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## Innovation as a part of an existing integrated management system

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### Abstract

This paper approaches the need for innovation management in the context of an existing integrated management system implemented in an organization. During the last decade almost all companies have been certificated according to various management systems, like quality management system, environmental management system, health and safety management system and others; furthermore many companies have implemented an integrated management system, by integrating two or more management systems. The problem rising today is how to integrate innovation in this integrated management systems. The challenge of the problem is that the development of an innovation management system is in the early phase. In this paper we have studied the possibility of integrating some of the innovation request in an existing management system, we have identify the innovation performance request and we proposed some recommendations regarding innovation management and its implementation as a part of an integrated management system. This paper lies down the bases for developing an model of integration management systems that include innovation as a main part of it.

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## 1. Introduction

The road to success for companies in today's economic environment is more demanding than ever and the capacity of adapting to the rapid changes is compensatory in order to resist on the market. The managers struggle, daily, with increasingly complex problems, caused by fierce competition in the market but also from the rising demands of customers. Innovation seems to be the solution for these problems.

The reality of current business environment, force managers to think of new ways of dealing with the challenges. The globalization of the economy leads to a fierce competition on the market, fueled by the customer easy access to information and therefore leading to high expectation from the companies. In this context every manager need to adopt some strategy in order to stay on the market. One step is to pay attention to the market and to the competitors and to stay updated. Innovation is one of the characteristic that every organization should developed and implement it into the company, because it is the only tool that can bring responses to the complex situation that a manger is facing today.

There are a lot of definitions for innovation in the literature, thus highlighting again the importance of innovation. In our article we have decided to define innovation as defined by OECD (2005), the implementation of a new product or the significant improvement brought to a new product (good or service) or process, a new marketing strategy, an organizational strategy or a new business strategy, workplace organization or external relations management, (Maier, 2014;Purcarea, 2011).

Starting from this definition we have studied the evolution of researches regarding innovation, in the literature, and we have identify the components of the innovation process, the possibility of managing innovation and some possibility of creating an innovation management system. The significant inters of managing innovation has been materialized in the last years, in Europe, by formulation of CEN/TS 16555-1:2013, which offer some technical specifications regarding the innovation management system (\*\*\*, 2013).

Most of the company have implemented one or more management systems. The most used management system is the quality management system but also the environmental management system and safety and occupational management system are often implemented. The advantages of implementing an integrated management system form by two or more management systems, in an organization have led a lot of company to adopt it. The scope of this article is to establish and develop a way of integrating innovation in to every day management systems existed in a company.

## 2. Current approach regarding integrated management systems

### 2.1. Defining elements for management systems

We started our research by asking “What is the meaning of the concept of management system?” The literature has multiple definition for management system, according to Andreson (2005) a management system is the processes and procedures used to ensure that an organization can fulfill all tasks required to achieve its objectives. In Asif (2008), management system is defined as a set of elements through which the performance management process is ensured in order to increase economic profitability.

Other research paper(Wilkinson, 2001; Anastasiu, 2009; Jorgensen, 2001) defines management system as the ensemble of elements with decision, organizational, informational, motivational character, within the organization through which all management processes and relations are carried. A management system of an organization can include different management systems, such as quality management system, financial management system and environmental management system etc.

In the research of Dragomir (2010), the phases of the life cycle management system are represented by the following steps and their characteristics.

- *Design* - identify the purpose for which it wants an integrated management system and determine the technical characteristics required for its functionality;
- *Implementation* - actual development of integrated management system components, their implementation within the organization and testing / correcting them;

- certification- obtaining external validation the efforts made by successfully passing an independent certification audits;
- maturity-routine maintenance of the system components, using its functionalities and continuous improvement of the integrated management system;
- Withdrawal/Transformation-upgrade the system by adding new sub-systems, switching to a new level of performance or withdrawal of integrated management system from operation and sometimes withdrawal of the organization from activity.

A management system is a tool available to the organization, used to communicate the interdependence of people and processes allows decision making under conditions of fair analysis will make it possible to increase profits.

2.2. Characteristics of the principal management system

By analyzing the literature (Wilkinson, 2001; Bernardo, 2010; Jorgensen., 2006; Patience, 2008; Abrahamsson, 2010) we have identify the characteristics of the principal management systems implemented by the companies worldwide. To have a clear image and due to the lack of space, in this article we have synthesized the characteristics found in the literature of ISO 9001, ISO 14001, OHSAS 18001 and ISO 27001 management systems in table 1.

Table 1. Characteristics of management systems

Management system type	Characteristics
<b>Quality management system ISO9001</b>	ISO9001 is a quality management standard, internationally recognized, designed to provide a common approach to the application of quality management system to companies and organizations. Quality Management System(QMS) is a set of management processes among which are interference, associated documents and structural elements of the organization, whose purpose is the overall direction and control of the organization in terms of quality. It is a management system which directs and controls an organization in terms of quality. Quality management is based on eight principles namely: customer orientation; leadership; staff involvement; approach as a process; management approach as a system; continuous improvement; management based on facts; mutually beneficial relationships with suppliers.
<b>Environmental Management System(ISO14001)</b>	Environmental Management System(ISO14001) is a useful "tool", allowing organizations of any size or type to control the impact of its activities, products, services on the environment.
<b>Occupational health and safety management system (OHSAS 18001)</b>	The management of occupational health and safety (OHSAS 18001) is a working model for organizations seeking better control over risks. It was designed to complement the quality and environmental management systems and is based on explicit requirements for more efficient management of occupational risks and creating a culture of prevention among employees. The system OHSAS 18001 is focused on reducing and preventing accidents and reducing their consequences in terms of loss of lives, time and resources.
<b>Information security management system (ISO27001)</b>	An information security management system is a management system based on a systemic approach to specific risks in order to substantiate, ISO27001implementation, operation, monitoring, reviewing, maintaining and improving information security. It is also an organizational approach to computer security. The standard is based on the following principles that define information security: confidentiality, integrity and availability of information. Addressing this standard provides long-term security based on the implementation of policies, procedures and security methods to protect information and resources organizations.

Most of the proposed systems are intended to improve individual creativity and productivity or to increase productivity of communication between stakeholders (Jorgensen, 2006).

According to Patience (2008) management system consists of four main elements such as:

- Policy and objectives of management, acting as guide for the organization;

- Management responsibilities, defined so that each person involved knows what are the needs and requirements of the position they occupy;
- Defining the processes, that establishes the links between people and organizational objectives;
- Distribution and analysis of data (documents and records), so as to ensure the improved of organizational performance.

Developing a management system ends to become a necessity for timely adjustment to the demands of stakeholders. If it is built from a holistic perspective, with the flexibility and adaptability provided by a modular construction, the management system will be a self-defense mechanism of the organization to rapidly changing insertion environment and allow its survival in a market increasingly globalized and more sophisticated for the requirements it imposes to the companies (Dragomir, 2010).

### 2.3. Integrated management systems

An integrated management system is a logical and systematic management approach allowing optimal strategic and operational decisions that take into account all essential aspects that lead to the efficient functioning of an organization, both in terms of quality as well as the environment or occupational health and safety or other management systems.

According to Olaru (2011) an integrated management system is a management system that integrates all components of a business in to a coherent system that leads to the goals and mission of the organization. The integrated management system aimed at planning "from one end to the other" and the integrated implementation, verification and evaluation of diverse aspects as possible, such as quality, environment, security, knowledge, marketing etc. Such a model of an integrated management system is shown in Fig 1.

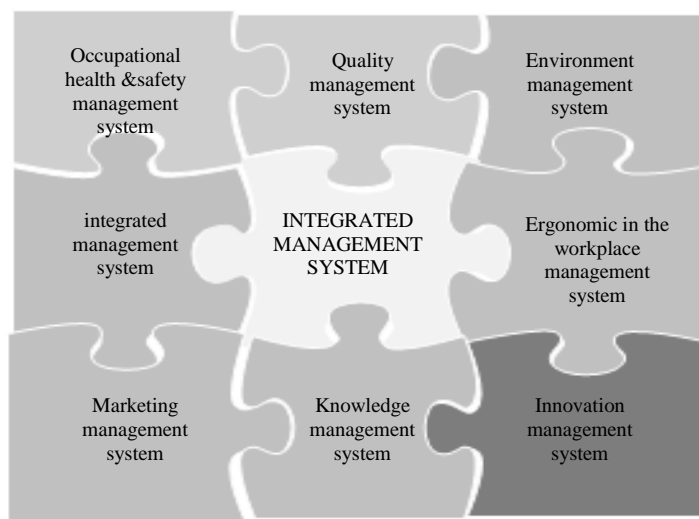


Fig 1. Conceptual model of an integrated management system (author processing)

In an integrated management system will be integrated all the processes that describing formalized systems personnel, finance, security, quality, environment, health, safety at work etc. To talk about an integrated, inside it all formalized processes identified in the systems should develop synergies. Integration of management systems is a difficult process that must be conducted according to the triad of quality - cost – time (Brad, 2008).

Integration of management is regarded as an effective method to meet current requirements for companies coming from all stakeholders and is found insubstantial form specified standards. Bamber (2000) believes that an integrated management system in the true sense of the word cannot be obtained simply by "annexation" of several management systems that have been developed independently.

Integration of multiple management systems brings the most diverse benefits for organization, benefits that can be translated into a more efficient organization activity and, consequently, increase business performance. Motivation integration management system is considered to be of two types: to reduce costs and add value to processes or to reduce business risks, representing a valuable opportunity to optimize documentation and audit processes analysis and inter-functional communication. Clearly, an integrated management system must include both common elements chosen management systems and specific elements whose definition can be performed from the external environment requirements. As regards the common elements, it appears that approximately 80% of the workload is similar for all management systems, which is the most important argument that advocates for their integration.

### 3. Role of innovation

#### 3.1. Ways of addressing innovation

In order to be able to integrate the innovation into an existing integrated management system in the company, we began by defining a way of dealing with innovation concept. In the literature we found that innovation was first differentiated from invention by Schumpert, in 1911, his work was later translated into English (Schumpert, 1934). Today the role of innovation is recognized in creating value and maintains competitive advantages (Beragheh, et al., 2009). Also in the work of Bernardo et al.,(2005), innovation is defined as the basis for renewal in any organization. If the organization does not change what the world offers and how it performs and delivers what offers he was risking his survival and growth prospects. The process of making innovation has gone through several phases conceptual its inception until today. Rothwell Pink is one of those who studied innovation management issues and achieved a ranking which presents the way in which innovation was addressed over time. This qualification is cited in (Tidd , 2005) and is shown schematically in table 2.

Table 2. Evolution of the innovation conceptualization mode

Generation model	Key aspects
<b>First generation</b>	Linear models based on "technology push"
<b>Second generation</b>	Linear models based on "market-pull"
<b>Third generation</b>	Interaction between different elements and feedback loops between them
<b>Fourth generation</b>	The parallel lines, integration with key suppliers and customers, with emphasis on alliances and connections
<b>Fifth generation</b>	Systems integration and extensive networking, flexible and customized response, continuous innovation

Various authors studied over time innovation revealing multiple perspectives from which it can be seen, the most common type of focusing on innovation (Varis, et al, 2010) (Beragheh, et al, 2009)and the nature of innovation. In technical specification guide, CEN/TS 16555-1:2013, innovation is defined as the implementation of a new product or the significant improvement brought to a new product (good or service) or process, a new marketing strategy, an organizational strategy or a new business strategy, workplace organization or external relations management. For this article we consider this definition for innovation.

### 4. Comparative analysis between innovation principles and principles of an integrated management system

In order to set the basis for a model that has innovation as a part of an integrated management system we need to identify the similarities and the parts where innovation can be introduced in an existing model of integrated management system. In the literature we have found a series of researches that present various types of integrated management systems, according to the specific management system that are being integrated. For limiting the amount of variables specific to each management system that is integrated, we have considered, based on the literature review, that if we manage to identify the similarity and particularities of innovation management principles and the principle of quality management system, the most used management system by the companies, we can easily

integrate innovation in any type of integrated management system. By reviewing the literature we have identified the main principles of quality and innovation management and we have listed them in table 3.

Table 3. Comparative study of innovation management and quality management system principles

	<b>Quality management system</b>	<b>Innovation</b>
<b>To whom is addressed</b>	Aims to meet customer needs	Aims to improve the competitiveness of the company through planned and systematic management of the company's innovation process, whether it concern other product, production process, marketing or organizational processes.
<b>Contractual issues</b>	Quality assurance activities are conducted in a contractual framework, being directly related to the client and the contract you signed with that organization.	Innovation activities, aimed at meeting society are not held in a contractual framework (there is no contract with "society" as an entity).
<b>Results pursued</b>	Customer satisfaction through: <ul style="list-style-type: none"> <li>- Improvement performance of products and services;</li> <li>- Increased the level of compliance;</li> <li>- Reduction in defects and scrap.</li> </ul>	For innovation managers a management system provides: <ul style="list-style-type: none"> <li>- Tools for review, storage and processing</li> <li>- Improvement;</li> <li>- Methods to avoid traps, or changes that would increase the value of ideas.</li> </ul>

By analyzing the principles presented in table 3 we can observe that there is a strong relationship between various aspects of them. In our past research (Maier, 2012) we have carried out an analysis, to highlight these relations. This analysis was made using graphical support of the Qualica Function Deployment method. As presented in Figure 3, it can be seen that there is at least one strong relation on each row and on each column of the matrix.

As it can be seen there are some common principles like leadership who is a common principle to the success of both innovation and quality. Developing an innovative culture in SMEs is a source of competitive advantages, leading to customer satisfaction and increasing the organization's focus on the customer. This is an obvious signal that the systematic management approach is essential for innovation. Also, acceptance of new technologies is an essential part of innovation

## 5. Model of integrating innovation in an existing integrated management system

In order to progress, in any field, a systematic approach of the action is required, this systematic approach can be implemented by a good model as it gives a set of understandable and actionable principles. Being aware of the importance of innovation for the company but in the same time responding to the market request of having implemented a management system, managers need to adopt innovation methodology having a solid model of integrating it into the current managerial processes, otherwise it can only lead to an accidental innovation. Another aspect is related to the usefulness of the model in such way that any type of the organization whether large or small, public or private, can benefit from it and also it must necessarily address and organize a broad range of issues. After exploring many options available in the innovation field today, the authors propose a model, illustrated in figure 2 that meets the conditions above mentioned, and represents a base for future development.



Fig.2. The proposed model having management innovation as a part of an integrated management system (author processing)

When we approach the subject of integration of management systems we find that it is a difficult process that usually is conducted according to aspects related to costs, time and benefits. Most of the integrated management systems have quality management system ISO 9001 as the base. As in our comparative analysis performed above we propose to introduce innovation to complement the existing management systems. On the other hand, an integrated management system involves penetration functional management at all levels of the organization, so that managers will meet a wide range of functions - a production manager will perform tasks related to: planning, production, safety, human resources, quality, environment, finance, etc.

In order to integrate innovation management as a part of an existing integrated management system we have to consider the current situation of the company's management system, existing possibility of multiple ways of realizing integration of the innovation management. For this stage of the research we have consider that we should integrate innovation management by conversion starting from a management system that is already implemented in the organization, and we will add additional processes according to requirements of the standards underlying innovation management thus developing practices and procedures. As we have observed in the comparative analysis there are some common processes which facilitate the application of this model of integration.

## 6. Conclusions

Although the concept of Integrated Management Systems in terms of quality, environmental and occupational health and safety management or other management systems is becoming increasingly seen as part of a company's management portfolio, the today's more and more demanding economic conditions force companies to consider innovation as a key element for their survival on the market. As we have presented in this article, innovation is a process that need to have some "free space" in order to expend and to bring real benefits for the companies, while an integrated management system has little or bigger impact over this "free space". This article addressed this "conflict" between the free nature of innovation and limitations of a management system. We propose a starting point for future study of this issue, by a model of integrated management system that has innovation as a part of it. Based on our study we consider that this model can bring together all the benefit of an integrated management

system and innovation and can have a positive effect for the companies that will implement it. The model is open for future improvement and adjustment to a better practicability and ease implementation by the interested companies.

## References

- Abrahamsson, S., Hansson, J., Isaksson, R. (2010) Integrated Management Systems – advantages, problems and possibilities
- Anastasiu, L. (2009), How the Changing of Technology Can Become a Motivating Factor in Human Resources Management, Proceedings on the 5th International Seminar Quality Management in Higher Education, Alexandroupolis, Greece.
- Anderson, C. (2005), How to Build Effective Management Systems, Bizmanualz, Vol. 26.
- Asif, M. (2008), Corporate Motivation for Integrated Management System Implementation, Why do Firms Engage in Integration of Management Systems: A Literature Review & Research Agenda, pp.2-21
- Bamber, C., Hides, M. (2000), Integrated management systems: An agile manufacturing enabler, 1st International Conference on Systems Thinking in Management
- Bernardo, M., Casadesu, M., Karapetrovic, S., Heras, I. (2010), Management systems: integration degrees empirical study
- Brad, S. (2008), Vectors of Innovation to Support Quality Initiatives in the Framework of ISO 9001:2000”, *Int. Journal of Quality & Reliability Management*, Vol. 25, Nr. 7, pp. 674-693
- Dragomir, M. (2010), teza de doctorat, Universitatea Tehnica din Cluj Napoca, Romania
- Jorgensen, H., Mellado, M., Remmen, A. (2004), Integrated management systems, Working Paper 7; Technology, Environment and Society, Department of Development and Planning, Aalborg University
- Jorgensen, T., Remmen, A., Mellado, D. (2006), Integrated management systems – three different levels of integration, *Journal of Cleaner Production*, Volume 14, Issue 8, 2006, Pages 713–722
- Maier, A., Brad, S., Fulea, M., Nicoara, D., Maier, D. (2012), A proposed innovation management system Framework - A solution for organizations aimed for obtaining performance, International Conference on Management, Business, Economics and Finance, 28-29 November 2012, Paris, France
- Olaru, M., Rizea, C., Sava, T., (2011) Promoting the concept of social responsibility by sme’s in Romania, in the context of concerns the implementation of integrated management systems, în: Editor Costache Rusu, Proceedings of „The 7th International Conference on Management of Technological Changes” - MTC , 1-3 September 2011, Alexandroupolis, Grecia
- Patience, A. (2008), Integrated Management Systems - A qualitative study of the levels of integration of three Danish Companies, Thesis submitted for the degree of Master of Science in Engineering in Environmental management
- Purcarea, I., Olaru, M., (2011), Paving the Path for Innovation: the case of Romanian SMEs, Proceedings of „The 6th European Conference on Innovation and Entrepreneurship - ECIE 2011”, 15-16 September, Aberdeen, Marea Britanie, ISBN: 978-908272-14-0.
- Raisiene, A. (2011), Advantages and limitations of integrated management system: the theoretical viewpoint, *Social Technologies*, p. 25–36.
- Schumpeter, J.A. (1934), *The Theory of Economic Development*, Cambridge, Mass: Harvard University Press
- Tidd, J. (2006), Innovation Models, Science and Technology Policy Research Unit, Paper 1, Imperial College London\*\*\*, (2005), Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data, OECD, Third Edition
- Varis, M. (2010), Types of innovation, sources of information and performance in entrepreneurial SMEs, *European Journal of Innovation Management*, Vol. 13, Nr. 2, pp. 128-154
- Wilkinson, G., Dale, B.G. (2001), Integrated management systems: a model based on a total quality approach, *Managing Service Quality*, Vol. 11, part 5, pp. 318-330.
- Zutshi, A., Sohal, A. (2003), Requirements for a successful integrated management system: The experiences of Australian Organisation, Working Paper 20/03, 2003, Monash University, ISSN 1327-5216
- \*\*\*, (2013), CEN/TS 16555-1 Innovation management – Part 1: Innovation management system