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INTEGRATION OF NORMALIZED MANAGEMENT SYSTEMS WITH AQAP STANDARDS

Abstract: The article presents difficulties and benefits of integration of normalized management systems such as: ISO 9001, ISO 14001, OHSAS 18001 with AQAP standards.

Keywords: AQAP, AQAP 2110, management systems integration, benefits of integration, difficulties of integration

1. INTRODUCTION

Integration of management system is an important issue since ISO 14001 standard in 2006 was developed. Nowadays there is a lot of international standards that describe different areas of management. In Table 1. there are presented popular international management standards and its classification, according to such criterion as:

- the objective of a management system,
- the application of a standard as the basis for the organizational development of a business area,
- the universality of a given standard.

Table 1. The examples of the major ISO management system standards. Source: based on [4]

Criterion	Types of standards	Examples
Objective	To ensure product/service quality	ISO 9001, ISO/TS 16949
	To ensure food safety	ISO 22000
	To reduce an organization's operational risk	ISO 14001, OHSAS 18001, PN-N 18001, ISO 27001, ISO 22301, ISO 28000, ISO 31000
	To improve an organization's results and image	ISO 26000, ISO 50001

Business area	Quality management	ISO 9001, ISO/TS 16949
	Food safety and hygiene management	ISO 22000
	Environmental management	ISO 14001
	Occupational health and safety management	OHSAS 18001, PN-N 18001
	Information security management	ISO 27001
	Business continuity management	ISO 22301
	Supply chain security management	ISO 28000
	Risk management	ISO 31000
	Social responsibility management	ISO 26000
	Energy efficiency management	ISO 50001
Universality	Universal	ISO 9001, ISO 14001, OHSAS 18001, ISO 27001, ISO 22301, ISO 28000, ISO 31000
	Sector-related	ISO/TS 16949, ISO 22000

There are also other well-known standards, that are issued by other than ISO organizations. The examples of that standards, are e.g. supplier standards in food sector – IFS, BRC [10].

One of the examples of specific management standards are NATO (North Atlantic Treaty Organization) publications. Quality management system is described in AQAP documents. There are two types of AQAP documents [13]:

- Contractual Type - These documents are in a "Technical Specification" format intended for contractual use;
- Guidance Type - These documents provide general guidance in the application of Contractual Type AQAP or standardized procedural guidance for GQA. They are not intended for contractual use.

In Table 2 there are presented Guidance Type of AQAP documents, that are used in quality assurance.

Table 2. The guidance type of AQAP documents. Source: based on [13]

No	Title
AQAP 160	NATO Integrated Quality Requirements for Software throughout the Life Cycle
AQAP 169	NATO Guidance on the Use of AQAP 160 Ed.1
AQAP 2000	NATO Policy on an Integrated Systems Approach to Quality through the Life Cycle
AQAP 2009	NATO Guidance on the Use of the AQAP 2000 Series
AQAP 2050	NATO Project Assessment Model
AQAP 2070	NATO Mutual Government Quality Assurance (GQA) Process

In Table 3 there are presented contractual type of AQAP documents, that are used in a certification processes.

AQAP standards commonly certified in polish organizations, are AQAP 2110, 2120, 2130. This standards are based on ISO 9001 standard with some changes. There are added such issues as:

- Quality plans and risk management (AQAP 2105) – added to ISO 9001 point 5.4,

- Control of monitoring and measuring equipment – point 7.6 with added the requirements of ISO 10012,
- Configuration Management – point 7.7,
- Reliability and Maintainability (R&M) – point 7.8,
- Access to Supplier and Sub-suppliers and support for GQA activities – point 9.1,
- Products for release to the Acquirer – point 9.2.

Table 3. The contractual type of AQAP documents. Source: based on [13]

No	Title	ISO 9001
AQAP 2105	NATO Requirements for Deliverable Quality Plans	No
AQAP 2110	NATO Quality Assurance Requirements for Design, Development and Production	Yes
AQAP 2120	NATO Quality Assurance Requirements for Production	Yes
AQAP 2130	NATO Quality Assurance Requirements for Inspection and Test	Yes
AQAP 2131	NATO Quality Assurance Requirements for Final Inspection	No
AQAP 2210	NATO Supplementary Software Quality Assurance Requirements to AQAP 2110	No
AQAP 2310	NATO Quality Management System Requirements for Aviation, Space and Defence Suppliers	AS 9100

The differences between AQAP 2110, 2120, 2130 standards are mostly in the scope of the 9001 exclusions. In AQAP 2130 are the largest exclusions of ISO 9001 standard requirements: 7.1 - Planning of product realisation, 7.3 - Design and development, 7.5.2 - Validation of processes for production and service provision.

The integration of AQAP system with ISO 9001 quality management system is quite easy, because of the structure of the AQAP standard. But still there are some problem with the

integration processes. The most problematic one are risk management and configuration management issues [9].

The Figure 1. presents, how to choose the required AQAP system.

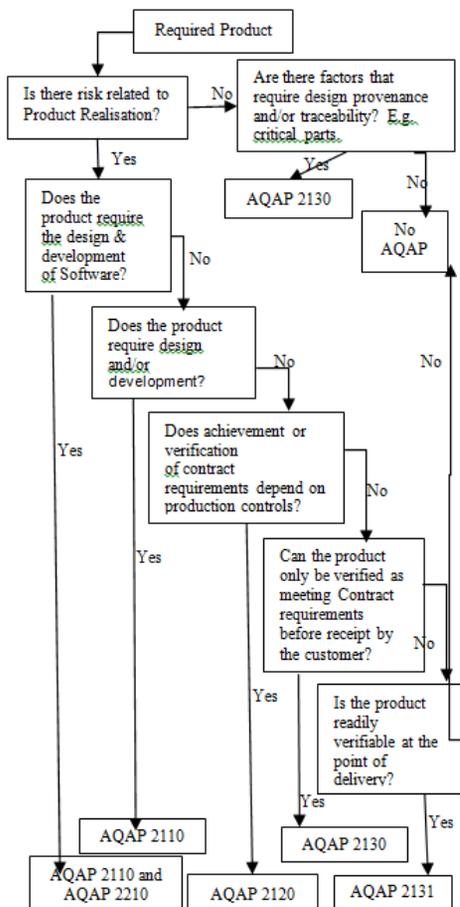


Figure 1 - Required AQAP product [1]

2. MATERIALS AND METHODS

The methodology used to collect the data was a survey mailed in 2014 to a sample of Polish organizations registered to at least two management systems selected from popular international standards, e.g.: ISO 9001, ISO 14001, PN-N 18001, ISO/IEC 27001, ISO 22000. The survey was sent to 885 organizations located in Poland. There were 81 valid questionnaires obtained, representing 9,2 % response rate.

According to the European Commission's

classification [5], there are 24,7% of small organizations, having 50 employees or less in the studied sample. About 37,0% of medium sized organizations with the number of employees between 51 and 250, while 38,3 % are large organizations having more than 250 employees.

With respect to implemented MSS in studied organizations, all have implemented ISO 9001 standard. Two other popular standards that are widely implemented are environmental management standard ISO 14001 – 67,9% and occupational health and safety management standard according to Polish or British standard (PN-N 18001, BS OHSAS 18001) – 50,6%.

In studied companies, 19,8% had implemented AQAP standard. In that group the AQAP 2110 was implemented in 60% of organizations, AQAP 2120 in 30% and AQAP 2130 in 10% of studied organizations with AQAP system.

The level of integration of MSSs was measured by the degree of integration of the system goals, resources and processes. In the survey, the organizations indicated whether certain aspects of integration were fully integrated, partially integrated or not integrated. Only organizations that declared the integration of MSS answer the questions about the level of integration. In order to measure the degree of integration of system goals, resources and processes 5 point Likert scale were used. There were used a open-ended questions to gain the information about the implemented systems and the time of the implementation in the survey.

That kind of measure is popular and used by other authors [2-3, 6-8, 12].

The results of the study are presented in the next section. Data processing was largely descriptive in nature. This descriptive analysis enables an illustration of the benefits of integration of management systems in Polish companies.

3. RESULTS AND DISCUSSION

In studied companies with certified AQAP system, most of them had implemented ISO 9001 first and after some time AQAP standard (56%).

The difficulties of integration of management system in a group of companies with AQAP and without AQAP system are presented on Figure 2. Surprisingly in a group

of companies with AQAP management system almost all difficulties of integration were bigger that in an organizations which haven't got AQAP standard in IMS. Two mostly indicated difficulties of IMS integration were low employee motivation and limited human resources used for the integration purpose.

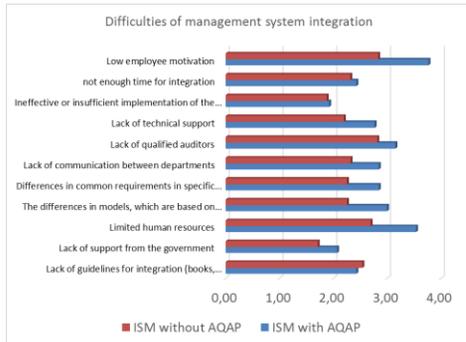


Figure 2 - Difficulties of management system integration. Source: own study

The benefits of integration of management system in a group of companies with AQAP and without AQAP system are presented on Figure 3.

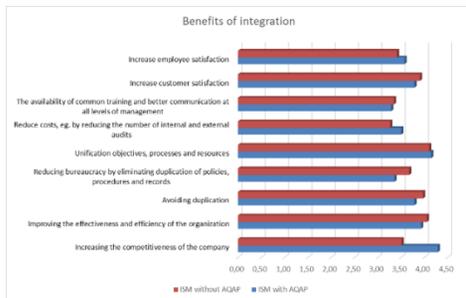


Figure 3 - Benefits of management system integration. Source: own study

Benefits of integration such as: increasing the competitiveness of the company, unification objectives, processes and resources, costs reduction and increase of employee satisfaction were more often pointed out by companies with AQAP system as one of the integrated management systems. Benefits such as improving the effectiveness and efficiency of the organization, avoiding duplication, reducing bureaucracy by eliminating duplication of policies, procedures and records, the availability of common training and better communication at all levels of management as well as increase of customer satisfaction were

more often pointed out by companies without AQAP system in the ISM.

In organizations that implemented AQAP system and integrated it with other MS, integration was usually on a high level. In table 4 there are presented common procedures and the level of its integration.

Table 4. Integration of procedures. Source: own study

Procedure	Integration [%]		
	Full	Partial	No
Planning	80	20	0
Internal audits	87	13	0
Management review	87	13	0
Control of non-conforming product	93	7	0
Corrective and preventive actions	93	7	0
Product realization	87	13	0
Human resources	93	7	0
Determination of requirements related to the product	80	20	0
Continual improvement	87	13	0
Control of documents	93	7	0
Control of records	93	7	0
Internal communication	80	13	7

In most cases, common procedures of different management system were fully integrated. The lower level of integration was related to such procedures as: planning, Determination of requirements related to the product and internal communication. This procedures were fully integrated only by 80% of companies with AQAP system. The highest level of integration was related to such procedures as control of documents and records, human resources management, control of non-conforming product and corrective and preventive actions.

7. CONCLUSIONS

Quality assurance system according to

AQAP standards is an obligatory system in a military sector. AQAP 2110, 2120, 2130 standards are based on ISO 9001 requirements. In studied organizations AQAP system was integrated with international management systems such as ISO 9001, ISO 14001 or OHSAS 18001. The biggest difficulties in the process of integration were related to the

human resources - low employee motivation and limited human resources used for the integration purpose. The benefits of integration were scored in presented research much higher than the difficulties. The most important benefits were: increasing the competitiveness of the company and unification of objectives, processes and resources.

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