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Quality and Business Sustainability

The economic, social and environmental challenges facing businesses today are unlike any that organizations faced in the past: there is more concerns for environmental protection; there is a pressure to convince managers to conduct business in respect with the sustainability requests; there is an increased desire for trustworthy, upstanding businesses – combined with flagging public trust in many of our largest corporations.

For this reason, since November 2009, ISO 9004 series related management of an organization to sustainable success based on quality management. Sustainable business provides a foundation for businesses' success in this climate. Its techniques enable organizations to be profitable, while in the same time, help people and the environment, resolving important social problems.

Business sustainability is often defined as managing the triple bottom line process by which companies manage their financial, social and environmental risks, obligations and opportunities. These three impacts are sometimes referred to as profits, people and planet. (From Financial Times Lexicon).

A more robust definition is that business sustainability represents resiliency over time: businesses that can survive shocks because they are intimately connected to healthy economic, social and environmental systems. These businesses create economic value and contribute to healthy ecosystems and strong communities.

According to the World Council for Economic Development (WCED), sustainable development is development that "meets the needs of the present without compromising the ability of future generations to meet their own needs." So, for industrial development to be sustainable, it must address important issues at the macro level, such as: economic efficiency (innovation, prosperity, productivity),

social equity (poverty, community, health and wellness, human rights), and environmental accountability (climate change, land use, biodiversity).

Most important for the business sustainability is the ability to manage the interaction between three areas:

- Social – Environmental: Environmental justice, Natural resources Stewardship, Locally & Globally;
- Environmental – Economic: Energy Efficiency, Subsidies/Incentives for use of Natural Resources;
- Economic – Social: Business Ethics, Fair trade, Workers' rights.

Corporate social responsibility (CSR) means to operate a business in a manner that meets or exceeds the ethical, legal, commercial and public expectations that society has of the respective business.

Stakeholders are interested in the performance of a company for reasons other than just stock appreciation. Stakeholders could or could not be shareholders.

Shareholders are an individual, group, or organization that owns one or more shares in a company, and in whose name the share certificate is issued. It is legal for a company to have only one shareholder. CSR primarily focuses on shareholders.

Corporate Accountability contributes to a sustainable business practice in that corporate accountability provides a legal and ethical basis for a company to report on its impact on society and the environment, in addition to their financial performance.

Despite the achievements of the last three decades, the present concepts of sustainability and sustainable development are still inadequate to drive the transitions necessary to adapt human relations with the Planet for the future.

Many companies now understand that sustainability affects their financial performance as demonstrated by the levels of commitment maintained through the recession. However, even leading companies are reaching the limits of what they can do by themselves. Own to this reality, the companies need leaders with a vision that looks beyond the short term to be able to face the challenges of a changing world. Today's leaders and those of the future need to account for the threats posed by climate change, resource scarcity, and a growing population increasingly keen to hold business accountable for its social and environmental impacts. Businesses themselves are also seeking out alternative sources of leadership inspiration.

Prof. Florin Danalache, Ph.D.
Senior Editor

DEVELOPMENT OF QUALITY OBJECTIVES

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Abstract

Top-management should not have any second thoughts in revising quality objectives and the changes should be communicated to the personnel, also. There is a clear link between the organization's commitment for continuous improvement and the dynamic aspect of policy and quality objectives review. Under these conditions, even partial achievement of relevant and careful established quality objectives proves continuous improvement.

Keywords: mission, quality objectives, strategic planning, key performance areas

QUALITY – A KEY FACTOR FOR SUCCESS

ISO 9001:2008 and ISO 9004:2009 provide excellent models for organizations to create quality management systems tailored specifically to their customers' needs. On one hand, accomplishing ISO 9001:2008 requirements will create trust in organization's capability to meet customers' expectations, by stimulating the analiys of their needs, by defining and controlling processes. On the other hand, ISO 9004:2009 enhances a basic quality management system by focusing on continuous improvement, in order to increase competitiveness, the satisfaction of customers and other interested parties. Virtually any organization can identify and implement processes that comply with these requirements, but the true challenge is ensuring that such compliance will add value by helping the company to achieve its business goals.

Quality means doing it right when no one is looking.
(Henry Ford)

According to some quality management experts, the most significant change brought by the new standards ISO 9000 is not linked to customers satisfaction, continuous improvement or even to the process-model

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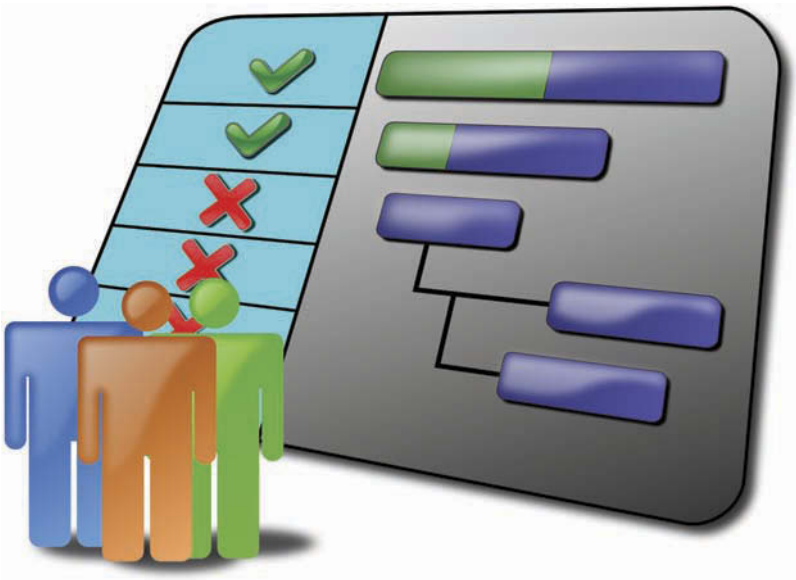

structure. The most significant change is the requirement for quality objectives. The standard requires that quality objectives should be established at each relevant function and level within the organization. In this respect, to move beyond simple standards compliance towards measurable, profit-improving success, it is required an understanding of how "the business of business" interacts with management theory, more exactly, an integration of quality and excellence into the business routines.

In order to achieve best results, top-management's commitment regarding to quality must be confirmed, by aligning the quality policy, objectives and processes. ISO 9001:2008 requires that a quality policy should provide a framework for reviewing the company's quality objectives. The policy should give an overall direction for the organisation, and the objectives should flow in that direction. However, because of outside forces such as customer requirements and market environment, business regime can – and often does – change. When this happens, the correspondence between quality policy and objectives may become skewed. Thus, the standard requires that top-management periodically review changes to both policy and objectives, but ISO doesn't address aligning quality policy and quality objectives with other business goals. In such cases, confusion about accountability could arise, and the organisation's quality objectives might become more than responsibilities assigned to the "Quality Department". On the other hand, resource allocation can also be a problem, when middle managers attempt to accomplish goals that aren't synchronized with quality objectives.

As a first conclusion, in any organisation implementing a quality management system, quality objectives must be defined, reflecting, also, the quality policy. They must be coherent and aligned to strategic objectives of the business, taking into account, also, customers' expectations. More than that, key-processes for accomplishing the business objectives, should be designed and aligned to quality objectives.

The quality policy, objectives and processes are interrelated and must work together to achieve business improvement.

ESTABLISHING QUALITY OBJECTIVES

There is already proven by lots of organisational practices that the success in business competition is determined by ensuring customers satisfaction, which means that the products quality level has to fulfill their requirements and expectations.

The economic organisations evolve in a highly dynamic social, economic, technological and competitive environment. Adapting to this environment implies a stronger customer focus; in this respect "customer-driven company" has become "customer-driven quality", which requires a proactive approach to customer satisfaction. Generally, being proactive as managerial focus implies long-term decisions, and the implementation of these decisions has to result in eliminating or diminishing potential causes with negative effects in the organisation's performance. The main causes that require the management's reactive attitude to be replaced by the proactive one in order to obtain customer satisfaction are the social development dynamics, shown by the evolution of customer requirements and expectations, and the intensification of competitive forces, currently increased by the globalization process.

The strategic planning of quality can provide the proactive approach to customer satisfaction. "Customer focus" – one of the eight quality management principles – determines several requirements for development and implementation of the managerial processes described in the ISO 9001:2008 standard. As an essential condition for the existence of every economic organisation, and especially for its evolution in the current external environment, customer focus requires the organisation's top-management to develop the planning process in quality, as well. Quality objectives have to be set for both the organisation, and its products, as we may conclude from the following paragraph from the standard: "*…the top-management has to ensure that the quality objectives, including those which are necessary to fulfill the requirements referring to the product, are set for the relevant positions and to the organisation's relevant levels".* As well, recommendations from ISO 9004:2009 standard which contain a specific reference to strategic planning of quality (paragraph 5.4.1), clarify the idea that quality planning should be done by a strategic decision.

Generally, in each organisation which has implemented a quality management system and especially in those whose system is in compliance with the ISO 9001:2008 standard, the managerial processes contain specific elements implied by the organisation's customer focus. For the same reason, strategic planning of quality in these organisations requires developing of the classical strategic management process, in a manner which may

allow the following specific problems to be solved:

- How are the organisational quality objectives comprised in the quality strategic ones?
- How may quality objectives be identified for different organisations, positions and levels?
- How may the correspondence between organisational and product quality objectives be achieved?
- How may the correspondence between the product quality objectives and the functional areas and compartment ones be achieved?
- How should the product quality objectives be set, in order to allow both fulfillment of customers' requirements/expectations and achievement of organisational objectives?

Therefore, another specific problem of the strategic planning on quality consists in the necessity of having supplementary input data. Besides information concerning general and competitive external environment and the organisation's strategic capability, there is a need for information referring to requirements and expectations of interested parties, especially customers.

Generally, organisations are setting multiple strategic objectives for the same period, because they can aim to the achievement of performance in different domains, as profitability, efficiency, competitiveness, flexibility, customer satisfaction, employees' satisfaction, social responsibility. From these domains, there should be identified key areas where strategic objectives have to be set. For example, quality focused organisations should always consider competitiveness and customer satisfaction as key areas for their objectives. In this way, the organisational quality objectives will be more than implicit (they are necessary in order to achieve other objectives, i.e. profit, turnover), but explicit, referring directly to the performance the organisation has to achieve, in order to fulfill customers' requirements and expectations. The organisational objectives express the global level performances. Their achievement requires obtaining certain results which have to be planned for different organisation levels, and these can be identified using a derivation process.

Within the strategic planning of quality process, identifying organisation's strategic business units is especially important. This is justified by the fact that requirements and expectations of different customer segments are not identical, even for the same product. Setting the quality objectives for the strategic business units is a

decisive stage for the organisation's success, because they are the base for adopting adequate competitive strategies; the competitive advantage which has to be achieved by implementing these strategies thereafter becomes the landmark for product quality objectives setting.

A model for a process of strategic planning, whose implementation allows solving particular problems regarding quality objectives in customer oriented organisations is presented in Figure 1.

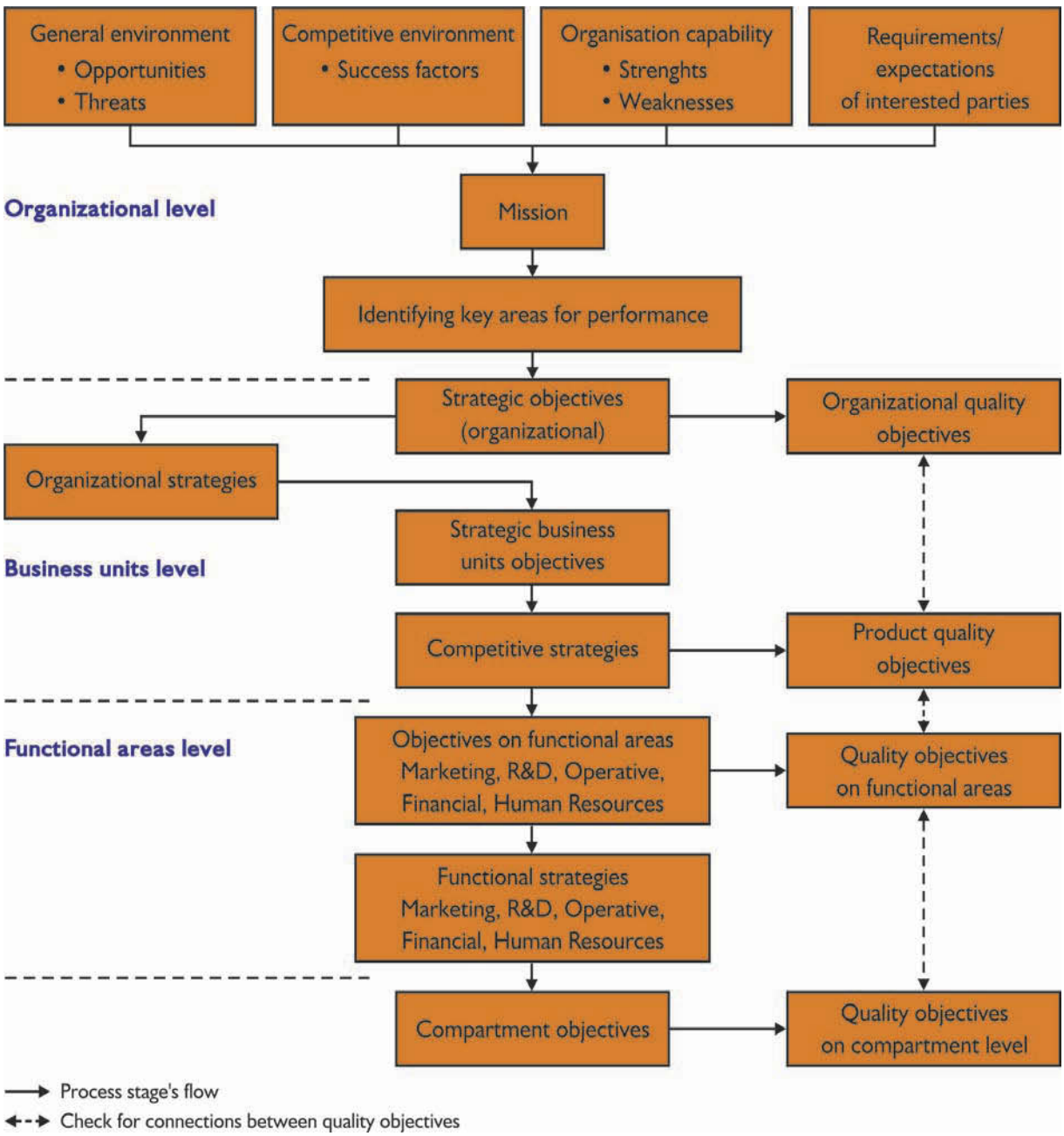

Figure 1 – *Model for a strategic planning process*

When setting and deriving quality objectives through the process presented in Figure 1, an obstacle may occur: if strategic objectives are not, implicitly, quality objectives, it is difficult to set quality objectives for product/service only referring to strategic business units. For example:

- if the organisation implements distinctions as competitive strategy, which requires bringing added value by enhancing the quality of products, solutions may be established without ensuring of correlation to organizational operating capabilities;
- if the organisation adopts a cost-controlling strategy, the analisys done for identifying solutions must be dense and extensive.

To overcome these difficulties, but also to build a method for verifying correctness and completeness of quality objectives established, we will propose another model of setting up and deriving quality objectives. The model will be based on the identification of "key problems" of quality, which must be solved in order to create capabilities of achieving strategic objectives.

QUALITY OBJECTIVES BASED ON "KEY PROBLEMS"

Generally speaking, a problem is a "question proposed for solution or consideration (Webster's Dictionary). Regarding to the proposed model, a problem is more like a "difficult situation which needs solving" (Word net). In this respect, an organisational problem becomes a challenge that needs to be solves, to establish more favorable circumstances in the organisation. Identification of a quality problem will be the sign for an inconvenience in the business, or an inadequate framework for accomplishing organisational objectives.

In order to release a new approach for setting quality objectives, we count on the following idea: the complete achievement of the strategic objectives in any organisation is conditioned by the identification and solving of the inconvenient situations regarding quality. By solving quality problems which have a special impact over objectives of other nature than quality objectives (key problems) it is created an ensemble of favourable forces, which can lead to the accomplishment of the strategic plan.

Many organisations which implement quality management systems know which are the requirements for quality objectives, but in many situations a lot of errors may occur:

- determination of quality objectives simply as a way to fulfill ISO 9001:2000 requirements, instead of this being a tool for decision making and strategic management;
- establishing objectives which are non-related to the mission or vision of organisation;
- establishing objectives formulated only in qualitative terms which may not be measurable (i.e. "reduction of costs of corrective measures"; "increasing number of collaborations and partnerships with suppliers and clients");

- establishing of unclear defined objectives (i.e. "efforts will be made for increasing qualitative level of products made by our organisation"; "any problem with quality must be solved quickly and at high exigencies");
- establishing vague, nice formulated, but useless objectives, without any added value (i.e. "promoting a management based on analyzing requirements of clients and taking actions in consequence");
- allowing functions to select objectives without guidance and facilitation from the top-management; this may lead to establishment of quality objectives which are incompatible between functional areas or with strategic interest of organisation („total control over flux and processes, in order not to appear deficiencies);
- inadequate training, regarding practical issues on quality objectives and the way each employee can contribute to their achievement.
- establishing easy to achieve objectives, will not be a solid base for mobilizing the members of organisation. On the other hand, if impossible objectives are established, workers may ignore them.

We propose a practical way for establishing quality objectives, which may eliminate difficulties presented above. A schematic view of the new process appears in Figure 2:

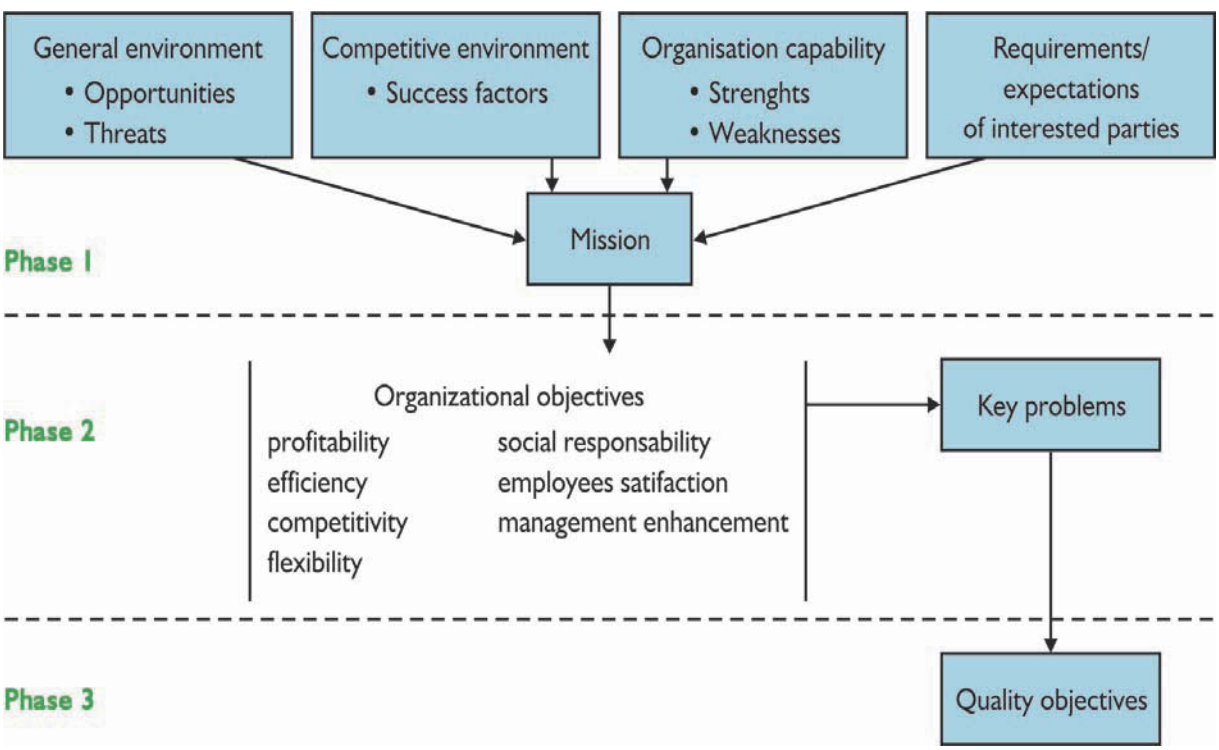

Figure 2 – *Establishing quality objectives*

Phase 1. ***Establishing the foundation for quality objectives***

The quality objectives must have a beneficent and distinguishable effect over the organisation's performance. They must be established according to the quality policy of organisation, but this alone won't provide the sort of guidance needed to drive the formation of the strategy of organisation. A quality system, as given in most businesses today, is just one variable in a long list of success factors (including reliability, innovation, delivery, price, prestige) that vary depending on circumstances. In other words, a traditional quality policy is not enough for being the base of quality objectives. The quality objectives are dynamic and must be updated according to the business environment and to other activities of continuous improvement. They will become, in this way, strategic objectives of the company and means for accomplishing requirements. The foundation of their selection will be the mission of organisation next to quality policy. The mission, defined by the top-management, must be compatible with the vision of organisation.

Top management must provide answers to the following questions as it defines the organisation's mission:

- Why do we exist as an organisation?
- What basic needs and desires are being met by the organisation's efforts?
- What goods or services will the organisation deliver now and in the future?
- Whom does the organisation serve through its efforts?
- Who are the stakeholders (employees, customers, suppliers, shareholders, neighbors, community leaders etc.), what are their individual strengths and importance in relation to what the organisation is trying to accomplish?
- How does the organisation identify the necessities and expectations of clients?
- How does the organisation identify the needs of recognizing capacities, work satisfaction, competence and professional enhancement of the personnel?
- How does the organisation approach the potential benefits of establishing partnerships with its suppliers?
- How does the organisation verify the accomplishment of the mandatory requirements?
- What are the strengths and weaknesses of organisation and what does form the cultural foundation of the organisation?
- In a general sense, where is the organisation moving (philosophically, operationally and competitively) compared to its current position?

Phase 2. ***Establishing strategic objectives and "key problems"***

Phase 2 continues the previous analisys by identifying the results that the organisation must achieve by accomplishing its mission. Practically, Phase 2 is the step of establishing strategic objectives and key problems of organisation, after considering influences of external environment and the strategic potential.

The strategic objectives and the correspondent key problems must be:

- measurable, or accompanied by success factors;
- true indicators of success or failure within an organisation;
- based on mission, so they may differ depending on the organisation;
- developed at the top of the organisation. Only top management has the broad perspective and understanding of the competitive environment necessary to select key problems (although the process of selecting key problems may be facilitated by others within the organisation);
- few in number, generally between four and ten. The more measures that are adopted as key measures, the more unfocused the organisation will become.
- representative of a wide range of organisational interests, including financial results, customer perspectives, internal performance measures and human resource concerns;
- clearly defined;
- used to form the basis for the selection of quality objectives.

Reaching strategic objectives will be conditioned, most of the time, by the way the organisation fulfils the requirements and expectations of clients and of other interested parties, because clients are a valuable asset of any organisation. This is why the strategic objectives once established, the key problems must be identified. In this respect, from the instruments of quality management, it may be utilized the Matrix of Results or the Critical Incidents Technique.

Phase 3. *Base quality objectives on key problems*

After top management has selected key measures for the organisation, functions and departments at all levels will select measurable quality objectives that are consistent with the key problems. It may sometimes be possible for functions and levels to adopt objectives that are the same as key problems, but most of the time, it will be necessary to select close substitutes: objectives that have direct, logical connections to them. Departments must strike a balance between traditional quality objectives and key problems that reflect other strategic concerns.

Establishing quality objectives based on key problems implies: identification

of possible causes of the problems, analysis of these causes, and a "cause-effect" analysis.

For each of the mentioned three steps, there may be utilized a large variety of quality management instruments. Experts recommend brainstorming and nominal groups technique for *Step a)*, diagram of relationships and diagram of affinity for *Step b)*, and "cause-effect" diagram and "Five Why-s" checklist for *Step c)*.

The following are the basic requirements for relevant and complete quality objectives:

- objectives should contain three elements: characteristics (description), an indicator (the value that needs to be achieved), the tendency (the evolution);
- to be established at relevant functions and levels;
- should be measurable;
- must be established also objectives necessary to achieve requirements of the product;
- must be communicated to the whole personnel;
- must be evaluated the need for updates and changing during management reviews;
- they have to be explicitly formulated, concrete, well delimitated;
- they must allow evaluation by established criteria (even for qualitative objectives);
- they must be related to capabilities and restrictions within the organisation;
- there must exist a structural compatibility of objectives and a temporal continuity;
- to be realistic (some experts consider as a requirement for a quality objective a 70% probability for its accomplishment).

Quality objectives are selected by process owners that are the managers who are directly responsible for the processes concerned. The selection/establishment process has to be done very carefully, in order to keep the generality of objectives and not to be produce the sub-optimization

phenomenon (this occurs when an objective enhances one function, but harms other functions). Process owners should set targets for the quality objectives in close relationships to the ISO 9001:2008 standard. They should establish quality objectives with an understanding of the underlying process capability. The old standby "two percent better than last year" may become a deception unless there is a logical basis for the target.

On the other hand, we have mentioned before that objectives must be measurable and clearly defined, as required by ISO 9001:2008. "Measurable" means the performance is traceable over time using quantitative data. Most organisations won't have too much trouble in making their objectives measurable, the problems arise in trying to define them clearly. In order to avoid mistakes, definitions attached to each quality objectives should answer the following questions:

- What exactly does the objective mean?
- How is the objective calculated?
- What is the source of data?
- Who collects data and how often?

The quality objectives must be established on a large time horizon, rather then being detailed on short and medium time, at department level. It is mandatory that the process of establishing quality objectives should end with personnel training. According to ISO 9001:2008, personnel must have a clear understanding of what their department is working toward and how they can contribute to the effort. This sets up significant responsibilities for training on the department level. This will eliminate vague statements from employees such as "we're trying to get better" or "we want to make the best quality possible".

Top-management shouldn't have any second thoughts in revising quality objectives and the changes must be communicated to personnel, also. There is a clear link between the organisation's commitment for continuous improvement and the dynamic aspect of policy and quality objectives review. In these conditions, even partial achievement of relevant and careful established quality objectives, proves continuous improvement. If all of these details will be adequately established, then misunderstandings, confusion and suspicions will be avoided, and quality objectives will have better chances in leading to organisational performance.

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ECONOMY OF QUALITY

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Abstract

There are several models of cost management, most notably PAF model. This model has been questioned in the recent years. This article proposes a different view of quality costs. It is necessary to consider the cost of investment in the quality system, and the cost of procedures, depending on the time needed. The analysis necessary to quality assurance activities, adopted by different companies or suggested by some papers, lead to distinguishing the following functions: build of quality, quality inspection, quality improvement, guarantee of quality and staff training. To determine the costs related to quality, we should take into consideration two types of costs: costs for system implementation (design and implementation), which can be viewed as an investment, and costs related to the use of systems, to the procedures necessary to achieve a batch of products.

Keywords: PAF model, cost of quality, quality system, lifecycle of the quality system

INTRODUCTION

An important managerial issue for quality assurance is to find out the cost of quality. But the cost by itself does not give the real measure, unless we also study the effects obtained by applying the quality assurance activities. For this reason a new paradigm appeared in quality management: the so-called "economy of quality". Economy of quality [1] means a quality management activity that examines the economic aspects, such as the cost of quality and its effects.

Quality
is not an act,
it is a habit.
(Aristotle)

After more than fifty years of studies, the problem of Economy of Quality is still open, although some progress has been made about quality costs, and successive methods used have led to a better understanding of them. Since 1946, the costs of quality have been studied by General Electric [2]. But current models still cannot be used to manage quality activities in practice. The problem of project quality costs has been even less studied.

Today the economy of quality is a modern tool for the company management [3] used by large corpora-

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tions, as well as by SMEs. J. Juran said [4] that the language of a manager should be an economic and not a technical language.

1. The Current Level of Research

Referring to the cost of quality, J. Juran proposed including the costs for market research, for research and development, design, manufacturing planning, maintaining the precision of equipment, employees training, sales of products and products testing, defect prevention, replacing defects, search of information.

Ph. Crosby [5] introduced the concepts of conformity and non-conformity, and consequently the costs for conformity (prevention and evaluation) and for non-conformity (internal and external defects). R. Tricker [7] noted that British standards introduce the notion of "economic quality" (the breakeven point at which costs exceed benefits). This expression is more acceptable than that of "optimal quality". Taguchi's concepts [8] can be summarized in the fact that a poor quality is a loss for the society, the loss increasing with the square of the error magnitude. In 1967 A.S.Q.C. published the "Quality Cost" document followed by a guide to "Quality Cost Reduction" and another on "Cost Management". Industry reacted in different ways to these concepts starting with 1980. There have been issued many solutions for management of quality cost, but they are still not universally accepted. This is mainly because in quality some expenses are, actually, investments (for example the training costs).

Other experts [10] are even more categorical, considering that quality assurance as a whole should be seen as an investment and not as an expense, because it affects the reduction of loss (scrap), reduces the inventory (assets in stocks), increases efficiency and productivity, improves the company image and ensures its competitiveness. Therefore costs should be managed and not recorded. But current accounting used by enterprises does not contribute to identifying quality costs and, consequently, to its increase.

The PAF Model is the most used model for determining the cost of quality. Masser defined in 1957 the PAF model which records the costs for prevention, testing, defects replacing. Similarly, John Groocock [11] used these three cost categories: prevention of damage, identification of defects, and replacement of defects. Feugenbaum added to this that there are both internal and external defects.

As it can be seen, this concept refers to the products conformity quality, and

not to the quality as perceived by the customer. Further it is missing a clear definition of what is meant by these costs, so that in practice it is necessary to provide various examples of expenses that are part of these categories.

The method of survey points [14] no longer seeks the cost split by articles of calculation, but looks at some issues called "the survey points". For example, the time of interruption of manufacturing is one such point. The method points out that the base of current calculation is a direct labor, but this is only about 15% of total spending, too little to estimate the cost from it. Furthermore, some manual operations require a very short time, but registration may require more time than that, hence accounting costs increase. Also some costs do not require a precise knowledge, but a good approximation, which in current accounting cannot exist. Many activities in quality assurance have an intellectual character in which time is not important, but necessary knowledge is.

M. Porter suggested [15] that in each activity are three types of cost: direct costs to create value, indirect costs to ensure performance of work and quality costs necessary for quality assurance and quality control.

2. The Systemic Approach to Quality Management

2.1. The Quality System

Quality assurance is achieved through a quality system. This is because quality management is a transfunctional management. J. Forrester noted [16]: "Until now, much of the practice and management training deals only with activities. Accounting, production, finance, human relations are taught as separate subjects. Industrial system is so complex, that knowledge of its parts is not enough. In management, the interconnections and interactions between the components are more important than the components separately". This explains the interest in industrial systems.

Although in the General Theory of Systems, the notion of "system" was made clear a long time ago, in the theory of quality, things have evolved slowly and some uncertainties still exist. The ISO 9000 standard defines the quality system (Q.S.) as "the organizational structure, responsibilities, procedures, processes and resources for implementing quality management". Notes accompanying the definition add that Q.S. must be extended so as to achieve the objectives for quality.

The standard is designed essentially to meet internal management requirements of the organization, and is more general than the requirements of a particular beneficiary, who usually only evaluates the part of the system of interest. This definition corresponds with the G.T.S concepts.

The quality system appeared [19] as a consequence of profound changes in science and technology, changes that took place initially within high technology: military, nuclear, aerospace, but now widespread in electronics, computers, vehicles, machine tools etc. The quality system is in turn a "High Product", a macro technology used to introduce technical progress in businesses. With its help, taking minimal and controllable risks, high quality products are made.

A definition encountered in the literature [21] referring to the quality system is consistent with G.T.S: the quality system is a "combination of equipment, software specialists and procedures in such a structure chosen, that one can achieve the objectives derived from quality policy". Other authors define quality system as a group of man-machine elements, driven by information, acting on the material, information, energy, and people, to pursue a specific purpose. QS is a network of administrative procedures and techniques required to manage quality, i.e. design, production and product support.

Below the quality system's elements will be defined. The aim of identifying its elements is encountered in many works [22], which try to find the basic "bricks" of the system. The Q.S. definition of ISO puts particular emphasis on the procedure. Applying a procedure involves the existence of experts, information and equipment that can define a basic system (arhema), the smallest subsystem of quality, and the "brick" of which we spoke earlier (Figure 1).

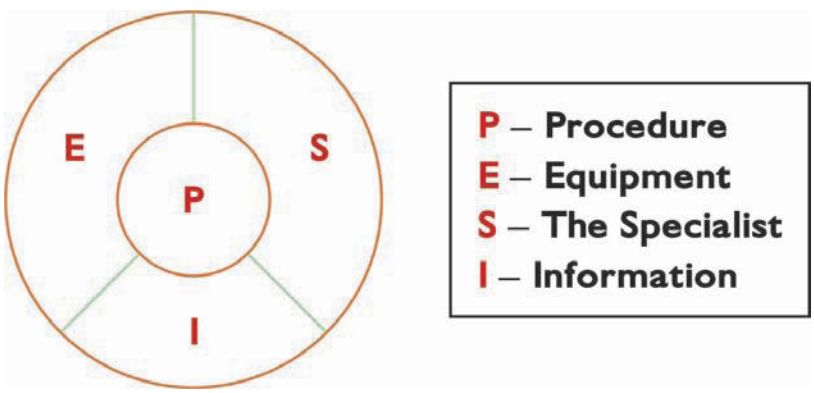


Figure 1 – *Arhema for quality system*

Literature devoted to systems presents different types of structures, industrial management studies leaning more towards hierarchical structures. Also, in works related to quality system, several possible structures are presented, but it should be noted that they refer to industrial activities that determine quality, and not to the quality system elements themselves. For example, ISO 9004 defines the "quality curve" while

previous works refer to the "spiral of quality", "fan work", "waterfall of activities". All these structures are simple, involving a sequence of activities. Recent works advance the idea that the structure is more complex, with parallel or hierarchical activities. Industrial activities considered for these structures have some differences, but their analysis shows that these are not fundamental. Quality process is carried out in a plan that has two dimensions: industrial activities and quality assurance functions (Figure 2):

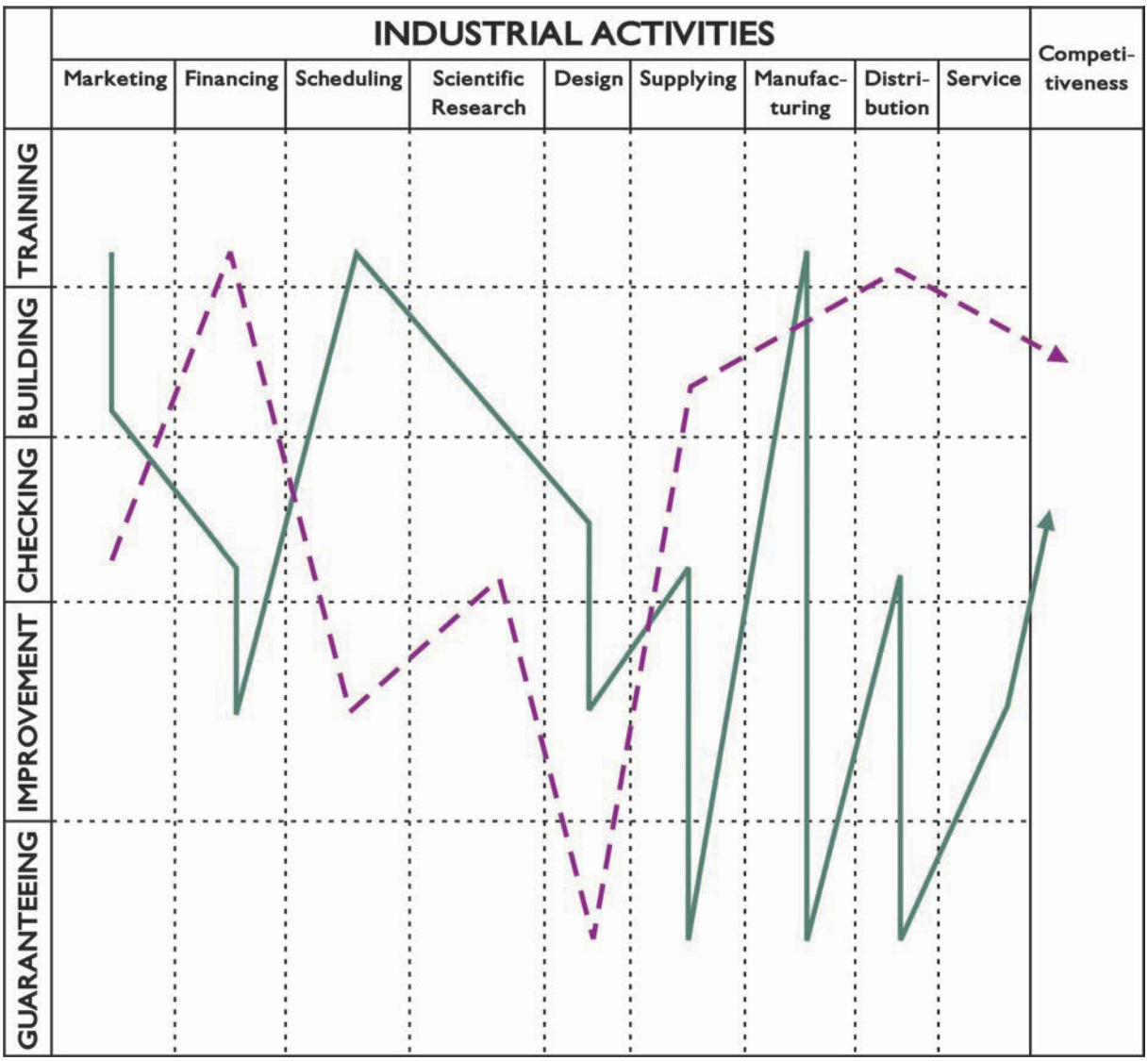


Figure 2 – *The quality process*

The procedures of the quality system are classified according to their quality assurance functions.

2.2. Quality Assurance Functions

Quality assurance (QA) contains all the measures that are adopted to constantly achieve a certain quality level of products. These measures must be planned and systematic, to ensure the producer and the customer that the desired quality will be obtained and all requirements satisfied. It should be noted that:

- the measures are adopted within some activities conducted in the company;
- the measures must ensure customer satisfaction;
- the measures should ensure a repetitive activity;
- the measures are translated into procedures, which are documents to be followed by the entire company.

In the ISO standards, the quality assurance is considered to be a set of actions planned and systematic, which are able to give confidence that the product meets the specified requirements. It is judged [23] that the ISO 9001 standard gives a guarantee to the customer and that it has a horizontal dimension (outwards expansion), while TQM is oriented towards the development of the company's capacity of satisfying the client and that it has a vertical dimension (expansion inside of company). The role of QA is to ensure all links between the two dimensions.

Some other opinions on quality assurance are also interesting. Thus, W.E. Erickson found that quality is always obtained as a result of a huge effort, and A. Toynbee stated that "good quality is obtained through hard work".

To understand the essence of quality assurance one should appeal to its functional approach. In management, the functional approach is used for making analyses, while the systematic approach is used for designing the processes. The explanation of functional approach can be found in the fact that the management processes and its activities are part of the company, which is a complex organism continually transforming itself and evolving. Thus it can be compared to a live, biological, organism, whose existence is ensured by performing its functions [4].

The function is an abstract theoretical concept used to put in order complex and varied actions, thus having the purpose of describing the role of an activity. The functions describe activities with a high degree of similarity. In addition to functional approach to enterprises or functional approach to products (used in value analysis), quality management also began to address functionally the quality assurance.

The enterprises activities that contribute to quality assurance are very different.

The chain of activities within an enterprise can be represented as a "spiral of quality", which shows how activities succeed. ISO 9000 uses, in the same purpose, the term of "quality loop". The spiral shows the enterprise activities that participate to quality assurance.

The measures necessary for Q.A. of a process can be applied prior to the process, simultaneously, or after the process. This observation allows the definition of classes with such measures that lead to quality assurance, called quality assurance functions (Figure 3):

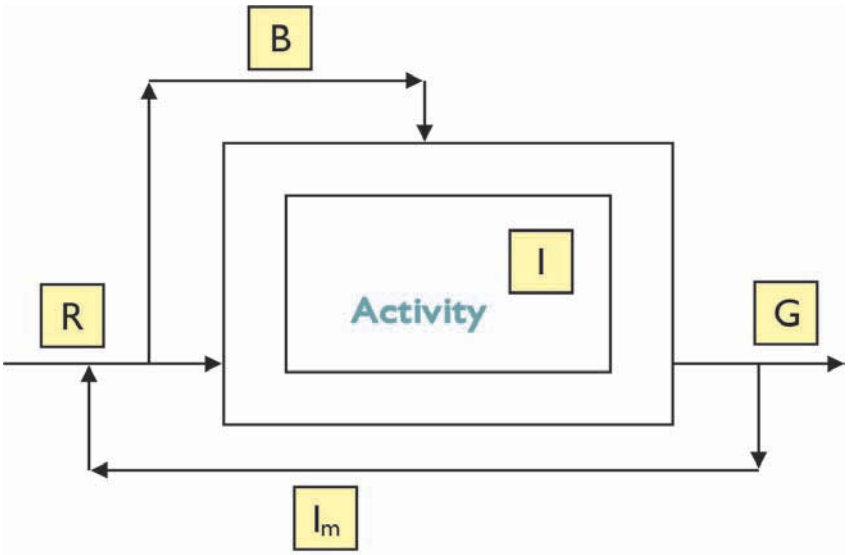


Figure 3 – *Quality Assurance Functions*

The analysis necessary to quality assurance activities adopted by different companies or suggested by some papers, lead to distinguish the following functions: build of quality, quality inspection, quality improvement, guarantee of quality and staff training. Grouping activities by functions is made after their homogeneity and time of application [17]:

- Building of quality includes measures to be adopted initially to achieve quality in an industrial activity;
- Quality inspection includes the achievement comparison activities with their specifications;
- Quality improvement includes measures to be taken to improve quality, after the verification activities;
- Guarantee of quality includes measures which confirm and guarantee the systems, processes, products or services;
- Staff training includes training measures and improvement of personnel for quality.

2.3. Quality Engineering

Nowadays systems engineering notions are used to design systems, including their quality. Systems Engineering is a discipline

which studies the creation and optimization of systems, meaning the design, implementation and exploitation, including the setting up of maintenance and security assuring procedures [27] (Figure 4):

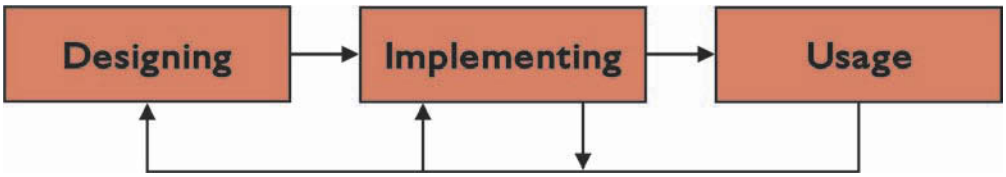


Figure 4 – *Systems engineering*

The term "quality engineering" is already used in the literature [28], but with limited and incomplete meanings, referring, for instance, to a range of activities such as professional training, technical assistance, research activities (for product development, logistics, etc.). In the Japanese literature [29], it is considered that "quality engineering" is the activity performed by the quality engineer, and its purpose is to collect information about the product, determining the quality characteristics, to establish procedures for quality in all activities including relations with suppliers and customers, training and development of systems for quality assurance. A recognized expert in quality, G. Taguchi, names his statistical method as "quality engineering". Further on throughout this paper, the term "quality engineering" will be used to describe the design, implementation and usage of quality systems.

3. The Systemic Model of Costs

To determine the costs related to quality, we should take into consideration two types of costs [30]:

- Costs for system implementation (design and implementation), which can be viewed as investment;
- Costs related to the use of systems, to the procedures necessary to achieve a batch of products.

The first ones are fixed costs, which are paid back pro-rata from each product. The other costs are variable costs for each product made. Fixed costs are allocated to each product using the distribution key, which involves the ABC method. Total cost of quality of a product is the cost of access to quality system, plus the costs of using the procedures:

$$CQ = C_{as} + C_{up} \qquad \textbf{(1)}$$

where:

CQ – total cost of quality (a lot) of a product;
C_{as} – cost of access to quality system;
C_{up} – costs of using the procedures.

Cost of access to quality system

The design and implementation of the system is an investment that is recovered by each resulting product, using the quality management system. The cost is related to staff training, implementation

of the quality system, system certification, and studies to define and write procedures. There are costs for creating a Department of Quality Assurance, for testing procedures, quality manual development, for the purchase and testing of equipment, etc. Thus, it exist a necessary investment to implement the system, which has several components:

$$C_{as} = I = I_1 + I_2 + ... + I_n \qquad \textbf{(2)}$$

This investment is a cost that has to be distributed to the lifespan of the quality system, on each batch and each product, using the distribution key. A distribution key is a measure of a type of cost. If a quality system is used to achieve more products, the resulting cost is smaller.

A product receives a variable percentage of each component of the investment according to the degree in which it was necessary. Distribution key can be: the percentage of procedures used, the time of use of the information system, product complexity, requests to change of quality plan, the number of hours required for training, of how much of the system capacity was actually used. The smaller the volume of products resulting from the project, the higher the access costs. If the distribution would depend on the volume of products, for a small volume we would have low associated costs. In this case, some products would support other products.

Determination of investment distribution key must be made carefully. The fundament of management accounting is direct labor. This seemed natural, because in the early twentieth century, labor represented the highest cost. But today it represents only a low percentage. In 1970 labor costs represented 40%, while nowadays it is only 5%. Many costs have causes other than manual labor. To simplify, a repartition key of investment in the quality system may be given by the time of use of the system [33].

$$K = \frac{Taq}{DCV.Zl.L} \qquad \textbf{(3)}$$

where:

T_{aq} – Time of use of the quality system for a batch of products (days);

DCV – Lifecycle of the quality system (about 15 years);

Zl – Working days per year (about 260);

L – Number of batches that are simultaneously working.

Supporters of the ABC Method [32] say that the arbitrary allocation of costs not related to production, depending on labor costs, is not representative for the resource use. Usually information about costs is

distorted and wrong decisions may be made [33].

For correct calculations we must update the investment. The pro-rata cost of using the system for a product is given by:

$$C_{as} = I \cdot K \qquad (4)$$

The Costs of using the procedures (Direct costs of quality assurance) for a batch of products is based on recording the total times for using the procedures (for each batch of products) (Table 1).

Table 1 – *Expenditure on using procedures*

Quality assurance functions	PRODUCT						Salary schedule	Total
	A	B	C	D	E	F		
Building								
Inspection								
Improvement								
Guaranty								
Training								
Direct costs (CD)								

In the table is shown the record of the time for using the procedures, equipment, employee training, information seeking. Time is then converted into money. Costs are then centralized at the sector level (cost centers) (Table 2).

Table 2 – *Quality costs in the enterprise*

Center	Building	Inspection	Improvement	Guaranty	Training	TOTAL
C						
C_2						
C_3						
C_4						
Total						

Registration is facilitated if there are product directors. Each worker doing an activity based on a procedure has to declare the time spent. This time is then converted into money. Certainly these statements would contain errors and therefore there is a tendency for them to be filled by direct supervisors.

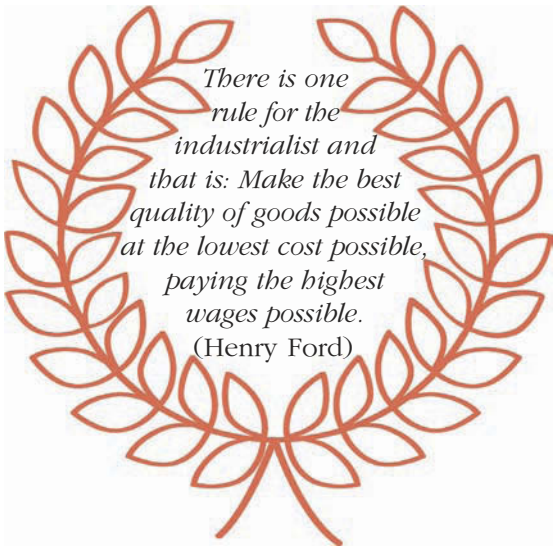
Some costs can be directly determined because they are recorded in primary documents, but others are determined based on a distribution algorithm. Similarly, one can identify the costs for the improvement, assurance and training activities. It should be noted that for guarantee, we consider the money spent on product certification, while for training we consider the money spent on the employees training.

The costs associated with defects must be considered in the fabrication cost. The training cost and the guarantee cost include the money spent to train the people involved in the actual execution (to clarify the *modus operandi*), as well as the costs associated with the product certification. The training of quality system and quality system certification are investments.

Thus, the cost of a product quality is:

$$CQ_p = CQ / n \qquad \textbf{(5)}$$

where n is the size of the batch.



Conclusions

There is some similarity between the PAF model and the systemic model. One may argue that prevention means implementing quality, identification means inspection, fixing defects means improving. However, the difference lies in the prevention costs that include the investments for the quality system and for training.

There are also some differences between the two concepts. Implementing a quality system is considered an investment that has to be paid back by the products, while the use of procedures represents direct costs. This way the costs have a clearer meaning, and we can better measure up the improvement activities.

Finally, we must stress that cost has no meaning by itself, that is we cannot say it is big or small, unless we take into consideration the benefits of applying quality assurance.

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EVALUATING THE QUALITY PERFORMANCE

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Abstract

This paper examines the effects of ISO certification in construction companies. It is aimed to achieve the following objectives: to ascertain if the implementation and certification of quality management systems to ISO 9000 standards in construction firms has helped them to achieve higher construction quality standards, to examine the impact of ISO 9000 on professional firms and to compare the effectiveness of ISO certification in manufacturing, service and construction firms. The findings of this study are based on thorough literature review and explained in three sections. Section one observes the effectiveness of ISO 9000 in raising construction quality standards in Singapore construction industry. It gives details about the use of Construction Quality Assessment System (CONQUAS) introduced in Singapore to evaluate the quality performance of building contractors using numerical scores. Section two examines the impact of ISO 9000 on professional firms. The findings indicate that there is a belief that ISO 9000 registration enhances a firm's chances of gaining work. Section three compares the effectiveness of ISO certification in manufacturing, service and construction firms. It aims to find the reasons for certification and benefits of ISO 9000 certification.

Keywords: construction companies, ISO certification, quality standards, effectiveness, quality accreditation

1. Effectiveness of ISO 9000 in Raising Construction Quality Standards

This Section analyses the effectiveness of ISO 9000 in raising construction quality standards in Singapore construction industry. It gives details about the use of Construction Quality Assessment System introduced in Singapore to evaluate the

The quality of a leader is reflected in the standards they set for themselves.
(Ray Kroc)

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quality performance of building contractors using numerical scores. It aims to ascertain if the implementation and certification of quality management systems to ISO 9000 standards in construction firms has helped them to achieve higher construction quality standards through higher CONQUAS scores.

1.1 The Construction Quality Assessment System (CONQUAS)

The CONQUAS system was developed in 1989 in consultation with the major public sector procurement agencies in Singapore such as the Housing and Development Board, the Public Works Department and the Public Utilities Board. It was initially designed to assess contractors in public sector building contracts.

The CONQUAS system was essentially developed to meet three objectives:

(1) To have a common quality evaluation system for construction projects.

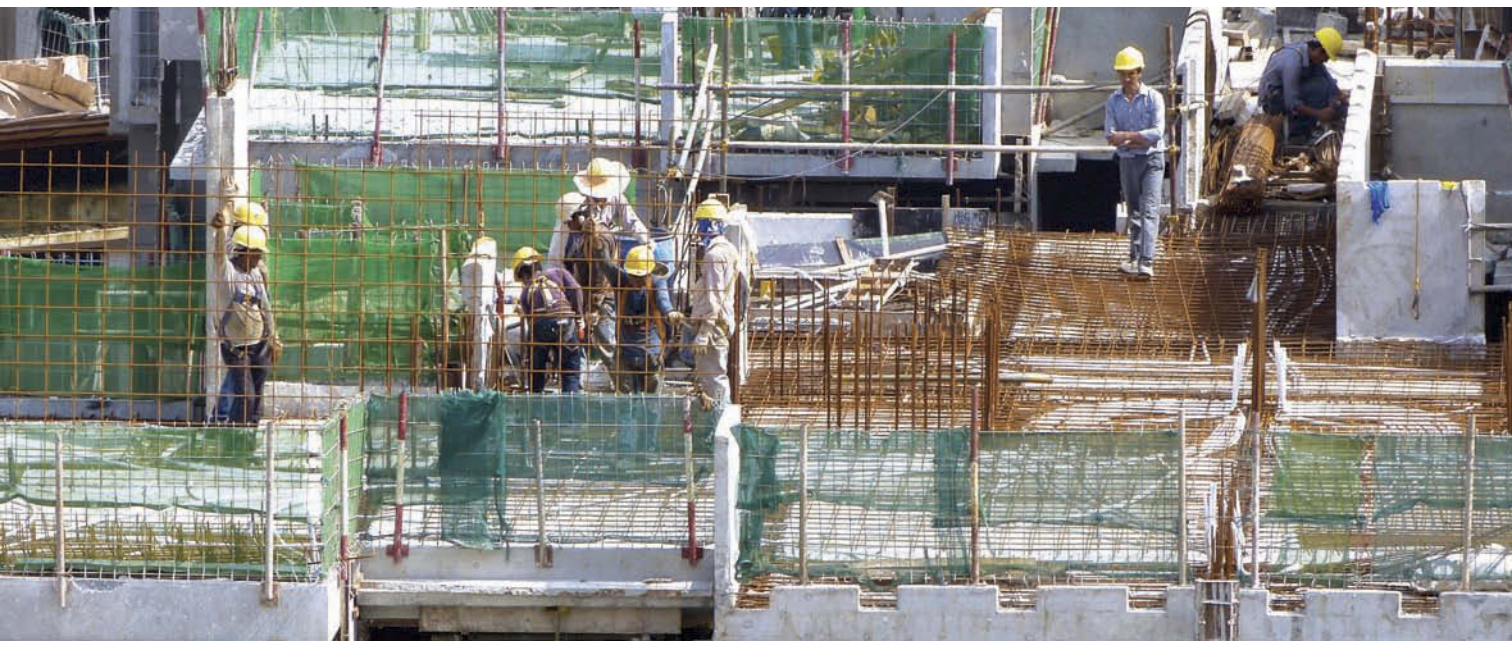
(2) To provide an objective and measurable system for quantifying the quality standards of building construction.

(3) To facilitate the systematic assessment of quality standards within specific time and cost limits and in the process, raise the level of quality in construction (Low, 1991).

The assessment done by the CONQUAS system is divided into three parts: **Structural work** (40%); **Architectural work** (50%); **External work** (10%). The 40:50:10 weighting adopted for assessment is essentially based on approximating the cost ratio of structural, architectural and external works for a typical reinforced concrete building project.

1.2 Use of CONQUAS in Singapore

The CONQUAS system was officially used to assess buildings in July 1989. Buildings which are eligible for assessment must be between one to three years



of completion. While the lower limit of one year helps to ensure that faults, should there be any, can be detected, the upper limit of three years will ensure that the building concerned can still be regarded as a relatively new development. When the CONQUAS system was first introduced, the initial assessment was also meant only for public sector building projects with construction costs of at least 3 million Singapore dollars. Confidence in the scheme has since then encouraged private sector developers and contractors to apply voluntarily to the CIDB for their projects to be CONQUAS-scored. To date, more than 1,000 projects in Singapore have been assessed using the CONQUAS system. It is now considered the effective quality yardstick for the construction industry in Singapore. The CONQUAS system is also a major factor in the selection of the annual CIDB Construction Excellence Award winners as well as in the performance grading of all contractors registered with the CIDB.

2. Methodology

This study measures the effectiveness of formal quality management systems in achieving good quality standards in construction. The CONQUAS records of 15 construction firms kept by the CIDB in its database were analyzed. Results of the analyses are discussed below.

3. Data Analisys and Interpretation

3.1. CONQUAS Performance Evaluation for Construction Firms with/without ISO 9000 Certification

This section examines if construction firms with third party certification to ISO 9000 standards are able to produce higher quality works than non-certified construction firms. For this purpose, the CONQUAS performance of 11 non-certified firms were analyzed and compared with four certified construction firms (Companies A-D).

By comparing the total average CONQUAS scores for both sets of firms in Table 1 it can be observed that certified firms tend to out-perform non-certified firms in so far as CONQUAS scores are concerned.

3.2. ISO Standard Implementation in Quantity Surveying Firms

This section examines the impact of ISO 9000 on professional firms of quantity surveyors in service sector who form part of the design team for the building construction industry. The specific objectives of this section were to determine:

Table 1 – *CONQUAS scores of certified/non-certified construction firms*

Non-certified firms		Certified firms			
Name	Final average	Name	Before	After	Final average
Company E	74.90	Company A	79.26	76.70	77.98
Company F	71.28	Company B	72.25	76.90	74.58
Company G	71.63	Company C	77.42	79.50	78.46
Company H	74.28	Company D	74.34	72.39	73.37
Company I	67.02				
Company J	68.33				
Company K	79.10				
Company L	75.30				
Company M	71.73				
Company N	69.42				
Company O	70.75				
Total average	**72.16**				**76.10**

- Is there a relationship between size of firm and ISO 9000 registration?
- Is there a belief that quality accreditation enhances a firm's chances of gaining work from both public and private sectors?
- The reasons why firms seek ISO 9000 series quality accreditation.
- The benefits gained and do they outweigh the costs?

3.2.1. Relationship between Size of Firm and ISO Registration

This study is based on a questionnaire survey results which was posted to 66 known firms of quantity surveyors in Northern Ireland (Table 2).

The evidence from the survey as shown in Table 2 confirms that there is a close relationship between size of firm by number of employees, and registration to ISO 9000. As the number of employees in the firm increases the rate of registration increases.

3.2.2. Quality accreditation and improving a firm's chances of gaining work from both public and private sectors

Although there is a much stronger belief among registered firms that ISO 9000 registration gives a better opportunity for public work, only 29% of this category saw an increase in demand since registration, 24% experienced a decrease, while 41% saw no change, and 6% could

Table 2 – *Number of employees versus percentage registered*

Employees	Percentage registered
1-2	0.0
3-5	53.33
6-10	61.1
11-25	81.8
Over 25	100.0

not answer (Figure 1). Only 12% of the companies experienced an increase in private sector work. From the analysis it can be concluded that there is a belief that registration enhances a firm's chances of gaining work.

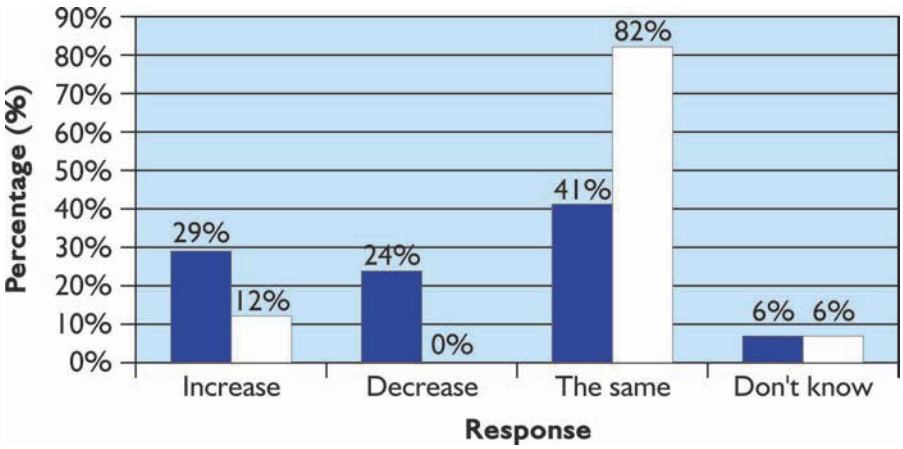


Figure 1 – *Workload since registration*

3.2.3. Reasons why Firms Registered or Seek ISO 9000 Quality Accreditation

From the survey the two most dominant reasons are externally driven. "Market image" is cited by 91% of the total respondents (made up of 36% registered and 55% non-registered firms). Many companies spend time and money in pursuing ISO 9000 to use this as an advertising tool, rather than expecting any operational benefits. Other reasons are "Public sector client pressure, cited by 86% of total respondents, and "Competitors registering" cited by 66% of the respondents as another external factor. The most dominant internal factor is "to improve internal efficiency", which is the reason given by 68% of respondents.

3.2.4 Benefits gained versus costs

Figure 2 shows that 53% of registered firms considered that benefits gained outweighed the costs, 24% considered

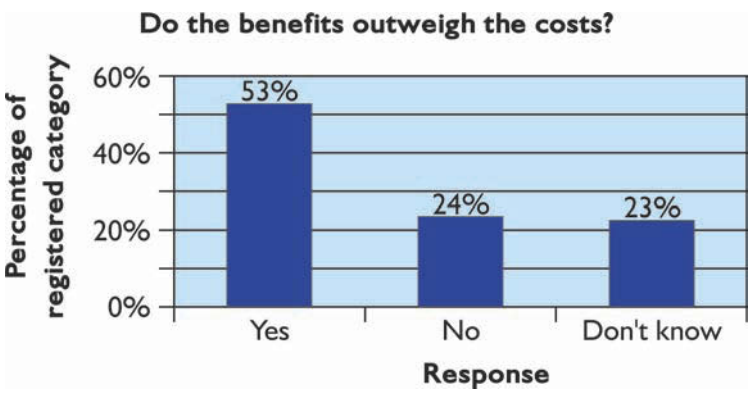


Figure 2 – *Cost/benefit comparison for ISO implementation (registered firms)*

the opposite, while 23% could not answer. Further analysis indicates that only 6% of the registered firms measure the costs, this finding suggest that many organizations are "playing the game that everybody plays", rather than using ISO 9000 for business improvement.

ISO 9000 tends to be internally focused, so opportunities for external benefits may be missed unless there is pressure from clients for registration. It is concluded that costs, profit and extra business are the main issues; it can be observed that there is little mention of quality.

3.3. Effectiveness of ISO Certification in Manufacturing, Service and Construction Firms

This section compares the effectiveness of ISO certification in manufacturing, service and construction firms. It aims to find the reasons for certification and benefits of ISO 9000 certification. The findings of this section are based on a questionnaire survey which was conducted by the University Industrial Centre of the University of Hong Kong. The sample consisted in ISO 9000 certified firms in Hong Kong, including: 86 manufacturing firms (37%), 57 firms (24%) from service, and 92 firms (39 %) from construction industry. The findings of this survey are discussed below.

3.3.1. Reasons for Certification

The survey results indicated that ISO 9000 was implemented for different purposes in different industries. For manufacturing firms, the majority of them aimed at using ISO 9000 to improve the management and control of their operations. It was quite common for them to use the ISO 9000 system to assist the management and control of production and associated operations. While using ISO 9000 to improve the management of operations was the main objective in the service sector, small and medium firms in this sector tended to be customer-driven. The main reason for construction firms to obtain an ISO 9000 certificate was to meet the customer's demand (Table 3):

Table 3 – *Reasons for certification (all firms)*

Reasons for certification	Manufacturing		Service		Construction		Total	
	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)
To satisfy customer	10	12	3	5	36	39	49	21
To stay in business	22	26	15	26	30	33	67	29
To improve management	41	48	30	53	9	10	80	34
More than one answer/others	13	15	9	16	17	18	39	17
Totals	86	100	57	100	92	100	235	100

3.3.2. Benefits of Certification

Benefits gained with respect to internal operations

The benefits gained with respect to internal operations were: better team spirit, less staff conflict, reduced wastage, increased efficiency, and shorter lead time (Table 4):

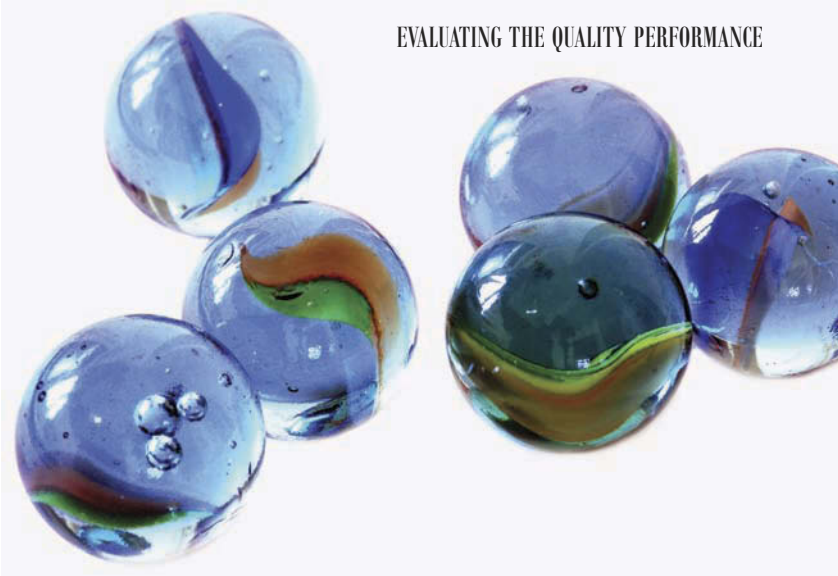
Table 4 – *Benefits gained with respect to internal operations*

Benefits of certification	Manufacturing		Service		Construction		All	
	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)
Better team spirit	68	79	47	82	55	60	170	72
Less staff conflict	58	67	34	60	44	48	136	58
Reduced wastage	60	70	28	49	49	53	137	58
Increase efficiency	60	70	42	57	57	62	159	68
Shorter lead time	35	41	22	24	24	26	81	34

The benefits derived by the construction firms were generally less than the manufacturing firms. Considering the fact that a large proportion of the certified construction firms pursued certification under customers' pressure, one might suspect that the firms which were passive in adopting ISO 9000 reaped less benefits from the system.

Customer relations benefits

A total of 62% of the firms in the three industrial sectors reported improved sales and attraction of new customers. As far as the construction firms were concerned, 31 of the 36 construction questioned firms which were customer-driven, reported not having longer/bigger contracts or less control from their existing customers. These figures strongly suggested that if a firm did not take the initiative to become ISO 9000 certified and waited until the customer demanded it, the firm should not



expect a longer/bigger contract or less control from its existing customers even after it was certified. This might be true at least for the short term.

Subcontractor relations benefits

A total of 42% of the firms considered that they had established a better relationship with their subcontractors. The situation of the construction firms was slightly below average, as only 30% of them had established a better relationship with the subcontractors. In general, the study indicated that the relationship between the certified firms and the subcontractors did not change much through the certification exercise.

A better approach may be for the certified firms to train and help the subcontractors to understand the importance of understanding the global demand for quality. It was reported that some of the more established firms provided technical assistance to help their subcontractors to implement ISO 9000. This might be an effective means to maintain quality and improve relationships with subcontractors.

3.3.3. Quality improvement

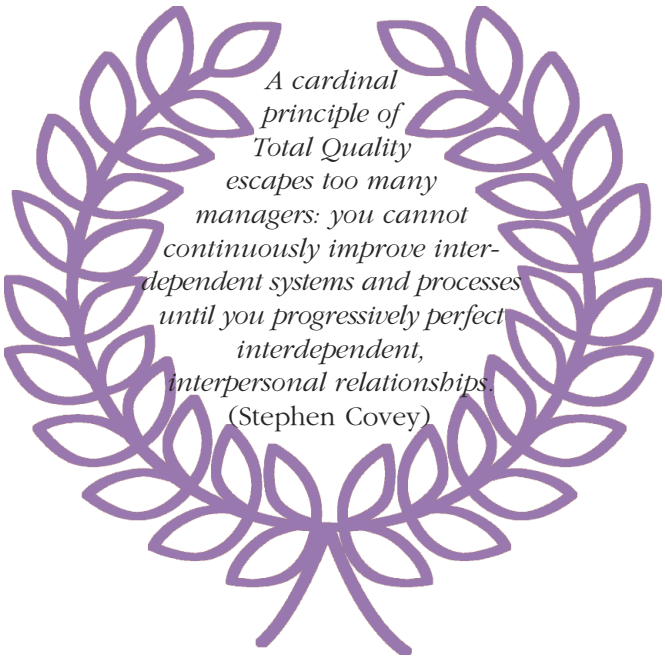
Training is an important indicator of how well a firm is prepared for quality management. According to the survey, nearly 90% of the certified firms had provided training on ISO 9000 for their senior management, middle management and front line staff.

The survey results indicated that a large proportion of the ISO 9000 certified firms tended to continue their pursuit of quality. TQM was the most popular approach taken by the certified firms. ISO 14000 appeared to be an important area, and it was likely that some ISO 9000 certified firms would take steps to implement the environmental management standard. Generally speaking, the manufacturing and service firms appeared to be more positive towards continuous improvement of quality management than the construction firms.

Conclusions

By comparing the total average CONQUAS scores of ISO 9000 certified and non-certified firms, it seems that certified firms tend to out-perform non-certified firms in so far as CONQUAS scores are concerned. It is identified that the larger quantity surveying firms are the most likely to register to ISO 9000. In comparison, the firms who do not register tend to be the smaller practices that have one or two employees.

The analysis shows that there is a belief that ISO 9000 registration enhances a firm's chances of gaining work. There is a need for professional firms to concentrate more on the internal benefits and related costing; to date the evidence shows that the standard is being used more as a marketing tool rather than a quality systems process. The relationship between the certified firms and subcontractors appeared to be an area where improvement was required. A large proportion of the firms reported having continued their pursuit of quality and management after being certified to ISO 9000. TQM appeared to be the most popular management approach. Some certified firms were planning for ISO 14000 certification.



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INSTRUMENTS USED FOR THE CONTINUOUS IMPROVEMENT

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Abstract

The management of organizations in a complex and changing world presents a major challenge. Making sense of conflicting priorities, allocating limited resources, understanding the impact of the organizations actions, comparing performance with competitors and responding to customer needs are just some of the issues management have to address. Some organizations seek solutions that avoid the complexity described above. This paper analyzes how organizations can increase their competitive advantage by using Balanced Scorecard in the continuous improvement process. If integrated into the organization's management system, Balanced Scorecard can prove to be a successful tool that helps to improve the organization measurement systems, the strategic management system and the communication tools as part of the continuous improvement process.

Keywords: BSC, continuous improvement, performance management tool, quality management system

INTRODUCTION

Today's business environment is governed by globalization, strong competition, fewer material resources, ecological requirements, increasingly demanding customers with rapidly changing expectations. These factors lead to the need to increase the speed of technological innovation which allows companies to survive and to be successful. Therefore, competitive advantage is achieved by those who continuously improve themselves. Yet, the continuous improvement in organizations can't be achieved so easily and the business success isn't assured only by simply investing in the development of new technologies or worse, by implementing changes made by others. The necessity

Almost all quality improvement comes via simplification of design, manufacturing... layout, processes, and procedures.
(Tom Peters)

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for implementing new technology in the production process must be the result of the priorities analyzing process, by taking into account the clients, competitors and partners demands, by understanding and limiting the impact on the environment, by allocation of limited resources or in other words to combine the concept of push technology (identifying an interesting technology, making a product and then searching for a marketplace) to pull the market (developing a new product to meet user needs – Takayama and Watanabe, 2002). Thus, if an organization wants not only to survive but to be successful in a very dynamic environment must monitor their key business indicators (financial, customer, internal business process, learning and development system) and continuously improve.

This paper presents a theoretical implementation scenario of a Balanced Scorecard System into an organization as part of the continuous improvement process. The organization implemented a quality management system based on the requirements of ISO 9001:2008 standard.

The paper is structured as follows: presentation of the theoretical notions of the used concepts (Continuous Improvement, Balanced Scorecard), example of implementation (presentation and analysis of the data obtained by the studied organization until today), and the conclusions.

1. Theoretical Approach

Continuous improvement is an ongoing effort to improve products, services or processes. These efforts can seek "incremental" improvement over time, or "breakthrough" improvement all at once.

Among the most widely used tools for continuous improvement is a four-step quality model – the plan-do-check-act (PDCA) cycle, also known as Deming Cycle or Shewhart Cycle:

- **Plan:** Identify an opportunity and plan for change.
- **Do:** Implement the change on a small scale.

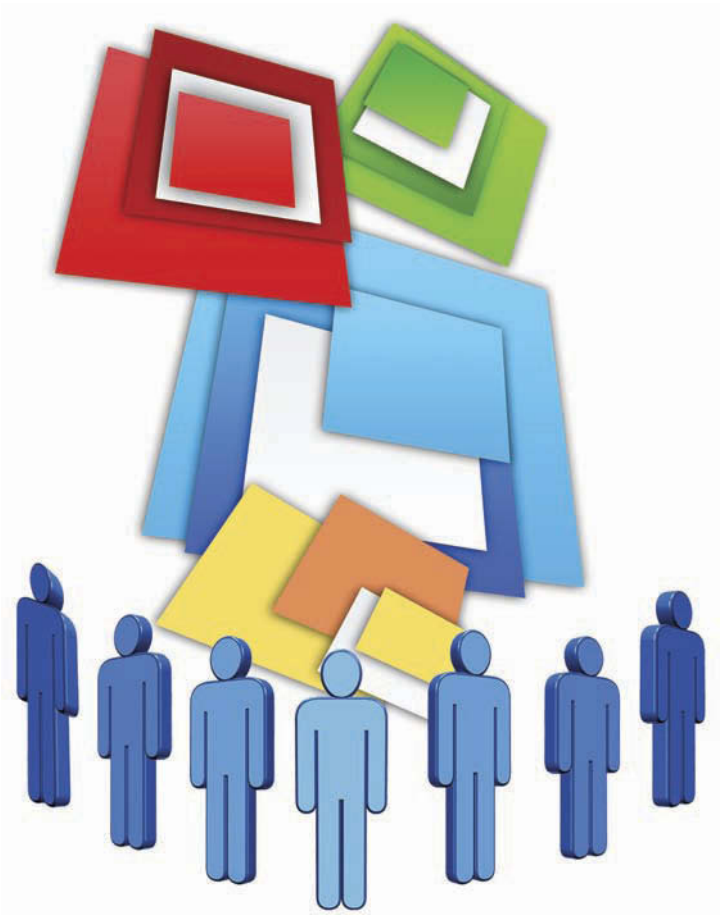
- **Check:** Use data to analyze the results of the change and determine whether it made a difference.
- **Act:** If the change was successful, implement it on a wider scale and continuously assess your results. If the change did not work, begin the cycle again.

In order to assure a real continuous improvement, organizations need to develop adequate tools for leaders to be used in communicating to employees and external stakeholders the outcomes and performance drivers by which the organization will achieve its mission and strategic objectives. A very good set of such tools proved to be Balanced Scorecard, a performance management tool for measuring whether the smaller-scale operational activities of a company are aligned with its larger-scale objectives in terms of vision and strategy. By focusing not only on financial outcomes but also on the operational, marketing and developmental inputs to these, the Balanced Scorecard helps provide a more comprehensive view of a business, which in turn helps organizations act in their best long-term interests. Four general perspectives have been proposed by the Balanced Scorecard:

- Financial perspective;
- Customer perspective;
- Internal process perspective;
- Innovation and learning perspective.

The financial perspective examines if the company's implementation and execution of its strategy are contributing to the bottom-line improvement of the company. It represents the long-term strategic objectives of the organization and thus it incorporates the tangible outcomes of the strategy in traditional financial terms.

The customer perspective defines the value proposition that the organization will apply to satisfy customers and thus generate more sales to the most desired customer groups. This perspective will normally include measures widely used today: customer satisfaction, customer loyalty, market share, and customer acquisition, for example. Equally as important, the organization must develop the performance drivers that will lead to improvement in these "lag" indicators of customer success.



The internal process perspective is concerned with the processes that create and deliver the customer value proposition. It focuses on all the activities and key processes required in order for the company to excel at providing the value expected by the customers both productively and efficiently. These can include both short-term and long-term objectives as well as incorporating innovative process development in order to stimulate improvement.

Learning and Growth Perspective is concerned with the human capital, the systems and the climate of the enterprise. The measures in the Learning and Growth perspective of the Balanced Scorecard are really the enablers of the other three perspectives. They are the foundation on which the Balanced Scorecard is built. Once an organization identified the measures and the related initiatives in their customer and internal process perspectives, the management can be certain of discovering some gaps between the current organizational infrastructure of employee skills and information systems, and the level necessary to achieve the proposed results.

2. Implementation Case Study

The studied organization (Alpha), has implemented a quality management system based on the requirements of ISO 9001:2008 standard. Alpha was challenged to continuously improve, but the company seemed to experience a plateau and was static. Overall, the organization needed something to guide and organize a continuous improvement effort. After intensive research, leadership proposed that the Balanced Scorecard might be an appropriate tool to focus strategy and develop a meaningful organizational effectiveness. Once the Balanced Scorecard was selected, management guided the overall planning process in its application for the company's continuous improvement.

Alpha main products are body armour elements used in the military equipment. In the last years, due to the increasing demand of products from its main customer, the company grew rapidly in size, but had lost operating control that produced significant inefficiencies.

As the Balanced Scorecard processes were being formulated for implementation, a number of key statistics were being gathered. Production efficiency dropped to 68% by the end of the first quarter of the year, far from the objective of 85%. The cost per minute of production was almost 10 eurocents per minute above management's goal. During the external quality audits made by the customer, the non conform products represented 4% from the delivered products and the managements objective was at most 2%.

Replacements of finished or partially finished products based on internal quality

inspection were relatively high – as many as 400 units per week. This was costly, as the company was partially processing finish units that either could not be sold to customer, or could be sold only as seconds.

Production goals were not being met on average about one-third of the time. While delivery time was being met on most orders it was being met through use of excessive overtime that resulted in increased production costs. Personnel issues were a concern as well because turnover during the first quarter of the year averaged almost 10 percent. In addition, absenteeism averaged just over five percent.

Moreover during the production process the machine downtime was running at about 4 percent of the total available time as compared to management's goal of two percent.

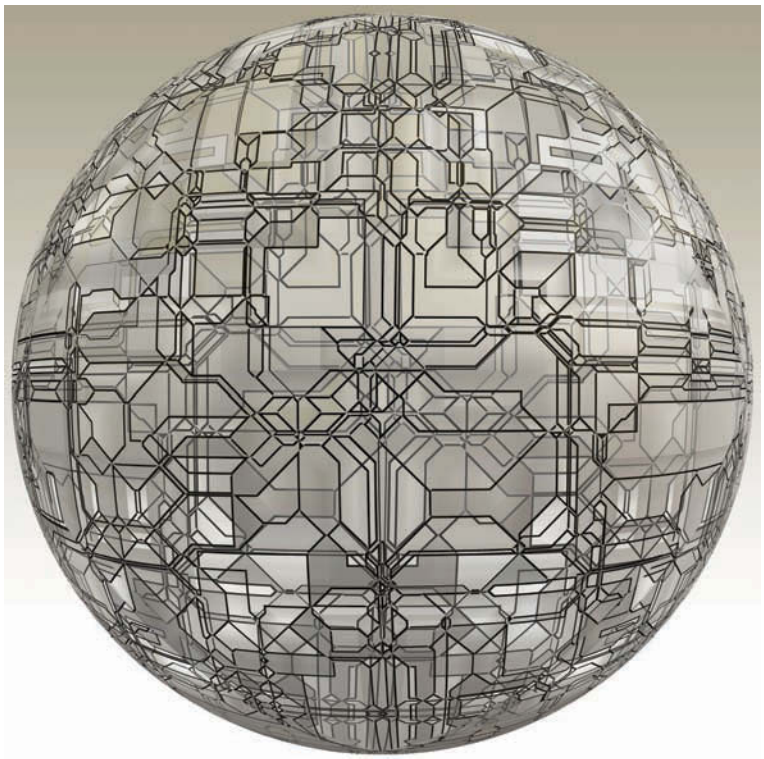
Customers continued to find around 6 percent discrepancies in the packing list for products received at the distribution centre as compared to a zero discrepancy goal. One major deficiency of the implemented management system was the repetition of the same mistakes over and over again, without learning anything. For the management became clear that the intangible capital was lacking, which in turn impeded the learning and growth process.

The first challenge to the implementation of Balanced Scorecard was the company did not have an experienced and well-trained production engineers that had the expertise to attack the problems being experienced in production; and leadership on the production floor was lacking. Secondly, management did not have the data in a usable form necessary to identify where and why the problems were occurring. With the Balanced Scorecard technique, Management created and filled a new production expert position to solve the production problems. The experience brought by the production expert was crucial in determining what data to extract from the company's data base in order to understand the location and cause of the problems. At the same time, management began a series of personnel development courses at the operational level designed to inculcate a quality attitude and also clarifying the specifications of each product.

The following improvements resulted from the Balanced Scorecard process implementation (Table 1):

Table 1 – *Comparison of before and after Balanced Scorecard implementation*

Activity	Before Balanced Scorecard	After Balanced Scorecard
Production efficiency	68%	85%
Production cost per minute	10.1	9.995
Production goals	Under	Above
Non conform products	4%	2%
Replacements units per week	>400	100
On time delivery	90%	100%
Employee turnover	10%	5%
Absenteeism	5%	2%
Machine downtime	4%	1.9%



Prior to the Balanced Scorecard approach, management's efforts at continuous improvement had not been successful. With the Balanced Scorecard activity together with teamwork and communication, management and employees were able to identify pending issues in time to formulate and implement strategies so as to successfully resolve or avoid the problems.

The key to management's success was to increase production efficiency and improve quality. Had a less ambitious strategy that focused only on factors directly impacting quality and efficiency been implemented, it would have consumed less team energy.

Furthermore, the concept of learning and growth stroke at the heart of continuous improvement. Management's efforts at increasing the intangible capital of the company surely enhanced the other aspects of the Balanced Scorecard efforts.

Significant improvement was achieved in all areas after implementation of the continuous improvement project using the Balanced Scorecard as tool of the continuous improvement process. Prior to the Balanced Scorecard approach, management's efforts at continuous improvement had not been successful. The use of the Balanced Scorecard forced management to think of the company as a system made up of aggregate parts that affect the whole. The Balanced Scorecard helped both management and the employees to understand the problems and better formulate strategies to obtain the desired results. Viewing the company as a system made up of aggregate parts also illustrated very clearly that teamwork and communication were important to success.

Conclusions

The Balanced Scorecard assists organizations in overcoming two fundamental problems: effectively measuring organizational performance and successfully implementing strategy. The Balanced Scorecard balances the historical accuracy and integrity of financial numbers with the drivers of future success. The framework enforces a discipline around strategy implementation by challenging executives to carefully translate their strategies into objectives, measures, targets, and initiatives in four balanced perspectives: Customer, Internal Processes, Learning and Growth, and Financial. Linking the Scorecard to key management processes such as budgeting, compensation, and alignment helps overcome the barriers to implementing strategy.

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MANAGING COMPETENCE-BASED CLUSTERS

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Abstract

For many years, research and management thinking has focused on understanding business relationships and networks. Now, the focus is shifting to managing business relationships and networks. Establishing and managing a competence-based cluster in developing markets is known to be a very demanding task. However, a network may help companies in their efforts to develop and commercialize innovative and value-added products and services. This study concentrates on how a competence-based cluster is contributing to the self-reinforcing process of achieving an excellence in business performance among its members and their clients. Theoretical background of the study stems from network and innovation literature, referring to studies on clusters, strategic networks and innovation networks. The empirical part of the study concentrates on case study, describing how a recently established competence-based cluster is utilizing the management of complex relationships in a business network in order to achieve a long-term competitive advantage based on excellence in business performance. The results indicate that successful management of such business network requires precisely developed framework of competences, clear criteria for members' assessment and continuously nurtured process of trust creation.

Keywords: competences, clusters, business network

INTRODUCTION

A large body of research [7, 8, 10, 11, 12] points to the fact that clusters contribute both for innovation and economic prosperity of regions and firms. Clusters, however, do not form spontaneously, but are heavily influenced by promotion, funding, public policy, social awareness, open collaborative values and formal professional management over decades. Operating in an optimal manner within a cluster environment

Be a yardstick of quality. Some people aren't used to an environment where excellence is expected.
(Steve Jobs)

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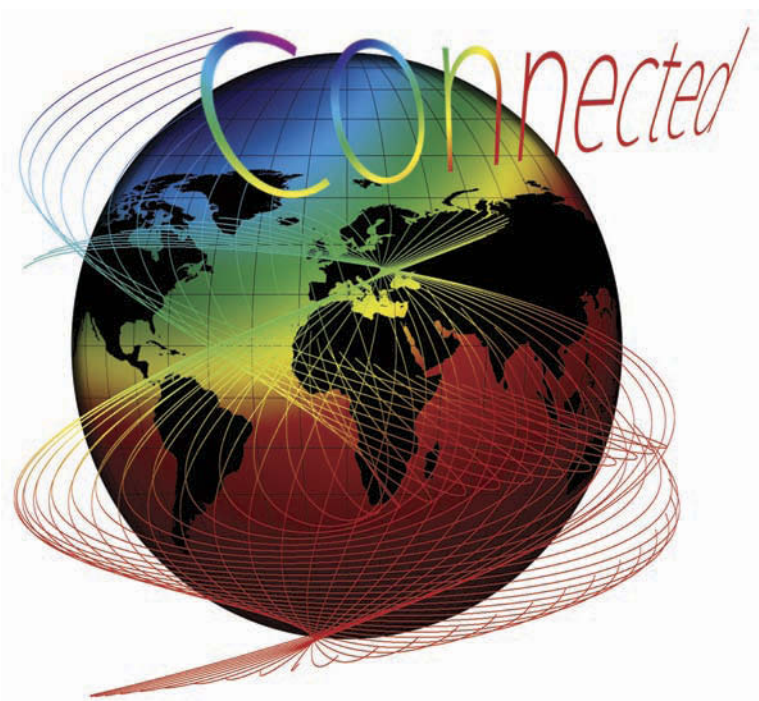
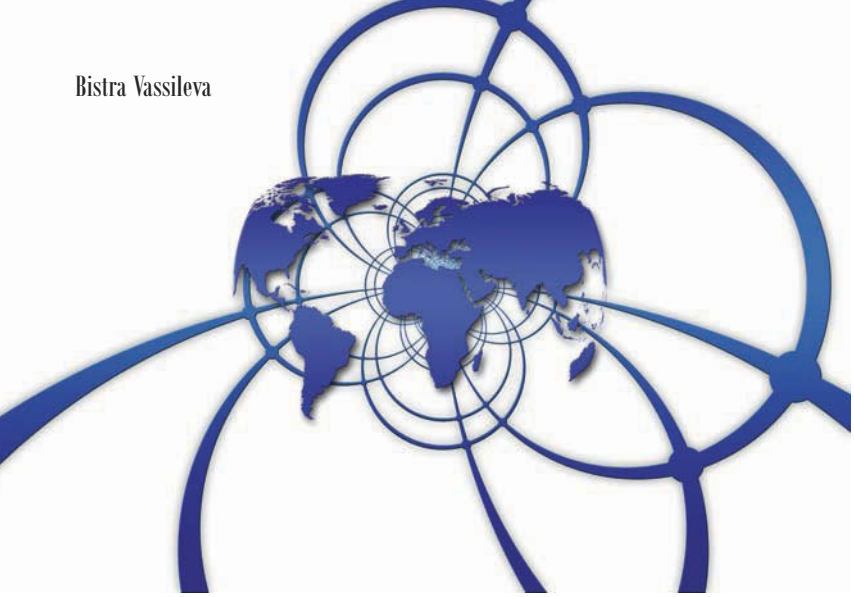
is also a learned skill for businesses, involving different knowledge bases, education levels and managerial strategies. Clusters are becoming an increasingly important area for policy development in areas related to competitiveness and innovation. Within the European Union, the Competitiveness Council identified clusters as one of nine priorities in its conclusion [2, 3, 9]. The Council's conclusions describe clustering as a priority area for actions to be taken in support of innovation. We can now witness a proliferation of cluster policies, cluster programs and cluster initiatives all around the world. There is now an increasing interest in evaluating the effectiveness of cluster policies, programs and initiatives. Regional and municipal governments have important independent roles in addition to the national government. Universities are the third major player, which provide skilled people and create knowledge for business to exploit commercially, as well as promote cluster building and analyze their operations. Fundamental to a knowledge-based economy are social values that promote trust, sharing and collaboration in order to create and operate long term visions.

This paper is concerned with network development, which may help companies in their efforts to develop and commercialize innovative and value-added products and services, to implement contemporary applied competencies in their business practices as well as for their clients in order to achieve competitive advantage and business excellence.

The main research objectives of the paper are: (1) to examine how a competence-based cluster can contribute to the self-reinforcing process of achieving an excellence in business performance among its members and their clients and (2) to describe how recently established competence-based cluster is utilizing the management of complex relationships in a business network in order to achieve a long-term competitive advantage based on excellence in business performance.

Following this introduction, the paper starts by reviewing the literature related to clusters and networks. The research method is limited to case study research but conceptual framework for cluster mapping and development is given in details. Finally, conclusions and recommendations are presented.





THEORETICAL PERSPECTIVES ON CLUSTERS AND NETWORKS

Clusters and networks continue to attract growing attention from policymakers. Initiatives to support cluster creation and development are nowadays widespread in Europe. In the 1970s and 1980s clusters established a strong position in the world market for both more traditional products and high technology products [9, 13]. During the 1990s clusters were widely recognized as important settings in stimulating the productivity and innovativeness of companies and the formation of new businesses.

The influential writing of Michael E. Porter first on industrial clusters [10] and then on regional clusters [11] in particular describes the tight relationships between cluster participation and the competitiveness of firms and industries. Regional clusters refer to geographically bounded concentrations of interdependent firms [3], and may be used as a catchword for older concepts like industrial districts, specialized industrial agglomerations and local production systems.

The network concept is often introduced to characterize the specific forms of governance based on social relations, trust and the sharing of complementary resources that typifies many regional clusters [15].

Clusters: evolution of the concept and implications for regional development

„Clusters" are a nebulous concept. That concept covers a variety of different business structures – national, regional, or cross-border clusters, clusters of competence, industrial or production systems and innovation systems. It is used for different purposes as well – to increase the competitiveness of SMEs, support collective research, rationalize a whole industry, implement environment management system.

Despite all those different definitions it could be pointed out that almost all of them share the idea of proximity, networking and specialization.

The focus of the main "schools of thought" in interpreting the process of regional clustering is presented in Figure 1.

A region that is able to successfully identity and work with its clusters will reap many strategic benefits. When examined from a global perspective Porter explains that regions offer significant competitive advantages. "Regional clusters have the ability to offer local things such as knowledge, relationship, and motivation which can not be matched by distant rivals." [12] Therefore, regions that foster their local cluster based strengths can reap tangible returns. Job creation and new entrepreneurial

	1970 →			1990 →	
	Industrial districts	**„The Californian School"**	**„The Nordic School"**	**Porter's industrial cluster**	**New economy**
Type of approach	Structural	Shifting from structural to examine the role of culture	Social-cultural oriented	Instrumental	Holistic
Focus	• External economies • Effective production • Incremental innovations	• Vertical disintegration • Reducing transaction costs • Specialised local labour market • Informal rules and habits	• Innovation as a complex and interactive learning process • Learning as a localised process • Tacit, non-codified knowledge	• External economies strenghtened by proximity • Possibility of copying success stories in other areas	• Global networks • Using of ITC to coordinate • Combination of tacit and codified knowledge

Figure 1 – *Interpretation of regional clustering by "schools of thought"*

innovations are able to flourish in such a collaborative environment. New leaders can develop within this context and continue to drive the networks and alliances of industry that will serve as power brokers within government and the community to continue to evolve a demand-driven framework.

Networks and their management

The author adopts the notion of IMP Group [7, 8, 13] about companies as members of a business network consisting of a large number of active and heterogeneous companies each interacting with others and seeking solutions to their different problems. One important outcome of this approach for managing in networks is that these interacted solutions are likely to affect several of the involved companies [5]. Interaction between inter-dependent companies involves simultaneous elements of cooperation, conflict, integration and separation in the companies' relationships. A company's position in the network is based on its total set of relationships and that position changes through interaction with other companies in different positions in the network. Inter-dependence means that the management of a relationship is essentially similar for both of the companies involved in them. IMP Group approach is that no company alone has the resources, skills or technologies that

are necessary to satisfy the requirements or solve the problems of any other and so is dependent on the skills, resources and actions and intentions of suppliers, distributors, customers and even competitors to satisfy those requirements. One important outcome of this is the formation of structures of relationships in networks to provide access for companies to the resources of others. A network consists of companies and the relationships between them. A network is not restricted to the set of companies with which a single company deals, or even to the companies that they deal with. Nor is a network simply the set of companies with which a company has formal or informal agreements about some co-operation (Figure 2):

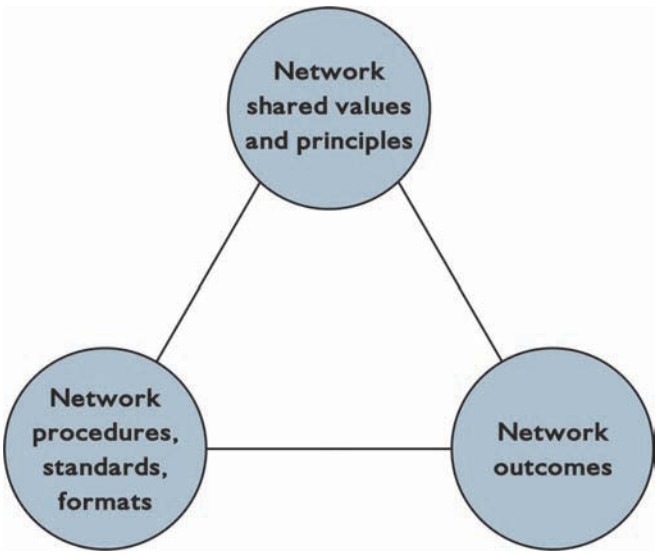


Figure 2 – *A model of managing in competence-based clusters [5]*

In business networks, firms participate in a self-organizing process in which order emerges in a bottom-up manner from the microinteractions taking place among firms involved [16]. From this point of view, networks are unmanageable, in the sense of being controlled and directed by a single participant firm. All firms are simultaneously involved in the ongoing management of the network, and the resulting structure and performance is coproduced by their actions. According to both academics and practitioners [1, 2, 13] this raises important issues for the meaning of the term management, and the extent to which firms can and should try to "manage" their relationships and networks.

A CASE STUDY OF VARNA EXPERT HUB FOR APPLIED COMPETENCES (EHAC)

This study focuses on a single case and describes how few SMEs and NPOs established and successfully launched a competence-based cluster in Bulgaria. The data are basically primary, since the author took part in the process of cluster creation and launching.

Although "studying a single large network is, in general, an extremely complex task, if not impossible in most cases" [17], the objective of this venture was not that challenging since the cluster has been formalized based on previously established informal networking between the founders.

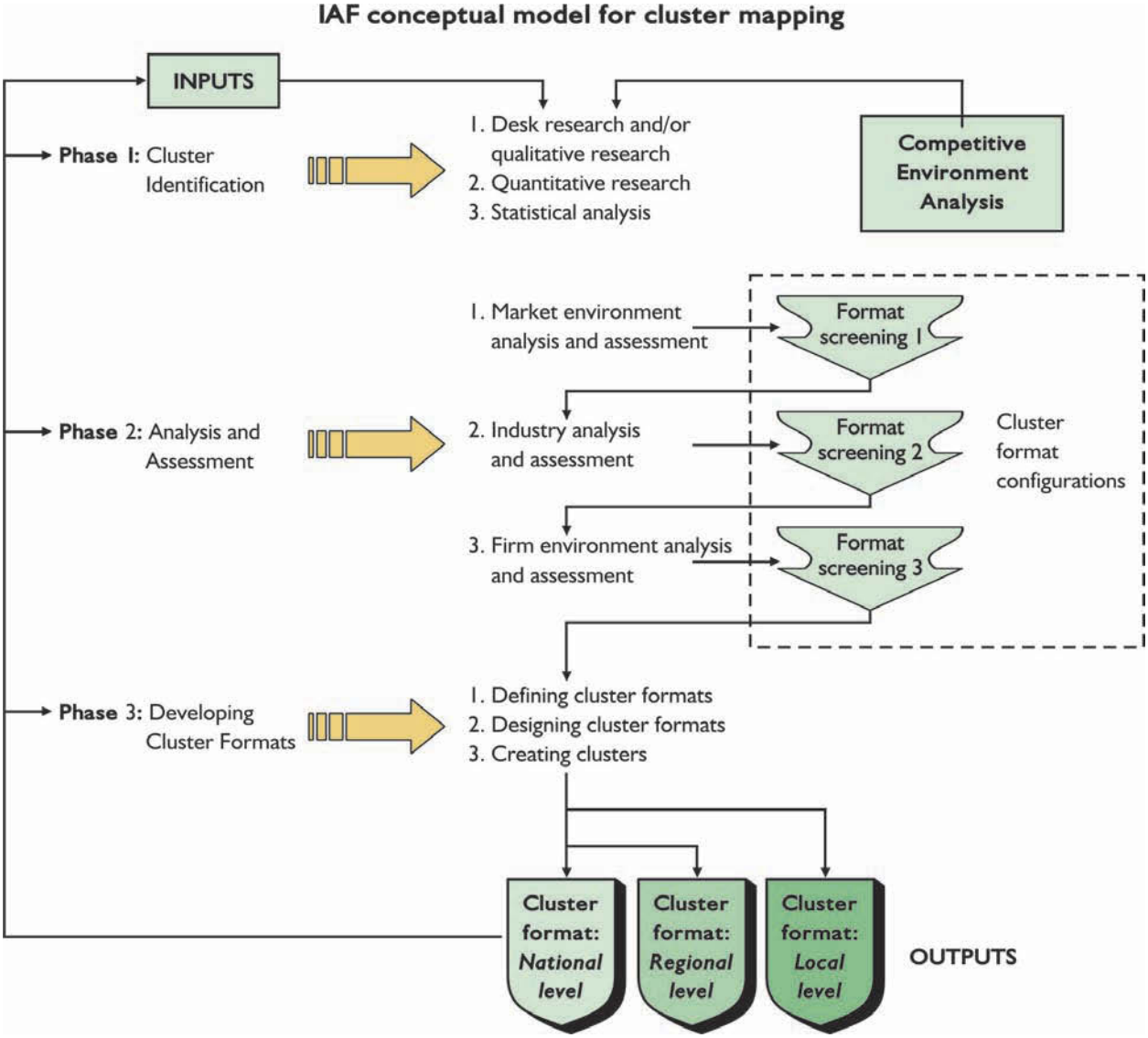


Figure 3 – *IAF conceptual model*

IAF (Identify–Analyze–Format) conceptual model (Figure 3) has been previously developed by the author [14] as a framework for cluster mapping. Basically the second stage (analysis and assessment) was accomplished in order to support the decision making for cluster initiation and for the timing of its launch. The assessment is performed on three interrelated levels: market, industry, firm. The aim is to determine the cluster' competitiveness prior to its launching. The screening factors

followed the Porter's [10] determinants of national advantage, namely: (1) resources and capabilities, (2) demand, (3) suppliers and other related industries, (4) firms strategy, culture and structure, (5) competitors, and (6) government. The format screening is an interactive process using a set of weighted ranks or benchmarks which could be developed by experts.

Formation of EHAC

Based on conclusions from the literature review the initiator of EHAC (E-marketing Association) decided that EHAC should be established and managed as a network following the theoretical base developed by IMP Group, combined with some implications from the original cluster concept in order to ensure certain level of management. The preconditions for EHAC formation (Figure 4) were determined upon the results from the IAF assessment and some preliminary research for the needs of the potential clients and members, including in-depth interviews, personal interviews and online survey. As key enablers were selected the following ones: 1 – IT capabilities and potential; 2 – adaptability; 3 – flexibility, and 4 – specialized marketing expertise. The IT is a critical issue nowadays since most of the companies are trying to reduce IT costs in the short term as well as some of them want to transform the IT function itself. We do believe that IT could be a major driver for developing the innovation capacity of the companies especially in a period of downturn.

Clusters or alliances, generally speaking, are a way to maximize flexibility and adaptability. Companies can quickly combine **complementary assets** and attack a business opportunity together.

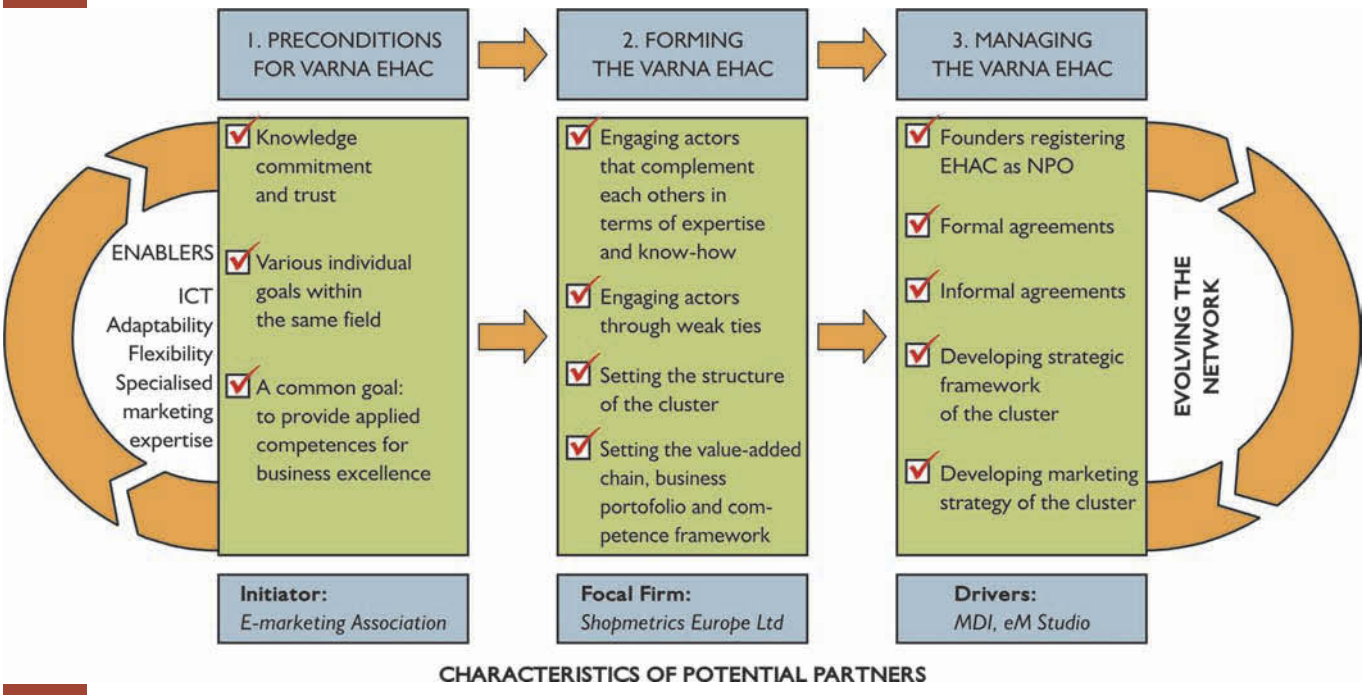


Figure 4 – *Value-added chain for development of competencies and creation of a successful innovative product*

The lack of specialized marketing know-how is obvious, since most of Bulgarian companies (approximately 90%) are small companies. The founding companies decided that the combination between IT capability and marketing expertise will be a substantial competitive advantage. Finally, it has been decided that the EHAC business model should focus on stimulating innovation and applying marketing competences while the main guiding principles should be based on mutual trust, result-orientation, mercantilism and personal development, teamwork and integrity (see Stage 1 in Figure 4).

The first formal meeting was held in August 2010. Discussion was concentrated on few topics, including business concept of the cluster, cluster structure, identification of potential actors in the network. The emerging network was named as Expert hub for applied competences (EHAC) and registered lately as NPO. During the subsequent meetings founding members concluded that the network would aim at supporting companies to achieve business excellence by providing specialized applied knowledge for improving their business processes and market performance.

Table 1 – *Short profile of EHAC founding members*

Founding member	No of services	No of employees	No of clients	Business domain
Shopmetrics Europe Ltd.	5	50	125	Software development
eM Studio Ltd.	6	5	45	Advertising, POS activities
E-marketing Association	3	4	16	Marketing research, TQM
MDI	3	5	9	Marketing and management consulting, executive training
eNeRGi Eventus Ltd.	3	2	2	HR development, in-company training
Para-dive 98 Ltd.	1	25	15	Corporate security

It was believed that through networking based on shared values, common business practices and innovative and creative thinking cluster members can improve their competitiveness and can achieve synergistic and self-reinforcing effects for themselves and for their clients. Thus, the common goal of the cluster was defined as follows: EHAC commits to form, develop, implement and improve business models, processes and activities for evolving competitive business performance.

The form of the association has been agreed to be strictly formal with three levels of participation: Group A: Founders (A), Partners (AA) and Associated partners (AAA); Group B: Members (B) and Associated members (BB); Group C: Interns and temporary experts.

The main challenge for EHAC at the moment is how to get on board larger companies and how to get other actors to adopt active roles in the network. Since the awareness creation requires considerable amount of resources, EHAC is preparing a documentation to apply for EU funding.

Business Model of EHAC

Since the innovation and competences are vital for every company survival and future development it was considered important to implant them into the business model of the network (Figure 5).

The EHAC business model is presented in a form of a value chain with three overlapping layers: 1 – raw resources, including Human Resources, 2 – ideas (innovation cycle) and 3 – expertise.

HR flow is filtered through common sense tests (IQ, Bulgarian language, including spelling and English language proficiency) followed by an interview. Then interns (Group C in the cluster) pass through so called "military training" which main goal is to train them to follow instructions and to report about task completion. The creative part of the training (innovation days or student competitions and contests)

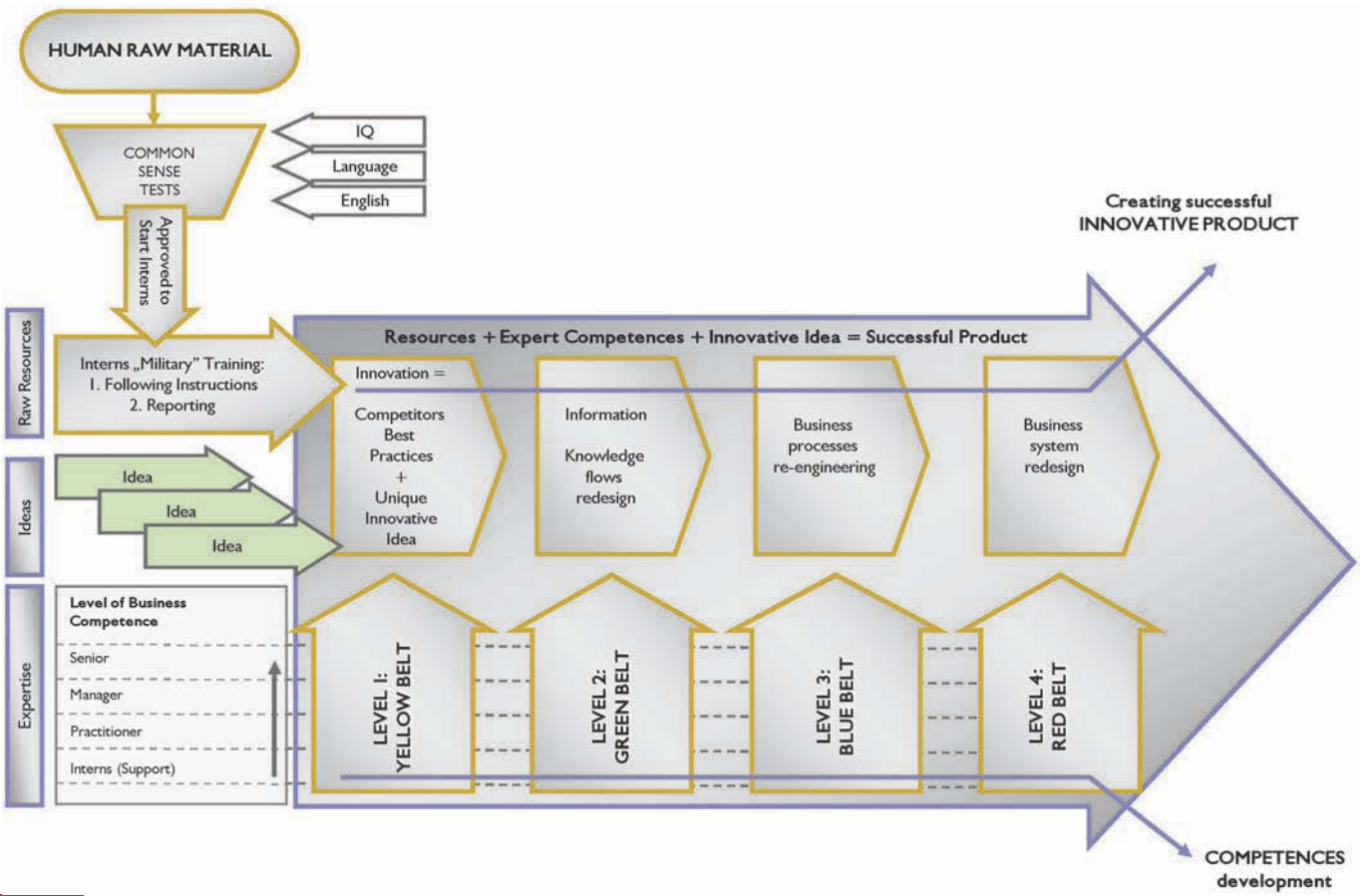


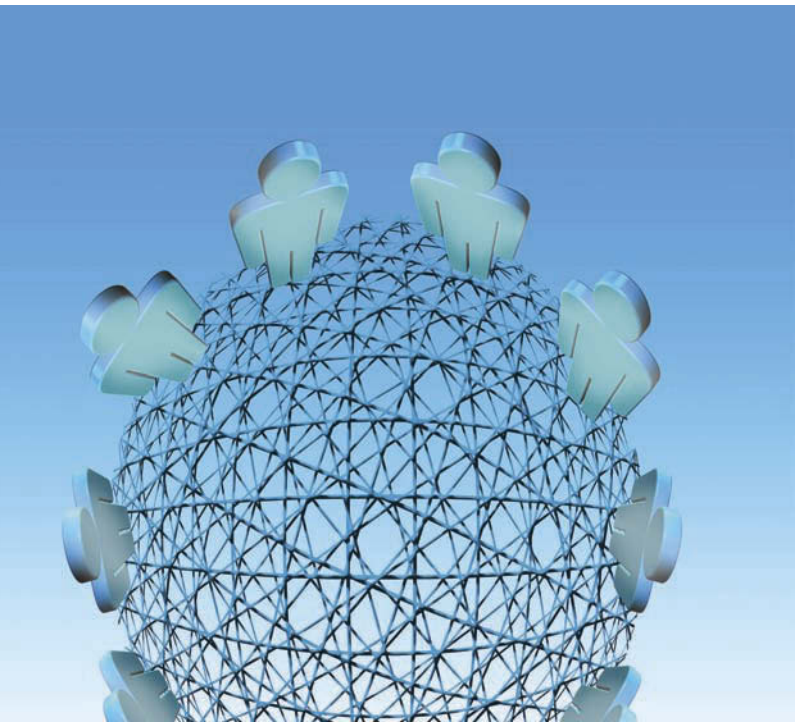
Figure 5 – *Value-added chain for development of competencies and creation of a successful innovative product*

is aimed at generating unique innovative ideas. These ideas are further supported by the third layer („expertise" in Fig. 5) in order to result in both successful innovative product/service and competence development. Applied competences are considered to be a broad and holistic concept, that is why the first formal task of the EHAC members is to develop a reference framework for applied competences (REFRAC). REFRAC will serve as a baseline of the presented business model which will be organized into four business domains: A – marketing diagnostics and business strategy; B – developing business decisions; C – implementing business decisions and D – monitoring and evaluation.

Conclusions and Recommendations

The first results indicate that successful management of such business network requires precisely developed framework of competences, clear criteria for members' assessment and continuously nurtured process of trust creation. The creation of trust played a vital role in the actor involvement. Moreover, it is very important for the initiator and the focal firm to be able to recognize the individual goals of each potential actor in order to get them motivated. Getting actors to commit to the network is rather difficult by now in Bulgaria, because of the challenging concept of the cluster, the predominant negative attitude toward the opportunity to develop and to succeed in open market using business responsible tools.

Based on our experience we can draw few recommendations. Firstly, to create successful network, a company must understand when networks/clusters make strategic sense and how to manage them for business results. EU funding can support cluster formation but it will not guarantee long-term business success. That is why, it is very important for the cluster members to share common goals and values as well as to develop a clear business model and business strategy in advance. EU funding should be treated only as an additional support. On the second hand, networks and clusters can be extremely useful in situations of great uncertainty and in markets with growth opportunities that a company either cannot or does not want to pursue on its own. Thirdly, one of the main reasons to engage in a network, as opposed to a conventional joint venture, merger or acquisition, is to



share risk and limit the resources a company must commit to the business venture in question. Fourthly, clusters are less effective when the partners' assets overlap considerably and when there is economic value to be gained through consolidation and cost cutting. Potential partners should possess complementary assets instead. On the fifth place, while implementing a network or cluster, the initiator or focal firm needs to put a structured process in place to define the explicit role of the partnership in its strategy, to identify appropriate partners, to build the right kind of relationship, and to manage that relationship over time.

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INNOVATION COMMUNICATION

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Abstract

In the last decade, most of the global economies have started to understand the importance of research as a driver for growth. Innovation, fundamental research or applied research are just some of the areas that are of most significance for the development of a company. In spite of the increase amount of studies regarding the importance of innovation, the number of companies that are actually implementing innovation in their business strategy from an efficient perspective, is very small.
The Romanian Institute of Statistics has conducted a nation-wide survey on the evolution of innovation in Romania. According to the data analyzed, the innovation activity in Romania is very modest. Because of this small percentage, the authors ask whether this small number is due to a lack of external communication of the organization.
Also, the authors ask whether the implementation of this new kind of communication – the innovation communication – would help increase the number of organizations that would use innovation as a mean for growth. To help answer these questions, the authors must also use an approach of public relations. The classical tools of public relations lend themselves to communicating innovations. The present article is trying to provide first indicators for the field of Innovation Communication applied to the Romanian business market. The article traces the conclusions based on a survey conducted on Romanian companies which have innovation as an important component of their business.

Keywords: innovation, communication, innovation measurement

1. INNOVATION, SOURCE OF COMPETITIVE ADVANTAGE

The health of a democratic society may be measured by the quality of functions performed by private citizens.
(Alexis de Tocqueville)

Innovation has proven to be the catalyst of economic growth. The Organisation for Economic Cooperation and Development (OECD) noted that *from a macroeconomic point of view there is no doubt that innovations have a positive impact on growth and employment* [1]. The companies that are most successful are the ones that are introducing innovation in a constant matter

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in their organization. This is why a large proportion of their revenues are due to new services and products.

Although Pekka Himanen describes five different areas of innovation (technological, business, design, product/service and cultural) [2], in the last 50 years innovation research has been focused on technological innovation, and process innovation in manufacturing, or industrial high tech. The effort to develop a matured business is a real challenge. Failure to growth materialize at this time decreases the chances of future success [3].

Under the imperative of the economic growth, companies are waging a battle much more difficult to ensure the required percentage of the shareholders, as capital market severely punishes those companies whose growth is stagnating. Threatened by financial problems, companies have resorted to strategies of crisis such as cost reduction, restriction of activity, entry into insolvency or worse, bankruptcy, applying the crisis management rules. However, very few companies have managed to regain afloat and fewer still have returned to an upward trend. Not accidentally, it seems, they have been innovation active, coming out of their limits of applicability of classical management and using smart strategies.

In the last decade, the concept of "innovation economy" has tried to set some new standards for business. It is no longer accepted today that knowledge, technology, entrepreneurship or either innovation are independent forces that remain unaffected by policy. They are now positioned

at the centre of the economic model. This implicates a need for an efficient innovation management which will have to plan, execute and evaluate activities and also to coordinate resources and capacities, which are spread all over the globe. Therefore, strategic management of innovation, known as Total Innovation Management (TIM), gains increasing interest in business and science.

The idea of Innovation Systems might be applied not only in the private sector, but also in the government and public sector. Innovation is a priority of all Member States and of the European Commission. Throughout Europe, hundreds of policy measures and support schemes aimed at innovation have been implemented or are under preparation [4]. Starting from the

mid 1990s, all of the Nordic governments have introduced the idea of innovation systems as a new field of policies. For example, the Swedish Government has recently presented "An Innovation Strategy for Sweden" [5], strategy which placed it first in the hierarchy of innovative countries in Europe in 2008-2009 (Figure 1).

2. THE CONCEPT OF INNOVATION COMMUNICATION

One crucial impact factor on innovation success and TIM represents communication of innovations [6]. There are two perspectives that need to be taken into consideration. The first one relies on the fact that all market-related processes, tools, and activities in innovation management have to be coordinated across innovation processes over a period of time. Innovation marketing is thus a central function in corporations and collaborative networks to present novelties to customers and launch innovations into markets successfully.

The second perspective has to take into consideration that the company has to present itself systematically to strengthen its corporate reputation. As a communication field in organizational communication, innovation communication continuously and purposefully manages communication activities on a corporate level to present ideas, innovations and innovative capability to known and unknown stakeholders in the innovation economy [7].

Consequently, business and science invest in developing new integrated management concepts, theoretical approaches and communication management tools to deal with the requirements of communicating innovations and presenting the corporation behind an innovation.

The concept of "innovation communication" is a rather new concept that is being defined. In this article, the authors concur to the definition given by Ansgar Zerfass in 2005 to the concept: symbolic

interactions between organizations and their stakeholders, dealing with new products, services, and technologies [8]. Simone Huck is also a scholar trying to explain the new concept. The author states that innovation communication has a very broad range, both internal and external communication: it reaches from customer communications, media relations or online relations to communication in the internal scope [9]. Also, the complexity of an innovation has to be "translated" to general audience. The explanation of technical specifications of an innovation is a difficult task to obtain and it requires special features and skills.

The authors agree that the concept is yet to be defined, and the empirical findings are to contribute to the theoretical definition of innovation communication. This is why the authors conducted a survey on Romanian firms through which they gathered information on the concept of innovation communication and its perspectives. The survey tries to identify the status and the perspectives of the concept in Romania researching the innovation activity of the enterprises, the process of communication of the innovation, the possible barriers of communication.

3. INNOVATION COMMUNICATION IN ROMANIA

For a more accurate analysis of the innovative process and its environment it is necessary to develop a better system of measurement. In the last decade, based on the concept of technological innovation to register new products and technologies, the framework has been extended by including the non-technological innovations that are considered to be equally important. Thus, innovation has been included in the definition of two additional processes, namely organizational innovation and marketing innovation, in recognition of efforts made by companies to improve the performance [10].

3.1. International statistics

The benchmarking in industry and services sectors gather data about the number of innovative and non-innovative companies, the typology of innovations, the turnover of the significant improved or new products, innovation related expenses, the public grants for innovation, the cooperation between innovative companies, the sources of information for innovation, the impact of innovations in relation with its typology and the economic indicators, all of them being classified to the company size (the number of employees), type of industry or area of activity.

The "Innovation Union Scoreboard" is a well-known tool measuring the innovation implementation in European companies [11]. The tool was used to evaluate the performance of the innovative process in different European countries (including Romania), strengths and weaknesses in R&D, and the implementation of the innovative systems (Figure 1).

The results are grouped in four levels of performance, as follows:

Level 1 = The Leaders of Innovation: The most innovative countries are Denmark, Finland, Germany, and Swedish.

Level 2 = The Followers of Innovation: Austria, Belgium, Cyprus, Estonia, France, Luxemburg, Holland, Slovenia and UK have attained medium levels of performance growing.

Level 3 = The Moderate Innovators: Czech, Greece, Hungary, Italy, Malta, Poland, Portugal, Slovakia and Spain have attained low levels of performance.

Level 4 = The modest Innovators: Bulgaria, Lithuania, and Romania have attained medium the lowest level of performance.

Comparing the findings over a 5 years period, all countries except Lithuania show an absolute improvement in the innovation performance over time.The findings reveal that Romania and Bulgaria are the growths leaders of the Modest Leaders. This underlines the fact that most companies in Romania are in an early stage in terms of innovation. Although there has been some progress, they recorded significant differences in competitiveness in relation to the EU member states.

To confirm these assessments, we studied the statistics provided by the National Institute of Statistics:

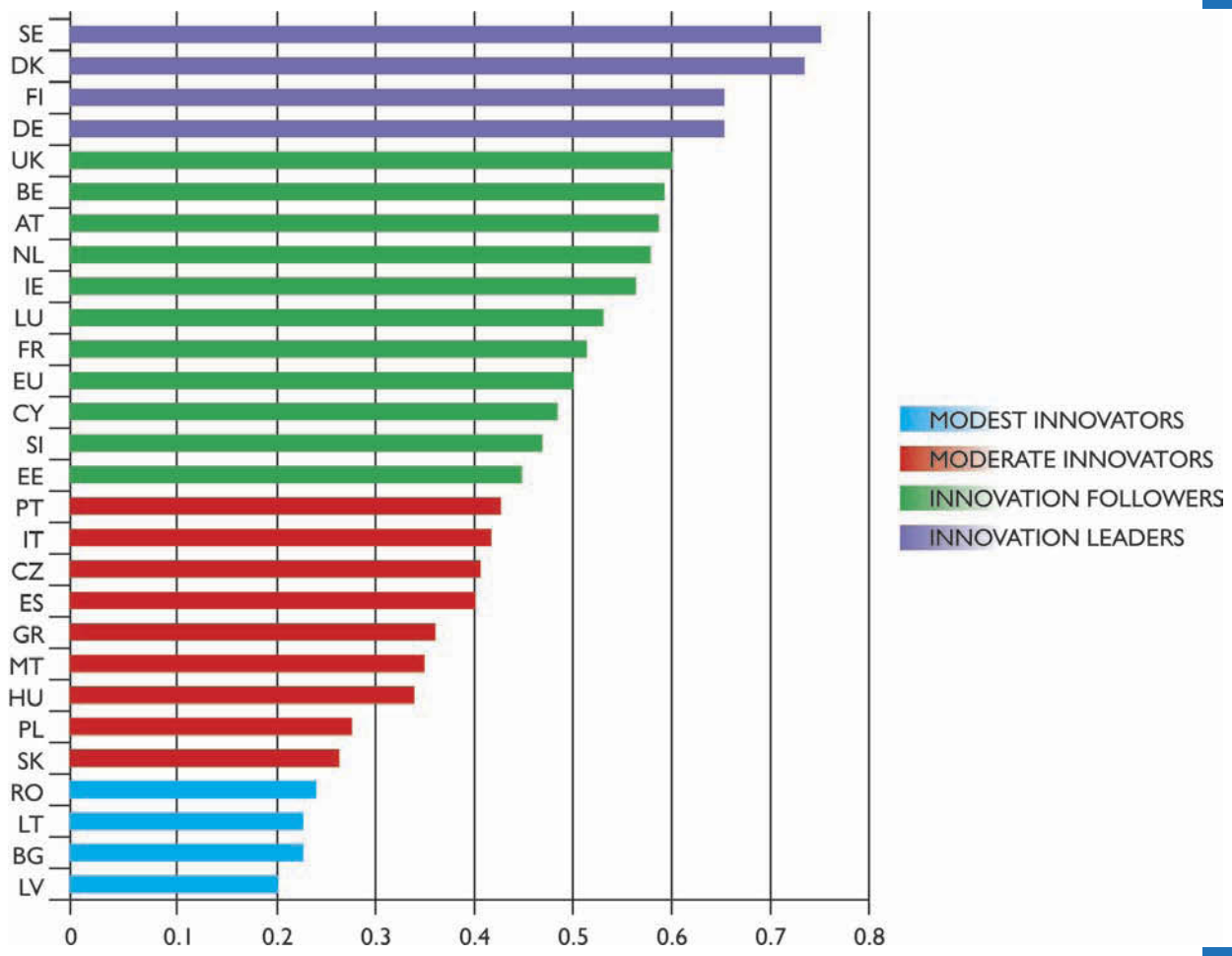

Figure 1 – *EU member states' innovation performance*

National statistics

In Romania, starting with 2000, a first attempt was made to estimate the evolutionary process of innovation at the national level. In a study at the time, but in subsequent studies too, revealed that innovation activity is modest, mainly to the following aspects:

- Lack of funding and government support for this type of activity and high costs for developing new products and services or import new technologies.
- Firm's organizational rigidity (resistance to change), the inexistence of a dedicated staff to introduce new management and more oriented toward cost reduction than to increase competitiveness.

Statistical data presented below are provided by the National Institute of Statistics, in Chapter Science, Technology and Innovation [15]).

Enterprises with innovative activities have been classified in two categories:

- Enterprises with technological innovation:
  - Enterprises with product innovations and/or processes;
  - Enterprises with innovations unfinished and/or abandoned;
- Enterprises with organizational and marketing innovations. This last category complements the previous definition of innovation statistics, innovative companies changing map explicitly.

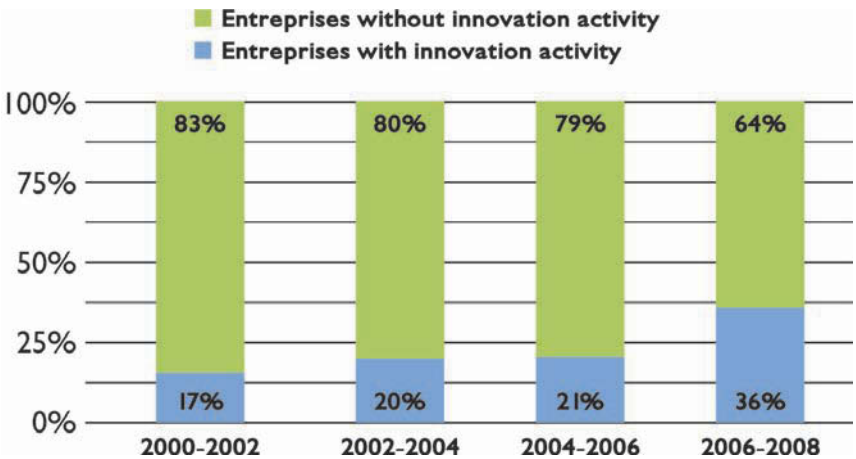

Figure 2 – *Innovative versus Non-innovative Enterprises*

In the studies done by the Romanian NIS and reported in an equal period of two years, is eloquently highlighted the trend of innovation capacity of Romanian companies, although at a relatively low rate (Figure 2). The addition of organisational and marketing innovations determined an increasing percentage of the innovative companies, as it can be easily seen in Figure 3 comparing the data collected in 2004-2006 and 2006-2008.

The study highlighted the fact that technological innovations reported on shows the Romanian companies must strive to catch a level they are still far away, as the European average is 47%. The report concluded also that in Romania currently R&D activity is reduced and therefore can not be a major source of innovation.

However, the Romanian companies in recent years (2006-2008) have demonstrated innovative activity level in organizational growth.

A survey conducted by the authors showed clearly that the most important barrier in obtaining financial rentability of an innovation process is the fact that the managers are afraid of assuming risks (Figure 4).

There is no culture for taking risks and obtaining profit from it. Most of 20% of the respondents identified the culture of risk taking as an important barrier in obtaining financial rentability of their businesses. The communication process of innovation is not considered as an important factor of disruption: less than 3% of the respondents identified the barriers of communication

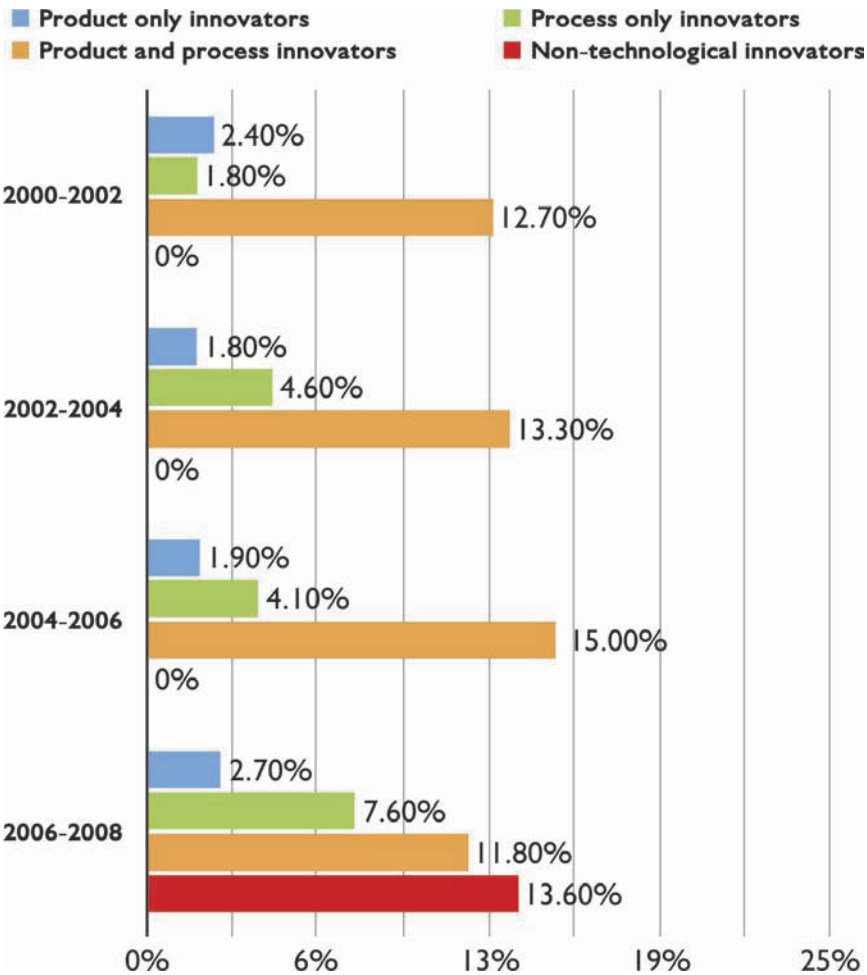

Figure 3 – *Innovative enterprises divided by types of innovation*

Figure 4 – *Which do you consider the most important barrier in obtaining ROI in innovation?*

as being a significant obstacle in obtaining financial stability. So, the authors ask themselves whether this low rate demonstrates a preparation of a communication strategy for the innovation or, it just means that the respondents are simply ignoring communication and they do not give any importance to it in the innovation process. The authors are optimistic, due to a percentage of 68% of the respondents that answered that the communication of innovation was a result of a previous communication strategy (Figure 5). This means that communication is well taken into account when it comes to the innovation process:

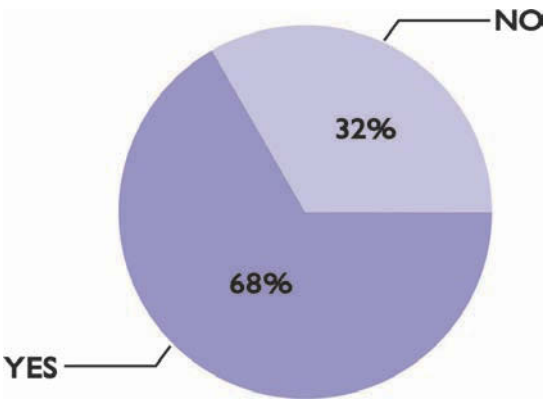

Figure 5 – *The communication of innovation was a result of previous strategy?*

The survey conducted by the authors also reveals the fact that the concept of innovation communication is not yet understood in Romania. One of the most important variables of innovation communication – the expert journalists – is not yet perceived as a significant mean of diffusion of the innovation: 58% of the respondents considered that expert journalists have a low and a very low relevance in the communication of innovation.

Another interesting issue is that 64% of the respondents said that they had problems with the financing during the idea stage or the implementation stage of the innovation process (Figure 6).

The authors tried to find out what percentage of these 65% respondents have tried to communicate their innovation in order to find external financing. The rate is a very encouraging one: 74% of those who had finance problems had started to communicate externally. This means that they tried to reach for external financing by communicating their innovation to different potential investors. This is one of the most important features of the concept of innovation communication: to try to find investors and to raise funds for innovation process.

4. PERSPECTIVES OF THE CONCEPT OF INNOVATION COMMUNICATION IN ROMANIA

Linking strategy and communication for innovation can create a culture of innovation in the long run. As a future direction, innovation communication may represent an organizational dynamic capability to plan the future direction of business including

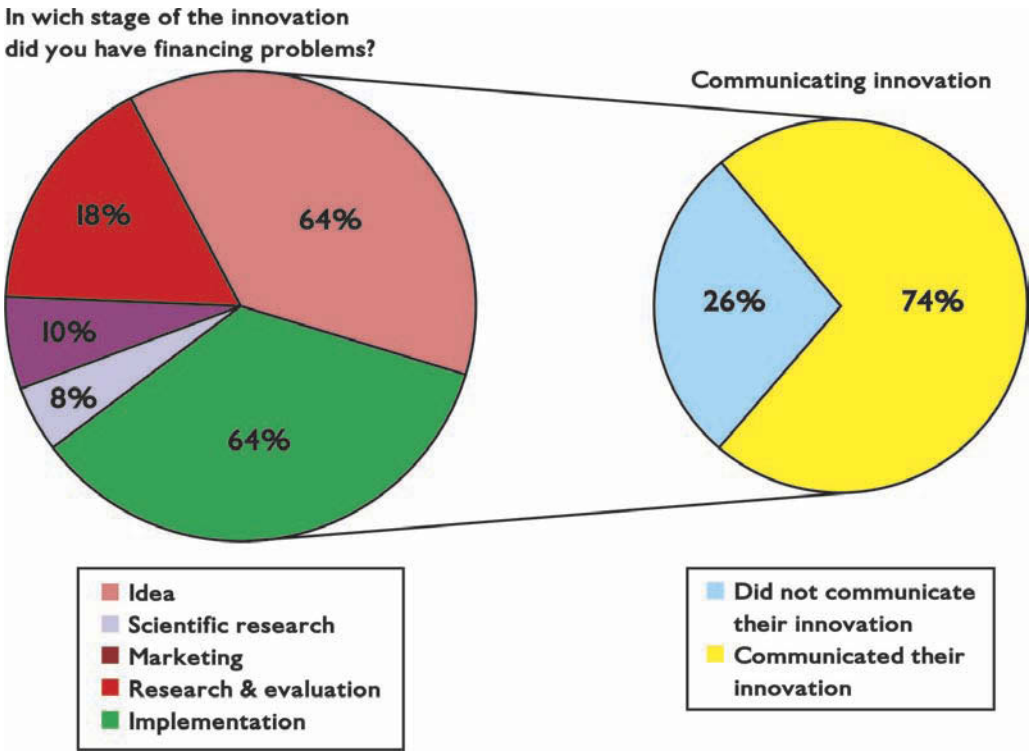

Figure 6 – *In which stage of the innovation process did you face financing problems?*

its mission, values, products and services to stakeholders [16], to re-organize, and increase the valuable resource base of a company in the actual fast changing environment. Moreover, communication of innovation strategy or corporate strategy can be surveyed using the integrated view.

Through dialog situations and information exchanges with stakeholders within organizations and partnerships, as well as outside in other sectors and industries, communication can also lead to receiving important feedback regarding strategy formulation and implementation [17]. Strategies for innovative marketing and communication in collaborative innovation are also topics [18], that can be pointed out to demonstrate the relationship between strategy and communication for innovation. Creative means of communication in organizational communication such as social media highlight corporate issues and innovative thinking in companies through new and intelligent combinations of strategic communication planning and operational communication tools [19]. On the other hand, interaction in collaborative innovation can support idea sharing. Dialogs can form knowledge transfer, but also require communication strategies in order to use the power of communication in collaborative innovation. Thus, the linkage between strategy and communication for innovation requires investigating frameworks and developing new integrated approaches, methodologies and practically oriented applications for organizations in the innovation economy [20]. These changing organizational and network processes can result in a strategic management perspective of innovation communication.

Since portfolio management provides key capabilities for achievement of an organization's strategy, there may be a major focus at the executive level to communicate detailed information on the progress of major product innovation and technology strategy projects. Ongoing and well-targeted communication is a key requirement for maintaining stakeholder confidence in the objectives to be achieved [21].

As a facilitator for innovation, communication works at three levels:

– Organizational level, on which each employee is challenged to contribute putting new ideas, processes or technologies across. Leadership has thus assigned the task of influencing attitudes towards innovations by mediating meaning in organizational social relations. There are companies who have employees dedicated to innovation whose activity was officially recognized as a profession since 2010 and was included in the Classification of Occupations in Romania, as "Innovation Manager". He/she manages the specific processes of innovation in the company and makes sure that new ideas turn into products and services. The authors recommend accelerated professional development of this function, given that until now were only 30 specialists certificated in Romania, also implementing in companies this kind of specialized management.
– Competitive level, on which Innovation Communication has a crucial role in strengthening the competitive edge of the companies. The authors recommend the organization of a specialized innovation communication department. Competing for public attention follows very specific rules and procedures. In terms of an integrative communication approach, appropriate measures have to be planned and implemented in line with the overall market communication, public relations, and internal communication strategies [22].
– External level, on which Innovation Communication plays an important part in the competitiveness of nations and regions. In particular, it is necessary to guarantee the information flow within clusters and innovation

systems, to focus on relevant topics, to discuss chances and risks (see [23] [24] [25]) of new technologies, and to make research results publicly available. Since the mass media is the main means to achieve this, journalism gets challenged.

Conclusions

As the authors have presented in the research, many Romanian companies lack a clearly articulated and well-communicated product innovation and technology strategy. Such a strategy is essential and is strongly linked to positive performance in product innovation.

Maintaining a competitive edge in a global, innovative, and dynamically evolving environment produces substantial pressure to redefine how business is conducted. We need an innovation strategy adapted to this environment.

Innovation portfolio management might be the most important driver for the Romanian firm's innovation performance. While the new product development process refers to "managing innovation projects right", innovation portfolio management addresses the issue of "managing the right innovation projects".

It is not enough
to do your best.
You must first know
what to do,
and do your best.
(Edwards Deming)

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RISKS AND UNCERTAINTIES

The dangers of life are infinite and among them is safety.
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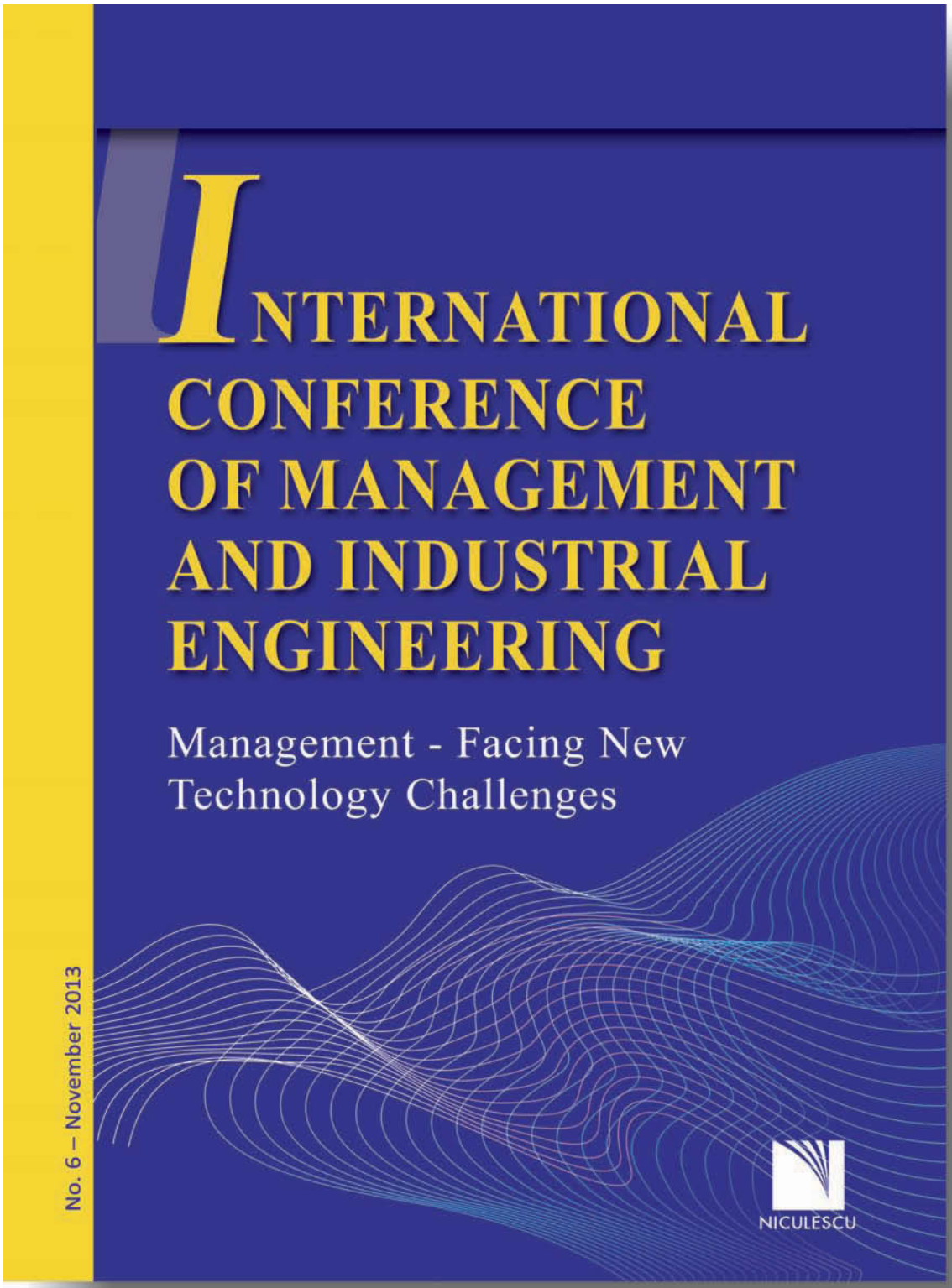

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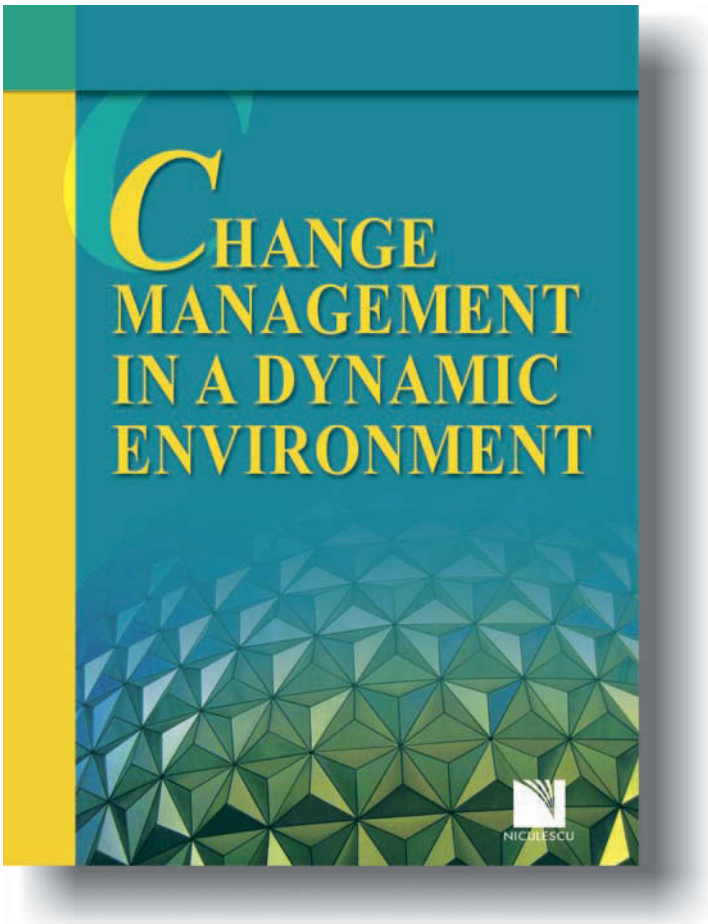

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