

The conception "Balanced Scorecard" - tool for strategic management of higher education institutions

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Abstract: *The paper deals with the conception of Balanced Scorecard (BSC) as an innovation strategic management system, which appears to be a superstructure of the Quality Management Systems and provides for the assessment of the basic processes in an organization. The BSC methodology and its relationship with the ISO 9001 requirements is presented and on this basis, an innovation strategy map serving the purposes of a university development has been developed.*

KEYWORDS: BALANCED SCORECARD, STRATEGY, INNOVATION, MISSION, PURPOSES, MEASUREMENT

1. Introduction

The development of society at this stage is knowledge-based, from which it follows that only structures that create, develop and evaluate knowledge can be considered successful. Moreover, the industry in the so-developed economies are already transforming from processing raw materials into processing information into knowledge and innovation. This trend in the development of society and the economy is called the "third wave". This means that industrialized economies in the world are already transforming into organizational structures based on information and knowledge [1].

With the entry into the stage of the fourth technical revolution and increasing the requirements for the qualification and skills of the company staff, more and more attention will be paid to the technical and organizational aspects of personnel training for these intelligent industries. This technical development becomes a top priority for many research centers, universities and companies in recent years with numerous contributions from scientists and practitioners. [2]

The higher education in our country is changing constantly. The new normative documents and the increasing rivalry require effective and efficient management, which in turn needs innovation modern tools. Each university faces the necessity for constant enhancement of its competitive power at both national and international level [3, 4]. All this could be achieved by well-developed and effective management systems. Figure 1 shows Management subsystem integration. The most extensively developed systems comply with the requirements of ISO 9001 [5]. The application of Balanced Scorecard (BSC) has been rather scanty in this country so far. For this reason, the main purpose of the paper is to popularize the conception of Balanced Scorecard as a tool for university management and development.

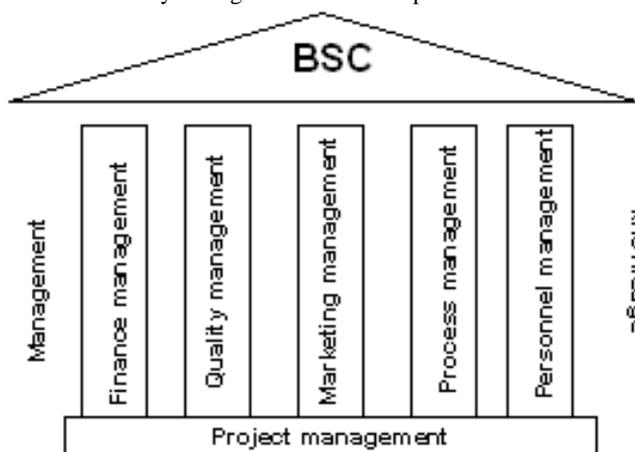


Fig.1. Management subsystem integration

2. Relationship between BSC and the ISO 9001:2015 requirements

BSC constituents are closely related to ISO 9001:2015 concerning the Quality Management System in an Organization. The close correspondence between the requirements of the standard and those of BSC will be analysed in details below.

2.1. Preconditions and means for resolving the problem

The requirements to the top management can be found in ISO 9001:2015, Section 5.1 Leadership and commitment are as follows: "Top management shall demonstrate leadership and commitment with respect to the quality management system by: taking the accountability for the effectiveness of the quality management system, ensuring that the quality policy and quality objectives are established for the quality management system and are compatible with the context and strategic direction of the organisation, ensuring the integration of the quality management system requirements into organisation's business process, promoting the use of the process approach and risk-based thinking, ensuring that the resources needed for the quality management system are available, communicating the importance of effective quality management and conforming to the quality management system requirements, ensuring that the quality management system archives its intended results, engaging directing and supporting persons to contribute to the effectiveness of the quality management system, promoting improvements, supporting the other relevant roles to demonstrate their leadership as it applies to their areas of responsibility.

A policy and mission following the strategic priorities of the organization in terms of quality should be developed. As a rule, this document is mandatory and serves as a tool for the formal delineation of the trends in the organization quality development. Thus, the BSC basic principle of organization strategy formulation is also considered in the ISO standard with the only difference that the organization development strategy in the form of a policy is implemented only in ensuring quality [6].

2.2. Co-ordination of the strategy with the subdivision tasks and individual goals of the employees

Section 5.2 "Quality policy" states that "Top management shall establish, implement and maintain a quality policy that: is appropriate to the purpose and context of the organization and support its strategic directions, provides a framework for setting the quality objectives, include a commitment to satisfy applicable requirements, include a commitment to continual improvement of the quality management system."

Section 5.3 "Top management shall ensure that the responsibilities and authorities for relevant roles are assigned, communicated and understood within the organization.

Top management shall assign the responsibility and authority for: ensuring that the quality management system conforms to the requirements of this International Standard, ensuring that the processes are delivering their intended outputs [7], reporting on the performance of the quality management system and on opportunities for improvement, in particular to top management, ensuring the promotion of customer focus throughout the organization, ensuring that the integrity of the quality management system is maintained when changes to the quality management system are planned and implemented.

Quality objectives and planning to achieve are described in Section 6.2

The organization shall establish quality objectives at relevant functions, levels and processes needed for the quality management system.

The quality objectives shall: be consistent with the quality policy, be measurable, take into account applicable requirements, be relevant to conformity of products and services and to enhancement of customer satisfaction, be monitored, be communicated, be updated as appropriate.

The organization shall maintain documented information on the quality objectives [8].

When planning how to achieve its quality objectives, the organization shall determine: what will be done, what resources will be required, who will be responsible, when it will be completed, how the results will be evaluated.

Quality objectives and roles should be created on the basis of the policy (the quality development strategy). These are particular tasks (actions) which should be fulfilled in order to put the strategy into practice. The objectives should be quantitative in nature, i.e. they should contain performance indicators (in numeric values) which make the assessment of quality policy implementation possible.

Objectives for the particular subdivisions should also be developed, their compliance with the organization objectives being ensured. The availability of such a system of performance indicators will make the analysis of the correspondence of the actions undertaken within the quality objectives to the organization strategy tasks possible.

The ISO 9001: 2015 requirements are compatible with the BSC principles in the following:

- Organization strategy development is carried out by the organization managers or owners on the basis of the measurable indicators (quotients);
- The organization development strategy should be expressed in real measurable objectives which, in turn, should be implemented at the departments level.

2.3. Elucidation of the strategy to the employees in the organization and establishing of feedback for organization strategy correction.

Section 7.3. "Awareness" comprises the following requirements: The organization shall ensure that persons doing work under the organization's control are aware of: the quality policy, relevant quality objectives, their contribution to the effectiveness of the quality management system, including the benefits of improved performance, the implications of not conforming with the quality management system requirements.

The „communication“ following requirements:

The organization shall determine the internal and external communications relevant to the quality management system, including: on what it will communicate, when to communicate, with whom to communicate, how to communicate, who communicates.

As stated earlier, the quality policy should correspond to the organization objectives. The employees should be informed about the quality policy and objectives in terms of documentation indicating the strategic trend of development by means of the internal communication system which should be convenient enough

to be used. BSC also stipulates a procedure for establishing communication between the employees giving them an opportunity for obtaining the information necessary for undertaking corrective actions in terms of organization strategy which is in complete compliance with the ISO 9001:2015 requirements.

2.4. Periodic and systematic review of the organization strategy

Section 9.3 "Management Review" stipulates the following: "Top management shall review the organization's quality management system, at planned intervals, to ensure its continuing suitability, adequacy, effectiveness and alignment with the strategic direction of the organization."

Top management review shall consider the quality policy and quality objectives compatibility with the modern organization needs, as well as with the degree of achievement of the pre-determined quality objectives at all organization levels.

BSC, as well as the ISO 9001:2015 standard, stipulates a recurrent review of the efficiency of the quality management system when spreading the organization strategy out to particular levels. In this case, both methods use numerical values as a basis for their analysis. Another element common for both systems is the existence of a system of documentation hierarchy.

The unfolding of the objectives in BSC is carried out by means of:

- Strategy maps logically connected with the strategic objectives
- Balanced indicators map (which quantitatively measure the business processes effectiveness, results and deadlines);
- Projects (investment, training, etc.);
- "Templates" of parents at different levels for control and assessment of the performance.

The ISO 9001:2015 standard, in turn, suggests a system of documentation hierarchy of its own.

- Quality policy and quality objectives, a reference book on quality;
- Procedures;
- Processes maps;
- Instructions, specifications, organization documentation;
- Quality records.

As can be seen, both BSC and the ISO 9001:2015 standard employ similar formal tools for organization strategy recording and realizing (documentation hierarchy), providing information channels among particular structural subdivisions and employees within the organization and introducing improvements in the system. The data about the system concern diverse areas (with ISO 9001:2015 this area is limited mainly to quality management, whereas with BSC it is much broader involving the strategic development of all activities of the organization). These areas are directed to organization efficiency involving maximum customer satisfaction resulting from the achievement of the predetermined goals.

Regardless of the great number of shared requirements between the two systems, the single implementation of a Quality Management System is insufficient to support the strategic management of a university. The reasons for this are as follows [9, 10, 11].

- The ISO approach accentuates upon the processes management and not upon the real factors influencing the object of training itself, i.e. the students, their aptitude and motivation.
- The ISO approach is not by all means connected with the results of the education condition analysis. This approach is universal; it is relevant for all fields and such an analysis is not necessary for its implementation. Therefore, it does not show the specific and sometimes crucial factors influencing quality. The approach is not expected to show the means of quality increase and which means are to be included in the Quality Management System

itself. The most important issue with this approach is that “the folders are in the correct order”.

- The ISO approach is based on the assumption that the customer (the student) is interested to the greatest extent in the high quality of the product and the organization-producer should provide him/her with this product. Nowadays, however, this assumption appears to be irrelevant. A student just does not purchase educational service as a ready-made product (as opposed to the customer in industry and commerce) but obtains it due to his/her own intellectual efforts. Thus, the student turns to be one of the real “manufacturers” of the product.

Unlike other areas where the customer is outside the system providing the product which he/she purchases, the student is inside the system, being its active element. Although the customer is in the focus of the ISO standard, the analysis of the systems implemented in some universities shows that the student is not explicitly present in these university systems [9, 11].

The ISO approach requires the establishment of the following:

- standards to be observed at the university in order to achieve the desired quality, concerning curriculum and particular subject design, knowledge modelling and the interaction between faculty and students
- ways of creating a students’ system of values in such a way that they strive for high quality and for learning how to self-educate themselves
- ways of motivating students for setting higher standards and goals to themselves during their study at university
- methods of students’ knowledge and skills assessment and their gradation.

3. The essence of BSC

BSC is one of the tools for business processes controlling. The essence of BSC is measurability. “All factors which are important for the company management should be measured; what cannot be measured, it cannot be managed.” [12]. The idea of a balanced system of indicators, i.e. BSC, was a realization of the desire of the management to be provided with a set of financial and non-financial indicators for intra-organizational management goals.

BSC transforms the mission and general organization strategy into a system of clearly stated tasks and objectives, as well as indicators determining the degree of objectives achievement, hierarchically grouped into four perspectives, i.e. “Financial”, “Customer”, “Internal Processes” and “Infrastructure/ Employees”. It is shown in Fig. 2. This gives answers to four of the most important issues in an enterprise concerning standard perspectives and the analysis of the goals of each of these perspectives allows for the answer to the following basic questions:

The Financial Perspective: shareholders’ expectations. “How will the strategy influence the financial state of the company? How does the organization appear to its shareholders and potential investors?”

The Customer Perspective: customer’s expectations. “How are we positioned in the intended markets? How does the organization appear to its customers?”

The Process Perspective: the process requirements. “Which are the strategically important processes? Which business processes should the organization focus on and improve?”

The Learning and Growth Perspective: growth and innovations requirements. “In what way should we become a constantly training organization? How do we stimulate growth? What resources will help the organization continue to grow and increase its business effectiveness?”

The BSC implementation is possible when the strong and weak points and the market situation are identified in the organization and on this basis the mission and strategic priorities for organization growth are established. The process of BSC introduction is accomplished in the following three steps:

1. Formulation of objectives whose achievement leads to mission and strategy realization (balance).

2. Creation of indicators with the help of which the level of achievement of each objective and the efficiency of actions providing the desired indicator level (cascading) is measured.

3. BSC implementation and activities.



Fig. 2. Balanced scorecard

Starting from the top and spreading downwards over all four perspectives “Financial”, “Customer”, “Internal Processes” and “Infrastructure/ Employees”, are arranged the objectives whose achievement facilitates strategy and mission realization. It is only the new objectives supporting the achievement of the existing ones that are written on the map. To focus attention upon the aspects involved in the mission and strategic priorities, it is recommended that the number of objectives does not exceed 25. For more detailed representation of tasks and objectives, a set of supplement maps of “second level” may be created. This level contains a map provided for each strategic priority or for each particular strategic unit in the organization. Figure 3 shows the hierarchic level development of BSC.

The qualitative and quantitative distribution of the objectives by perspective is the following:

- “Financial” – objectives revealing the ways of achieving the strategic intentions in the field of finance (3-5 objectives);
- “Customer” – objectives describing the market situation and strategy as a way of achieving the financial objectives at the previous level (5-6 objectives);
- “Internal processes” – objectives describing the directions on which efforts should be concentrated as a way of achieving the objectives of the Customer Perspective and Financial Perspective (6-10 objectives);
- “Infrastructure/ Employees” – objectives describing the ways of achieving a particular condition of the assets as resources for achieving the internal processes objectives (4-6 objectives).

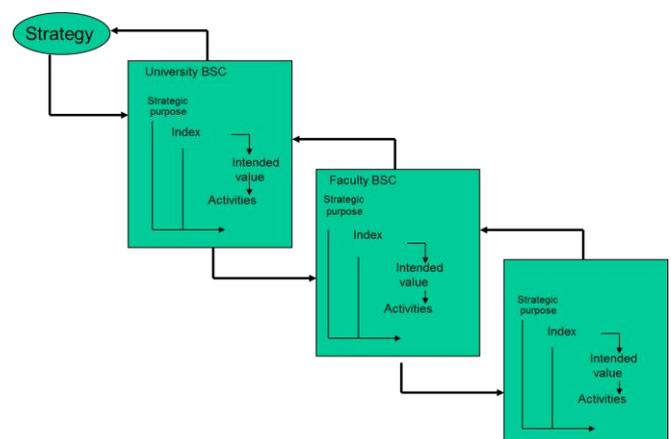


Fig. 3. BSC hierarchic level development

A strategy map should be balanced by the vertical axis, i.e. the achievement of the objectives at lower levels should facilitate the achievement of those at higher levels. There should not be an

objective which does not support other objectives at the same or lower level, with the exception of those at level 4. There should not be objectives which do not support objectives at the same or higher level except for some objectives at level 1.

At the second stage indicators are developed with the help of which the level of achievement of each objective is measured and actions which are to provide the required level of the indicator (cascading) are planned. It is recommended that a set of indicators incorporating both performance indicators and forming indicators should be developed for each of the objectives. The former characterize the degree to which a particular objective has been achieved and the latter show the efforts for its achievement.

The objectives map should also be balanced by the horizontal axis. Therefore, causal relationships between the performance and forming indicators should be determined within each set of indicators. After that, a complex of actions is developed with the help of which the objectives achievement is planned. On the one hand, one action may facilitate the achievement of several objectives and on the other, several actions may facilitate the achievement of a single objective. The deadlines, means and the subdivisions and people responsible for each action are determined.

Should there be objectives which are not supported by other objectives or for which indicators and actions are difficult to be developed, it is necessary either to analyse the causal relationships, to paraphrase the objectives or even to exclude them from the number of objectives to be achieved.

Further, the indicators are projected upon the organization structure, thus the complex of indicators being decomposed, responsibilities being distributed, the process of collecting the indicators and the sources of information at lower levels of planning, as well as the feedback for each indicator and level of automation of these processes being determined.

The third stage is that of BSC implementation in the operational performance. At this stage the following actions are undertaken:

- development and realization of the action plan for BSC implementation;
- training in the principles of operation of BSC;
- control of the action realization;
- indicator monitoring;
- synchronization of BSC with the motivation system;
- synchronization of BSC with the existing systems for organization reporting and management.

The efficiency of BSC in the organization depends directly on the extent to which it is implemented.

Based on the mission, strategic priorities and the analysis of the internal and external environment at a university in compliance with the methodology of BSC, a map of the objectives of BSC has been developed representing the mission and the strategic priorities of a university from the point of view of the four perspectives given in Fig. 4.

4. Conclusions

The paper presents a comparative analysis between the requirements of a Quality Management System and BSC. The conclusion that may be drawn is that there are shortcomings in the implementation merely of Quality Management Systems or BSC and that a strategy map development is of vital importance for a university.

What does BSC provide us with in terms of tertiary education:

- An exhaustive and deep evaluation of the condition and the perspective for development of a university;
- BSC becomes a language and creates an environment for communicating ideas within the education institution, at the same time appearing to be the core of knowledge in the university;
- BSC is not only a means of analysis but a means of objectives achievement;
- BSC provides for the rapid adaptation to the changing environment.

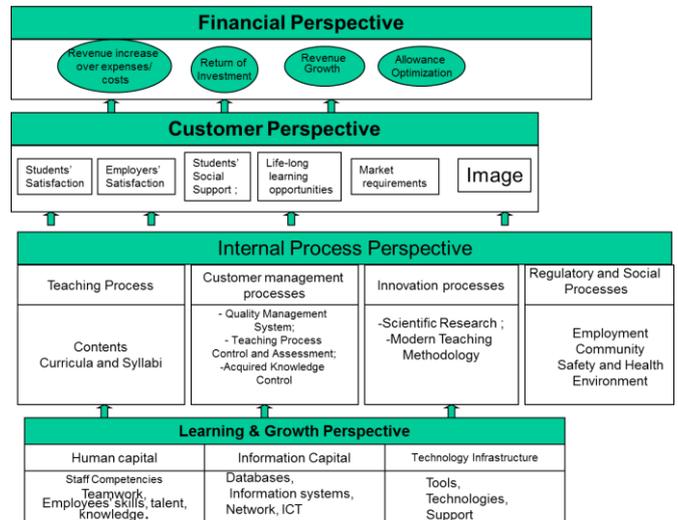


Fig. 4. Strategy map

5. References

- [1]. Demirova S., Turning knowledge into innovation and innovation into an effective product concept, International Conference on Creative Business for Smart and Sustainable Growth, 2019, DOI: 10.1109/CREBUS.2019.8840107
- [2]. Damyanov D., Demirova S., Modern requirements for the training of personnel for intelligent industries, Journal „Human resources”, Vol. 8, 2016, pp. 8-10 (in Bulgarian)
- [3] Kirov K., Current status and identification of areas for improvement of quality management systems in higher education, VII International Scientifically Applied Conference: Strategic guidance in business in XXI century and the Quality of Higher Education, 2-4 July 2008, Proceedings of Scientific papers, Varna, pp. 16-21 (in Bulgarian)
- [4] Kirov K., Assessment Of Management Systems Coherence Identification Of Areas Of Improvement, 8-th International Conference, Machines, Technologies, Materials, 19-21 September 2011, Sofia, pp. 134-136
- [5] ISO 9001:2015 Quality management systems – Requirements, International Organization for Standardization, Geneva, Switzerland
- [6] Kirov K., Opportunities for analysis and modeling of a quality system through FMEA, VII International Scientific Conference: Strategic guidance in business in XXI century and the Quality of Higher Education, 2-4 July 2008, Proceedings of Scientific papers, Varna, pp. 22-27 (in Bulgarian)
- [7] Kirov K., Process, technology and management, Proceedings of the Union of scientists – Varna, Technical science, vol. 1, The Union of scientists – Varna, pp. 16-19, http://www.su-varna.org/izdanij/2014/TN-2014/pp_16_19.pdf (in Bulgarian)
- [8] Kirov K., Application of FMEA methodology for managing the improvement of quality management systems, VII International Scientifically Applied Conference “Sustainable Development”, 2-4 July 2008, Proceedings of Scientific papers, 2011, Varna, pp.91-95 (in Bulgarian)
- [9] Lassoued, K. Balanced scorecard implementation in higher education: An Emirati perspective. Corporate Ownership & Control, 15(3-1), 2018, pp 205-216. <http://doi.org/10.22495/cocv15i3c1p5>
- [10] Archana, P. Using Balance scorecard in Educational institutions, International Journal of Business and Management Invention, Volume 5, Issue 11, November, 2016, pp 70-77, [https://www.ijbmi.org/papers/Vol\(5\)11/version-2/G05110207077.pdf](https://www.ijbmi.org/papers/Vol(5)11/version-2/G05110207077.pdf)
- [11] Harmon, P. Business Process Change: A Manager's Guide to Improving, Redesigning, and Automating Processes, Edition 1, Elsevier Science, 2002, pp.529
- [12] Kaplan, R. S., Norton, D. P. Balanced Scorecard: Strategien erfolgreich umsetzen. Schäffer-Poeschel Verlag, Stuttgart, 1997