Integration of Standardised Management Systems

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Abstract: In economic, political, and natural environments as changing and hazardous as those of our days, far-sighted corporate planning is often impossible. Corporate management has recently been determined, both in Hungary and worldwide, by such factors as transitory insufficiency of resources, decrease in orders, inflation, and a global pandemic. Rather than proposing a solution to these problems, this paper is meant to direct attention to a means, known as Standardized Management Systems, and an integrated use thereof, that may help businesses to tide over hard times and has the quality of inspiring confidence in business or technological partners.

Keywords: process risk; process security; implementation project

1 Introduction

A process-oriented approach to corporate management has been gaining ground since the 1980's. Efficiency, quality, and a controlled completion of business and technological processes are aims of as high priority as the former focus on profit or sales. A number of laws (enacted, for example, on environmental considerations), 'obligatory' partner expectations, and an 'unenforced' sparing of external and internal resources provide a framework for secure everyday operation of producers / service providers, and attainment of strategic goals [10].

Researches, advanced methodologies, standards, and directives carried out or developed in the last couple of decades line up behind the process-oriented approach to corporate management, and may help companies adapt themselves to turbulent changes of the business ambience. In a chronological order of emergence, these management tools include, but are not limited to:

- Porter's value-chain model [17],
- Business Process Re-engineering or BPR [6] [19],
- Transaction-processing systems (e.g. ERP systems) [15] [20],

- Controlling systems (e.g. Balanced ScoreCard) [12],
- Standardised Management Systems and an integrated use thereof [11],
- IT systems designed to support process management (e.g. Aris) [5] [15],
- Definition and monitoring of Key Performance Indicators (KPI's) [1]
- Risk analysis in a VUCA world [3],
- Business Continuity Management and corporate resilience [4],
- Industry 4.0 and robotization renewed technology processes [7] [9].

It is on the basis of these sources that the notion 'process security' has been evolved. *"Process security can be defined as a state in which, with all required inputs (or resources necessary for execution of the process) given, the organizational units responsible to fulfil process-related tasks will produce outputs (such as products, services, or information) in adequate quantity and quality in due time, and upon any disturbance, normal operation of the process can be restored with lowest possible use of resources within the shortest possible time."* [13; p. 402]

2 Standardised Management Systems of ISO

The International Organization for Standardization has been carrying out international surveys on the use of ISO 9001 quality management systems and outcome of certification of organizations since 1993 [23]. The survey report with data from year 2021 presents data on as many as 16 certifiable and auditable management systems (see Table 1).

Though the number of certificates issued keeps changing, not necessarily covering all organizations audited, the % shares are striking. Quality management systems add up to more than half of all standard management systems. While the ISO is not the only entity to have proposed standards with requirements specified for managements systems, the efforts this international organization has made in this area so far are, most probably, dominant, especially in Europe and the Far East. A peculiar fact, the ISO systems are all auditable and certifiable, while this does not necessarily apply to management systems or directives designed by other organizations.

Table 1
Management System Standard Certifications, 2021 [21]

Standards	Management systems	Number of certificates	%
ISO 9001	Quality management	1 077 884	55,06%
ISO 14001	Environmental management	420 433	21,48%
ISO 45001	Occupational health and safety	294 420	15,04%
ISO/IEC 27001	Information security	58 687	3,00%
ISO 22000	Food safety	36 124	1,85%
ISO 13485	Medical devices - Quality management	27 229	1,39%
ISO 50001	Energy management	22 575	1,15%
ISO/IEC 20000-1	Information technology - Service management	11 769	0,60%
ISO 37001	Anti-bribery management	2 896	0,15%
ISO 22301	Security and resilience - Business continuity management	2 559	0,13%
ISO 39001	Road traffic safety management	1 285	0,07%
ISO 28000	Security and resilience - Security management	584	0,03%
ISO 55001	Asset management	488	0,02%
ISO 20121	Event sustainability management	253	0,01%
ISO 29001	Petroleum, petrochemical and natural gas industries - Sector-specific quality management	157	0,01%
ISO 44001	Collaborative business relationship management	136	0,01%
Sum		1 957 479	100,00%

Management systems are used to ensure that the management staff of a business organization be capable of keeping its business-related and technological processes and resources under continuous control. A series of management systems (or a single integrated management system) should co-ordinate and regulate a totality of all organizational processes ranging from planning and governance to checking. A good management system is required:

- to be checked and improved on an ongoing basis (through the PDCA cycle),
- to be documented (multi-level, up-to-date prescriptive and descriptive documentation accessible to all concerned),
- to take adopted organizational practices (in process management) into account, and
- to be in tune with business goals.

Management system standards define requirements to meet, while it is always up to the user organization to decide upon a way of meeting such requirements.

3 Benefits of Integration

The ISO standardized management systems lend themselves to integration. An organization should find out which management systems it is required by its business partners (such as suppliers, co-operating partners, subcontractors, and customers), owners, and managerial staff to implement and run, and may choose

to set up a single integrated management system instead of a former series of self-contained ones.

Considerable benefits may result from a choice like with regard to the overall load on the organization.

By implementation of a single process-oriented, documented and unified management system, duplicate use of controls with respect to the very same processes, as would result from the existence of various management systems, can be avoided. Clear-cut responsibilities and powers can be assigned to different jobs. Confidence in the business will gain strength. Moreover, a transparent integrated management system made up of several subsystems often brings along a competitive advantage. Thanks to built-in performance indicators (KPI's), the efficiency and successfulness of processes can be measured and checked.

Furthermore, external and internal communications are likely to improve. Optimization of production or service delivery is expected to lead to shorter corporate response times and a cost reduction. Redundant requirements with no relevance to the operation of the organization will not be specified any longer.

With ISO management systems, certification acceptable by an independent trade association is subject to completion of an external audit every 3 years. Where multiple management systems are integrated into one in an organization, the number of troublesome periodic inspections and internal audits can be reduced, each audit and certification covering all subsystems involved. A well-integrated management system will yield more than what performances by individual self-contained management systems may add up to. Standardized management systems have layouts with a lot of similarities. The annex to standard ISO/IEC 27001 contains a table showing relations between standards and similarities between their layouts. It is Quality Management (ISO 9001), Environmental Management (ISO 14001), and Occupational Health and Safety (ISO 45001) that are most often involved in integration of systems, with Information Security Management (ISO/IEC 27001) closing up quickly nowadays. Likewise, these are the standards mentioned mostly in literature on system integration [2] [11] [18].

Primarily, an integrated management system should be based, and focus, on value creating processes, and a quality management system may be the best choice to use as basis for that. An organization may not start to set up all subsystems of its integrated management system simultaneously. The integration process may take place in parallel with the functioning of an existent ISO 9001 system. At the end of the process, however, all controls affecting the totality of processes will be included in a single standardized handbook and a set of standardized procedures instead of a series of documents, each dealing with quality management or environmental management or occupational health and safety separately. Duplicate keeping of information or use of unnecessary records (whether electronic or paper-based) should be avoided. It is to be noted that an integrated

documentation system alone cannot be regarded as an integrated management system [22].

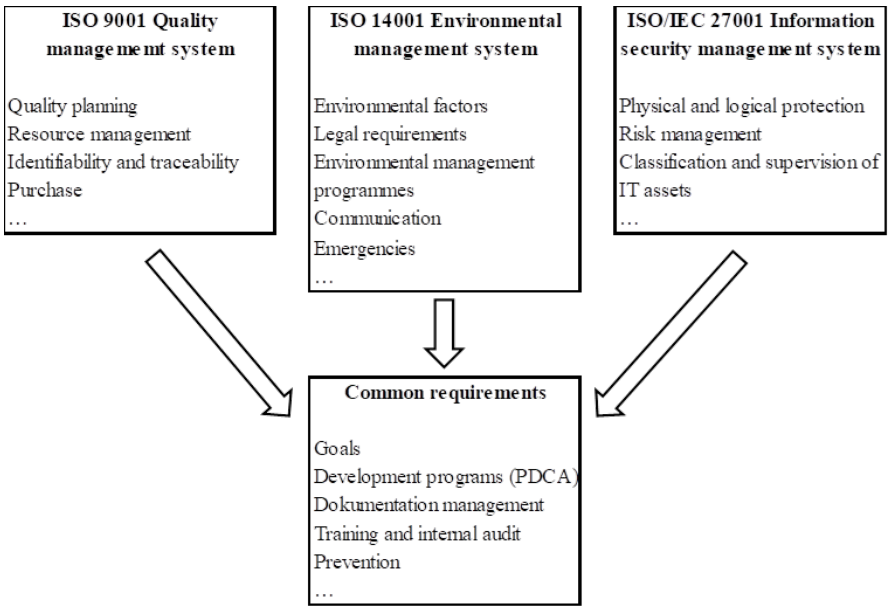

Figure 1

Common requirements for an integrated management system (sample)

4 The Project towards Setting up and Implementing an Integrated Management System

The process-oriented approach is a characteristic that all standardized management systems have in common. Situational assessment is aimed at an analysis of both external and internal processes. Controlled and documented processes will result in a transparent organization. Implementation of controls designed in full detail will lead to improved corporate resilience, transformation of the organizational culture, reproducible processes, and a clear assignment of a well-defined sphere of responsibilities to each employee. Integrating ISO 9001, ISO 14001, and ISO/IEC 27001 into a single system implies efforts taken to lay the foundations of a quality-centered, green approach to corporate management with a risk-averse and prevention-focused attitude in information security, which is likely to bring about improved quality, cost reduction, environment-friendly operations, and availability of information. Employees concerned should be delivered training concurrently with efforts to develop detailed controls and ensure conditions necessary for operation. (All these are meant to meet

requirements of the standards and expectations of external and internal stakeholders, as well as comply with relevant rules of law.)

Checks (or pre-audits) and repeated certifications of the resultant management system will equally serve to encourage and compel continuous improvement.

The project phases (or sets of tasks to be completed) are outlined below:

1) Project initiation and efforts in preparation (setting objectives, selecting a management system, setting up a project team, considering factors of return, and formulating an integrated enterprise policy).
2) Situational assessment (analysing business-related and technological processes, exploring interconnections, simplification, optimization, and documentation).
3) Identification of targets in terms of quality, environment protection, and security, as well as criteria, and actions to take, all in line with organizational goals.
4) Allocation of resources for implementation and maintenance of the integrated management system.
5) Personalized instruction and training of employees.
6) Risk assessment and management (identifying risks using size and probability of damages, and reduction, sharing, shifting or possible acceptance of risks).
7) Development of business continuity plans, with additional identification of substitute solutions.
8) Drafting of all necessary documents (a handbook, process descriptions, procedures, policies, work instructions, and job descriptions).
9) Efforts in preparation for certification (internal and external audits, measurement – analysis – improvement).

The requirement of risk management mentioned in Phase 6 carries differing weights in standards designed for different management systems. Any simultaneous use of different approaches in terms of identification, analysis, assessment, and management of risks may cause troubles in the integration process. While the ISO/IEC 27000 series of standards includes a risk management standard applicable to information security (ISO/IEC 27005), application of such a general standard of the International Organization for Standardization as ISO 31000 or ISO 31010 or perhaps another globally recognized methodology available (e.g. MIL-STD-882E) is recommended. Where quality, environmental and information security management systems are to be integrated, their risk management approaches should be reconciled first. As a matter of course, these three areas are associated with different sources of risk. For quality, crucial

sources of risk are likely to include product design, production technologies, business strategies, and competence of human resources. To the environment, such factors as external environmental impact, environmental pollution, and use of materials may have relevance. With regard to information security, physical and logical protection of information assets, including IT systems and data media, is of highest priority.

A risk can be defined as a function of the size and probability of damages. Consequently, organizations should make an attempt at designing and implementing a standardized corporate risk rating system for the parameters mentioned above [16]. The resultant product, or risk level, will, in its turn, determine the necessary risk management procedures and actions [10]. Certainly, the PDCA cycle (i.e. the approach of continuous checking and improvement) can be used in risk management as well as maintenance of management systems [2].

In a paper of hers [8], Jørgensen identifies the following three levels or stages of integration for that of standardized management systems:

1) The organizational units that use management systems, will standardize their documentation systems and communication channels (correspondence). This will result in less duplicate paperwork as would arise from simultaneous use of multiple management systems, and render external and internal audits easier. This stage is based on a common, standardized corporate risk management system.

2) Generic co-ordination: Standardized process management and improvement in accordance with the Plan-Do-Check-Act model, with resultant focus on synergies between management systems. At this stage, different management policies and goals will also be brought in line.

3) Full integration: The integrated management system will accomplish a full co-operation of all people concerned, with no separate management systems remaining. Continuous improvement and monitoring for external and internal changes will be systemic processes.

As early as upon initiation, the following tasks and parameters linked with the design, completion, and documentation of the project should be defined clearly [18]:

a. Project objectives and expected outcome (in terms of fulfilment of requirements on management systems, certification, process control, and co-ordination of business goals).

b. Setting up a temporary project team (identification of a project sponsor, a project leader, and project team members).

c. Scheduling actions (as implementation of a management system or integration may take as long a time as a year or more), and setting milestones.

d. Identification of a project management tool (network design software) and a link thereto.

e. Development of a project reporting system.

f. Carrying out a cost–benefit analysis.

Conclusions

A standardized integrated management system in operation will not solve any or all problems as a business organization may have to face owing to changing economic and market environments, intermittent availability of resources or unpredictable environmental impact. If well-implemented: however, it will contribute to a resilient and process-based corporate management and help the organization with handling unforeseen situations. As a matter of course, the 'subsystems' (or components) of an integrated management system are associated with a different set of targets or goals each that must be fulfilled upon integration too.

Setting up and running a management system should always be regarded a means rather than an ultimate corporate goal, and will result from a strategic decision in any case. Identification and selection of component subsystems for an integrated management system are based on decisions made by the internal managerial staff, while also driven by such factors as the 'load-bearing capacity' of the organization and expectations of external partners (such as customers, suppliers, co-operating partners, and government bodies) and owners. Project management tools are available for implementation.

In addition, auditing and certification may assure external partners that all technological and business-related processes are run in a controllable and documented (or traceable) manner at the organization in question. An operation-oriented, integrated management system furthers attainment of business goals, and facilitates an efficient use of organizational resources.

Acknowledgement

The writing of this work was also inspired by my doctoral students since 2014 in Doctoral School on Safety and Security Sciences, Óbuda University.

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