Josip Britvić, univ.spec.oec.
Virovitica College
Matija Gupca 78, 33000 Virovitica
Phone: 033/721-099 Fax: 033/721-037
E-mail address: josip.britvic@vsmti.hr

Zrinka Blažević, mag.oec.,univ.spec.oec.
Virovitica College
Matija Gupca 78, 33000 Virovitica
Phone: 033/721-099 Fax: 033/721-037
E-mail address: zrinka.blazevic@vsmti.hr

Dorotea Vlainić
Virovitica College
Matija Gupca 78, 33000 Virovitica
Phone: 033/721-099 Fax: 033/721-037
E-mail address: dorotea.vlainic@gmail.com

APPLICATION OF INTEGRATED MANAGEMENT SYSTEMS IN ENTREPRENEURSHIP

PRIMJENA INTEGRIRANIH SUSTAVA UPRAVLJANJA U PODUZETNIŠTVU

ABSTRACT

Quality can be defined as a degree of authenticity when using a product or service. By development of technology there has been a development in system quality. By all general globalization the demands of consumers and the number of competitors have grown, there for initiation of system quality isn't considered a competitive advantage any more. By development of management system there was a need to merge more management systems in to one system – integrated management system. Integrated management system can be a combination of two or more management systems: Quality Management System (ISO 9001), Environmental Management System (ISO 14001), Health and Safety Management System (OHSAS 18001), Information Security Management System (ISO 27001), Energy Efficiency Management System (ISO 50001) and others. One of the most important fact for every organization is ensuring the quality and reliability of products, health, safety and satisfaction of employes, compliance of enviromentally friendly standards for environment, proving the safety of classified data and reducing energy consumption. Primary goal of paper is to show the frequency application of integrated management systems in Croatian companies practice. The other goal of paper is to show which are the management systems that are most often integrated in Croatian business practice. Qualitative research methodology was used in work while the informations were collected combined from primary and secondary sources. Two working hypotheses were set up based on analysis of the literature. First hypoteses is that the most companies in the Republic of Croatia with the instaled management system have implemented an integrated management system. The second hypoteses is that the most companies integrate Quality Management System (ISO 9001) and the Environmental Management System (ISO 14001). Introductory part of the work shows the short theoretical

review on the most important management systems and the second part shows the research result of application of integrated management systems in the Republic of Croatia.

Keywords: *ISO 9001, ISO 14001, ISO 27001, ISO 50001, integrated systems, information security*

SAŽETAK

Kvaliteta se može definirati kao stupanj izvrsnosti prilikom korištenja nekoga proizvoda ili usluge. Razvojem tehnologije došlo je do razvoja sustava kvalitete. Sveopćom globalizacijom rasli su zahtjevi potrošača i broj konkurenata, tako da se uvođenje sustava kvalitete ne smatra više konkurentskom prednošću nego jednim od osnovnih zahtjeva koje poduzeće mora ispunjavati. Razvojem sustava upravljanja javljala se potreba spajanja više sustava upravljanja u jedan sustav – tzv. integrirani sustav upravljanja. Integrirani sustav upravljanja može biti kombinacija dvaju ili više sustava upravljnja kao što su npr. sustav upravljanja kvalitetom (ISO 9001), sustav upravljnja zaštitom okoliša (ISO 14001), sustav upravljanja zdravljem i sigurnošću na radu (OHSAS 18001), sustav upravljanja informacijskom sigurnošću (ISO 27001), sustav upravljanja energetskom učinkovitošću (ISO 50001) ili kombinacijom nekih drugih ISO normi. Jedan od najvažnijih činjenica za svaku organizaciju u današnjim globaliziranim uvjetima poslovanja je osiguravanje kvalitete i pouzdanosti proizvoda, zdravlje, sigurnost i zadovoljstvo zaposlenika, udovoljavanje ekološki prihvatljivih normi za okolinu, dokazivanje sigurnosti povjerljivih podataka te smanjenje potrošnje energenata. Primarni cilj rada je provjeriti kolika je učestalost primjene integriranih sutava upravljanja u praksi hrvatskih poduzeća. Drugi cilj rada je prikazati koji su to sustavi upravljanja koji se najčešće integriraju u hrvatskoj poslovnoj praksi.U radu je korištena kvalitativna istraživačka metodologija dok su podaci prikupljani kombinirano iz primarnih i sekundarnih izvora. Na temelju analize literature postavljene su dvije hipoteze rada. Prva hipoteza je da većina poduzeća u RH s uvedenim sustavom upravljnanja imaju implementiran integrirani sustav upravljanja. Druga hipoteza je da većina poduzeća integrira sustav upravljanja kvalitetom (ISO 9001) i sustav upravljanja zaštitom okoliša (ISO 14001). Uvodni dio rada prikazuje kratki teorijski osvrt na najznačajnije sustave upravljanj, dok su u drugom dijelu rada prikazani rezultati istraživanja primijenjenosti integriranih sustava upravljanja na području RH.

Ključne riječi*: ISO 9001, ISO 14001, ISO 27001, ISO 50001, integrirani sustavi, informacijska sigurnost*

1. Introduction

With the development of national economies and networking of world economy, certain advantages are gained, but also some problems appear. According to that, the concept of quality is changing, the goals and tasks which are associated with the management of quality are increasing and changing. The importance of quality control of products, processes and overall business and enterprise management is of great importance for survival of enterprise in the market. Today, when there is a great struggle for survival, the company will achieve competitiveness and become a leader in its field, only if business quality is in the first place in all segments of companys work. Customers more often require from suppliers (and more often inversely) very high level of quality as well as safe and environmentally friendly product or service. Companies in order of convincing their customers that they are working according to the highest standards of quality, environmental, occupational safety and social

sensitivity implement, and after, certify their management systems by accredited international authorities. The certificate is a confirmation that companies use to convince their business partners and stakeholders they are operating according to the requirements of certain ISO standards. The subjects in this paper are integrated quality management systems. The introduction part of the work includes the stages of development of quality management systems and integrated systems. The second chapter defines the ISO standards which are mostly used in practice (according to ISO[208] organization data). In the third chapter methodology is described, while in the fourth chapter there is a discussion about the research results.

2. Introduction about management systems

2.1. Stages of development management system

The first phase of quality management system development refers to a period when demand was higher than supply. Capacity, quality and design is defined by the producers without the involvement of the consumer because he had to be satisfied with what he gets. In that kind of situations management is oriented to the production and to securing quantity. In that kind of environment, innovations and education of employees are not the primary goal. Increasing the amounts of manufactured goods over time, resulted in balancing supply and demand, and that represents the second phase. This allows the manufacturer and seller to pay more attention to product designing, and that means to fulfill basic requirements for quality. Then comes the adjustment of acceptable quality level between those who provide and those who demand the products or services. The result to that are the first systematic measures to test quality (Lazibat, 2003).

The third phase indicates an increase in supply, relatively moving the intersections of supply and demand. By increasing the supply, the customer is enabled to chose products with as few errors. In this way the customer does not determine only the quality of the product, but he is also interested in the quality system of the supplier, in order to prevent any possible errors. There has been a conclusion that the independent system of quality management needs to be defined in order to increase the quality of products and services. From the above reasons in 1987 standard ISO 9000 is created, which allows independent certification and comparability of the quality assurance system from the third point of view. ISO 9000:1987 provided a competitive advantage and creates trust between the supplier and the buyer (Lazibat, 2003).

The fourth phase is significant by the changes and by expanding products, and the current situation in modern organizations oriented to long-term. The buyer sets conditions on the market, demands quality service and excellent product quality. The supplier is compelled to offer additional services in the area of concern for the costumer. Certification of quality management systems is turning to companies in the area of services. The product is no longer available in material form, the product becomes a combination of goods and services. Customer satisfaction becomes more important measure for the quality of services, and it is based on motivation and increased awareness in the company on the human resource. ISO 9001 standard since 1987 to 2008 has experienced three revisions in which have been significant changes in content and requirements of the standard. It is expected that the fourth revision of the standard will be completed and put into use during 2015. The main task of management becomes to define structure of the company, and that refers to setting goals and

[208] ISO – abbreviation of International Organization for Standardization

strategies of companies with divisions, on the leadership and organization model (Lazibat, 2003).

The fifth phase is characterized by connecting the customer and the supplier, the quality of service, the importance of environmental protection and guidance to the future and sustainability of the business. First comes common planning of customers requirements and suppliers for quality, as well as linking different companies to create products for system optimization. Globalization plays a significant role in expanding introduction of the concept of quality. By appropriate documentation and certification of the quality management system, a connection between customers and suppliers can be achieved. Modern quality management must include important aspect of environmental protection, protection of employee health, safety in the food chain, social sensitivity, information security, and energy efficiency. Because of these requirements this standards are created: ISO 14001, OHSAS 18001, ISO 22000/HACCP, ISO 26001, ISO 27001 and ISO 50001. By combining two or more of the above system managements, organization creates an integrated control system.

2.2 The most common management systems

According to official data, the ISO organization issued 19,573 international standards to the date 31.12.2012.g (www.iso.org, 2013). Between the specified number of ISO standards, ISO organization qutes several popular ISO standards: ISO 9001:2008; ISO 14001:2004; OHSAS 18001:2007; ISO 22000:2005; ISO 27001:2013; ISO 50001:2011.

2.2.1. ISO 9001:2008

The basic norm of an integrated quality management system is considered to be ISO 9001:2008 - Quality Management System. The above standard is based on the process approach. ISO 9001:2008 defines requirements for the process approach in developing, implementing and improving the effectiveness of the quality management system, in order to increase customer satisfaction by meeting their demands. The term process is defined in the ISO 9001:2008 as a set of interrelated or interdependent activities that transform inputs into outputs. Establishing processes and interactions, and managing processes in organizations are the main tasks of each organization. It should be noted that often an output from one process is a direct input into another process. For easer functioning, all of the processes can be applied with the methodology known as PDCA matrix. Each action within the process can be performed by the PDCA principle that is constantly trying to improve (Milčić, Donevski, Banić, 2008).

2.2.2. ISO 14001:2004

The purpose of standards dealing with issues of environmental management is to provide organizations with an effective and meaningful environmental management system that can be merged with other management requirements. Under the environment implies the air, water, sea, land, climate, animallife and their mutual action as a part of the human environment. Protection of the environment is based on respect for international and domestic laws and regulations related to the environment and generally accepted principles. Environmental quality is possible to analyze from different aspects, so that the quality can be expressed through physical, chemical and aesthetic indicators. International Organization for Standardization have established in 1993 a special technical committee called TC 207, whose main task was to standardize the world's environmental management systems (Lazibat, 2009). Although in that time there were already a large number of national standards and regulations

related to environmental aspects because of the cultural specificities, regulations like that often represented a slowdown of international trade. Because of these reasons there is a need for a unique international standard which would eliminate these problems, for the new ISO 14000. Generally there are two basic types of ISO standards:

1. Normative: sets out the requirements that must be met, and the verification of the fulfillment of such requirements is carried out by audit.
2. Information: only give some certain guideline, such as that they don't offer certification and are not subject to audit.

ISO 14001 - Environmental management systems - Specification with guidance for use is the only normative standard of the ISO 14000 family. All other standards of this "family" norms are informative (Lazibat, 2009).

2.2.3. OHSAS 18001:2007

The purpose of the safety at work is the prevention of injury, occupational diseases and other diseases related to work and protection of the work environment. Safety at work is an integral part of the organization of work, and safety at work is the employers responsibility. The objective of the management of safety at work is to achieve a high level of safety by a systematic approach to reduce the risk, hazard and effort that occur during work. Specification OHSAS 18001:2007 (Occupational Health and Safety Assessment Series Specifications) is a specification for introduction and certification system for managing health and safety for persons in professional activities (Milčić, Donevski, Banić 2008). "Norms/specifications OHSAS 18001, ISO 14001 and ISO 9001:2008 are mutually compatible and in some parts they fully match" (Lazibat, 2009:408).

2.2.4. ISO 22000:2005

Hazard Analysis and Critical Control Points (HACCP) is a systematic approach that cares about food and health security, which deals with the physical, chemical and biological hazards, and the control is implemented by certain points during the production. HACCP is used in the food industry, so it can identify potential food safety hazards. The system is used in all stages of food production, including packaging and distribution. The application of HACCP - is expanding to all kinds of industries, except for the production of food products, it is beginning to be used in the manufacture of pharmaceuticals and cosmetics (www.iso.org, 2014).

2.2.5. ISO 27001:2013

ISO 27001:2013 is an international standard that defines the requirements for establishing, implementing, operating, monitoring, grading, maintaining and improving a documented Information Security Management System. It is based on the standard BS 7799 which has been added with some new controls, such as incident management related to information security. The standard is applicable to all types of organizations (commercial, government, non-profit, etc.), and to all sizes of organizations from small organizations to the global ones (Osmanbegović, 2010). "Standard consists of five parts: 1. The system for the protection of information; 2. The responsibility of people in the management; 3. Procedure of internal control systems for the protection of information; 4. Procedure validation system for the protection of information; 5. Procedure related to the improvement of the system for the protection of information" (Osmanbegović, 2010:7).

2.2.6. ISO 50001:2011

The increasing demand for energy, the limited availability of fossil fuels and the harmful impact of these fuels on the environment, seeks a new solution in the field of energy, and that is how standard ISO 50001:2011 is developed. This standard is used to control the system power management. ISO 50001:2011 is a standard which supports organizations in developing systems to increase energy efficiency and the possibility of finding ways for the efficient and responsible use of energy. ISO 50001:2011 is a generic standard, as well as all other ISO standards, which means that it applies to all types of organizations, regardless of the size of the organization or the organization's activity. Energy management systems are focused on broad national economic sectors, and they could have an impact on 60% of world energy consumption (www.iso.org, 2014).

3. Methodology of research

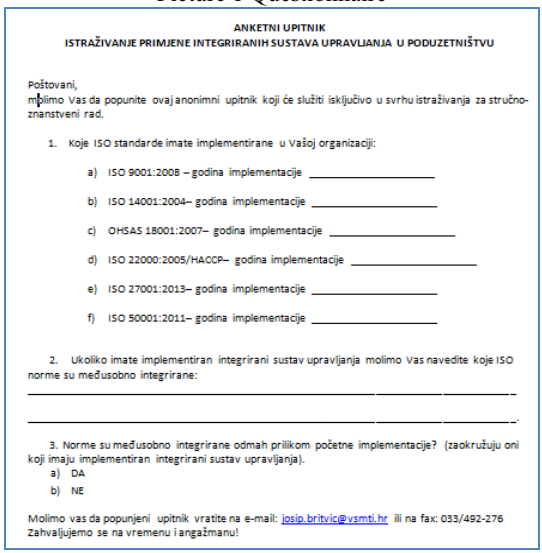
Lazibat in year 2009. states that the combination of ISO 9001 and ISO 14001 occurs most common in practice under the integrated management system. He also states that the ISO organization acceded to built all standards with the idea that they will often be used together in practice, and made them compatible. In modern business there is a whole range of management systems that can be integrated into a single system called IMS (Lazibat, 2009). Accordingly to studied literature the objectives of work are defined. The primary objective of this paper is to check how frequently is the application of the integrated management systems in practice in Croatian companies. The second objective of this paper is to show which are the management systems that are commonly integrated in the business of Croatian companies.

Based on the analysis of literature, two hypotheses were set up. The first hypothesis is that the majority of companies in Croatia with the management system introduced have a implemented integrated management system. The second hypothesis is that most companies integrates quality management system (ISO 9001) and environmental management system (ISO 14001).

For the purpose of data collection a qualitative research methodology is used, while the data are collected from primary and secondary sources combined. The first step has been to collect othe secondary data that was used as research samples. Secondary data were collected using a web portal kvaliteta.net. In the database portal kvaliteta.net[209] a sample of 300 organizations has been selected which are certified according to ISO 9001:2008 from all over Croatia, and which are certified in the range of 1995. up to 2014. Primary data were collected through a structured questionnaire, which is shown in picture 1. A questionnaire was sent to a selected sample via e-mail, collecting completed questionnaires conducted in part by e-mail, and partly by fax. The questionnaires were collected in a time span of 30 days and there was a total of 210 questionnaires correctly completed.

[209] Web portal Kvaliteta.net (www.kvaliteta.net) is unique data base of certified organizations in Croatia. Certification bodies continously deliver to the portal new data on monthly base.

Picture 1 Questionnaire



ANKETNI UPITNIK
ISTRAŽIVANJE PRIMJENE INTEGRIRANIH SUSTAVA UPRAVLJANJA U PODUZETNIŠTVU

Poštovani,
molimo Vas da popunite ovaj anonimni upitnik koji će služiti isključivo u svrhu istraživanja za stručno-znanstveni rad.

1. Koje ISO standarde imate implementirane u Vašoj organizaciji:

a) ISO 9001:2008 – godina implementacije _____
b) ISO 14001:2004– godina implementacije _____
c) OHSAS 18001:2007– godina implementacije _____
d) ISO 22000:2005/HACCP– godina implementacije _____
e) ISO 27001:2013– godina implementacije _____
f) ISO 50001:2011– godina implementacije _____

2. Ukoliko imate implementiran integrirani sustav upravljanja molimo Vas navedite koje ISO norme su međusobno integrirane:
_____
_____.

3. Norme su međusobno integrirane odmah prilikom početne implementacije? (zaokružuju oni koji imaju implementiran integrirani sustav upravljanja).
a) DA
b) NE

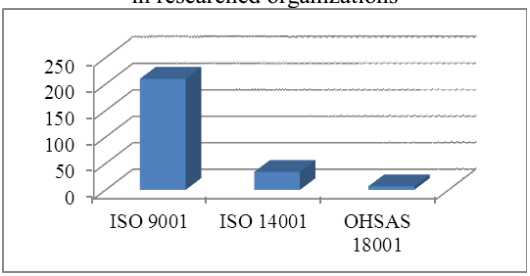
Molimo vas da popunjeni upitnik vratite na e-mail: josip.britvic@vsmti.hr ili na fax: 033/492-276
Zahvaljujemo se na vremenu i angažmanu!

Source: Made by autors

4. Results and discussion

The collected questionnaires show that the organizations most commonly implement ISO 9001:2008. All 210 organizations surveyed by questionnaire, have the ISO 9001:2008 standard implemented, which is expected because the Implementation of International Standard ISO 9001:2008 itself represented a criteria for inclusion in the research. Also, the existing literature and data of ISO organization suggest that the mentioned norm is the most commonly implemented standard in practice. ISO 14001:2004 has been implemented in 34 organizations, while OHSAS 18001:2007 is implemented in 7 organizations. Chart 1 shows the market shares of implemented standards in a sample of 210 researched organizations.

Chart 1 Market shares of implemented standards in researched organizations



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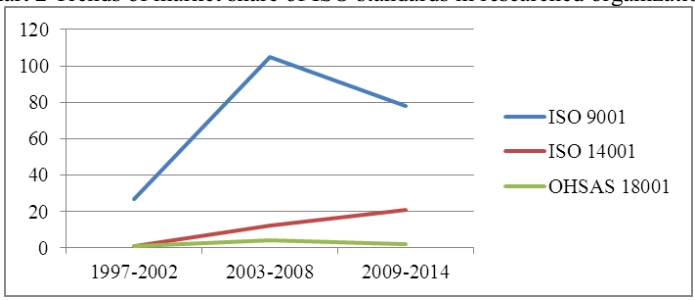
Process of the data collected on a sample of 210 organizations indicates a significant annual increase in the number of implementations of ISO 9001 standard in the period between the 1997 till 2008. After the 2008 there has been a significant decline in the annual number of implementations of ISO 9001. It is not the case with the ISO 14001 standard that since 1997

sees a constant, but significantly slower, growth in the number of annual implementation compared to standard ISO 9001. Specification OHSAS 18001:2007 recorded a small increase in the annual number of implementations since 1997 till 2008, followed by a decline in the number of annual implementation of OHSAS 18001:2007. Stated is shown on the chart number 2.

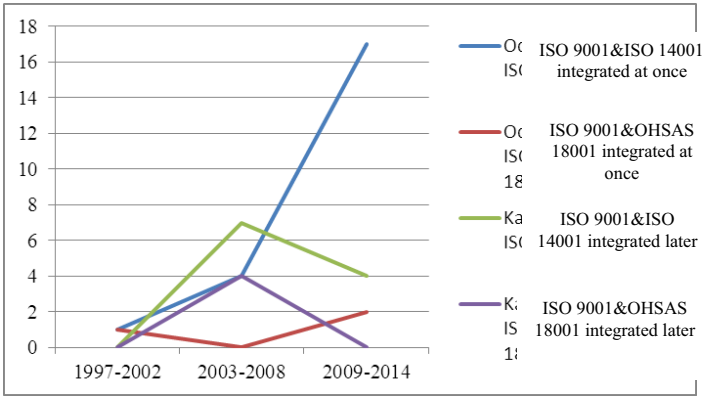
Chart 2 Trends of market share of ISO standards in researched organizations



Source: Made by authors

Process of the collected data indicates that organizations that were "pioneers" in the implementation of ISO standards in Croatia usually implemented only standard ISO 9001. Since 2008 there are more often implementations of the integrated system, usually a combination of ISO 9001 and ISO 14001 standards, while the number of implementations of ISO 9001 as an independent norm decreases. The stated is shown on chart number 3.

Chart 3 Trend of implementation of integrated standards in period 1997.-2014.



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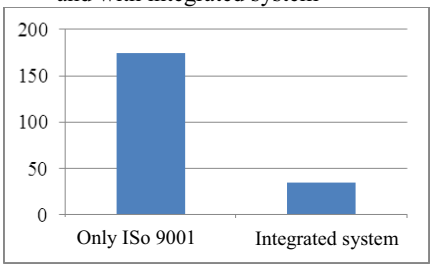
The study results do not support the first hypothesis, the claim that the majority of organizations in the Republic of Croatia with the management system introduced have implemented an integrated management system. The research results showed that 175 organizations have implemented only the standard ISO 9001, while 35 organizations have implemented an integrated management system and a combination of ISO 9001, ISO 14001 and specification OHSAS 18001. Stated is shown on the chart number 4.

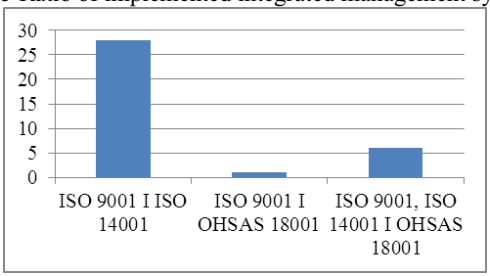
Chart 4 Number of organizations only with ISO 9001 and with integrated system



Source: Made by authors

The research results confirm the second hypothesis, that the most organizations integrates quality management system (ISO 9001) and environmental management system (ISO 14001). The research results shows that in 35 organizations with an integrated management system 28 of them have implemented integrated quality and environmental management system, ISO 9001 and ISO 14001. Six organizations have an implemented integrated management system for quality, environment and safety at work, ISO 9001, ISO 14001 and OHSAS 18001. Only one of the 210 organizations surveyed have an implemented integrated quality management system and safety at work, ISO 9001 and OHSAS 18001. The stated is shown on chart 5.

Chart 5 Ratio of implemented integrated management systems



Source: Made by authors

5. Conclusion

The management systems is becoming more important with the growth of international trade integration and cooperation. The modern way of business between companies and organizations is becoming hard to imagine without a standardized management systems. Literature consulted and conducted research shows tendencies of integration management systems. A more often appearance is the implementation of integrated management systems, usually a combination of ISO 9001 and ISO 14001, which confirms the second hypothesis. However, standard ISO 9001 is still most commonly implemented as an independent management system which denies the first hypothesis. By further study of the literature is was determined how the ISO 9001 is a basic (fundamental) standard, and that the implementation of that norm is foundation for creating a good foundations for further development of the management system and eventual integration. The authors concluded that the main goals are achieved, therefore to check the frequency of applied integrated management systems in practices of Croatian companies and also provide an answers to the question which are the management systems that are most commonly integrated in Croatian business practice. The authors concluded that this study indicates that there is a need for further research. Carrying

out these studies should reveal the reasons for the implementation of integrated management systems and monitoring trends of standard integrations examined in this paper. The study should also include monitoring the implementation trends of new ISO standards. Monitoring trends and comparisons with other economies would indicate a degree of awareness in Croatian managers and business owners about the importance and benefits that standardized management systems bring.

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