About the Integration of Information Security and Quality Management

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ABSTRACT

In this article, the ISO/IEC 27001 and ISO 9001 standards are analyzed. Based on the similarities and differences between the quality management system and the information security management system, the possibility of their integration is shown, as well as the advantages of this solution. The advantages and disadvantages of these management systems, statistics on the number of certificates issued in the world according to the relevant standards and trends in their distribution are considered in detail. It is concluded that it is possible and necessary to integrate these control systems.

Keywords: Standards of ISO, quality management system, information security management system

Introduction

In the modern world, with the advent of widespread and convenient technical devices, the problem of information security has become quite acute. Along with the release of quality products or the provision of services to enterprises, as well as organizations, it is important to keep the necessary information secret from competitors to remain in advantageous positions in the market. In the competitive struggle, various actions aimed at obtaining (obtaining, acquiring) confidential information in a variety of ways, up to direct industrial espionage using modern technical intelligence tools, are widespread [1-7]. Thus, organizations that adhere to the best world practices, containing requirements, and guidelines for the implementation of business process management systems in an organization, become leaders in the market. The best standards for the development, implementation, monitoring and improvement of such systems are the documents of the International Organization for Standardization (ISO). Particular attention should be paid to the standards of the ISO 900x and ISO 2700x series, which contain best practices for the implementation of a quality management system and an information security management system [8-11].

The quality management system implemented following the requirements of the ISO 9001 standard has long been recognized as an integral attribute of a successful company that produces high-quality products or provides high-class services. Today, the presence of a certificate of conformity is both an effective marketing solution and a mechanism for controlling production processes. QMS audit is a developed line of business [12-17].

The dependence of the company's successful activity on the corporate information protection system is increasing daily. This is due to the increase in the volume of vital data processed in the corporate information system. Information systems are becoming more

complex, and the number of vulnerabilities found in them is also growing. An ISMS audit allows you to assess the current state of the security of the functioning of a corporate information system, assess and predict risks, and manage their impact on the company's business processes [18-21].

Quality Management System Standards

ISO 900x is a series of international standards that describe the requirements for a quality management system for organizations and enterprises. The ISO 900x series of standards was developed by Technical Committee 176 (TC 176) of the International Organization for Standardization.

The standards are based on the ideas and provisions of the theory of total quality management (TQM).

The ISO 900x series of standards addresses various aspects of quality management and includes the most well-known standard, ISO 9001. The standards provide guidance and tools for companies and organizations that want their products and/or services to continually meet customer requirements and continuously improve quality. ISO 9001 specifies the requirements for a quality management system, while ISO 9000 provides the basic concepts and vocabulary, while ISO 9004 focuses on how to make a quality management system more effective and efficient. ISO 9011 is a guide for internal and external audits of quality management systems [22-26].

ISO 9001 specifies requirements for quality management systems and is the only standard against which external certification can be carried out (although this is not a requirement). It can be used by any organization, regardless of the field of activity. ISO 9001:2008 has been implemented in more than 170 countries around the world, and the number of organizations that have implemented the standard exceeds 1 million.

The basis of the standard is several quality management principles, including great attention to customer satisfaction, motivation and involvement of top management, the process approach and continuous improvement. The use of ISO 9001 ensures that consumers receive consistently good quality products and services, which in turn brings many business benefits [27-32]. System health checks are an important part of the ISO 9001 standard. Organizations should conduct internal audits to verify the operation of the quality management system. An organization may decide to invite an independent certification body to verify that it does not conflict with the requirements of the standard. Alternatively, it may invite its clients to conduct a quality system audit themselves (second party audit).

Information Security Management System Standards

ISO/IEC 2700x is a series of international standards that includes information security (IS) standards published jointly by the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). The series contains best practices and recommendations in the field of information security for the creation, development and maintenance of ISMS. The ISO/IEC 2700x series demonstrates a whole system of regulatory international documents that reflect the Western model of information security management, containing guidelines, rules, and security measures [33-38]. One of the most famous and practical standards is ISO/IEC 27001:2005 "Information technology - Security techniques and tools - Information security management systems - Requirements". The standard defines information security as: “maintaining the confidentiality, integrity and availability of information; in addition, other properties can be included, such as authenticity, non-repudiation, credibility.”

The standard guides both implementing an ISMS and obtaining third-party certification that security controls exist and function following the requirements of this standard [39-41]. The standard describes the ISMS as a comprehensive management system based on business risk principles for implementing, operating, monitoring and maintaining a security management system.

Similarities between ISO 9001 and ISO 27001

Both standards are built on the principle of a "process approach" in the development,

implementation and improvement of the effectiveness of the ISMS. The "process approach" is understood as a system of identification and management of the processes used by the organization, as well as ensuring their interaction. The main advantage of this approach is continuous management (at the intersection of processes, their various combinations and interactions). One of the methods for implementing the "process approach" to management is the classic closed cycle of management Plan-Do-Check-Act, known as the "Deming cycle", "Deming-Shewhart cycle", which is laid down again in the QMS process organization model of the ISO 9001 standard. In addition to the same "process approach", the QMS and ISMS standards correspond to each other, and moreover, they have a similar structure in terms of requirements, which is reflected in the annexe to the ISO 27001 standard. ISO 27001 and ISO 9001 standards have a similar structure for regulating the quality system and information system security [42-46]. At the same time, it can be concluded that the ISO 27001 standard has a wider application.

Integration of management standards

At first glance, quality management and information security are completely different areas. However, in practice, they are closely related and form one whole. Customer satisfaction, which is the objective goal of quality, every year increasingly depends on the availability of information technology and on data security, which ISO 27001 is used to maintain. On the other hand, ISO 9001 accurately matches the corporate goals of the organization, helping security. Thanks to an integrated approach, ISO 27001 can be effectively integrated into existing QMS or implemented in conjunction with a QMS.

More than 27,200 organizations in a wide variety of industries in more than 100 countries worldwide are certified to ISO 9001 for quality management. Depending on the market and legal requirements, many organizations are increasingly forced to deal with information security. In this regard, the integration of the control system offers real opportunities. An integrated approach is just as interesting for companies that have not used any management process so far. ISO standards for quality (ISO 9001), environmental protection (ISO 14000), information security (ISO 27001) and IT service management (ISO 20000) have a similar structure and process approach [47-50]. This provides a synergy that pays off: in practice, an integrated management system for ongoing operations saves about 20 to 30 per cent of the total costs for system optimization, checks and audits.

Information security and quality management standards are aimed at continuous improvement following the PDCA model. In addition, they are similar in their structures, as shown in the correspondence table in Annex C of ISO 27001. Both standards define the concepts of the process approach, scope, system and documentation requirements, and administrative responsibility. In both cases, the structure ends with an internal audit, management review and system improvement. In this, both systems interact. For example, ISO 9001 requires the management of non-conforming products. Similarly, in the ISO 27001 standard, there is a requirement for incident management to resolve failures [51-53].

Differences between standards complement each other usefully, which will decisively contribute to increased business success. For example, ISO 9001 requires the definition of corporate goals, customer focus, and measurability to what extent goals and objectives are met. These three issues are not the focus of ISO 27001. In turn, this standard gives priority to risk management for business continuity and offers detailed assistance in implementing an ISMS. Compared to this, ISO 9001 is more of a theoretical standard.

Conclusion

In conclusion, it should be noted that in modern business, the integrality of the basic quality management system, built in accordance with the requirements of the ISO 9001 standard, and the emerging information security management system is obvious. Today, the market leader will be companies that track not only the quality of products and services

but also the levels of confidentiality, integrity and availability of information about them. Also, an important success factor is forecasting and risk assessment, which requires a competent approach and the use of the best international practices.

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