies that are going to implement quality system, and so would have some theoretical and methodical importance.

The object of the study is Lithuanian companies that have implemented quality systems in accordance with the requirements of the ISO 9000 series of standards.

The article was prepared using the analysis, comparison and generalization of scientific literature.

The quantitative method of sending questionnaires by post was used for the purpose of the study. The respondents were chosen from the official list of certified Lithuanian entities issued by the Lithuanian Standardization Department. The

date of obtaining the quality system certificate was the criteria for selecting the respondents. The selected companies were the ones that had been operating a quality system for more than a year, as they, contrary to those that had just finished implementation, were already able to identify and assess the benefits of the implemented system. The intention was to quiz about 25% of study population.

The population of the study was 125 Lithuanian companies. The study was carried out between March 2000 and April 2001. The prepared questionnaire was sent to 40 companies, personally addressed to heads of quality departments, with the invitation to participate in the study. Thirty-one organizations (24% of the total study population) agreed to participate in the study and provided the answers to the questionnaire. We consider that the quizzed companies basically represent the study population, according to the nature of their operations and size. Such sampling is satisfactory for getting not less than 95% of plausibility of research results (Kruopis, 1997).

The questions in the questionnaire were divided into four sections: questions regarding the motives of system implementation, questions regarding the implementation benefits, questions regarding general information about the company and questions regarding the quality management system link to TQM. When making this questionnaire, closed questions were used: the proposed choice of answers was prepared after analysis of scientific literature about the motives of quality system implementation and the effectiveness of the system. A standardized choice of answers makes the summary of questionnaire results easier and saves time for respondents when they fill out the questionnaire. However, the usage of closed answers limits the objectivity of study results: when answering questions, respondents often choose the easiest way—they pick one of the proposed choices even though it cannot fully represent the real situation in the company, and respondents do not bother to provide unique and specific observations. When offering possible answers about the benefits of the system, internal and external aspects on the company were taken into account.

The main task of the study was to determine the benefits, which the implemented quality system has brought to the company and to find out whether the companies apply formal methods for the evaluation of system effectiveness; that is, whether they keep quality cost accounting, whether they analyse it and whether they compare the results of performance variation with system implementation. Moreover, with the help of the questionnaire, the authors tried to investigate how companies, whose main goal is satisfying customer needs, determine these needs, whether companies use a certificate as a mean of advertising, whether they plan to implement environmental systems in accordance with ISO 14000 standards.

The questionnaire did not ask respondents to rank the chosen answers or to disclose the priorities of their motives. The assumption that all the respondents could choose every proposed answer alternative was used when processing of the results. The answer distribution percentage was derived by calculating the proportion of chosen answer alternatives from the whole number of respondents.

The published results of other researches, which were conducted in Western

Europe, were used in the questionnaire set-up process as well as for the interpretation and comparison of study results.

Research on quality systems and their certification was conducted in the European Union in 1994–1996 at the request of the European Commission (hereafter, EC research). The data for this research were gathered during the unofficial interviews with representatives of different business areas as well as with the help of the answers to the questionnaires that were distributed to the certified and certifying companies. In 1994, when the first part of the research was carried out, the questionnaires were sent to 2877 companies in 12 EU countries. 18.4% of respondents answered. Moreover, 24 certifying authorities were questioned. The second part of the research, in 1996, was dedicated to the determination of the reliance on the quality certificates. The questionnaires were sent to 3121 certified companies in 15 EU member states. Answers from 12% were received (European Commission, 1997).

In 1992, at the request of Lloyd's Register Quality Assurance Ltd (LRQA), an independent market research organization conducted a study (hereafter, Lloyd's research) on what reasons companies seek a quality certificate and what internal and external advantages the acquired quality system certificate contributes. The data for the research were gathered in the interviews with 400 quality managers and top management representatives from the LRQA client database (Osman, 1996).

In 1998, in Spain, 900 companies having ISO certificates were chosen for research on the benefits of the quality system implementation. 288 organizations (32%) participated in the research. The authors—Casadesus & Gimenez—published the results of their research (hereafter, Casadesus & Gimenez research) in 2000 (Casadesus & Gimenez, 2000).

In the current article, when arriving at their conclusions, the authors compare the results of the researches carried out by the above-mentioned authors among Western Europe entities with the outcome of the investigation into Lithuanian companies.

The Results of the Study

Reasons of the Introduction of Quality Systems (QS)

When naming the motives of quality system introduction, the companies indicated both internal and external factors. Only a few companies related QS implementation with the possibility of exporting their production to foreign countries or the increase of their current market share (see Figure 3). The majority of the companies expected stability and consistency from the quality systems and stressed the fundamental principles of the quality management system concept—the production of constant-quality goods and the satisfaction of customer needs. However, only 14.3% claimed that QS could have helped to lower production costs (see Figure 3). Two companies mentioned the requirement of the clients as the main motive; a few said that all specified choices characterize the reasons of their decision. The distribution of answers to the question did not confirm the hypothesis raised at the beginning of the study that the main reason

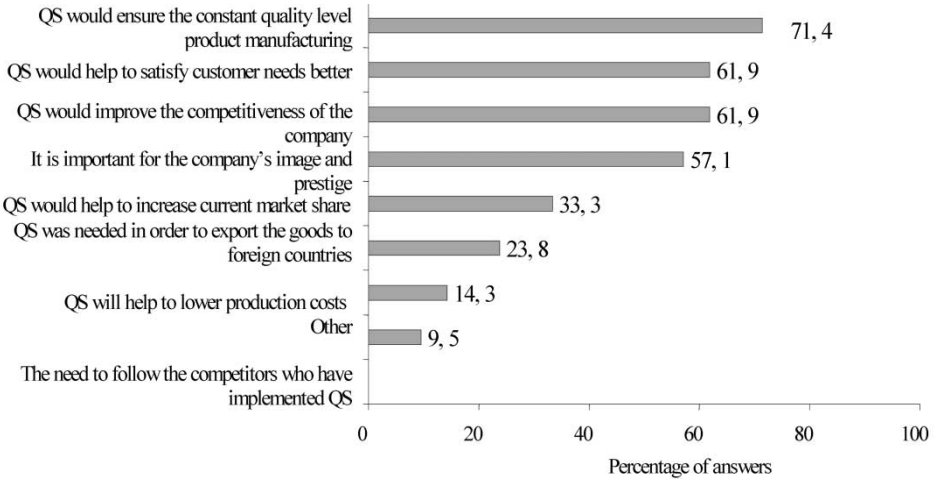

Figure 3. The reasons that stimulated Lithuanian companies to implement QS.

for quality system implementation is the necessity of the certificate to export production abroad.

It is worthwhile mentioning that, of eight companies, which export more than 50% of their production, not a single one claimed that they needed a quality system certificate for working in foreign markets. This fact either discloses the inconsistency of the respondents and their unwillingness to give true motives or shows that the certificate does not have a decisive importance when entering foreign markets.

When analysing the researches conducted in other European countries it is worth noting that none of the previously mentioned researches aimed to investigate why companies started quality management system implementation; rather, it was questioned why companies strive for QS certification. The EC research (European Commission, 1997) determined that the fundamental motives that stimulated companies to certify QS were:

- Customer request/pressure (15%).
- Competitiveness improvement (14%).
- The need to improve current QS (13%).
- The need for higher internal effectiveness (10%).
- Tendencies in the European markets (7%).
- Marketing goals (6%).

Lloyd's study has once more confirmed the previously mentioned reasons and determined that external pressure on the market was the major driving force promoting the pursuit of QS certification. Moreover, the majority of the respondents, by not having a QS certificate, would lose their opportunity to take part in order tenders (Osman, 1996). It is worth noting that the internal benefit for a company was less important when deciding to certify QS.

Results of Quality System Implementation

Although the companies that were implementing QS were not likely to think that QS would help to lower production costs (Figure 3), when answering the question about QS implementation results, they point out the decrease in production defects (85.7%) and the increase in labour productivity (14.3%) (see Figure 4

Non-conformity of products is the first important quality indicator. The decrease in non-conformity products means that companies have fewer goods to repair, reproduce, utilize or sell at lower prices and they have less waste in the production process—and this allows the companies to increase their production effectiveness and have resource savings. It means that, even though the potential decrease in the production costs did not encourage starting up QS, the implemented system created preconditions of increasing the profit of the company. Of the companies identified, 61.9% said that they expected that QS will increase their competitiveness (see Figure 3), but only 9.5% have chosen the answer 'clients shifted from competitors' (see Figure 4). This led us to conclude that QS partly did not justify the expectations, that it helped to strengthen the position in the market, but did not help to recapture market from the competitors. However customers' satisfaction, quality of products and services are the other important quality indicators of a company's activities. Quantitative and qualitative researches into customers' satisfaction, carried out by the most Lithuanian companies are not satisfactory.

Almost one third of the companies claim that QS implementation increased sales volume (see Figure 4). One fifth of the questioned companies indicated that sales increased about 20%, while others claim that such calculations were not carried out and that 'it is hard to unambiguously answer, because the production changed all the time, the old products were modified and new ones appeared' and that 'even though the sales increased by 30%, it is hard to evaluate what

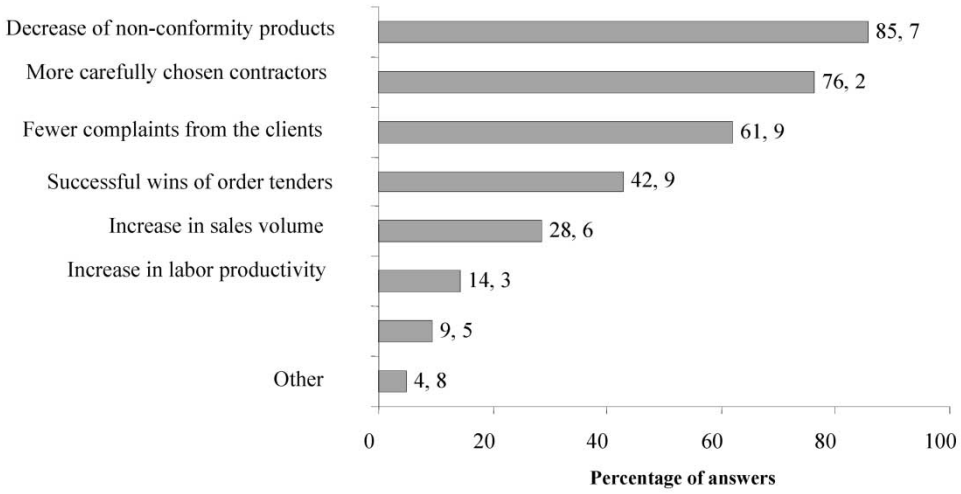

Figure 4. The results of quality management systems implementation.

Table 1. Comparison of results of QS implementation (in the order of priority)

EC research	Lloyd's research	Casadesus & Gimenez's research	Research of Lithuanian companies
1. Improved perception of quality significance	1. Better management control	1. Decreased number of errors and defects	1. Better knowledge of duties and obligations
2. Clearer duties of the employees	2. Stableness/ consistency in the whole organization	2. Guaranteed order fulfilment	2. Reduced number of defects
3. Better employee job involvement	3. Improved service of clients	3. Reduced quality costs	3. Increased clients' reliance
4. Clients' confidence	4. Increased effectiveness	4. Improved job satisfaction	4. Reduced complaints from clients
5. Increase of internal effectiveness	5. Reduced wastage	5. Reduced complaints from clients	5. Improved communication between employees
6. Image improvement	6. Improved employee motivation	6. Increased market share	6. Won tenders for orders

share of increase is directly related to the QS implementation'. This leads to the conclusion that the notion that QS improves sales volume is based only on guesses and subjective opinion.

Table 1 presents the comparison of the QS implementation results specified by Lithuanian and foreign companies. The information gathered during a survey of Lithuanian companies and presented in the table 1 was also confirmed by the results of an external audit of quality management systems.

EC research concluded the following results of QS implementation: improved perception of quality significance (16%), clearer duties of the employees (11%), better employee job involvement (9%), clients' confidence (9%), internal effectiveness (8%), image improvement (7%) and regular fulfilment of tasks (6%) (European Commission, 1997). The respondents of Lloyd's research claim that QS created conditions for better management control (86%), that QS enabled them to supply a better service for the customer (73%), that it increased effectiveness (69%), decreased costs (40%) and increased employee motivation (50%) (Osman, 1996). The EC research, as well as Lloyd's research, concluded that QS gives more internal than external benefits.

Casadesus & Gimenez investigated whether QS was a reason for the following internal company benefits: the standardization of job procedures (33%), the determination of employee duties and obligations (19%) was improved, employees were better involved into the job (11%) and improvization was reduced in the work (7%).

Moreover, the errors and defects in the production process were markedly reduced; there appeared possibilities to shorten the time of the product to the client and to lower production costs. Thirteen percent of respondents declared that QS increased quality management costs, while 60% declared contrarily. As for the external benefits to the companies, Casadesus & Gimenez identified better response to client needs (34%), entering of the new markets (21%), improved relationship with the clients (18%), and a decreased number of client's audit (8%). The investigated organizations responded to the question of how QS affected the companies' clients by claiming that customer satisfaction improved, the number of customer complaints decreased and clients repeatedly purchased the supplied products (Casadesus & Gimenez, 2000).

The results of all three researches are in line with the tendency that, although the initial motives to certificate QS are external-benefit oriented, the internal benefit of the introduced system is evident for the company. On the other hand, both EC research authors and Casadesus & Gimenez pointed out in their conclusions that companies do not always gain the realized improvement—often QS results in a better image of the company, but not in a realized benefit.

When identifying the changes in the company after QS implementation, the respondents in Lithuania stress improved communication and better job fulfilment (see figure 5) in the first place—this confirms one more advantage of QS—the system helps reduce the confusion in the job and decreases the number of errors that occur due to unclear duties and obligations. Moreover, if, after QS implementation, defects are identified when they appear (90.5%, Figure 5) and not in the final product, this helps avoid resource and work-time wastage.

How does QS affect the employees of the company? Respondents indicated that employees fulfil their duties with more responsibility and do their best in order to achieve the goals of company's quality policy (see Figure 6).

If the management of the company has really succeeded in sharing the idea of quality seeking among all employees, and succeeded in proving the benefits of

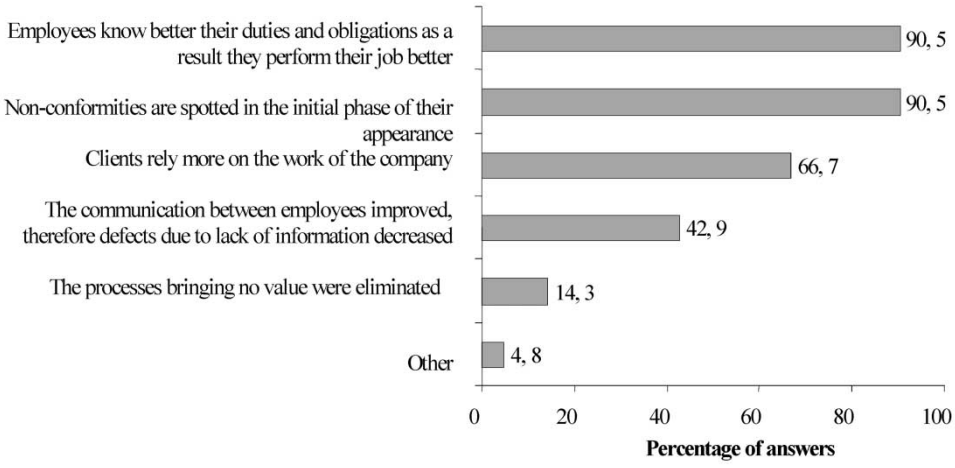

Figure 5. Changes in the company after implementation of QS.

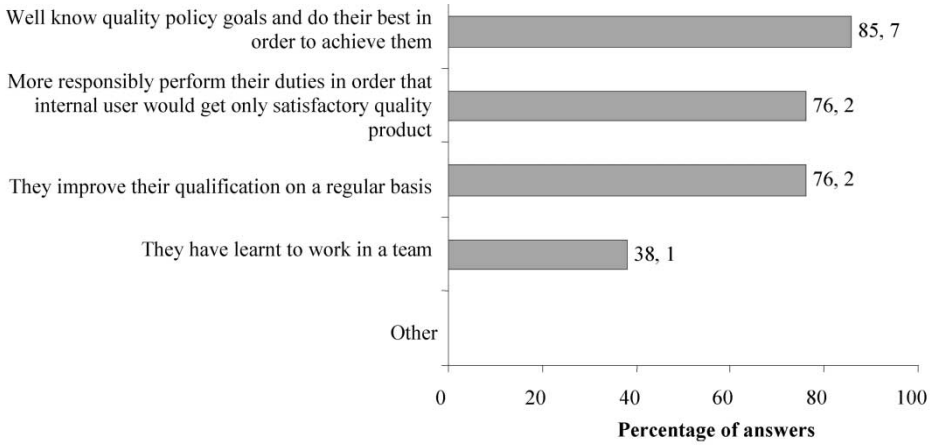

Figure 6. The influence of QS on the employees of the company.

QS and involving all personnel into the implementation of the system, then the attitude towards work and the responsibility for quality should have changed within the company. In order for the QS to function more effectively, the management of the company has radically to change the situation when only a few staff care what is going on, when employees are unwilling to take part in decision making, they want to avoid responsibility and are not interested in the goals and objectives of the company. The employees have to be inspired to generate job improvement ideas and to look for ways to put these ideas into practice. Teamwork helps to provide more choices for problem solving and to find more suitable ways of problem solving. 38.1% of the companies indicated that, in the process of QS implementation, their employees have learnt to work in a team, and 76.1% that employees constantly improve their qualification (see Figure 6). These factors are one of the preconditions for the successful development of the company.

The fundamental aspect of effective QS is the satisfaction of client needs and the execution of the pre-defined requirements. In order to realize this, there is a need to form a mechanism that would expose, fix and analyse client needs, expectations and complaints. The companies that took part in the survey indicated that they usually get information from those clients who contact the company, but the companies by itself rarely approaches clients directly.

QS requires forming client complaint procedures and the recording, investigation and reaction towards such complaints. Respondents, with the help of these procedures, determine the expectations and requirements of their clients.

The particular answer distribution of Lithuanian companies, in essence, coincides with the notion of Casadesus & Gimenez that the weakness of QS is data gathering and analysis about client need satisfaction (one of the basic criteria for good quality management). The research of Casadesus & Gimenez determined that 33% of organizations gather data about clients once a year, 16% once in 3 months, 40% do not have a pre-specified time span and 11% do not gather and analyse at all (Casadesus & Gimenez, 2000).

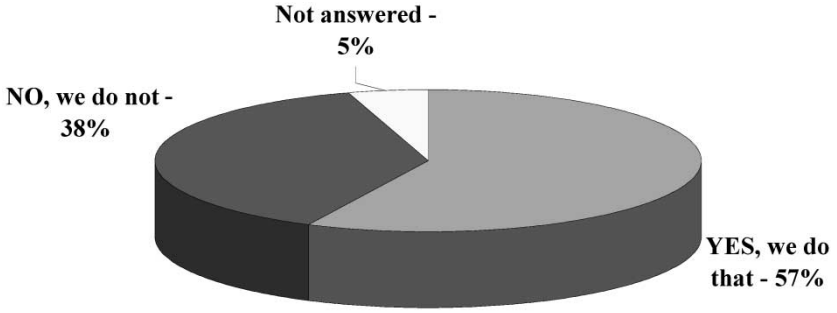

Figure 7. Data about quality costs accounting in the researched companies.

It is expected that this particular attitude will change after the start of application of the new QS model (ISO 9001: 2000), which requires creating customer needs satisfaction measurement procedures.

Before conducting the study, the hypothesis was raised that Lithuanian companies do not keep quality cost accounting, because they lack knowledge and experience about the practical application of the quality cost concept. The hypothesis was only partly confirmed—about 40% of companies do not gather and analyse such information, while more than half do (see Figure 7). This means that considerably more companies than expected apply quantitative quality management methods to keep quality cost accounting. Usually, quality cost accounting concerns a company's (manufacturer's) quality costs; however, a customer's quality costs should also be investigated. Currently, a study of this question is being carried out.

Quality cost recording allows determination of a company's losses due to poor quality, the areas of a company's activities where the biggest non-conformity expenses accumulate, and identification of the areas of a company's activities that need improvement the most, to show what benefit the implemented quality policy has brought. The inclusion of quality cost elements into financial accounting of the company is one of the ways of quantitatively evaluating the benefit of a quality management programme and allowing one to ensure timely adjustment and the performance of preventive actions. The areas of usage of quality cost information indicated by the responders are presented in Figure 8.

Of companies that did not perform quality cost accounting 62.5% failed to do so due to lack of knowledge and the absence of a data gathering and processing system (see Figure 9).

The additional expenditure of time and resources that is required for quality cost accounting is not the basic reason influencing the absence of gathering and analysing of such information. Only one of the respondents indicated that their company is not seeking to perform quality cost accounting and analysis. Can we not make the assumption that the companies that started to create QS later had more information about the quality costs concept and methods? After trying to determine the relationship between QS implementation time and the quality costs concept application, there was no regularity: both the companies that were among the first to implement QS and gained quality certificate in 1995 and the

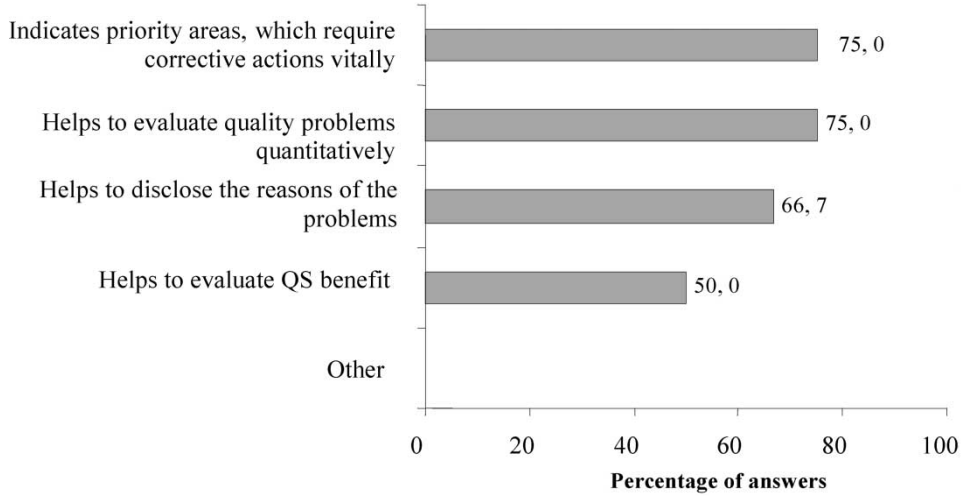

Figure 8. The areas of quality cost data usage.

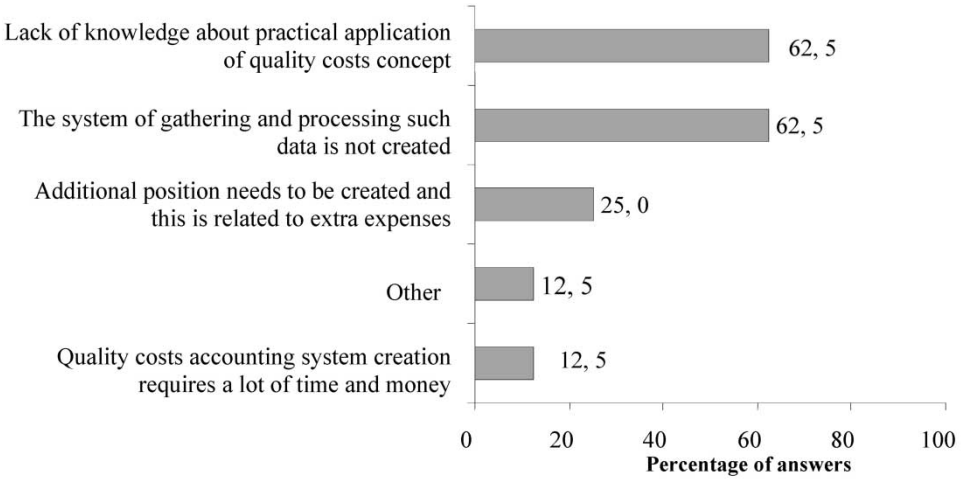

Figure 9. Reasons of not performing quality expense accounting.

ones that implemented QS in 1997, 1998 or 1999 performed quality costs accounting.

It goes without saying that majority of the companies use a quality system certificate when advertising their company. The sign of the ISO 9000 certificate can be on the genuine form of the company, in promotional material, stickers, on the product packaging, etc. The rules from the certifying authority regulate the usage of the certificate sign. The ISO 9000 symbol becomes part of the company's image creation. Although all the companies recognize the certificate as an advertising means, only 62% think that gaining the QS certificate affects

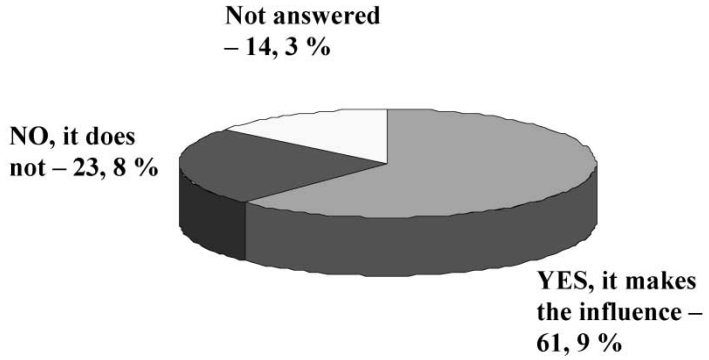

Figure 10. QS certificate influence on the choice of Lithuanian consumer.

the choice of a Lithuanian consumer (see Figure 10). The distribution of this particular answer testifies that some businessmen in Lithuania are not yet familiar with QS and do not treat it as an advantage of the relevant company. On the other hand, if companies do not think that QS will influence the choice of Lithuanian customers, the advertising objective is not part of the decision to implement QS and gain the certificate. Therefore, the respondents should have evaluated the QS certificate in a broader sense than just the benefit of the company's image.

Just effort and a positive attitude is not enough in order to implement and certify QS. System implementation and certification often demands huge investments and complicated technologies for the companies, costing hundreds of thousands of Litas. About 43% of the investigated companies in Lithuania do not count the investment payback period of the QS creation and certification. On the other hand, the answers of the respondents lead us to think that QS creation and certification often pays back in one or two years (see Figure 11).

Summarizing, one can state that the majority of Lithuanian companies formally do not calculate the payback of the investments into QS creation and certification; and so, practically, do not perform an evaluation of real QS effectiveness. The benefit of QS is rarely based on figures. This situation does not allow evaluation of the change of a company's performance indicators after QS implementation: the companies are not able to compare the indicators before implementation and after. On the other hand, we can consider the findings of Casadesus & Gimenez: they state that it is very hard to evaluate quantitatively the decrease of costs due to QS, and the benefit of QS system can be assessed only qualitatively (Casadesus & Gimenez, 2000).

Recently, society's concern towards environmental issues has been rising all over the world. In order to preserve a clean and not devastated environment, every member of the society has to feel responsibility for his actions that can do the harm to the environment. The tendency that products, which are not in line with environmental standards, will find it harder and harder to conquer not only international, but also local markets, is becoming a widespread matter. Increasing pressure from society is helping to make every organization produce ecologically

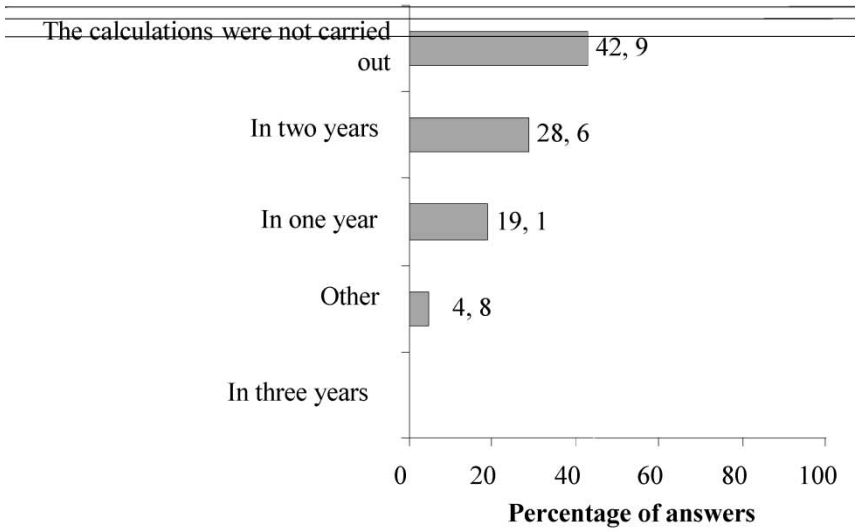

Figure 11. Period of QS implementation and certification expense payback.

clean products, effectively use resources and organize work processes in such a way that is least harmful for the environment. To achieve this goal, organizations create and implement environmental management systems (EMS) in accordance with the requirements of the ISO 14001 standard. The affinity of the ISO 9000 and ISO 14000 series of standards and their parallels create a precondition for quality and environmental management system integration.

QS is mostly orientated to the demands of customers. An environmental management system is directed towards the requirements of environmental protection, which come from law requirements, society's pressures, etc. Effective functioning of an environmental management system means that no single environmental problem will be forgotten in the company and that all operations affecting the environment will be strictly regulated. Moreover, society's interests definitely do not play the last role in environmental protection. Both management systems have similarities because they direct the whole organization of the company towards the proactive determination of weak places and the prevention of risk and errors. That is why such requirements as constant actions of improvement, adjustment and prevention are common for both systems.

Almost 20% of the surveyed companies have already obtained international environmental certificates of environmental management, which proves that the environment management system (EMS) complies with the requirements of ISO 14001 standard. Moreover, almost half of the surveyed organizations are going to create EMS (see Figure 12).

These facts prove that Lithuanian companies are making first steps towards environmental management and are started being interested in the methods of environmental problem elimination and prevention. Organizations realize that their operations' products and processes not only have to be of the highest

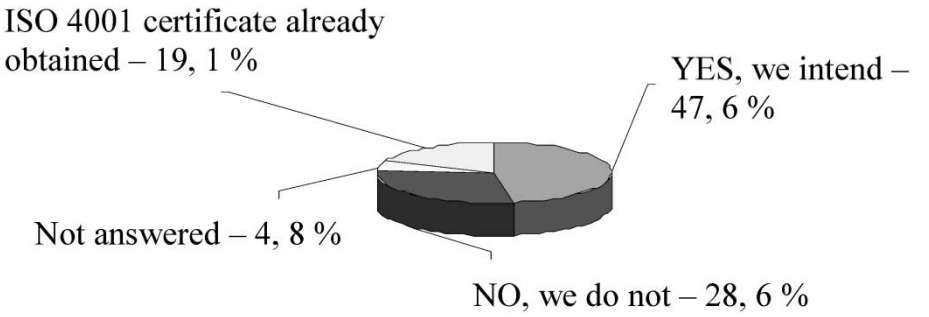

Figure 12. Intention of companies to implement an environmental management system.

quality, but also not dangerous to people's health and not harmful for the environment.

A survey of Lithuanian companies confirmed that a new QS model (ISO 9001: 2000) stimulates companies to study and implement TQM more than the 1994 model (see Figure 13).

This study of Lithuanian companies shows that they are satisfied with the benefits that QS brings. The results of research into companies in Spain have shown a similar pattern. On the other hand, EC research conclusions are more sceptical, because they show that QS results are hardly realizable and they are usually limited to the internal benefit. Moreover, the authors of the above-mentioned researches state that QS has had a limited influence on the strengthening of competitive position, the decrease of defects, better communication, expansion of export possibilities, the decrease of a product's time to customer—for these are the aspects that could be expected from the realisation

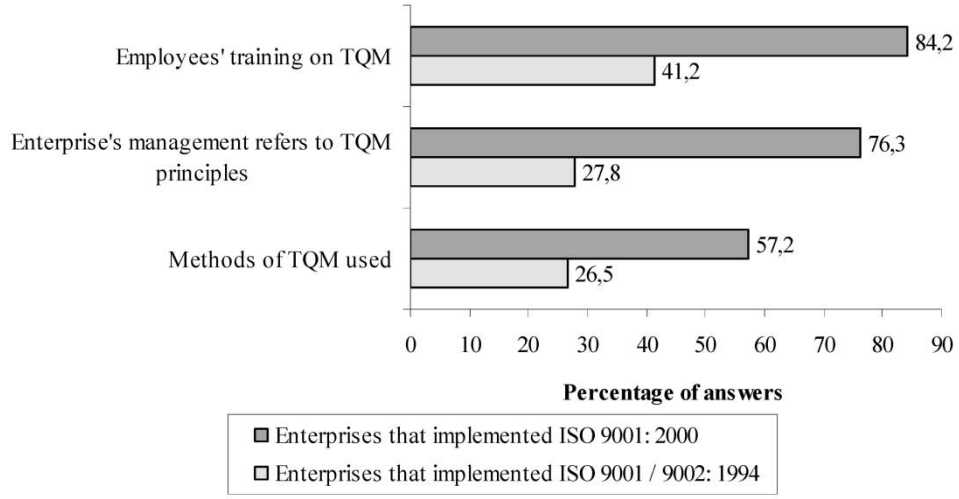

Figure 13. QS model's influence on TQM implementation in companies.

of a quality management system. Such contradictory conclusions could mean that Lithuanian and Spanish companies were not sincere when answering the questionnaire and indicated groundlessly good QS results. On the other hand, the surveys of Lithuanian as well as Spanish companies were conducted several years after the EC research; therefore, it could be the case that, in the longer period, the accumulated QS implementation experience and previous mistakes have enabled companies that started implementing quality systems later, to realise better the advantages the systems provide.

Conclusions

(1) One of the most important phenomena of quality management development and globalization is the formation and application of standardized quality system models and TQM in the business and other areas. The implementation of quality systems has a strong influence on the improvement of a company's activities, its production quality and overall competitiveness. A quality system can serve as a transitory instrument for implementation of TQM in the company.
(2) After quizzing 31 companies in Lithuania (that is, 24% of all ISO 9000 certified organizations at the time of the research), the basic motives for implementing quality management systems were disclosed and the benefits of the implemented systems were determined.
(3) The research has reflected that the main motives for quality system implementation were to ensure production of uniform quality products, better fulfil customer needs, increase the company's competitiveness, and improve the image and prestige of the company. The research has denied a hypothesis raised by the authors that the most important motive of quality system implementation is the necessity of the QS certificate in order to export goods to foreign markets.
(4) Operating a quality system helps to decrease the number of non-conforming products and the number of customer complaints, allows the employees to perform their jobs better, improves communication, teaches employees to choose contractors more carefully and to work in a team. Even though the motives inspiring the creation of QS were the pursuit of external benefits, the companies emphasized the internal benefits of the system and only a few related QS to the increased number of orders, taking customers from competitors or the condition for winning tenders.
(5) The research has discovered the areas of quality systems that need to be improved. The most important are the absence of the procedures for measuring the client's need satisfaction or the system's inefficient operation and it not being appropriate or not performing quality cost accounting. Almost 40% of the surveyed companies do not keep quality cost accounting, because they lack knowledge about the practical application of the quality costs concept, and the system of such data gathering and processing is not available. The creation of this system is one of the most important tasks of quality science. The integration of quality costs elements into a company's financial accounting is one of the ways of allowing quantitative evaluation

of the benefits of QS or a quality management programme and helping to ensure the timely adjustment and execution of corrective and preventive actions.

(6) The concern of society and business organizations towards the balanced development of the economy and environmental protection issues is increasing all over the world. Almost half of the surveyed companies plan to create environmental management systems. We recommend companies create an integrated quality and environmental management system in accordance with the requirements of ISO 9001: 2000 and ISO 14001 standards. This would create the possibility of consolidating and decreasing the amount of required documentation and would more effectively utilize the required resources for the design, implementation, certification and support of the integrated system.

(7) The conducted study showed that the benefits of the implemented quality systems, in essence, satisfy the Lithuanian companies. Similar conclusions were drawn after considering the research into 288 Spanish companies and that by the Lloyd's organisation. The results of EC research were more sceptical; they stressed that the results of quality system implementation are hardly measurable and are often limited to the internal benefit of the company.

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