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INTEGRATED SYSTEMS MANAGEMENT IN SMALL AND MEDIUM ENTERPRISES

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ABSTRACT: Appearance of a number of management systems with various and sometimes divergent demands, demands for revise of optimal strategy on implementation of these standards in small and medium-sized enterprises (SMEs) and the attempt on their integration into integrated management system are suggested even more. Firstly question on choice and a reason for implementation of standards is raised. Management and employees expect benefits on the implementation and they pass and minimize the implementation barriers. Basic concept on integrated management system (IMS) into SMEs and analyze on reasons and advantages at IMS implementation are presented in this paper.
KEYWORDS: Quality, Environment, Safety, IMS, SMEs

INTRODUCTION

In previous period theory and practice of management have been rapidly changed, supplemented and sometimes excluded. The result is appearance of a great number of management concepts which acronyms cannot be recognized even by experts of this field (for example TPM, DDM, MBP, MBO, HRM). Development of movements on quality and environment in the 90's caused appearance of the management quality system (QMS - ISO 9000:2000), environmental management system (ISO 14000), management system for health and safety at work (ISO 18000), risk management system (ISO 17000) and other being under preparation.

As much as any standard attempts to explain that these standards are applicable equally to any organizations regardless their activities, size and structure, anybody, being run upon IMS, is cleared that there are no standard elements that may neither easily or effective be applied to activity and size of the organization. Such is also confirmed by numerous publications of ISO organizations and other international quality organizations for application as of QMS and SMEs as of standards in various activities to be helpful to these organizations to pass problems occurring with standards applied and to reach internal and external benefits.

This paper analyzes benefits (reasons and advantages) of IMS into SMEs.

SME – DEFINITION

Micro, small and medium-sized enterprises (SMEs) are socially and economically important, since they represent 99 % of all enterprises in the EU and provide around 65 million jobs and contribute to entrepreneurship and innovation. However, they face particular difficulties which the EU and national legislation try to redress by granting various advantages to SMEs. A legally secure and user-friendly definition is necessary in order to avoid distortions in the Single Market. The revision ensures that enterprises which are part of a larger grouping and could therefore benefit from a stronger economic backing than genuine SMEs, do not benefit from SME support schemes. The increase of the financial ceilings is designed to take into account subsequent price and productivity increases since 1996, however the headcount ceilings remain fixed (Table 1).

Table 1. Type of SMEs [4]

Enterprice category	Headcount	Turnover or	Balance sheet total
medium-sized	< 250	≤ € 50 million	≤ € 43 million
small	< 50	≤ € 10 million	≤ € 10 million
micro	< 10	≤ € 2 million	≤ € 2 million

INTEGRATED MANAGEMENT SYSTEM (IMS)

In the organization theory there is a basic rule:

1. Firstly the decomposition of various systems is done,
2. Integration key elements are single out and
3. Integration of decompounded systems is done.

What is common i.e. what are the key integration elements for the management systems - QMS, EMS, OHSAS, HACCP etc? Firstly, they are as follows:

- ☐ *the same stakeholders, namely interest groups (employees, management, business partners, inhabitants, state, shareholders),*
- ☐ *the same processes in organization and environment,*
- ☐ *the same methods and techniques, theories and practice of management,*
- ☐ *similar concept of management in processes,*
- ☐ *similar resource management,*
- ☐ *identical concepts for measurement, analyses and improvement,*
- ☐ *the same responsibility of the leadership and*
- ☐ *the same vision, mission and business policy of organization.*

Addition to common elements of IMS, there are also elements that are specific to any of partial management systems (sample - figure 1, for basic IMS).

Figure 1. Basic IMS

The following question is propounded: which of the previous integration systems should be "the core" of integration? The response depends on the following: already implemented management system in the organization, activity field, i.e. type of documented business processes, dominant demand of stakeholders.

However, since the QMS according to ISO 9000 is documented in its application and the used process approach demonstrates a good base for integration, it is proposed that QMS becomes "the core of integration" in most cases. Therefore other solutions of "the core of integration", due to specific business processes and demands of stakeholders, should be considered.

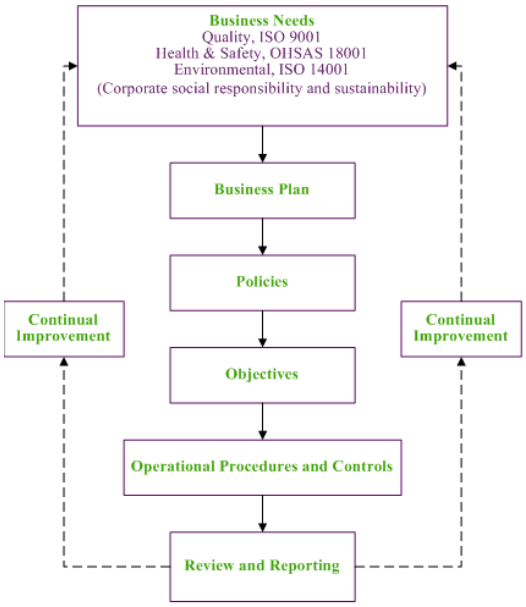


Figure 2. Flow chart of integration process

QMS has been accepted in most countries as their national quality system standard. There is no any "special" standard for SMEs, but many researches show that a large and growing number of small and medium-sized enterprises have already accepted the ISO 9000 standards.

There are many common features of management systems for quality, environment, and safety (Figure 2).

In theory and practice there are some integration models. Mr. Seghezzi [7] indicates the models, being based on cross-processes, that include TQM models and process models (as in ISO 9000:2000), form a good integration base since the approaches, such as ISO 14001, ignore the scope and culture. Having followed this concept Mr. Wikinson and Mr. Dale developed the integrated organizational management system model for quality, environment, health and safety that include fields such as leadership and culture.

Euro Info Centre EIC/IT 378 and Research Centre for Quality and Environment of the University of Padova are to be the most frequently guide for implementation IMS in SMEs.

The main goals of the guide were (and at the present are): to stimulate SMEs to implement environmental management svstems (EMS); to demonstrate the possibility to integrate EMS with other managernent systems (quality and safetv); to improve the access of the companies to the IMS; to improve the knowledge of the companies on the sustainable development bases.

The intent of the IMS guide is to inform on the convenience and on the way to introduce an EMS when quality and/or safety managernent systems are already established in an enterprise.

This guide, far from being a substitute for the reference standards, is a support document for SMEs which, independently of their initial situation (ISO 9001 and/or ISO 14001 certification, EMAS registration, no certification, etc.) want to take advantage of the synergies and many points of contact between environment, quality and safety management systems.

The integrated management system guide has realised contents as shown [5]:

1. *Quality systems,*
2. *Environmental management systems,*
3. *Management systems for health and safety at work,*

4. Model for an Integrated Management System (Management responsibility, System resources, Product realisation, Measurement, analysis and improvement).

Beside this guide the BSI Management systems published PAS 99. Document is a Publicly Available Specification of common requirements for management systems that can be used as a framework for an integrated management system.

PAS 99 takes account of the six common requirements for management systems standards outlined in ISO Guide 72; guidance document and also follows the Plan, Do, Check, Act approach of all the major management systems requirements standards. These 6 common requirements are:

1. Policy,
2. Planning,
3. Implementation & Operation,
4. Performance Assessment,
5. Improvement,
6. Management Review.

Figure 3 illustrates model IMS.

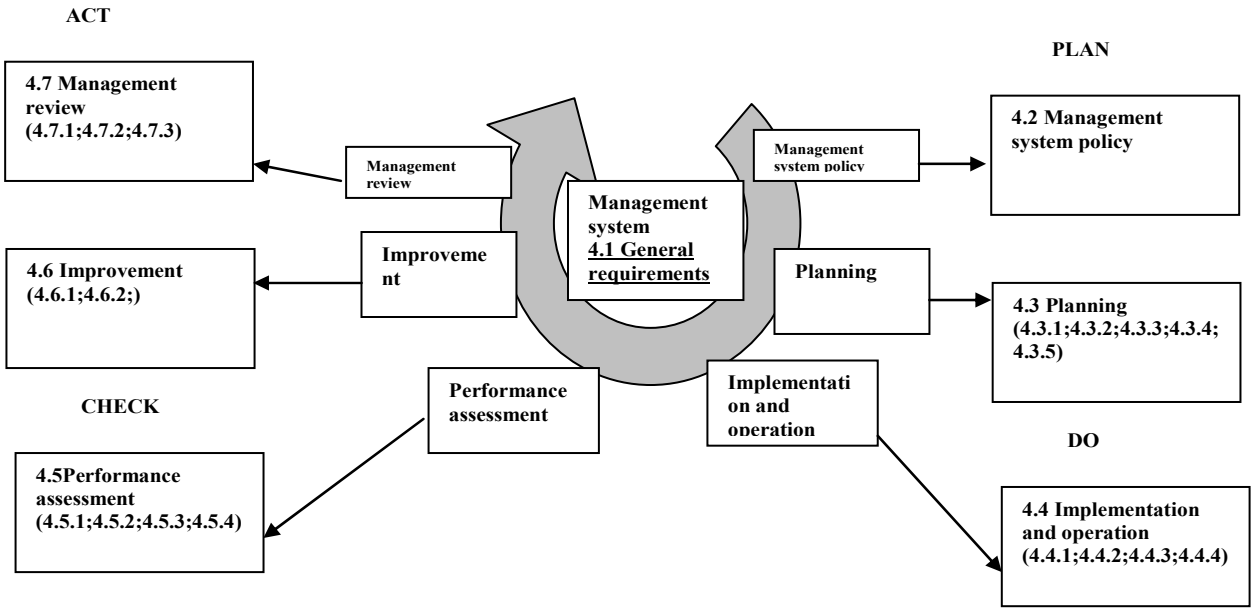


Figure 3. IMS model (PAS 99)

REASONS TO ACCEPT IMS

Appearance of external pressure by any state shown through the pass of a number of laws and regulations and through extremely stern punishments for any errors in their implementation, then strengthen pressure of public requiring healthy and safe working environment, they all impel enterprises to revise their practice in implementation of management system. When added other reasons such as costs for service on consulting and evaluation, time needed to prepare certification and limited human resource it is obvious that some companies must find their own optimal way for parallel and cheap fulfillment of all external and internal requests.

The response is in implementation of integrated management systems, therefore the systems directed towards improvement of work processes in all fields being important for any enterprise.

The first step for establishment of integrated systems is to stipulate regular hierarchy of demands and to expect considered parties being needed for the system. To comply with the principle on risk minimization it should be started with a state as a considered party that may cause the highest damage to a company and than should include the others.

Thus the next hierarchy of demands is reached: Demands of laws and other regulations (law on environment protection, law on work protection, work legislations etc.), Demands of users, needs of enterprise, Demands and needs of social community, (surrounding where an enterprise operates), Demands of standard for management systems.

In addition, SMEs take part in one or more supply chains (SC - Supply Chain), where any buyer in SC has its own corresponding demands. These demands influence the SMEs operation i.e. the needs of the buyers of constant and high quality products and strong management that provides all these mentioned. To that effect SMEs are more and more required, as a condition for business cooperation, to implement the quality management system (ISO 9001:2000) or environmental management system (ISO 14001). If the production program refers to the nutrition products, any organization should implement HACCP, and in case of work in risk production conditions, ISO 18001 (safety and protection at work) should be implemented. It is obvious that in SMEs the core of business activities should be

"moved" from the production management onto management systems providing fulfillment of these and more complex demands of buyers. Large companies also play an important role in starting the SMEs up to accept innovations. This is the result of the fact that most of SMEs are typically included into business to business activities.

Other reasons may also start small and medium-sized enterprises up to integrate the standards. These starters have been already identified by many authors and it firstly refers to the important role of stakeholders.

Partial management systems are concentrated onto discrete fields being often in mutual contrast, thus some authority conflicts in organization may occurred their application.

Reasons for IMS implementation are also the expected benefits relating primarily to efficiency.

BENEFITS OF SMEs IN ACCEPTANCE OF IMS

SMEs may reach a number of benefits if accepts IMS. The benefits are divided into two categories: internal and external ones. The internal benefits are connected to internal function and processes of a company while external are connected to external company activities. More, internal benefits may be divided into three categories: organizational benefits, financial and benefits for employees. Similarly, external ones are grouped into commercial, communication and quality/environmental/safety benefits.

Improvement of internal efficiency and quality of the management is the first internal result that be reached by any small or medium-sized enterprise. That may be achieved for example, if three functional departments are fuzzed to one and by harmonizing organizational structure containing similar elements.

The next one is that integrated system permits equality in management methodology. The integrity of system results in reduce of unclear boundaries between individual systems and in expand of horizon above functional level any of individual system, sharing information across traditional organizational boundaries.

Many standards share the same elements; therefore their integration will enable a company to avoid duplication of system procedures and to eliminate overlap of efforts at identification of danger, development and maintenance of requested control and audit.

Finally, many authors notice reduce in volume of company documents and creation of usual forms that are more easily used by more operators as important material benefit.

Irrespective of above mention organizational benefits, the SMEs may also reach financial benefits. Cost savings that arise in reduction of the frequency of audit are already confirmed as in theory as in practice. However, audit may not be reduced to one audit only, since the program of internal financial audit will be necessarily enlarged to ensure efficiency of integrated procedures. Financial benefit will be reached by improvement of results on minimization of external certification costs over single certification audit and as a result of increase of data and management staff.

Acceptance of EMS by small and medium-sized enterprises increases motivation of employees, awareness and qualification. This argument may be applied to IMS because it does not protect external surrounding only but it protects internal parameters over management systems for health and safety.

Thus, employees may enjoy better and more safety conditions that create better image of any company and improve relations among employees and management. Table 2 sums internal benefits that SME may reach through implementation of IMS.

Table 2. Internal benefits

INTERNAL BENEFITS
Organizational Benefits ☐ Improvement of quality of management by down-sizing three functional departments to one and reducing fuzzy management boundaries between individual systems ☐ Increase in operational efficiency by harmonizing organizational structures with similar elements and sharing information across traditional organizational boundaries ☐ Avoidance of duplication between procedures of systems - Streamlining paperwork and communication
Financial Benefits ☐ Cost savings by the reduction of the frequency of audits ☐ Reduction in external certification costs over single certification audits ☐ Increase in profit margins
People Benefits ☐ Increase in employee motivation, awareness and qualifications ☐ Creation of a better company image among employees

Considering external benefits, IMS may enable small and medium-sized enterprises to reach competitive advantage, to eliminate possibilities of competitive companies with their innovative strategies to exceed their activities. Furthermore, considering IMS, some authors verify that fulfillment of customer demands and perspective to attract new ones, offer some possibilities to company to increase market.

Besides above mention commercial benefits, SMEs may find positive outlet for company's image. Synthesis of various proves for various management fields and their abilities to demonstrate legal compliance may enable the company to ensure "large picture" of their performances.

Finally, the field of obvious benefits may be identified in the conditions of quality, environment, health and safety performances. Implementation of IMS in small and medium-sized enterprises offers possibilities to reduce damages on machines, storages or product loss and hazardous waste generation as well as minimization of accidents and time loss. These potential positive effects may cause high values for SMEs, if we consider their disadvantages (for example: financial limits, shortage of human resources...) any damages, loss or accident, stoppage as catastrophe.

The fact is that in SMEs, only business parameters, being required by law and those being necessary for operational function, are filed. Objectively and transparently shown business parameters are rarely available to the leadership for decision making and business activities directing. Implementation of standards for management system ensures collection of data through established evidence system as well as form the data through analyze needed for decision making.

The Table 3 presents external benefits.

Table 3. External Benefits, Categories and Examples

EXTERNAL BENEFITS
Commercial Benefits
☐ *Competitive advantage,*
☐ *Improvement of market place*
☐ *Gain new customers/satisfy existing ones*
Communication Benefits
☐ *Improvement of company's image*
☐ *Improvement of relations with stakeholders*
☐ *Evidence of legal compliance*
Q/E/S Benefits
☐ *Improvement in quality, environmental and health and safety*
☐ *Reduction of hazardous waste generation*
☐ *Reduction of equipment damage and product loss*

It should be pointed out that properly established and developed IMS makes possible the business process rules and business activities are available to employees. That is multi useful due to often fluctuation of employees if, for example, one employee, who had important work duties, leaves the company and his colleagues have not had any insight in them. System of evidence and documented procedures and instructions enable any new employee to enter fast the work procedures.

The figure 4 shows benefits of IMS implementation into SMEs according to the East Anglia [6] research.

Implementation of standards and it's verification by the certification body ensure improvement on the markets especially on those activities where clients consider the certificated quality system as a condition for contract signing. Quality constant delivers are offered to clients.

The benefits of certifying to PAS 99 are:

☐ ***Encourages risk management**: Provides third party reassurance that applicable laws and regulations are continually observed and that the organization's social, environmental and financial risks are being met,*

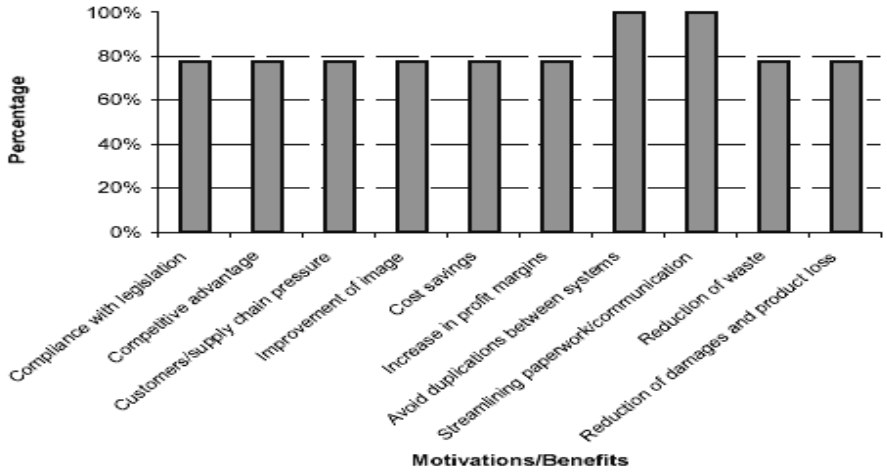


Figure 4. Benefits of SME with IMS [6]

☐ ***Gives a competitive edge**: By meeting contractual requirements and removing barriers to trade, independent assessment to Integrated Management provides purchasers with confidence in suppliers, products, services and goods.,*

- ***Attracts investment:*** *Demonstrates independent assurance of an organization's internal controls, efficiency and effectiveness helping to meet corporate governance requirements,*
- ***Improves & protects brand reputation:*** *The perception of your organization's brand is vital in today's markets. Consumers are demanding transparency in organizations while certification can help organizations meet those demands.,*
- ***Raises stakeholder perception and satisfaction:*** *Proves senior management's commitment to continually monitor and improve, creating a better performing organization.*

CONCLUSIONS

From above mention it may be concluded as follows:

- *IMS has become inevitable for SMEs,*
- *Management and internal efficiency are improved,*
- *By implementation of IMS the conditions for reduced costs are reached,*
- *External advanta ges are achieved (competition benefit, market position and relationship with customers as result of better quality, better performances in the view of environment, health and safety).*

REFERENCES

[1] *Karapetrovic, S., Willborn, W. (1998), "Integration of quality and environmental management systems", The TQM Magazine, Vol. 10 No.3, pp.204-13.*

[2] *Rajković D., IMS in SMEs - reasons, advantages and barries on implementation, 2 nd International qualitz conference, Quality festival 2008, Kragujevac, 2008.*

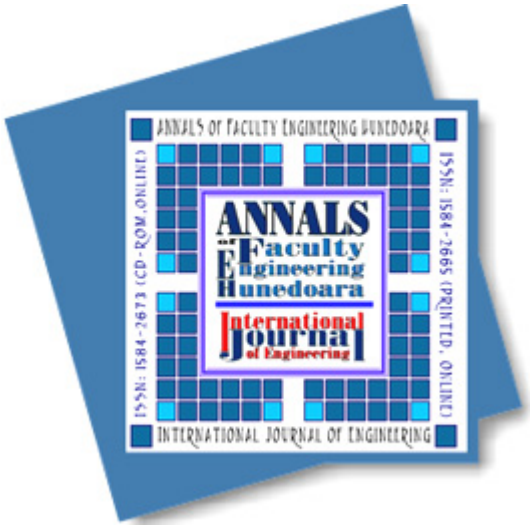
[3] *Scipioni, A., Arena, F., Villa, M. and Saccarola, G. (2001) Integration of Management Systems. Environmental Management and Health, Vol. 12, no. 2, pp. 134-145*

[4] *Small Business Service (2003) Small and Medium Enterprises (SME)-Definitions.*

[5] *Standards Australia. 1999. Handbook H139: Step by step guidance on integrating management systems, health and safety, environment, quality. Sydney: Standards Australia.*

[6] *Theofanis, S. Phd: Integrated management Systems in Small Medium-Sized Enterprises: Theory and Practice, University of East Anglia-School of Environmental Sciences, 2003.*

[7] *Š. Seghezzi, D. (2000) Total Management Systems - why and how. In: 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.*



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