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INTEGRATED MANAGEMENT SYSTEMS (IMS) ACCORDING TO ISO AND OTHER INTERNATIONAL MANAGEMENT STANDARDS

Использованы материалы диссертации на соискание ученой степени магистра, посвященной объединенным системам управления (IMS) в соответствии с международными стандартами управления. Рассматриваются требования различных стандартов управления с целью выявления общих и схожих элементов. Для этой цели используется методология, близкая к анализу House of Quality (HoQ). Рассматривается мотивация организаций по введению объединенных систем управления и структурные подходы к объединенным системам управления.

This paper is based upon the author's Master Thesis on Integrated Management Systems (IMS) according to international management standards. The Thesis addresses the requirements of various management standards in order to identify common or analogous elements. For this, a methodology similar to the analysis of the House of Quality (HoQ) is being used. Motivations of organizations for setting up an IMS are being investigated. Finally, structural approaches towards an IMS are presented.

1. The International Organization for Standardization (ISO) and management standards

ISO is a worldwide federation of national standards bodies [1]. The objective of ISO is to promote the development of standardization and related activities in the world with a view to facilitate the exchange of goods and services, and to develop cooperation in the spheres of intellectual, scientific, technology and economic activity [1]. Until 31 December 2003, ISO has developed and published a total of 995 international standards and standards-type [3]. Out of these standards the two major families' standards that play important role in management are ISO 9000 and ISO 14000.

The ISO 9000 family of standards represents an international consensus guideline on good management practices with the aim of ensuring that an organization can deliver the product and services that meet the customer's quality requirements [2]. A quality management system (QMS) enables organizations to analyse customer requirements, to define the processes that contribute to the provision of a product or a service meeting the specified requirements, and to keep these processes under control. A QMS can provide the framework to assist organizations in the continual improvement to enhance the satisfaction of customers and other interested parties [4].

The ISO 14000 standards contain management tools for organizations to control their environmental aspects and to improve their environmental performance. The ISO 14000 series of standards contains both organization- and activities-oriented standards. The organization-oriented standards provide comprehensive guidance for establishing, maintaining and evaluating an environmental management system (EMS) [1]. The activities-oriented standards are concerned with determining the environmental impacts of products and services over their life cycle, and with environmental labels and declarations [1]. ISO 9000 and ISO 14000 are voluntary instruments which can be used to improve the quality and environmental management systems of an organization.

2. Data on certification according to ISO 9001:2000 and ISO 14001:1996

The most recent data released by ISO on certification of the ISO 9001 and ISO 14001 standards show steep upward trends for many participating countries in all continents. These include the OECD countries which already have a certain tradition with management standards, and other countries such as those in Central and Eastern Europe and Latin America

Table 1

Selected Countries Certified According to ISO 9001:2000 and ISO 14001:1996 from 2000 to 2003[1]

Country	2000		2001		2002		2003	
	9000:1994	14001:1996	9001:2000	14001:1996	9001:2000	14001:1996	9001:2000	14001:1996
China	25657	510	7413	1085	40997	2803	96715	5064
Czech Republic	3855	116	320	174	1125	318	2565	519
India	5682	257	544	400	2247	605	8367	879
Hungary	4672	164	1349	340	4446	640	7750	770
Romania	1032	5	87	15	767	45	2052	96
Russian Federation	1134	3	35	12	314	23	962	48

where the numbers of certified organizations are increasing more than proportionately. China is also a country with very high growth rates in respect of certification. Up to December 2003, a total of 500 125 certificates of ISO 19001:2000 had been issued to various organizations in 149 countries and 66 070 certificates of ISO 14001:1996 in 113 countries respectively [5]. These data seem to reflect the growing importance of globalisation. For the time being, the data for Russia do also reflect this trend, but the total number of certified organizations is still very small for such a large country. Table 1 shows the growth of certification for five selected countries and the Russian Federation since 2000.

Source: ISO. adaptation by the author based upon the survey of ISO 9001:2000 and ISO 14001 Certifications from ISO [5].

Table 1 shows the rapid growth of certification in all selected countries. One has the impression that ISO certification is one of the basic requirements for sustained competitiveness in the international market.

Organizations throughout the world have been motivated by various reasons to seek ISO 9001 and/or ISO 14001 certification. While the cost involved differs from organization to organization, the certification process inevitably requires significant efforts with respect to designing, implementing and documenting appropriate processes, entailing both direct and indirect costs associated with consulting and audit fees, employee training and others [6]. Some organizations argue that an ISO certification leads to improved internal processes while others argue that customers increasingly require ISO certification. Thereby, certification should help maintain or increase an organization's market competence and share.

In a study by Corbett, Luca and Pan, a total of 5398 organizations from 15 countries[2] were asked about their motivations to seek for ISO certification [7]. Most organizations replied that they are motivated by the factors of «quality improvement», «environmental improvement», «corporate image» and «marketing advantage».

From a qualitatively point of view, organizations face the task of meeting various objectives in terms of quality, ecology, and health and safety, each of which are reflected in specific ISO and other international management standards. Whilst the structures of these standards are similar, organizations have a strong incentive to find ways and means for the creation of integrated management systems able to meet the requirements of all standards simultaneously. This is becoming even more important with the introduction of a management standard for health and safety known as OHSAS 18001 with a structure similar to ISO 9001 and ISO

[1] The certification of ISO 9001:2000 started in 2000 and organizations were given a time period of three years up to 15 December 2003 for the transition from the 1994 version of ISO 9001, ISO 9002 and ISO 9003 standards to ISO 9001:2000. Therefore, the data for 2000 include organizations that are certified according to ISO 9000:1994 and ISO 9001:2000. Data presented here are taken from the ISO Survey 2003 where ISO collects the data from various sources without guarantee their quality and accuracy. Note also that, since 15 November 2004, ISO 14001:1996 has been replaced by ISO14001:2004.

[2] Countries that were involved in the survey are Australia, Canada, France, Hong Kong, Indonesia, Japan, Republic of Korea, Malaysia, New Zealand, Philippines, Singapore, Sweden, Taiwan, Thailand and United States.

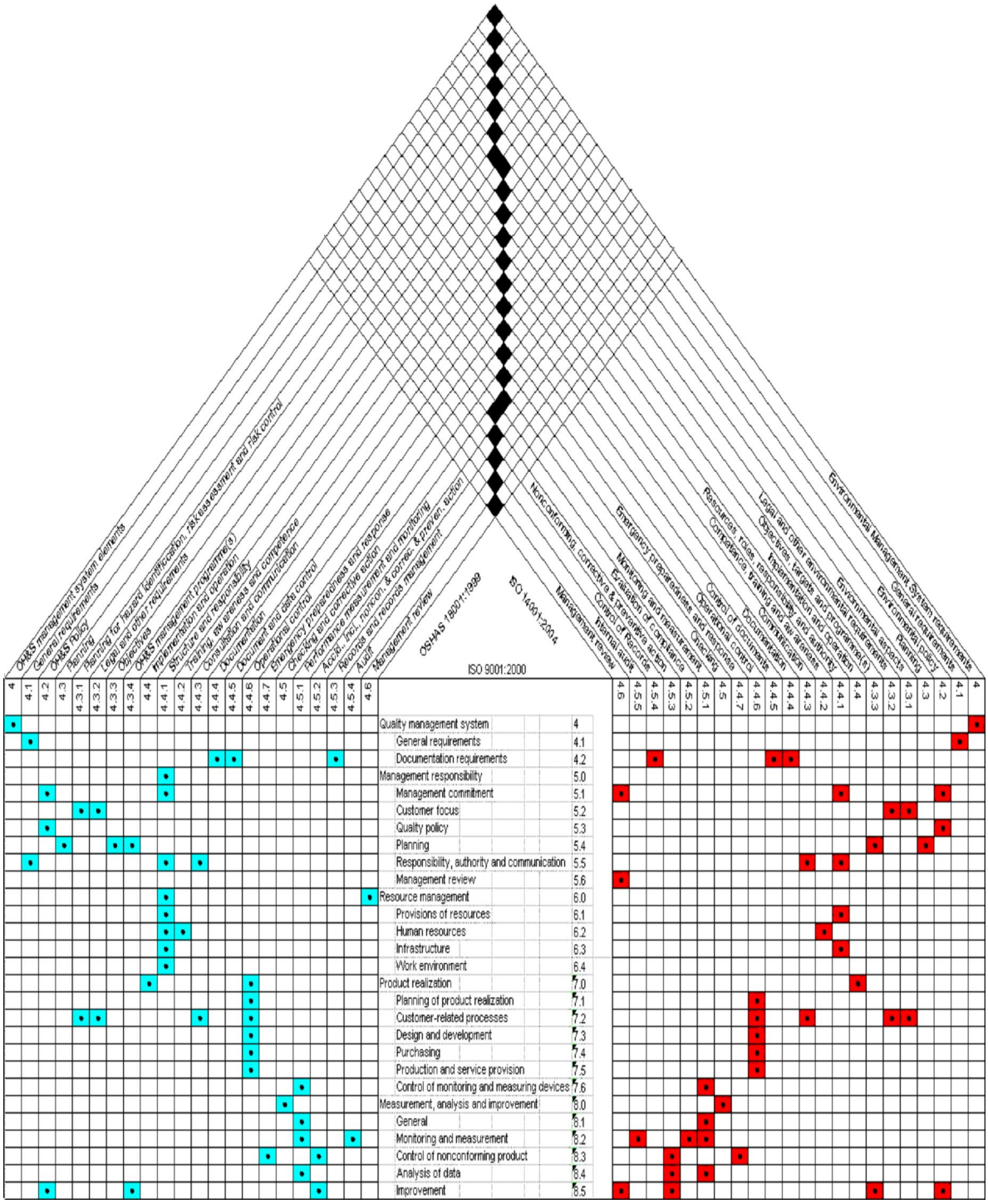


Figure 1: The Correspondence between ISO 9001:2000, ISO 14001:2004 and OHSAS 18001:1999

14001 which is not (yet) an ISO standard [8]. Since there is no intention of the international standards setting bodies to come forward with one integrative standard covering all objectives, the integration will have to take place at the level of management. Hence, in essence, integrated management systems will become important in the near future.

3. Integrated management systems

Integration is defined as the management of different issues such as quality, ecology, health and safety, and sustainability under a

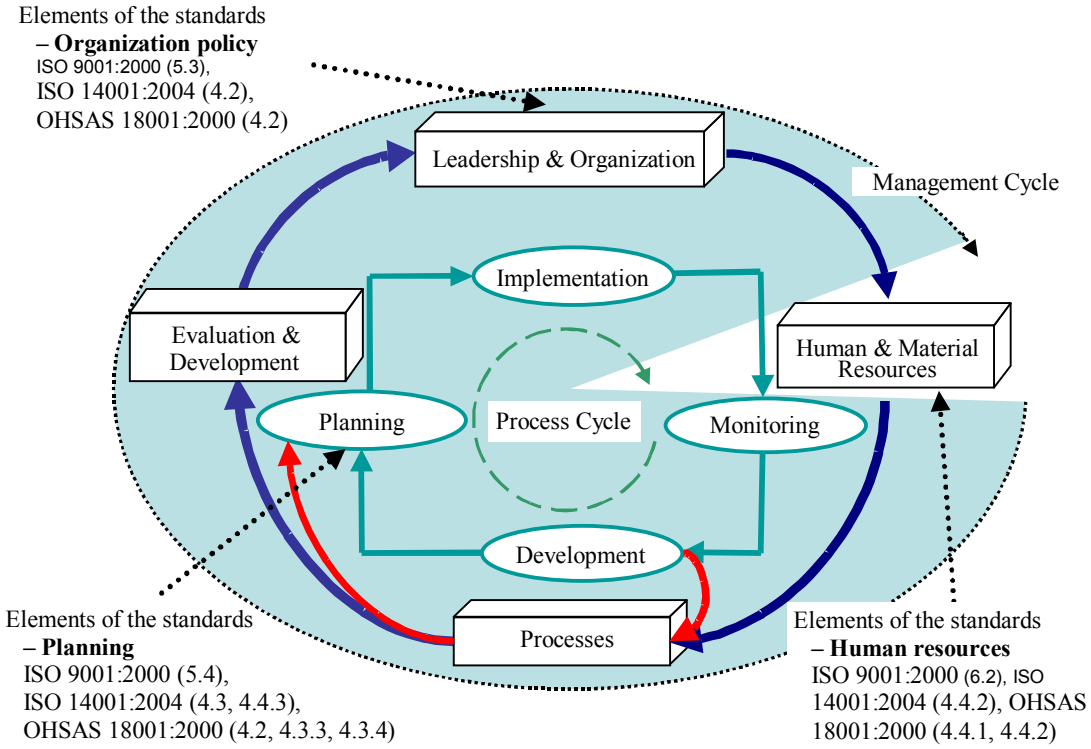


Figure 2: Integrated Management System (IMS) according to international standards at the levels of the management cycle and the process cycle

common management system, within one common framework inside the organization. Therefore, an integrated management system combines different management issues under one common framework so that employees of an organization can easily synchronize their daily routines with the system.

In order to set up such a system, it is important to compare the relevant standards in order to identify the common or analogous elements. For this, an approach similar to the analysis of the House of Quality (HoQ) has been used. Figure 1 shows the result of the identification of analogous elements of ISO 9001:2000, ISO 14001:2004 and OHSAS 18001:1999.

The elements of ISO 14001:2004 (red colour) and OHSAS 18001:1999 (blue colour) are aligned together with the elements of ISO 9001:2004 which are located in the middle of the house. The common elements must then be inserted in the various activities and functions of an organization. In this way they are implemented in the overall management system. Figure 2 illustrates this procedure.

The outer part of Figure 2 represents the management cycle. It starts with a commitment (leadership) and the setting up of an appropriate organization which employs staff and uses resources to combine them into processes. The outcome of these processes is evaluated and eventually leads to a further development of the management system. A new commitment is given by top management and the cycle can start again. The inner cycle represents the processes which are managed according to the same cyclical principle.

Source: adaptation by the author based upon Bayerisches Staatsministerium für Wirtschaft, Infrastruktur, Verkehr und Technologie [9].

The various elements or requirements of the standards can now be assigned to the stages of the management cycle and the process cycle. Figure 2 shows three such requirements i.e. organization policy, human resources and planning and their respective assignments by way of example. Since the three standards have an analogous structure, it is the task of the organization to identify those stages of the manage-

ment cycle or/and the process cycle to which the respective requirements can be assigned. In doing so, an integrative approach which takes all three standards simultaneously into account can be assured.

If applied systematically and using comparative synopsis tables on the requirements of the management standards, e.g. the table based upon the HoQ technique or other widely available tables, organizations are in a position to exhaustively assign each requirement of each management standard to a particular stage of their management cycle or/and process cycle. Hence, this method assures a complete implementation of the standards into an IMS.

4. Preliminary conclusive remarks

There is a rapid growth of certification according to ISO management standards in many countries of the world – with the Russian Federation lagging behind in term of absolute numbers.

Since there will be no integrative standard covering all performance objectives, the integration will have to take place at the management level of an organisation. Integrated Management Systems (IMS) will become important in the near future.

This paper presents a systematic method for organizations to assure a complete implementation of the standards into their IMS.

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