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SELECTED REQUIREMENTS OF INTEGRATED MANAGEMENT SYSTEMS BASED ON PAS 99 SPECIFICATION

Abstract: The aim this research was to analyze the ways of integration of management systems in food sector. The study involved the documentation, audits, corrective and preventive actions and management's review phases described in the specification PAS 99, which is one of common elements of integrated management systems. Four organizations were selected for the study. The organizations had introduced and certified at least two standardized management systems. It was assumed that the investigated organizations should have implemented the HACCP system. Studies were conducted as a case study. The employees responsible for the functioning of management systems were interviewed in all four organizations. The study was conducted in the form of in-depth interviews based on pre-prepared script. The scenario was developed based on the PAS 99 guideline. The process of integration of management systems implemented in the studied companies reveals the full compliance of an integrated management system with PASS 99 in the policy area.

Keywords: PAS 99, ISO 9001, management system integration, documentation, HACCP

1. Introduction

A large number of management systems to compliance, with which organizations can undergo certification process means, that the minimum level of integration of management systems is a necessity in order to ensure the smooth functioning of the organization (Kafel and Sikora, 2011).

Currently, there are guidelines for the integration of the management system standards or other normative documents different than the Polish, to comply with,

which it is possible to integrate the system or its certification. Such documents are listed in Table 1. There are no generally accepted international standard to provide guidance to comply with, of which audits of IMS (Integrated Management System) can be carried out, is indicated as a significant barrier to the integration that conforms study carried out by Douglas A. and Glen (Douglas and Glen, 2000).

The quality management system developed according to ISO 9001 differs from the other systems (ISO 14000, ISO 22000, HACCP) primarily by approach targeted at meeting the needs of clients, where other systems also apply to other stakeholders such as government agencies, the public,

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community, consumer groups and conscious investors. That is why the premises of the implementation of integrated management systems can meet the requirements of many stakeholders. Such action may result in the following potential benefits (Tari and Molina-Azorin, 2010; Poksinska *et al*., 2003; Klefsjö *et al*., 2003; Bernardo *et al*., 2009; Jørgensen *et al*., 2006; Zutshi and Sohal, 2005):

- Increased competitiveness of enterprises,
- Improve the effectiveness and efficiency of the organization,
- Avoiding duplication of work,

- Reducing bureaucracy by eliminating duplication of policies, procedures and records,
- Harmonize the objectives, processes and resources,
- Reduce costs, for example by reducing the number of internal and external audits,
- The availability of joint training and better communication at all levels of management.

In table 1 are presented IMS models.

Table 1. Integration Management Systems models (Kafel and Sikora, 2010)

No.	Number	Title	Country of origin
1.	Global SAI. AS/NZS 4581:1999	Management system integration – guidance to business, government and community organizations. Australia: SAI Global;1999.	Australia NewZeeland
2.	HB 10190:2001	IMS: The framework (Integrated Management Systems Series)	UK
3.	PAS 99	Specification of common management system requirements as a Framework for integration	UK
4.	NTS (1996)	*Management Principles for Enhancing Quality of Products and Services, Occupational Health and Safety, and the Environment*, Draft Norwegian Standard, Norwegian Technology Standards Institution, Oslo,	Norway
5.	DS 8001:2005	Management Systems – Directives on developing an Integrated Management System	Danmark
6.	UNE 66177:2005	IntegraciónSistemas de Gestión	Spain

There has been analyzed the level of integration of management systems, using as a reference document the requirements of PAS 99:2006 in this paper. This document was prepared by the BSI - UK certification body, as a guide of Publicly Available Specification. It contains the basic requirements, which may be used as a standardized schema for systems'integration. The structure and contents of the guideline are similar to the basic elements of well-known standards such as document

management and records, management review, corrective and preventive actions, internal audits and continuous improvement. This structure includes used in almost all standards popularized by Deming's PDCA cycle (Kleniewski, 2007).

2. Study description

The study was carried out in southern Poland. There were chosen four organization in which there have been implemented and

certified at least two standardized management systems. It was assumed that the examined organizations should have implemented the HACCP system. The type of studies was case studies. In each of the organizations the person responsible for the operation of management systems was representative of the top management of the organization in this area was interviewed. The study was conducted in the form of in-depth interviews on the basis of pre-prepared script. The developed scenario based on the guidelines PAS 99. Characteristics of the organization are contained in Table 2.

Table 2. Characteristics of the organization

Organization	Characteristic
Organization 1.	The company is the largest manufacturer of bakery and confectionery in Lower Silesia. The organization is distinguished by a wide and diverse range of manufactured products such as baking bread, cakes and durable products. The company consists of two large production facilities, craft bakery, confectionery, industrial, and retail stores. The organization employs approximately 500 employees. The total assets in 2010 was about 38 million Euro and revenues was 18,5 million Euro. The company sells its products on Polish market and on all markets of Central and Eastern Europe.
Organization 2.	Manufacturing facility is located in Malopolska region, belonging to the group consisting of plants producing beverage cans, steel cans, closures for bottles, glass bottles and development services. The group consists of plants located in 9 countries around the world. The test factory produced steel cans for food packaging.The total assets in 2010 was about 29 million Euro and revenues was 38,6 million Euro. The main export markets are Romania, Italy, Russia, USA, Ukraine, Japan, Canada ns Hungary.
Organization 3.	Leading manufacturer of wet spices in Poland who employ more than 300 employees. The production plant is located in the Malopolska region. The product range offered by the company includes sauces, mayonnaise, mustard, ketchup and dressings.The total assets in 2010 was about 1,09 million Euro and revenues was 1,536 million Euro. The marker share of selling mustards in Poland is about 25%.
Organization 4.	One of the world's largest producer of soluble coffee based on cereals and chicory. The production plant is located in the Malopolska region. Offer of a soluble coffee and malt coffee and beverages based on grain extracts malts, chicory, natural coffees and many enriching natural supplements. The company employs more than 250 employees.The total assets in 2010 was about 816 million Euro and revenues was 910 million Euro. The main export markets are: Sweden, Germany, Russia, Czech Republic, Astria, Ukraine, Slovakia and Hungary.

All selected and tested organizations are associated with the food industry. Three of them are food producers and the fourth organization is a manufacturer of food packaging. Management systems implemented in these organizations can be divided into general management systems, which can operate in any organization, regardless of the nature of the production and evaluation of systems and standards

dedicated specially to food industry suppliers.

The functioning management systems in the surveyed organizations, on the compliance with which currently valid certificates are issued by independent certification bodies are specified in Table 3.

Table 3. Cerified systems in the selected organizations

Organization 1.	Organization 2.	Organization 3.	Organization 4.
ISO 9001 ISO 22000 BRC	ISO 9001 ISO 22000	ISO 9001 ISO 14001 OHSAS 18001 BRC IFS 834/2007 ISO 22000 Kosher Certificate AQAP 2110	ISO 9001 HACCP (Codex Allimentarius) IFS Halal Kosher Certificate 834/2007

The number of management systems operating in organizations is high, which causes the necessity at least under its partial integration. Implementation of at least two systems in one organization is very popular in Polish organizations, which is confirmed by the study carried out by the Czupryna and Maleszka (Czupryna and Maleszka, 2008). Integration of management systems is a continuous process and largely depends upon the sequence of implemented systems in the organization. Among the tested companies the order of implementation and certification of systems were similar. All surveyed organizations also implemented a quality management system complied with the requirements of ISO 9001 and the food safety assurance system based on HACCP requirements. Both systems have been subjected to certification, and in organizations 1 and 2 certification basis was Danish standard DS 3027:2002 and in organizations 3 and 4 the basis for the certification was Codex Alimentarius. The ISO 22000 standard issued in 2005, has become the impulse for the organization 1 and 2 to implement the requirements of this standard. Therefore there was a replace of reference document in the certification process from standard model DS 3027:2002 on the ISO 22000:2005.

Certification of compliance with the standards of suppliers constitutes to facilitate the negotiation process in the food industry (Parker *et al.*, 2012; Karaman *et al.*, 2012), and therefore, surveyed organizations decided to adapt their production to these requirements and its certification. Standard compliant with the requirements of the BRC has been implemented in the organization 1 and 3. Standard compliant with the requirements of IFS has been implemented in the organization 3 and 4. In the case of the organization No. 2, which has been producing food packagings, the efforts are currently being developed for accession to the certification for compliance with the standard BRC. The production is also controlled by large customers of packages according to their own standards of evaluation.

Surveyed organizations have also joined the implementation and certification of its production to comply with specific programs. For such programs it may be considered organic food production and food production that meets the requirements of various religious groups. Requirements related to the processing of organic products are set out in 834/2007 EU Regulation and the detailed implementing regulations (Rozporządzenie, 2007). Compliance with

the requirements specified in these Regulations allows organization No.3 and 4 for labeling their products with a sign for organic farming and the sale within the EU. In addition, the organization 3, which in the examined group of companies have implemented the biggest number of systems, underwent their organic products for certification on compliance with the requirements of the U.S. market – NOP (National Organic Program). Despite of slight differences in the requirements of the European and American standards, as perceived by experts and consumers (Sawyer *et al.*, 2008), on organic production organization wishing to export their products, had to certify the compatibility of the two standards.

Requirements related to the production of food for Muslims and Jewish respectively were confirmed by certified Halal and Kosher certificate, were introduced in organization 4. Organization 3 runs part of its production in accordance with the requirements of kosherness.

In 3rd organization there have also been implemented an environmental management system (ISO 14001) as well as OHSAS 18001 and NATO requirements for quality assurance in design, development and production (AQAP 2110).

3. Documentation of integrated management systems

One of the requirements of PAS 99:2006 is a need for a shared integrated documentation. Any documentation of the quality management system, in particular of the integrated system should include a qualitymanual, procedures, instructions, processes map, policies, objectives of the organization, as well as the requirements for initial operational programs or GMP / GHP depending on the system (Sikora, 2011; Russ Russo, 1997). In accordance with the requirements there should be an accurate description and scope of the management

system covering all integrated systems described in the manual.

Among the surveyed companies, only for organization No. 1 all the necessary documents have been common and have been developed in a fully integrated manner. The quality manual included a record of system integration and there has been explained what is the integration in the enterprise. In the other organizations, the integration of the documentation under the different systems varied. In an organization No. 2 due to the centralized document management system, which is available in the SAP computer system, and also because of the significant differences in the various factories located in different parts of the world, there is no clear information available about integration of documentation. For the tested facility documentation was integrated of ISO 9001 and ISO 22000 systems. On the other hand completely different attempts were taken for integration of documentation in the organization No. 3, where the quality manuals were prepared for each system separately, while other documents, such as procedures, instructions, processes map, policy and objectives have been integrated. For organizations No. 4, which is also a part of a global corporation, as in the case of organization No. 2 documentation system is developed on the group level, which means that individual plants does not have the ability to personalize individual requirements according to their needs. The main system that is fully documented at the group level is ISO 9001 system in this organization. Other systems and requirements depending on the country and activities of the plant are developed individually. Comparing the documents to the requirements of the current PAS 99, the plant quality manuals are developed separately, but some of the areas were integrated. Because of the fact that the organization is part of a group they were only able to integrate some of the documents and in this case procedures, guidelines and policies as well as goals have been

integrated. Other documents that are specific for each system are a separate part of the documentation.

Another important element in the PAS 99 specification is the structure of documentation, especially the point about the basis requirement of documentation built. For organization No. 1 documentation was developed using the ISO 9001 standard. Additionally it is interesting that during documentation development there, the structure of standard was used according to its particular chapters. In addition, the documentation contains the requirements for HACCP, which is a part of it. On the other hand the organization No. 2 has developed its documentation in accordance to the current map of the processes within the company, using a process approach and matched it to the individual requirements of the plant. For organizations 3 and 4 basic scheme on which there was developed an integrated documentation is ISO 9001, with the exception that additionally overlays of other implemented systems were created and have been incorporated into it.

One of the questions during the interview was whether after implementation of the second system, documentation has changed significantly, particularly its form and procedures layout. In the organization No. 1 according to company's representative, there were no significant changes. Only after the implementation of the BRC systems, the necessary documents specific to this system were added. In an organization No. 2 very small changes occurred, as determined by representative as cosmetic. On the other hand, in the case of organization No 3, the implementation of second and subsequent systems did not entail significant changes. However, in 2000 the introduction of a new edition of ISO 9001 led to significant changes in the documentation and then they decided to lead the total reconstruction of the structure of documents corresponding to the new requirements of the standard. In the case of 4th organization for a long time there were two parallel system documentation

running (ISO 9001 and HACCP), but after some time they have been integrated in the areas that enable such treatmentincluding profile of the company.

Another information obtained from representatives of the surveyed companies was the fact of describing the way to integrate systems in the documentation. In organization No. 1 in the quality manual there has been defined the term of an integrated system, and provided a description. In the case of organization Nos. 2, 3 and 4, despite the partially integrated documentation it did not contain information about how to integrate the systems.

The section 4.4.4. of PAS 99 contains requirements for communication, where the organization integrating management systems should: establish, implement and maintain effective arrangements with regard (PAS, 99).

- For internal communication between the various levels and positions in the company and
- To receive, record and respond to communications between stakeholders.

The obtained data concerning the most expanded communication technique has the organization No.3, where procedure for internal and external communications relating to the individual systems was developed.

4. Integrated management system audits

Another requirement of PAS 99 is the obligation to establish, conduct audits by the organizations plan of an integrated management system, which should be based on the most important aspects of the management system and include:

- Review of the organization.
- The frequency of audits.
- Methodology and competence of auditors for auditing the individual systems.

- Reporting.
- Risk management in the organization.

According to a study carried out in Spain by Bernardo and others in 2011, organizations that exhibit a greater degree of integration of management systems in a complete way also try to integrate and plan audits (Bernardo *et al.*, 2011; Bernardo et al., 2009).

A similar phenomenon has been observed among the studied organizations. For organizations 1, 2 and 3, where the systems are integrated to the greatest extent, the planning of audits is done commonly for all systems. Audit process itself for these companies is conducted simultaneously for two management systems. Only in case of organization No. 3, where there are more certified systems, the organization assumed that during one control there may be audited up to two systems. For organization No. 4 audits of particular systems (ISO 9001 and HACCP) are carried out separately, due to the fact that the ISO documentation is developed globally for all establishments, and the requirements of the HACCP system has been designed exclusively for surveyed location.

While planning an integrated audits, there has been a usual problem with the knowledge and skills of auditors, who often do not have adequate experience in auditing integrated systems such as quality, environmental and food safety. This problem has been observed in the studied organizations where audits are conducted generally a maximum of two systems. With the information obtained from the company regarding the competence of auditors in the organization No. 1, 2 and 3 auditors have auditing powers up to two management systems. Another fact received from the representatives of organizations No.3 and 4 was the information on the record concerning non-compliance with regard to the individual systems. In the case of non-compliance of these organizations, it is assigned to the different management systems. In an organization 4 there has been developed separate forms of non-compliance

for particular systems additionally.

5. Corrective and preventive actions

In section 4.6.2. of PAS 99 there has been indicated requirements for corrective and preventive actions as well as improvement processes. The guide provides requirements for integrated systems in order that for all processes should have been developed following assumptions:

- Review of non-compliances including potential non-compliances.
- Identify the causes of non-compliances including potential non-compliances.
- The development of preventive measures for non-compliances.
- Develop a plan to implement appropriate preventive action,
- Creating records of actions taken.
- Reviewing the effectiveness of actions taken.
- The development of corrective and preventive actions relevant to the identified risks.

Accordingly with the above requirements representatives of management staff were asked about integration in the area of corrective actions and the management of nonconforming product. In case of organizations No.1, 2 and 4 corrective actions and dealing with nonconforming product is completely integrated. For organization 3 only corrective actions have been integrated, and the handling of nonconforming product due to the large number of implemented systems remains managed separately for each system.

6. Management review

One of the last requirements of PAS 99 is a managements'review. There has been assumed in the guide that:

- Top management makes integrated management review at planned intervals

to ensure its continuing suitability, adequacy and effectiveness.

- Reviews should include an assessment of opportunities for improvement and the need to change of management system, including policies and objectives of the organization.
- Records of management review should be archived.

In accordance with the above requirements the representatives of surveyed organizations were asked about the way of leading the management's review.

The first question in this field related to the frequency of management reviews, which in all 4th organizations takes place once a year.

The next question was to provide information on the integration of management reviews, which in the case of all organizations is integrated. Only in case of organization No. 1 management review is carried out in two stages. During the first part data from HACCP and BRC is being analyzed and during the second part data from the ISO 9001 standard is analyzed. This is due to the fact that the requirements of HACCP and BRC systems cover the same area of food safety.

Another issue related to the review of the management was a question about the record in the Management Inspection Report for an integrated system or a system of quality and food safety system. In case of organization no 1 and 3 it refers to an integrated system, with the exception that in organization 3 it is additional separate section for the food safety system. In turn of organization No. 4 the management review comes out of ISO 9001, and therefore there is no record for an integrated system, which is caused by the fact that the documentation has not been fully integrated. Nevertheless, the management review includes additional elements from other systems, such as HACCP, HALAL and KOSHER.

Representatives of the organization were also asked about the fact whether the input to management review shall include information about the HACCP system for example when critical limits at CCP are out of control, etc. In all surveyed organizations, the answers were affirmative, except that in the organization No. 2 and 4 these data are discussed at the level of a single location (plant), rather than globally.

The next question concerned the verification of the HACCP system and whether it is a part of the management review. The responses indicate that HACCP verification is part of the management review, but the way it is carried out is different. In the case of organization No. 2 during management review a general review takes place, and appropriate verification of the HACCP system is performed by HACCP team on the a regular basis. In the organization No. 3, verification has different levels of detail, where the full verification is carried out once a year, while the partial checks are held every month. However, in the in organization No. 4 HACCP team meeting concerning verification are held monthly but decisions that the system needs change are made once every quarter, and then creates a record of these activities.

Additional information obtained from all surveyed companies is the issue referring to the guidelines for the improvement of the management system, which are concluded in the management review.

The last question concerned the output data from the management review. In organizations 1, 2 and 3 outputs from management reviews provide guidance for an integrated management system covering quality management system and HACCP system. However, in case of organization No. 4 outputs from management reviews are generated separately for each of the systems, due to the lack of full system integration.

7. Conclusion

1. The integration of certain elements of the implemented management systems

results in a natural way from the operation of the organization.

2. Difficulties in integrating systems are mainly related to the functioning of organization in international groups in which some rules are set from the top down and it is impossible change them.

3. External benefits of certified management systems mean that organizations will not give up their certification in the near future.

4. In the surveyed organizations, the person responsible for the implemented management systems is one person.

5. Despite the existence of the documents allowing the integration of management systems such as PAS 99, the surveyed companies did not benefit from the guidelines contained in them, and led the integration of systems in their own way.

6. Auditor competence allows them to carry out audits of up to two systems.

7. Integrated audits planning is a problem with the knowledge and skills of auditors, who often do not have adequate experience in auditing integrated system.

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