

TOTAL QUALITY MANAGEMENT SYSTEM (TQMS) IN SMALL WINERY AND BAKERY IN CYPRUS. A CASE STUDY.

ANTONIS A. ZORPAS,

*INSTITUTE OF ENVIRONMENTAL TECHNOLOGY AND SUSTAINABLE DEVELOPMENT,
DEPARTMENT OF QUALITY CONTROL, CYPRUS*

DIANA-MIHAELA POCIOVĂLIȘTEANU

*ASSOC. PROF., “CONSTANTIN BRANCUSI” UNIVERSITY OF TARGU JIU, FACULTY OF
ECONOMICS AND BUSINESS ADMINISTRATION, ROMANIA*

VASILIS J. INGLEZAKIS

*INSTITUTE OF ENVIRONMENTAL TECHNOLOGY AND SUSTAINABLE DEVELOPMENT,
DEPARTMENT OF QUALITY CONTROL, CYPRUS*

IRENE VOUKALLI

*INSTITUTE OF ENVIRONMENTAL TECHNOLOGY AND SUSTAINABLE DEVELOPMENT,
DEPARTMENT OF QUALITY CONTROL, CYPRUS*

Rezumat

Quality of products and production affects the welfare, efficiency and competitiveness of the business entity. Total Quality Management System (TQMS) represent the organizational structure of enterprise, application of methods, tools and processes used for the implantation, maintenance and improvement of activities and their outcomes as well as the organization takes all the necessary actions for its environmental performance and safety. The aim of the implementing TQMS in company is to create a good relation of employees to quality and safety as a fundamental category of the market economy and make them produce this quality and on the other and to provide good relation between SMEs and governmental authorities. QMS determine the prior characteristics of products, through which the company meets the identified needs of the market. The paper presents a case study of the implementation of aTQMS in small winery and bakery industry from Cyprus. The TQMS include the implementation of ISO 9001:2008, ISO 14001:2004 and ISO 22000:2005.

Cuvinte cheie: ISO 9001, ISO 22000:2005, ISO 14001:2004, quality management, winery, Bakery, Cyprus.

Clasificare JEL : M40, M41

1. Introduction

Small Medium Enterprises (SMEs) and Very Small Medium Enterprises (VSMEs) are the economic backbone of the most economies in Europe. Those VSMEs have Mono-service or product, they feel economic pressure, they sell to the local market, they are Family traditions and they are informal organizations, they have very «low management», they have employees from different nationalities, they have little access to adult training and to the new requirements of the market and they do not federate and they produce high amount of waste.

1.1 Wines and Pitta Bread in Cyprus

It is probably true that there has been a commercial wine industry in Cyprus longer than anywhere else in the world. Whilst this may give rise to romantic promotional gambits like "Four thousand years of Tradition", it is no guarantee of good wine today. Thankfully, though, there is plenty of good wine to drink in Cyprus at the present time, but this is due to the skill of modern wine-makers and their equipment rather than inherited traditions. The wild vine from which our modern grape varieties descended (a very long time ago) undoubtedly grew in Cyprus and the bitter small fruits were probably collected and dried by man. The cultivation of vines for dessert fruit and wine is relatively recent. In fact it seems that the grape was first brought near man's home and cultivated in the Black Sea area around 8000 years ago. From there it spread slowly south-eastwards to Mesopotamia, Syria and Egypt, from whence it travelled across the Mediterranean to Greece, on to Italy, and so on. There is much evidence to suggest that the country which had the greatest wine industry for the longest period was Syria, from around 3000 BC or before, until

about 1000 AD, when Islam held sway and banned the production of alcohol. It is known that in that early period, 5000 years ago Syrian farmers came to Cyprus and brought their wine-producing grapes with them. The **Cypriot wine** industry ranks 37th in the world in terms of total production quantity (37,500 tonnes) (FAO, 2005) and much higher on a per capita basis. Although, chronologically, Cyprus belongs to the *old world* of wine producing countries, the industry has gone through changes that place it more on par with the *new world* (Baker 2006). The wine industry is a significant contributor to the Cypriot economy through cultivation, production, employment, export and tourism. According to the yearly report of Cyprus Wine Products Council (CWPC, 2009) the most common variety that are cultivated in the Island is Mayro representing the 46.8% of the total cultivation area in hectaria which was 5133, followed by the variety of Xynisteri (20.7% and 2269 ha), Carigna Noir (5% and 552 ha), Soultanina (4.8% and 531 ha), Cabernet Franc (3.1% and 342 ha), Cabernet Sauvignon (2.9% and 315 ha) and Shiraz (2.4% and 261 ha) consist the main croups in Cyprus. According the same report 29 % of the varieties is foreigner while 71 % are Local varieties, (CWPC, 2009).

The Vine and Wine Industry of Cyprus has a history of over 3000 years. The importance of this sector throughout the centuries was not due to its contribution to the Gross Domestic Product of the country but to its wider economic, social, cultural and environmental effects. The present paper deals with the characterization of wastewater generated from Cyprus wineries. The quantity and the quality of the wastewater depends on the processes followed for the production of wine as well as on the volume of the tanks that are used. In Cyprus are established 34 wineries producing approximately up to 20 million Kg wine, (CWPC, 2009).

Wheat has been cultivated by man since before recorded history. It is conjectured by anthropologists that hungry hunter/gatherers first stockpiled the grain as a storable food source. When it got wet, it sprouted, and people found that if the grain was planted it yielded yet more seeds. Although bread is very old, pita bread has a very long history too. Pita is a round pocket bread widely consumed in many Middle Eastern, Mediterranean, and Balkan cuisines. It is prevalent from the Balkans through Turkey, the Levant and the Arabian Peninsula. The "pocket" in pita bread is created by steam, which puffs up the dough. As the bread cools and flattens, a pocket is left in the middle. Pita bread is very common to Cyprus kitchen. In Cyprus there exist only 3 big industry producing pita bread and lots of small bakeries that produce few amounts. It's estimated that the daily production of pita bread in Cyprus is up to 50000 pcs.

1.2 Short overview of Total Quality Management Systems - ISO 9001, ISO 14001.

Concerns for product quality and process control is nothing new. Historians have traced the concept as far back as 3000 B.C. in Babylonia. Among the references to quality from the code of Hammurabi, ruler of Babylonia, is the following excerpt: *“The mason who builds a house which falls down and kills the inmate shall be put to death”*. This law reflects a concern for quality in antiquity. Process control s concept that may have begun with pyramids of Egypt, when a system for quarrying and dressing stone was designed. One has only to examine the pyramids at Cheops to appreciate this remarkable achievement. Later Greek architecture would surpass Egyptian architecture in the area of military applications. Centuries later, the shipbuilding operations in Venice introduced rudimentary production control and standardization. Following the Industrial Revolution and the resulting factory system, quality and process control began to take on some of the characteristics that we know today. Specialization of labor in the factory demanded it. Interchangeability of parts was introduced by Eli Whitney when he manufactured 15000 muskets for the federal government. This event was representative of the emerging era of mass production, when inspection by a skilled craftsman at a workbench was replaced by the specialized function of inspection conducted by individual not directly involved in the production process. Specialized labor and quality assurance took a giant step forward in 1911 with the publication of Fredrick W.Taylor's book Principles of Scientific Management. The pioneering work had a profound effect on management thought and practice. Taylor's philosophy was one of the extreme functional specialization and he suggested eight functional bosses for the shop floor, one of whom as assigned the task of inspection: *The inspector is responsible for the quality of the work, and both the workmen and speed bosses [who see that the proper cutting tools are used, that the work is properly driven, and that cuts are started in the right part of the pieces] must see that the work is finished to suit him. This man can, of course, do his work best if he is a master of the art of finishing work both well and quickly.*

In recent years, the quality of manufacturing products has become one of the most important factors that influence national and international business and economic patterns. Numerous quality standards have been developed and adopted over the years, with the ISO family of standards representing an international consensus on good management practices with the aim of ensuring that an organization can deliver products or services that meet the customer's quality requirements. ISO 9000 standards originated in 1987 with a bulletin from the International Organization for Standardization (ISO) (Ferguson, 1996). Its purpose was to provide a series of international

standards dealing with quality systems that could be used for external quality purposes. Another important consideration was the desire to provide information to organizations about how to design their own quality systems based on individual company marketplace needs. The standards in the ISO9000 series intend to be generic standards for quality management and quality assurance. The standards are to be applied to any type of organizations; independent to the size of the organizations or the kind of products manufactured or services provided, in private and public organizations, including government services. The original ISO 9000series consisted of 5 standards: ISO 9000, 9001, 9002, 9003 and 9004, plus ISO 8402 (which was published in1986 and it focused on terminology).The ISO 9000 series was the fastest growing standards in history and was very popular from the start (Bergman,1994). By 2004 more than 136 countries had adopted the series as national standards, and more than 650000 facilities had been certified by third-party organizations to ISO9001:2000. Since 1987, were the ISO 9000 family was issued, it is unlikely that any other standards had more impact on international trade, on the relationship between suppliers and their customers and on the management of quality. AllISO standards are evaluated on 3-year schedule to determinate whether they remain suitable for their application or if they need to be revised or withdrawn. At the annual meeting of ISOs Technical Committee 176 in 1990 it was agreed that the series of ISO 9000:1987 should be revised and that the revision should be done in two phases (Tsiakals, 2002). This approach was adopted because a great numerous of organizations were familiar with the 1987 standards and would likely be resistant to major structural changes. The results of these processes were a small revision of the ISO 9000 family in 1994 and a greater and more important revision with major changes to structure and content of the standards in the year 2000. After the2000 revision ISO 9000 family consisted of the following three standards: ISO 9000:2000, ISO 9001:2000 and ISO9004:2000. ISO 9000:2000 is the general standard that serves as an overall guide to the other standards. Its purpose is to provide definitions of terms and a basic explanation of the ISO 9000 standards. Nowadays there is another revision to ISO 9001:2008 with very small changes from ISO 9001:2000. ISO 9001:2000 and ISO 9001:2008 is written for all types of organization, including service organizations. Different industries may have their own terminology, but the standard is written using universal, generic terms. Whether an organization is fabricating, assembling, manufacturing, arranging, consulting, or providing services, it will benefit from the implementation of the QMS requirements contained in this standard.

Two of the most important objectives in the revision of the ISO 9000 series of standards have been (i) to develop a simplified set of standards that will be equally applicable to small as well as medium and large organizations, and (ii) for the amount and detail of documentation required to be more relevant to the desired results of the organization’s process activities. **ISO 9001:2008, *Quality management systems – Requirements*** has achieved these objectives, and the purpose of this additional guidance is to explain the intent of the new standard with specific regard to documentation. ISO 9001:2008 allows an organization flexibility in the way it chooses to document its quality management system (QMS). This enables each individual organization to develop the minimum amount of documentation needed in order to demonstrate the effective planning, operation and control of its processes and the implementation and continual improvement of the effectiveness of its QMS. It is stressed that ISO 9001 requires (and always has required) a “*Documented quality management system*”, and not a “*system of documents*”.

The 2008 version of ISO 9001 is written to be more user-friendly to small businesses and service organizations and yet to remain useful to large manufacturing organizations. The standard’s generic controls and terminology allow it to be used by all organizations; it is not specific to any one particular organization. In all cases where ISO 9001:2008 was adopted by an organization, the QMS must be customized to fit organization needs. ISO 9004:2000 provides further guidance for continuous improvement of internal quality management systems. The results of several studies showed that the most important reasons for using the ISO 9000 family of quality standards are: customer or marketing demands, needs forimprovement in process or systems, desire for global deployment and lack of focus inside the organization. The adoption of a QMS according to the requirements of ISO9001:2008, should be a strategic decision of an organization. The design and implementation of an organization’s quality management system is influenced by varying needs, particular objectives, the products provided, the process employed and the size of the organization.

One definition of an environmental management system (EMS) is given by the British Standards Institute: “the organizational structure, responsibilities, practices, procedures, processes and resources for determining and implementing environmental policy.” An EMS therefore generally follows the adoption of an environmental policy. The environmental policy formally outlines a company’s commitments to environmental management and commonly includes commitments to reduce waste, pollution, energy and resource use, sets objectives and targets and reviews the company’s environmental performance. Once the policy and EMS are in place a company will consider the publication of an environmental report to document the company’s progress against its policy and performance targets set within the EMS. Companies may adopt a certified EMS, such as ISO 14001 or Eco-management and audit scheme (EMAS), or they may develop their own ‘in-house’ systems. ISO 14001 was written

as a consensus standard with nearly 50 countries participating. It can be applied to an entire organization or parts there in and/or its activities, products and services. The aim is to promote continual improvement. Companies achieve certification following inspection by an approved accreditation body, (Zorpas, 2010). Improving the environmental performance of SMEs is important, irrespective of their total as yet unknown impact, because they are a vital part of the enterprise society that collectively can contribute to sustainable development. One mean of bringing about improved environmental performance is through the adoption of EMSs. The two formal EMSs in the market place are EMAS and ISO 14001. Common to both initiatives is the need for an organization to implement a number of management system stages to formalize the organizations' policies, procedures and practices that control environmental aspects.

1.3 Management systems for the food and drink industry

In the last decade, consumers have become very critical about food quality and food safety due to several incidents of contaminated food (Spiegel et al., 2003). In order to build and maintain the trust of consumers in food quality and food safety, quality assurance and food hygiene is of major importance in the food sector. Quality, food safety and environmental management systems in the food and drink industry, a combination of which, as well as with the support of the top management of the organizations offers an integrated system in the food and drink industries that includes quality, productivity and safety of the products. ISO 22000:2005 is a HACCP-type standard based on and fits very well with ISO 9001:2008 especially developed to assure food safety. Total quality management (TQM) and ISO 9000 focus more on management aspects and also aim to improve total quality. Furthermore, food manufactures are obliged by legislation to apply HACCP, while the other systems are applied voluntarily in the food industry. The assurance of safe production and the supply of safe food products appear to be the main aims of the food and drink industry. These aims can be attained by adopting as systematic and organizational structure, controlling activities, processes, procedures and resources according to the standards which constitute the basis for the quality and hygiene systems, including HACCP, ISO 9000 and 14000 series (Early, 1995). The implementation of a QMS, according to ISO 9000 series in the field of food products, is related to ensuring quality procedures for the food companies and reinforcing legislative requirements. Many food processing and packaging companies can start on the journey towards world class quality by building a solid structure using together GMP, HACCP and the ISO 9000 family. From this point of view, the organization can add the principles of TQM which include modern leadership and human resource principles, customer focus, strategic planning, fact-based decision making process, and modern process control techniques. With this foundation the organization can incorporate a high quality strategy into their business that allows enhancing their competitiveness by continuing to improve the value towards their customers and by systematically improving all of the company's operational performances. These principles can effectively transform the company into a customer-driven organization which can compete in the global marketplace.

ISO 9001:2008 focuses on customers' needs and expectations. One of the most important customer expectations is to have safe food products. ISO 9001:2008 allows an organization to integrate its quality management system with the implementation of a food safety system. The most common, in the food and drink industries, is the simultaneous operation of a QMS and a food safety system such as HACCP. The application of HACCP within an ISO 9001 QMS can result in a food management system that is more effective than the application of either ISO 9001 or HACCP alone, leading to enhanced customer satisfaction and improving organizational effectiveness (Sparling et al., 2001). The effective integration of these two systems will improve the performance of the organization and decrease the amount of paper work for the effective operation of the systems. Efstratiadis and Arvanitoyannis (2000) mentioned that HACCP as a part of a quality system not only manages to provide safety to the products, but also assure a better and more effective implementation of the whole quality system. The new standard ISO 22000:2005 offers an alternative to food enterprises that they do not implement ISO 9001 and they want to have an effective food safety management system.

Quality and safety are important for the winery and bakery industries. The quality assurance of the whole process is significant for the consumer acceptability, while the assurance of the safety is obligatory for protection of public health. Quality is required in order for the product to meet the customer's specifications and may be assured by the application of quality management systems like ISO 9001. As far as food safety is concerned, food legislation of European Union, recognizing the significance of the safety for human health, has established the application of Council Directive 93/43/EEC & Regulation (EC) No 852/2004 in which the basic hygiene and HACCP requirements are defined (directive 93/43 it is no longer in force, because it has been repealed by the Regulation EC 852/2004).

In Cyprus food industries have started to apply safety programs the past few years in a preliminary way in order to comply with the current food safety directives or regulations (93/43/EEC, 852/2004/EC, 178/2002/EC).

Implementation of HACCP system is a fundamental approach to ensure the safety of food supply, providing a systematic procedure for the identification, evaluation and control of hazards in each operation (Conter et al., 2007). Small business may lack the in house knowledge and resources to the correct implement of HACCP. Before implanting a HACCP system, a food business should already have in place various practices that may be collectively termed “prerequisite programs (PRPs) (e.g. raw materials specifications, staff training, hygienically designed facilities and good hygiene practice (GHP), (Panisello and Quantick, 2001; Taylor, 2001; Zorpas and Tzia, 2010). It’s estimated that, in Cyprus, 100 new companies/firms/enterprises per year implement from one to four several management systems per year. The most common systems that enterprises in Cyprus being certified are the ISO 9001:2008, ISO 22000:2005, ISO 14001:2004 and OHSAS 18001.

The paper presents a case study of the implementation of a TQMS (ISO 9001, ISO 14001 and ISO 22000) in small winery and bakery industry from Cyprus. Both enterprises hold a certification of those 3 systems the last 4 years.

2. Materials and methods

The following case study covers a small-sized traditional winery in a Cyprus base on Agios Ambrosios Village in Limassol district (elevation of 600 m approximately) and a Bakery Industry produce only pita bread. The winery (I.P Gaia Oinotechniki Ltd) founded in 1950, occupies 10 permanent personnel while the annual production of the organization does not exceed 120000 bottles of wine. The Bakery (Artozym) founded in 1970 as bakery in order to produce only bread and then from 1990 has stopped the production of bread and start the production of Pita Breads (like Cyprus, Greece, Arabian, Tortilla)

Top management of the both industries seeking to improve the interior operation of the organization, to infiltrate in new markets and increase the market share, decided that the implementation of a total quality management system according to the requirements of ISO9001:2008, ISO 14001:2004 and ISO 22000:2005 will yield the desirable results. None of the members of the organization’s top management had previous experience in plan and design of a quality, environmental and food safety system and had limited knowledge about the requirements of the above standards. The first action of top management (from each company) was to purchase the three main documents which consists the ISO 9000 series (ISO 9000/ 9001/9004), to purchase ISO 15161:2001 which provides the necessary guidelines on the application of ISO 9001:2008 to food and drink industry and to obtain as much more information about ISO 9000 family. Also the purchase of ISO 14001:2004 and ISO 22000:2005 was in priority. After a short period of time top management realized that it was very difficult to design an appropriate TQM system with the resources that were allocated to the organization, and for that reason they hired an external quality consultant who had the know-how’s required for the design and application of the TQMS. The consultants engineers hold accreditation in all the fields mention above and belong to the personnel staff of the Institute of Environmental Technology and Sustainable Development based in Cyprus.

3. Results

The winery that is being examined, due to its small size, has some particular characteristics which are: Direct management from the owner of the winery, direct contact between the personnel and the top management, simple and effective system for internal communication (small notes, mobile phones), short number of permanent personnel (5), great number of seasonal personnel (up to 50 during the grape-harvest), great number of suppliers in grapes as well as their own cultivation, direct contact with the organization’s customers and a very short planning. On the other hand Bakery has similar characteristic with the winery plus: presented with 30 permanent employees and the management is still running from the three owners which one is the production manager, the other is the sale manager and the other one is the account manager.

The development and the implementation of the TQMS was the result of a well-planned programme of procedures with its final goal the effective operation of the quality system and its complete incorporation in the daily operation of the organization. The procedure that took place and has been implement in order to comply with the requirements of ISO 9001:2008, ISO 14001:2004 and ISO 22000:2005 presented in Table 1 (from the time that the top management decided to apply a TQMS according to the standards requirements up to the certification audit that took place from an external accredited Certification Body. Both companies had chosen the Cyprus National Certification Body).

Table 1. Winery and Bakery procedure in order to comply with the requirement's of ISO 9001, 14001 and ISO 22000

Code	Title of Written Procedures that cover the requirements of ISO 9001, 14001, 22000	ISO 9001:2008 requirements	ISO 22000:2005 requirements	ISO 14001:2004 requirements
P-00	Manual	All paragraphs	All paragraphs	
P-01	Documents ID	2,	2	
P-02	Documents Control	4.2.3	4.2.2	4.4.5, 4.5.4
P-03	Files Controls	4.2.4	4.2.3	4.5.4
P-04	Management Reviews	5.6-5.6.3	5.8-5.8.3	4.6
P-05	Training and human resources	6.2, 6.2.2	6.2, 6.2.2	4.4.2
P-06	HACCP and Quality Control Team	7.2.3	5.6.1, 7.6.1	
P-07	GMP: Good Manufacturing Practises	5.2, 8.3, 8.5.3	5.7, 7.6.5, 7.2	
P-08	New Products design procedure	5.4, 7, 7.1, 7.2, 7.2.1, 7.2.2, 7.3	7, 7.3	
P-09	HACCP system	7.3.2-7.3.6, 8.2.3, 8.3, 7.6.5, 8.4, 8.5.2	7.3, 7.3.3, 7.3.5, 7.5, 7.6, 7.6.4, 7.6.5, 7.8, 7.10.2 8.2, 8.3, 8.4.2, 8.5.2,	
P-010	Suppliers Control	7.4, 7.4.1, 7.4.2	7.3.3	
P-011	Sales	7.4, 7.4.1, 7.4.2	7.3.3	
P-012	Pest Control	7.5.1	7.2	
P-013	Personnel Hygiene	7.5.1	7.2, 7.6.1	
P-014	Collection and Management of Wastes	6.4, 7, 7.2.1	6.4, 7, 7.2, 7.3.4, 7.3.5	
P-015	Usages of energy and water	6, 6.1, 6.2	6, 6.1, 6.2	
P-016	Product tracking and recalls	7.5.3, 7.5.4	7.9	
P-017	Use, storage, package, delivery of the products	7.5.3, 7.5.4, 7.5.5	7.2, 7.9	
P-018	Non Conformity products and services	8.3	7.10	4.5.2
P-019	Correctives and prevention actions	8.3, 8.4, 8.5.2	7.6.5, 7.10, 7.10.2, 8.2	4.5
P-020	Internal Audits	8.2.2	8.4.1	4.5.5
P-021	Maintenance Programs and Calibration of the equipment's	7.6	8.3	4.5.1
P-022	Quality, Food and Environmental Control -	4, 8.2.1	4	4.2
P-023	Package Materials	7.5.3, 7.4.3	7.9	
P-024	Continual Improvements	8, 8.2.3, 8.5, 8.5.1	7.6.4, 8, 8.5.1	
P-025	Emergency Situation Manual – Health and Safety	8.5.3	5.7	4.4.7
P-026	Internal and External Communication	5.5.3, 7.2.3	5.6.1, 5.6.2	
EMP-00	Environmental Manual			All paragraphs
EMP-01	Management of Waste			4.4.6
EMP-02	Environmental Planning			4.3, 4.3.4
EMP-03	Legal requirements			4.3.2
EMP-04	Internal & External Communication			4.4.3
EMP-05	Environmental Audits			4.5.5
EMP-06	Environmental and Risk Assessment Analysis			4.4.7
EMP-07	Observation of Environmental Targets and Objectives			4.4.7
EMP-08	Environmental Programs and Methodology for the identification of environmental issues and objectives, Environmental Impact Assessment			4.3, 4.3.1, 4.3.4,

Top management plays the key role in ensuring that the TQMS works as planned and applied. By its definition, it is confirmed that the TQMS is a management responsibility. It is conceived and driven by top management. The main top management's responsibilities for an efficient TQMS are as follows: (i) shall be the recognized leader of the TQMS; (ii) must create an environment in which the TQMS can be effective; (iii) must assure compliance with a documented TQMS; (iv) must supply the resources, training and support for employees implementing the TQMS; (v) must continually review the compliance performance of the organization and (vi) must recognize the successful efforts of the workforce.

The TQMS system of the winery and Bakery is also supporter from job description, work instructions, guidance's, safety manuals as well as both hold a risk assessment analysis for their activities in order to comply with health and safety regulation in Cyprus and in order to have certification from the ministry of Labour that are a distribution industries. Those supporter documents cover several checks like: (i) typical checks in the raw materials; (ii) several “what if” scenarios like what we do in case that the temperature in out of range or what we do in case that the electricity is cutting off.; (iii) safety roles in case of fire; (iv) jobs descriptions(v) organogram, (vi) environmental public awareness information as for several tourist can visit the winery, (vii) guidance's for the employees in order to minimize the waste at source and to minimize the negative impact of the companies to the environment, (viii) translate material in several other languages as both companies has employee from several EU countries like Bulgarian, Romania, Slovenia, (ix) quality, environmental and food safety policy which are public able etc.

3.1 Problems and obstacles during the implementation period

A number of organizations have reported substantial problems during the planning and the implementation of a TQMS according to ISO 9001, 14001, 22000. The most critical problems concern (i) the documentation process, the lack of ISO 9001/14001/22000 knowledge and experience, (ii) the lack of time and resources, (iii) the commitment of top management and personnel(iv) the creation of system ownership, (v) typical structural of the companies, (vi) employees from different nationalities (vii) they're family traditions and they are informal organization, (viii) they have little access to adult training and to the new requirements of the market. These obstacles, undoubtedly, are more obvious in small companies with the issues of productive time, financial and human resources being the most critical. It is recognizable that small companies are not inposition to qualify a satisfactory number of employees during and after the implementation of TQMS, nor they can finance the cost of preparation, development and registration (Aldowaisan & Youssef, 2006).The requirement of the QMS for the SMEs is sometimes very complex. It is not the substantial or effective qualities of those standards which are too high, it is more the internal and external barriers to access which are more demanding; cost, bureaucracy, resources, measurement analysis and improvements, knowledge, know-how, etc (Zorpas et al, 2008, Zorpas 2010).

After the initial assessment of the winery's and bakery's structure it was obvious that the organization's structure was far from any of the three standards requirements. The results of the assessment showed main nonconformities in critical issues such as: (i) control of documents and records, (ii)internal audits, (iii) training programs (iv) adoption of import legislations like the environmental impact assessment and risk assessment analysis, (v) product analysis and health certificates, (vi) maintenance and calibration of equipment, (vii) specific measurements targets, objectives and informal policies, etc. As mentioned previously, none of the winery and bakery top management had previous experience in the implementation process of any of the previous standard. Nevertheless due to lack of financial recourses, top management decided that it would be better to design the TQMS with its own human recourses. After a short period of time it was clear that this was a very time-consuming process with questionable results, and for these reasons it was essential the collaboration with an external quality consultant to ensure the right documentation and the initial operation of the TQMS. Lack of experience and knowledge, regarding all personnel, was another important obstacle for the organization to overcome. This problem was overcome by conducting both internal and exterior training programmes.

Internal training was conducted by the winery's quality manager and the consultant in the form of 2h seminars (2 per week and for 12 weeks) and for the Bakery was 3 seminar per week and for 20 weeks (4 h per seminar). All the employees trained in (i) the basic requirements of ISO 9001:2008 (ii) the basic requirements of ISO 14001:2004 and how they will prepare their environmental programs (issues and objectives) (iii) the basic requirements of ISO 22000:2005vocabulary; (iv) the role of the documents and records of TQMS and how they develop and write their procedures in a very short and easy way (no more than 1-2 pages per procedure plus the forms; (v) individual responsibilities and the benefits that will be derived from the implementation of the quality system; (vi) food hygiene, food safety and the pre-requisition programs; (vii) cleaning programs and the safety use of machinery's; (viii) understanding the actual day-to-day process of upgrading and improving processes and procedures; (ix) about health and safety in the working environment ; (x) customer satisfactory questioners, etc. Another important action that helped the organization was the visits that were realized by the consultant to winery and bakery and other food industries which already had a certified TQMS according to the requirements of ISO 9001:2008, ISO 14001:2004 and ISO 22000:2005.

Very important was also the productive time and recourses as well as another problem that faces the organization, even now, is the training of the seasonal personnel especially for the winery. As it is familiar, wine making is a very complicated procedure. During the grape harvest and collection season (September, October)the amount of work

increases greatly and so the recruiting of extra workers is essential. This problem is overcome with the conduct of a short-period seminar and the proper work instructions. As it is well known, Total Quality Management Systems implementation requires a substantial amount of time, resources and effort. Productive time was, and still is, a very critical issue for the organization. The planning and establishment process, including the certification audit, took about 14 months for the winery and 11 month for the bakery.

Financial and human resources, and also infrastructures were issues that produced many problems to the organization to deal with. The organization, due to its small size, could not afford to isolate employees or departments to the exclusive responsibility of quality activities. Therefore the responsibilities for the operation and the maintenance of the TQMS and other quality responsibilities were included among other responsibilities of the personnel. Lack of direct financial resources by the organizations for the wage of quality consultant and third-party certification was another considerable issue. The solution for this issue came from the consultant firm as they decide to support the winery for at least 3 years with the same amount of money (social accountability programs from Envitech).

Another difficulty was that of achievement workforce commitment to TQMS implementation as the effective system's implementation requires the commitment and cooperation of all the employees. In order to achieve this commitment, the owner of the winery ensured that all employees were informed of how the TQMS would benefit them. Top management (in winery), informed the personnel of how the TQMS would help the organization in critical areas such as the reduction of defective products, the improvement of internal communication, the increase of customer's satisfaction, the increase of share market and the opportunities for infiltration in new markets as some of the wines that are produced are ecological.

3.2 Cost of the ISO 9001:2008, ISO 14001:2004, ISO 22000:2005 planning, establishment and certification process

There were several factors that appeared to be the primary concerns regarding the cost of the winery's QMS planning, establishment, certification and running. The most significant elements that constituted the total cost are the costs of the outside consultant (design, establishment and maintenance the QMS system as well as for the seminars), the training fees, the registration fees and the costs in employee time. Secondary elements that endorsed the total budget were, among others, the investments in equipment, the collaboration with exterior laboratories for conducting essential chemical analyses, calibration test, and health certificates for the employees and some functional modifications.

The cost of the consulting service for the winery (including 14 months of design the quality system, the HACCP study, the environmental impact assessment study, the risk assessment analysis, the environmental programs, the yearly running, the writing of the procedures including the interviews from the employees, the design and implementation of working guidance's as well as several other forms that had been used for documentation, and the training seminars and also the internal audits), was estimated at €20000. Registration/Certification fees were estimated at €5000 for 3 years (including yearly audit and the initial audit). Calibrations were estimated at €500 per year, product analysis around €800 per year, health certificates for the employees at €50/employee, environmental analysis like noise, CO2 emissions etc were up to 800 €. For the bakery and for the same consultant services for a period of 11 month the cost was estimated up to 26000 €, the certification fees was the same, but the product analysis cost were up to 2500 € per year and the calibration fee were up to 2000 €. Thus because the top management decide to calibrate as much equipment they could and implement a very strictly analysis program for their products (including chemical and microbiology analysis in monthly base). Health certificate were up to 50 € per employee also.

During the 14 months period (for the winery) that was required for the TQMS planning and establishment, winery's quality manager occupied exclusively to that purpose. For that reason quality's manager annual salaries (€20000), were included to TQMS design and application cost. The compliance to ISO 9001:2008, ISO 14001:2004 and ISO 22000:2005 requirements obliged the organization to invest in new equipment and to make some functional modifications. The organization realized the following actions: (i) replacement of the 4 vinifications with total cost up to €75000; (ii) replacement of the bottling machine with total cost up to €12000; (iii) change the whole cellar condition for better wine with a total cost up to €2000 (implementation of moisture and temperature stabilizations); (iv) Improvement of the buildings with a cost up to €10000 lighting system; (v) collaboration of external laboratory etc. On the other hand for the bakery during the 11 months period the quality manager annual salary was up to 24000 € while the 3 owners of the bakery decide on 2007 to build a new factory in order to comply with all the EU

standards as well as with the TQMS standards which cost to them up to 2.2 million € (almost 4000m² including production area, package area, storages area, refrigerators plus the administration office).

4. Conclusions

TQMS would help the organization in critical areas such as the reduction of defective products, the improvement of internal communication, the increase of customer's satisfaction, the increase of share market, the opportunities for infiltration in new markets and global deployment. Moreover, Implementation of the TQMS gives additional benefits to winery such as decrease of the cost of quality and mistakes; higher quality of the wine, waste reduced, late delivery reduced, productivity improved, returns down and advertising potential. The understanding of these benefits will be the motivation force for the winery to continue its journey towards quality improvement.

Micro enterprises (Zorpas et al, 2008) present several unique characteristics. Among these characteristics are the following (i) that they have Mono-service and or product, (ii) they feel economic pressure, (iii) they sell to the local market, (iv) they're Family traditions and they are informal organization, (v) they have Very «low management», sometimes they have employees from different nationalities (new phenomenon), (vi) they have little access to adult training and to the new requirements of the market, (vii) they do not federate and (viii) they produce high amount of waste (liquid, solid, air). Also, according to “The new SME definition – User guide and model declaration” (EU, 2005), SMEs are often confronted with market imperfections. SMEs frequently have difficulties in obtaining capital or credit, particularly in the early start-up phase. Their restricted resources may also reduce access to new technologies or innovation. Therefore, support for SMEs is one of the European Commission's priorities for economic growth, job creation, economic and social cohesion, (EU, 2005). Traditional Quality and Environmental Management or Health and Safety tools do not fit in the reality of the VSMEs or micro-business with less than 10 employees. Nor do they fit well in many SMEs. Family companies are everywhere in Europe. Most of them want to apply the most common and known standard which is the Quality Management System of ISO 9001:2008. The requirement of the QMS for the VSMEs is sometimes very complex. It is not the substantial or effective qualities of those standards which are too high, it is more the internal and external barriers to access which are more demanding; cost, bureaucracy, resources, measurement analysis and improvements, knowledge, know-how, etc (Zorpas et al, 2008).

The Customer's Satisfactory Questioner (CSQ) analysis presents significant results as the evaluation of companies from its clients. For the winery they (i) give 90% excellent in wines quality as the company win the 1st and 3rd award in national competition during 2009 and 2010; (ii) give 95% excellent in their environmental performance as the win the 2nd award from the Ministry of Environment in Cyprus; (iii) give 90% excellent in their services.

Through ISO 9001, ISO 14001 and ISO 22000 the top management of both companies set clear targets; which was very critical for the general view of the company. At the end the implementation of the TQMS help the top manager in several ways.

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