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Knowledge, intellectual capital and quality management As well as balanced scorecard lead to improved Competitiveness and profitability

Abstract: From the contemporary change management paradigm and new, knowledge-based economy, we emphasize the impact of advanced managerial tools. As evidenced in practice, simultaneous implementation of several management approaches, concepts and methods brings about more integral corporate success. We advocate integration of up-to-date approaches - knowledge management (KM) and intellectual capital management (ICM) as well as balanced scorecard (BSC) under the “conceptual umbrella” of quality management, i.e. quality management system (QMS) and total quality management (TQM). Interrelating elements of these management concepts through comparison of respective characteristics, differences and similarities, connections and complementary activities, we establish relations and interdependence which result in synergy when applied concurrently. QMS implementation (in accordance with ISO 9000 standard series), en route to TQM, KM is improved, intellectual capital enlarged (via knowledge, skills, motivation, management systems, procedures, information and product flow, customer and other stakeholder relations) and application of BSC facilitated. Conversely, KM and BSC improve opportunities for attaining organisational and business excellence. All mentioned concepts can be viewed as facets of modern integral management model, in continual dynamic interaction that brings about a potential for improved competitive advantage and business performance.

Keywords: Management, concepts, tools, knowledge, quality, synergy, strategy

1. INTRODUCTION

As a consequence of social development dynamics, technical advances, especially information technology, increasingly intensive market development and rising customer requirements, increased pressure from competition, value-change in organisations and environment, a new paradigm of management has emerged – so-called knowledge based economy.

The new paradigm points out that the

only surviving enterprises will be those which continually strive toward acquisition of knowledge, learning and business improvement, characterized by flexibility in the sense of rapid accommodation to changes in the environment, from buyers and competition or from within the enterprise. Numerous enterprises still struggle to accommodate new requirements and one of important opportunities to attain business success is the implementation of new, advanced management concepts – Knowledge management (KM),

intellectual capital (IC), balanced scorecard (BSC) as well as quality management. These concepts represent key factors in contemporary business, in searching for ways to improve, maintain and utilize proprietary nonmaterial resources, including managerial skills, employee abilities, internal know-how, innovations, etc. Fundamental characteristic of employees is the knowledge they possess, which coupled with creativity generates quality, product innovation, processes (manufacturing technologies and management) etc., resulting in improvement in intellectual value and enterprise performance.

2. HOLISTIC APPROACH TO KNOWLEDGE-BASED MANAGEMENT

Opportunities brought about by new

technology and new management approaches and organizational models are defined as a new techno-economic paradigm centered on information and communication technology and flexible business organization models, which become key component of economic growth. New paradigm sets new principles which have to be very basic to management and decision-making processes in an enterprise to secure maximum activity effectiveness and efficiency.

New business conditions, assigning more importance to intellectual, not physical and financial resources in value creation, necessarily lead to changes in managers' thinking as well as in management practice, which must be undertaken in the struggle for survival and competitiveness. Table 1 shows a number of elements that can differentiate conditions and characteristics of "old" and "new" economy i.e. management paradigm.

Table 1: Characteristics of old and new paradigm i.e. economy (adapted from [1] and [2])

Old paradigm	New paradigm
Hierarchy / bureaucracy;	Teamwork, markets and networks;
Functional structures;	Business process structures;
Mass production, rigid organization;	Flexible production and organization;
Mechanization, technology lead by strategic business units;	Digital technology, technology lead by key competences;
Discipline in the organization;	Organization learning;
Specific work skills;	Diverse skills;
Command and control, low trust;	Empowerment, cooperation, high trust;
Strategy as a perspective plan;	Strategy as a process – building consensus and unity;
Capital / economy of scale;	Innovation / quality / knowledge;
Knowledge used periodically, owned by minority of employees.	Knowledge is key source of competence, its creation and dissemination is stimulated within the enterprise.

New economy is characterized by far larger investing in new business concepts and methodology, than equipment. What is perhaps the most significant for new economy is constant presence of smaller or bigger changes – business and performance improvements.

Central to the new management paradigm is knowledge, it is of immeasurable

importance and we often hear of knowledge economy and knowledge-based society. Knowledge is necessary for management and functioning of the organization, one can say knowledge is generally necessary, in the economy of a country, region and the world.

Knowledge economy brings about new models, criteria and measures of business

success and behavior. It requires considerable changes in business philosophy, concepts and techniques. Employees become focal point of interest as a key resource, and the notion of "human capital" gains its full meaning in the organisation. They possess knowledge, ideas, creativity and other properties which nowadays become most important source of competence and competitive advantage.

Knowledge is at the very core of economic development, representing one of the key enterprise abilities, and also the key to organisational development.

In response to escalating competition in altered business conditions, managers have at their disposal various alternative initiatives and organisational change (strategy, structure, work practices, etc.). These changes are necessary and organisation's top management must constantly search for ways to improve business process flexibility reaction-time to varying requirements of customers and other stakeholders.

In response to demand for sustainable and successful business practise, new operational and transformational strategies are shaped (programs and methodologies). Practise has shown that utilization of multiple managerial approaches, concepts and methods brings about more complete business success, such as: marketing strategy, JIT concept, quality management system (QMS), total quality management (TQM), Lean management, BPR - Business Process Reengineering, Six Sigma concept, BSC - Balanced Scorecard i Knowledge i Intellectual Capital Management [3], etc.

Crucial question for survival and further development of the enterprise is which management philosophies, strategies, approaches, concepts, programs, methods and tools to apply. Thus we arrive to the aspect of integration of managerial concepts and management systems – knowledge and intellectual capital management, balanced scorecard, QMS and TQM, which are entirely in tune with new management paradigm, improve enterprise competitiveness and affect its market performance.

Since numerous management approaches resulting from the new paradigm and intended for realization of enterprise business objectives are not contradictory but complementary, their integration under the „conceptual umbrella of quality

management“ along with condensation of positive experience in management development could result in synergy.

Integration of abovementioned approaches integrates good practise, relating and connecting the enterprise with customers, environment, employees and other interested parties.

3. MANAGEMENT TOOLS IN ATTAINING COMPETITIVE ADVANTAGE

3.1 Knowledge management

Knowledge, i.e. KM is increasingly assumed to be the area critical to attain business competitive advantage, a matter becoming visible in the actions of entrepreneurs, managers, business associations where knowledge gains the status of basic resource of contemporary information economy.

Knowledge is a multifaceted phenomenon variously defined in literature, seen as: unbounded business and action resource with potential to improve organizational performance, object that can be memorized and manipulated, process of simultaneous gaining of knowledge and action, state of mind of the fact of knowing – understanding gained through experience or learning, etc. [4].

KM implies the development, transfer and application of knowledge within the organization so as to attain and maintain competitive advantage [5]. KM follows the classical management system in setting goals, implementation and control, which makes it compatible to varying management approaches. Knowledge management relates to the processes and practise through which organisations create knowledge-based value.

Key KM activities are: knowledge goals definition, knowledge identification (analysis and description of knowledge in company environment), knowledge acquisition (from customer, supplier, competitor and partner relations), knowledge development (directed toward creation of new skills and products, better ideas and improved processes), knowledge distribution (exchange and dissemination of knowledge from an individual to a group or the organization), knowledge

utilization (productive use for the benefit of the organization), knowledge retention (selection, storage and updating of information, documents and experience) and measurement and assessment of knowledge [6].

3.2 Intellectual capital management

In the “new economy” era, intellectual resources of the organization are considered vary important for improvement of business performance and value for the owner. IC has a long- reaching importance for the enterprise: future performance of the enterprise, less than its present performance, will depend on its invisible property.

IC is not easily defined due to its multidimensionality: it is “knowledge that exists within the enterprise and can be used to create competitive advantage” or “a set of everything the employees know and can sharpen organization competitiveness” [7].

It has been demonstrated that IC resides in abilities and talents of managers and employees customer loyalty, brand value, management systems and techniques, collective knowledge imprinted in organizational culture. This includes creativity, inventiveness and intuition of managers and employees, as well as electronic networks for high-speed information transfer so that enterprise can react to market demands before the competitor, as well as cooperative learning with customers that fosters relations and loyalty.

IC of the enterprise consists of human and structural capital. Human capital is so-called “thinking” capital and education of employees enlarges its value. Structural capital consists of the results of employees’ intellectual activity, information and data-bases. It also consists of relations to external stakeholders, organisational and developmental component. It can not renew itself, but requires active participation of employees, their knowledge and skills. [8]

At its core, IC represents the ability of the enterprise to utilize its resources so as to create satisfactory value for the enterprise and its interested parties, in present and especially in the future. For possible results to become reality, it is necessary to undertake continual activities through effective intellectual capital management (ICM), as well as on the maintenance and renewal of human resources on which the results depend.

ICM has a goal to renew and maximize the value of enterprise intellectual value, on which future performance and future efficiency improvements depend.

Key activities necessary for effective IC relate to improving employee competence and their dedication to work, i.e. to their appreciation of the enterprise business.

ICM becomes the hallmark of contemporary management model, closely related to KM, knowledge being the common characteristic. Therefore, ICM and KM are two distinct processes with certain similarities (they deal with, among other things, knowledge) but also differences, primarily in perspective, where ICM is predominantly of strategic character, while KM tends to be operational and tactical matter.

3.3 Balanced Scorecard

BSC is a leading system of performance measurement related to strategy redefinition and management of improvements which improve organisation’s competitiveness and affects its success in contemporary market.

This concept stands apart from other concepts in that it facilitates the appraisal of the impact of various factors from the past to present results, long-term monitoring of results and continuous harmonization of organization performance to its strategy. Instead of just one, financial perspective, BSC offers performance appraisal in several balanced perspectives, related to consideration of long-term and short-term goals, financial and non-financial measures, external and internal performance perspectives, prospective and retrospective indicators (attained results), quantity and quality, past and future, etc. BSC measures enterprise performance from four perspectives simultaneously [9]: financial, customer (and other interested parties), internal processes and innovation, i.e. learning and growth. Balanced approach based on measurements from this perspective establishes the characteristics of non-material property and their harmonization with strategic needs. This directly affects internal processes efficiency and in turn, via productivity and cost, affects financial result. BSC makes cause-and-effect relations of discrete actions in enterprise value chain [10] and reveals how non-material property (knowledge, competency, procedures, culture

etc.) characteristics are transformed into material, financial results (Table 2). BSC can motivate and initiate considerable improvements in critical business areas, such as product, process, consumer and market development. It is focused on business components critical to strategy and goal realization. In this manner, performance measurement system outgrows its role and actually becomes strategy implementation system, in other words an indispensable component of strategic management system.

3.4 Quality management (QMS, TQM and national quality awards)

There is lots of talk nowadays about so-called quality revolution, where once a pure formality, quality becomes central notion of

enterprise management. Enterprise management through quality is a business philosophy aimed at attaining improved business performance, management concept introduced as QMS (formalized through ISO 9000 international standard series), TQM concept and national quality awards (NQA).

QMS is defined as „management system which leads and manages the organisation from the quality point of view“ [11]. It is based on quality management principles: customer focus, leadership, employee participation, process and system approach to management, continual improvement, fact-based decision-making and partnership with suppliers. Successful application of this approach requires „plan-do-check-act“ methodology (PDCA).

Table 2: Cause-and-effect relations between the activities in value chain from BSC perspectives

<u>Financial perspective</u>	<p>7. Attainment of long-term shareholder value:</p> <ul style="list-style-type: none"> • assurance of customer satisfaction and loyalty, • tapping new sources of revenue; <p>2. Setting the strategy of productivity and revenue growth:</p> <ul style="list-style-type: none"> • assuring low cost, • increase in capacity utilization, • exploitation of all opportunities for revenue, • augmentation of customer value. 	<u>Customer perspective</u>	
↓	←	<u>Internal processes perspective</u>	
<u>Learning and growth perspective</u>	<p>3. Resource allocation and development:</p> <ul style="list-style-type: none"> • human resources (knowledge, competency, skill etc.), • information capital (knowledge bases, network infrastructure, applications etc.) and • organization capital (flow, structure, system and procedures etc.); <p>4. Establishing coordination and improvement in strategic readiness and behavior:</p> <ul style="list-style-type: none"> • culture, values, awareness, • leadership, team-work, • motivation, rewards etc. 	<p>1. Customer expectations, demands and needs research:</p> <ul style="list-style-type: none"> • market analysis and segmentation, • choice of customers whose needs can be satisfied competitively; <p>6. Customer expectations fulfilled:</p> <ul style="list-style-type: none"> • product characteristics (price, quality, reliability, availability and functionality), • relations (cooperation and additional services) and • company reputation. <p>5. Internal processes planing and management:</p> <ul style="list-style-type: none"> • operative (product manufacturing and delivery to customers), • augmentation of customer value, • creation of new products/services and • support (purchasing, legal-social, environment and societal status improvement etc.); 	↑
↓	→	<u>Customer perspective</u>	

QMS, through requirement specification in ISO 9001 standard [12], establishes quality policy and goals, management responsibility, documentation, process evaluation and continual improvement in product realization. It contains systemic requirements based on many years of experience in global business system building.

An organisation which adopts the approach to development, application, maintenance and improvement of QMS creates trust in the ability of its processes and quality of its products and creates a foundation for continual improvement.

This may lead to increased customer and other interested parties' satisfaction and thereby to organisation's success [11]. It is frequently stated nowadays that ultimate goal – improved quality of living and work, can only be attained after realizing the highest level of quality system – TQM concept.

TQM approach involves management and leadership of all company functions, all business processes and the entire enterprise through quality, with simultaneous integration of related activities on all levels.

TQM is based on numerous ideas founded on customer oriented enterprise management, effective and efficient attainment of basic system objectives, satisfaction of needs of all involved in business and improvement of all business processes. Notion of TQM has multiple meanings: it represents “an approach to organization management focussed on quality, based on cooperation of all its members, aiming at long-term success through customer satisfaction, benefiting all members of the organization and society“.

In TQM, the notion of quality relates to attainment of all management objectives. Steady and continuous leadership, as well as education and training of all members of the organization are key to success in this approach [13].

TQM is founded in the following principles [14]:

- focus is on processes and total process management,
- team-work in analyzing and problem-solving as integral part of the process,
- training and instruction of employees toward optimum work performance,

- qualitative and quantitative norms for each individual and each job, as well as determination of responsibilities for each individual in the organization,
- selection of suppliers who deliver only high quality input,
- production for a known buyer, only if business results improve and
- emphasis on continual improvement of all processes and procedures (marketing, engineering, manufacturing, finances and human resources).

TQM model incorporates application of numerous methods and quality tools: cause-and-effect diagram (Ishikawa), SPC (Statistical Process Control), Taguchi method, FMEA (failure mode and effects analysis), FMECA (failure mode, effects and criticality analysis method), QFD (quality function deployment, customer aspect of quality planning), etc.[15]. In reality, TQM model development represents a quality revolution, which includes the following shifts [15]:

- from quantity to quality,
- short-term to long-term profit,
- from manager's (and expert's) responsibility to all employees' responsibility and
- from individual toward team responsibility (holistic, systemic approach).

TQM concept serves as a basis for identification of organization's strengths and weaknesses in the process of continual improvement, through national quality awards (NQA) i.e. national business excellence models (e.g. European – EQA, USA – MBNQA, Japanese – Deming prize etc.). European foundation for quality management (EFQM) represents a fundamental concept of TQM as a company management method for business excellence attainment, based on: customer focus, partnership with suppliers, employee development and involvement, processes, continual improvement, leadership, public accountability and orientation toward results. In other words, EFQM has developed a TQM model of business excellence that serves as a basis for European quality award.

4. RELATION BETWEEN KNOWLEDGE MANAGEMENT QMS AND TQM

Knowledge-based economy makes KM very important for business success. KM and quality management (QMS and TQM) are two interrelated and interdependent management concepts geared toward attaining business success. We first emphasize the importance of QMS support for and relations to KM and ICM.

Numerous aspects of QMS concept – competency, education and training, communication, leadership, business processes,

improvements (innovations) and relations to external interested parties (customers, suppliers and partners) are fundamentally related to KM and affect elements of IC. [16]

According to QMS, the organization has to plan and develop processes required for product realization: establishes requirements and customer communications, evaluates and selects suppliers, plans and performs manufacturing and servicing, monitors and measures (user satisfaction, process performance and product conformance), analyses, takes action and improves, etc. [12] All these activities affect the components of IC (human and structural) by enlarging their value.

Table 3: Management concept characteristics (objectives, focus and employee development)

KM	ICM	BSC	QMS	TQM	NQA
Objective is to achieve knowledge superiority and competitive advantage. Becoming a learning organization. Foster innovation and collaboration.	Renewal and, in the future, augmentation of human potential, information and organization capital.	Balance the relation between financial and nonmaterial factors leading to increased competitiveness and success.	Consistency of action. Measuring performance against established quality objectives.	Make continuous improvement to all functions of an enterprise.	Fact-based approach to running the business. Benchmarking against industry best practices.
Focus on processes needed to collect, store, retrieve, share and leverage knowledge assets.	Focus on improving employee competitiveness, commitment, loyalty to the enterprise, motivation for better team collaboration.	Focus on business components important for strategy and objective realization; Offers monitoring and assesment of performance from several balanced perspectives and strategy redefinition.	Concentrates on fixing quality system defects and product/service nonconformities; Establishes the maturity of QMS which enables preventive action and continual improvement.	Focuses primarily on satisfaction both the internal and external customers of a management environment that seeks continuous improvement of all systems and processes.	Performance excellence of th entire organization and management framework; Identifies and tracks all-important organizational results: customer, product/service, financial, human resource and effectiveness.
Empowerment competence development, learning.	Competency, training, employee development.	Awareness, responsibility, sanctions and rewards, etc.	Competency, awareness and training.	Empowerment, training, development.	Placing value on employees and partners.

Related to competency, as a component of human capital comprising knowledge, skills, management and employee talent, is the important role of explicit knowledge in the form of databases helping managers in implementing the chosen strategy under heavy competition. This is represented by the contents of documented QM, in procedures and operating instructions, whose activities are reviewed and innovated. Dispositions related to the value generated through employee behavior are developed via building culture of quality, application and improvement of QMS. Leadership role and employee motivation to attain objectives is also prominent.

In structural capital, the value of relationships to external stakeholders is in relations the enterprise nurtures with interested parties. This pertains to „the capital in developed and nurtured relations“ to customers, suppliers, other business partners, investors (owners) and the community.

Organisation value sources are related to internal structure or everyday business operations in product manufacture and service rendering. It consists of the value of created processes, such as organisation diagram, management practice, technical manuals, planning and control systems, databases, information, product and service flow, etc. which are materialized in QMS procedures.

Developmental component relates to non-material side of anything that can generate value in the future, via performance improvement. In that sense, developmental capital, from QMS standpoint, comprises anything that will influence future value: reengineering and restructuring effort, new training program development, R&D activities, as well as documented knowledge related to innovation in product and process, operating practice, databases, product and service design specifications.

When correlating elements of advanced management concepts – KM and IC with TQM, one can cite various dimensions and aspects of knowledge based business success, related to innovation and development, achievement of enterprise integration and flexibility (organisation's responsiveness), customer focus, purchasing network, quality of business oriented toward innovative processes,

ability to accommodate change, operation efficiency, effective manufacturing management, improved project management and decision making, improved employee relations. [17]

As an integrating concept, KM points to the new type of organisation and becomes part of contemporary model of a learning, innovative organisation based on TQM, which continually reviews and reengineers all business processes with the aim of improving competitiveness.

KM will enlarge capabilities of the organization to attain excellence if a sound managerial foundation, such as TQM exists.

Knowledge-based TQM will inform, lead and facilitate continual improvement and learning, thereby helping the organisation to in the best possible way satisfy ever-changing needs and expectations of customers. This will result in applied knowledge management principles slowly becoming complement to process management. [18]

Basic inputs for both TQM and KM are information, knowledge and people, and desired outputs are applied knowledge and intellectual capital (in the form of information and documentation in TQM).

However, focus and strategy are fundamentally different. For KM, knowledge is the source of competitive advantage, and TQM relies on quality system processes to attain customer satisfaction. Table 4 shows the differences between KM and TQM focus and strategy elements in detail.

Similarities between TQM and KM concepts are reflected in the following elements of objectives and results: 1) continuous improvement and measurement of attained customer satisfaction / continuous improvement and learning, 2) valuation of employees and intellectual capital, 3) education, training, employee development / development of people and competencies, 4) empowerment and involvement, 5) team-work and cooperation, 6) acquisition of knowledge on customers and market / acquisition of knowledge on competitors, users, suppliers and partners, 7) selection and utilization of information and data, opening communication channels / knowledge access improvement and 8) improvement of quality and efficiency of decision-making. [18]

Table 4: Differences in KM and TQM approach [18]

KM	TQM
<ul style="list-style-type: none"> • Embedding knowledge in personnel, users, products, processes, services; • Treating knowledge as a source of competitive advantage; • Attainment of higher productivity through knowledge; • Creation of knowledge and embedding in new technologies and products ; • Searching for new sources of information; • Adapting knowledge to market needs. 	<ul style="list-style-type: none"> • Better use of resources aimed at attaining effectiveness and efficiency; • Striving for excellence through benchmarking; • Consistency and precision, according to high standards in all aspects of organization; • Effective leadership and team dedication; • Customer and result focus; • Quality measurement using data and tools; • Management based on facts and processes; • Mutual respect, trust and benefits for all interested parties.

It is advisable to apply best practice, lessons learned and common problems in TQM implementation also in implementation and practice of KM, KM also being a long-term and evolutionary process. Some similarities in application of TQM and KM [19]:

- Both must support organization's mission as well as long-term strategy and objectives;
- Customer focus (both internal and external). In TQM customer is "king", while KM furnishes the basis for customer relations management. Proven methods, such as QFD, can be successfully applied in both TQM and KM;
- Both entail culture change. TQM introduces new management style, KM introduces new way of information exchange and decision-making;
- Organizational changes or restructuring may be required;
- Comprehensive training program required. This particularly applies to an organization that aspires toward becoming learning organization;
- In both concepts, success is critically dependent on top management support;
- Return is very difficult to measure and benefits are realized in distant future;
- To develop, implement and maintain, both approaches demand support in: leadership, processes, culture, information technology, measurement system etc.

5. RELATIONS OF KNOWLEDGE AND QUALITY MANAGEMENT TO BSC CONCEPT

Knowledge is key notion of BSC concept which, from the perspective of learning and growth, via competency, knowledge bases, procedures, culture etc. leads to attaining organization's objectives – fulfilling the expectations and securing long-term values for all interested parties.

Employee learning and growth, as one of BSC's perspectives, is supported by activities and initiatives of knowledge management. These include strategic recruitment, hiring, training (formal and informal), team building, documentation management, cooperation-based communication systems, employee knowledge and skills assessment, knowledge base development etc. Knowledge and growth are the key to strategic success and to the future. Learning and growing organization is one in which knowledge management activities are carried out and augmented with the aim to fully exploit the creativity of organization's people. [20]The foundation or fundamental reason of enterprise strategic success is in its people, creative people's creativity being the only source of long-term success and competitiveness, for every other aspect of the organization may be copied. Right people need to be recruited, trained and lead, and the learning process has to be continuous. To sum up the value of BSC from the complex of relations to other advanced management approaches from the point of strategic management, one can say that: 1) it models

organizational vision and facilitates its wide recognition, 2) it clarifies and updates (redefines) strategy, 3) it relates strategic organizational goals, 4) it aligns the needs of customers to business goals, 5) financial and physical resources are aligned with strategy, 6) it functions as a holistic model of strategies, which enables employees', teams' and organizational units' perception of opportunities for contributing to organizational success, 7) it contributes to alignment of goals of individuals and organizational units to the strategy of the organization, 8) it focuses efforts to changes, by identifying opportunities and improvement initiatives, 9) it receives feedback on strategy development and implementation,

to monitor progress and facilitate strategic perspective and 10) it builds the system of rewards and punishments. [21]

From this exposition, we can conclude that a large degree of correspondence exists between quality management philosophy and BSC concept, and that it can be effectively integrated with other management systems (primarily with KM and ICM). BSC approach is consistent with numerous managerial approaches and initiatives in organizations, such as interfunctional integration, constant process improvement, new partnerships with customers and suppliers, emphasized role of teams, etc.

Table 5: Relations and complementary nature of activities in KM, ICM, BSC and QMS

Intellectual capital	<ol style="list-style-type: none"> 1. Intellectual capital significance awareness and establishing of objectives; 2. Definition and categorization of non-material factors; 3. Determination of key factor management method; 4. Monitoring, measurement and review of intellectual capital performance; 5. Reporting and employee motivation. 	<ol style="list-style-type: none"> 1. Vision and strategy definition; 2. Identification of critical perspectives and formulation of objectives; 3. Identification of key success factors for each perspective; 4. Adopting the action plan of influencing key success factors and identification of key performance measures; 5. Monitoring, reporting and performance assessment, rewarding and strategic plan revision. 	Balanced scorecard
Quality management system	<ol style="list-style-type: none"> 1. Education and training for quality, definition of policy and objectives; 2. Identification of processes and mutual influence; 3. Determination of process performance and management methods; 4. Resource allocation, process monitoring and performance measurement; 5. Application of measures and continual process improvement. 	<ol style="list-style-type: none"> 1. Knowledge objective definition; 2. Knowledge identification and acquisition; 3. Knowledge development (creation of new skills, products, ideas and processes) and distribution (exchange and dissemination); 4. Knowledge use and retention (selection, storage and updating); 5. Knowledge measurement and valuation. 	Knowledge management

Comparing of BSC concept and quality programs brings to light similarities based on expectations that employees will be committed to realization of goals, if they are informed and involved in their establishment. All approaches see human resources, i.e. employees, and technology as the agents of improvement. However, unlike approaches to improvement which see it as a continual and gradual process (for example, TQM), BSC puts

an emphasis on abrupt improvements which can be effected in longer or shorter period of time. The apex of all interests is in quality management, where customers and internal processes represent two perspectives of BSC. Both approaches consider effectiveness and efficiency key to customer satisfaction as well as for business results. BSC implementation can help organizations develop and apply business excellence strategy [21].

BSC technology, related to budgeting, resource allocation, alignment of low-level goals, reporting, review, etc. relates and corresponds to the principles and requirements of ISO 9001 standard requirements and facilitates attainment of quality policy and goals. Associating financial indices with quality programs gives the management the complete picture of improvement effort effectiveness. On the other

hand, quality programs can significantly contribute to BSC application, through performance improvement in key processes, adoption of “good practice” in processes, focusing employees on customer satisfaction etc.

Integration of BSC concept in particular with QMS and TQM, KM and ICM, provides management system with a strategic focus.

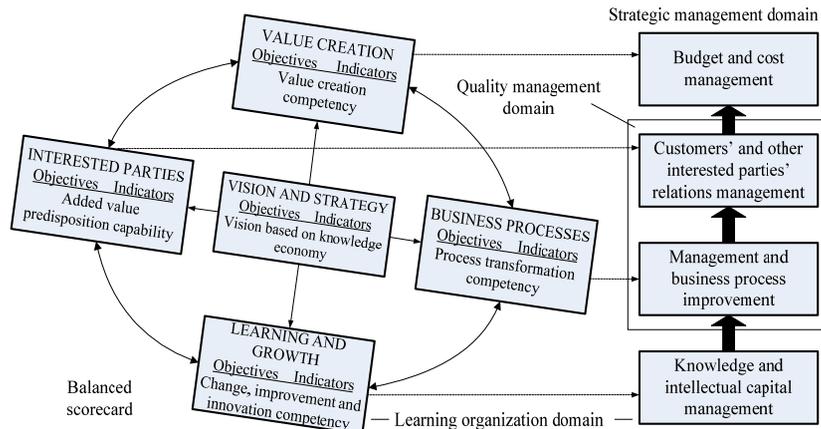


Figure 1: Relations of BSC perspectives and strategic management activities (adapted from [20] and [22])

6. CONCLUSION

KM, ICM and BSC concepts can be unified with quality management (QMS and TQM) into a unified management system, through strong culture focused on learning and change, which can facilitate planning of activities, resource allocation, setting complementary objectives and assessing total effectiveness of an enterprise.

In a summary of relations among KM, ICM and QMS, the following can be said:

- KM is focussed on management of activities related to creation, adoption, transformation and utilization of knowledge in an organization;
- ICM objective is renewal and maximization of IC value of the enterprise;
- BSC is directed to holistic view of performance, toward realization of enterprise vision and strategy, from the perspective of customer, internal

processes, finances, learning and growth;

- QMS is focused on the customer, satisfaction of his needs, business processes and their improvement;
- QMS supports effective development of KM and ICM, knowledge generation, learning process and knowledge dissemination throughout the organisation;
- QMS facilitates roadmapping for enlarging the value of intellectual capital;
- TQM is focussed on internal and external customers and their satisfaction, as well as satisfaction of other interested parties, on the application of numerous quality tools, etc, and
- KM, ICM, BSC and QMS complement each other and are coherent with TQM concept and organizational learning concept.

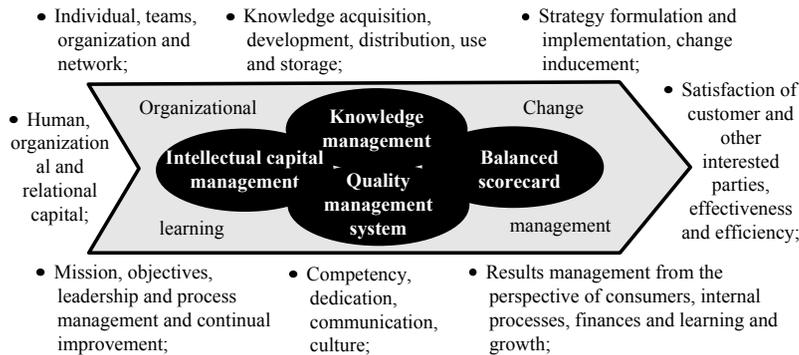


Figure 2: Key factors of KM, ICM, BSC and QMS

Numerous advantages can be realized through coupled KM, ICM BSC and QMS:

- linking and harmonization of business strategies with organizational and employees' objectives,
- assurance of product quality which continually satisfy the customer,
- focussing the employees on fulfilling customer requirements and requirements of other interested parties,
- improvement of present processes and the entire enterprise, as well as strengthening the present practice,
- assurance of acquisition and storing, as well as generation of new knowledge in the enterprise,
- renewal and enlargement of human potential, information and organisation capital,
- encouragement of communication in the enterprise and creation of holistic focus,
- development of employee competencies and awareness through training and learning,
- inclusion of all employees, which encourages identification with the objectives,
- directing all effort on change and tapping the potential for general success and
- creation of foundation for future improvements applying the concept of learning organisation etc.

All four concepts are integral parts of modern management model which can not be viewed separately.

They can only be viewed integrally, in a constant dynamic interaction, since this is the only way to realize synergy, resulting in competitive advantage and improved enterprise performance.

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