

Total Quality Management in Higher Education with Balance Scorecard Technique

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Abstract

As issues of Total Quality Management, performance measurement and issues of accountability become increasingly consequential in higher education, an understanding of the concerns motivating these changes within the public sector and the new measurement frameworks which are emerging can be extremely useful. The Balanced Scorecard should translate an organization's mission and strategy into tangible objectives and measures. The measures represent a balance between external measures for stakeholders and customers, and internal measures of critical business processes, innovation, and learning and growth. The measures are balance between outcome measures—the results of past efforts—and the measures that drive future performance. As a part of its "Evaluation in Higher Education with Balance Scorecard", a pilot application self-assessment program, is working with academic and administrative units within the Dept. of Informatics to define an appropriate array of excellence indicators that broadly reflect the institution and unit mission and other critical success factors. While very much a work-in-progress, the general framework that follows is emerging, and may well be of use to other institutions. The "balanced scorecard" approach offers an institution the opportunity to formulate a cascade of measures to translate the mission of knowledge creation, sharing and utilization into a comprehensive, coherent, communicable and mobilizing framework—for external stakeholders, and for one another. As pressures for performance measurement and accountability mount, the need to rethink and reframe our excellence measurement frameworks has never been more pressing.

Keywords: Total Quality Management-TQM, Balanced Scorecard-BSC, Higher Education-HE, Perspectives, Objectives, Measures, Indicators.

BSC classification: (You can find a guide for BSC Classification at <http://www.balancedcorecard.org>)

Introduction

The quality approach (e.g., Deming, 1993; Juran, 1995; Ruben, 1995), emphasizing external stakeholder focus, process effectiveness and efficiency, benchmarking, human resource management, and integration and alignment among components of an organizational system, provided impetus for the use of a more comprehensive array of performance indicators. Many major corporations now couple financial indicators with other measures selected to reflect key elements of their mission, vision and strategic direction. The usefulness of these indicators extends beyond performance measurement, per se, and contributes also to self-assessment, strategic planning, and the creation of focus and consensus on goals and directions within the organization.

One approach that addresses this need in a systematic way is the Balanced Scorecard (BSC) concept developed by a study group composed of representatives from major corporations including American Standard, Bell South, Cray Research, DuPont, General Electric and Hewlett-Packard (Kaplan and Norton, 1994, 1995, 1996a, 1996b). As described by Kaplan and Norton (1996, p. 2), "The Balanced Scorecard translates an organization's mission and strategy into a comprehensive set of performance measures that provides a framework for a strategic measurement and management system. The Kaplan and Norton balanced scorecard looks at an organization from four perspectives (known as four perspectives of BSC):

- *Financial*: How do we look to shareholders (stakeholders in public sector and Higher education)?
- *Internal business processes*: What must we excel at?
- *Innovation and Learning*: How can we continue to improve and create value?
- *Customer*: How do our customers see us?

Each one of the above four perspectives are linked with the appropriate objectives, measures, targets and initiatives. Specifically, Kaplan and Norton (1995b, p. 10) explain: The Balanced Scorecard should translate a business unit's mission and strategy into tangible objectives and measures. The measures represent a *balance* between external measures for shareholders and customers, and internal measures of critical business processes, innovation, and learning and growth. The measures are *balance* between outcome measures—the results of past efforts—and the measures that drive future performance. And the scorecard is balanced between objective, easily quantified outcome measures and subjective, somewhat judgmental, performance ...

Total Quality Management and Balanced Scorecard

Anderson (2004) and Hoque (2002), point to the fact that only between one fifth and one third of the TQM associated initiatives in Europe and USA brought significant improvements in quality, productivity, competitiveness or financial return. One of the major biases identified as a possible cause for the poor TQM results is the poor linkage between quality and strategic control methods. In this context, Anderson et al (2004) suggest that the successful application of total quality management to the organizational context through one of its associated tools can be significantly strengthened when combined with a strategic performance management framework, such as the Balanced Scorecard. Hoque (2002) reinforce the linkage between TQM and Balanced Scorecard, acknowledging that by using a Balanced Scorecard approach, organizations that failed in their TQM initiatives can get back on track by borrowing insights from the BSC approach. The researchers considers that by connecting the TQM related performance metrics to the organizational strategy through the use of the Balanced Scorecard the success of the TQM initiatives and programs can be considerably strengthen. In the following Table 1 are classified the ccorrespondence and assignment of TQM and BSC parameters.

Table 1: Correspondence and assignment of TQM and BSC parameters

TQM related activities	TQM related performance metrics	BSC dimensions
Executive commitment and management competence	Employee opinion survey Employee satisfaction New techniques introduction compared with competitors Learning & growth Internal business processes	Learning & growth Internal processes
Customer relationships	Supplier satisfaction survey Supplier retention rate Internal business processes	Customer Financial
Supplier relationships	Customer satisfaction survey Customer acquisition rate Customer retention Industry market share Customer complaints Warranty repair cost Customer Financial	Internal processes
Benchmarking	Labour efficiency compared with competitors Rework / scrap rate Cost of quality Return on investment Internal business processes Financial	Internal processes Financial
Employee rating	Employee satisfaction survey Employee capabilities Spending levels for employee development and training Learning & growth	Learning & growth
Open, less bureaucratic culture and employee empowerment	Customer satisfaction survey Employee satisfaction survey The degree of decentralization in corporate governance Customer Learning & growth	Customer Learning & growth
Monitoring quality programs (Zero defects culture)	Incidence of product defects Material and labour efficiency variances Percent shipments returned due to poor quality Warranty repair cost Internal business processes Customer	Internal processes Customer
Internal business process improvement and innovation	Investment in high technology Introduction of new management system Sales growth Internal business processes Financial	Internal processes Financial

Public Sector and Not-for-Profit Balanced Scorecard

The key changes to the Balanced Scorecard template in order to make it relevant to those organizations (Chalaris, Poustourli, 2012):

- Move the Financial Perspective of the Balanced Scorecard to the bottom of the template. The overall objective of most public sector, government and not-for-profit organizations is not to maximize profits and shareholder return. Instead, money and infrastructure are important resources that have to be managed as effectively and efficiently as possible to deliver the strategic objectives.
- The overall objective in of public sector, government and not-for-profit Balanced Scorecards is to deliver services to their key stakeholders & customers (external and internal), which can be the public (students, parents, faculty staff, adjunct professors, employees, suppliers of products and services, citizens etc), central government bodies (Ministry of Education, Lifelong Learning ad Religious Affairs, Hellenic Quality Assurance and Accreditation Agency etc) or certain communities. This perspective usually sits at the top of the template to highlight the key stakeholder deliverables and outcomes.
- The two remaining Balanced Scorecard perspectives will stay as they are. Any public sector, government and not-for-profit organizations needs to build the necessary human, information and organizational capital to deliver its key processes in the middle of the map.

The diagrams of four BSC's Perspectives in private sector as well as in public sector are illustrated in Figure 1.

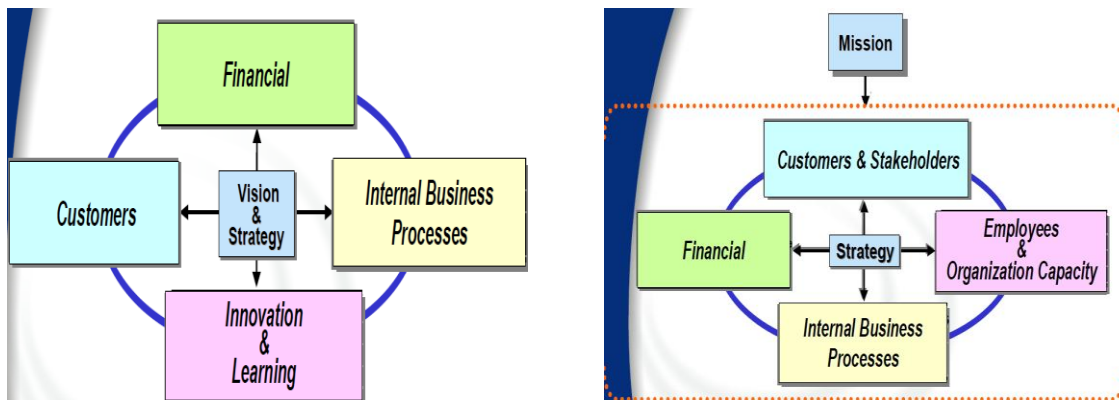


Figure 1: The BSC Perspectives in Private and Public Sector (www.balancedscorecard.org, H. Rohm, 2002)

Balanced Scorecard (BSC) in Higher Education

In higher education, as in business, there are time-honored traditions relative to the measurement of excellence. Rather than emphasizing primarily financial measures, higher education has historically emphasized academic measures. Motivated, as with business, by issues of external accountability and comparability, measurement in higher education has generally emphasized those academically-related variables that are most easily quantifiable. Familiar examples are student and faculty demographics, enrollment, grade point average, scores on standardized tests, class rank, acceptance rates, retention rate, faculty-student ratios, graduation rates, faculty teaching load, counts of faculty publications and grants, and statistics on physical and

library resources. For the purposes of HEIs we considered necessary to adapt the four perspectives of the typical balanced scorecard methodology to those presented in the figure 2 below. In this approach the "financial perspective" is replaced by the "teaching and research work perspective" (**Error! Reference source not found.**), which refers to the highest possible quality of the supplied teaching and research work. The "customer perspective" is replaced by the "students and partners perspective" since they are considered as customers of the HEIs. The "internal processes perspectives" remains the same, while the fourth perspective "learning perspective" is replaced by the "human and financial resources perspective". This perspective refers to input and infrastructure elements of the scientific process of the institution 0.

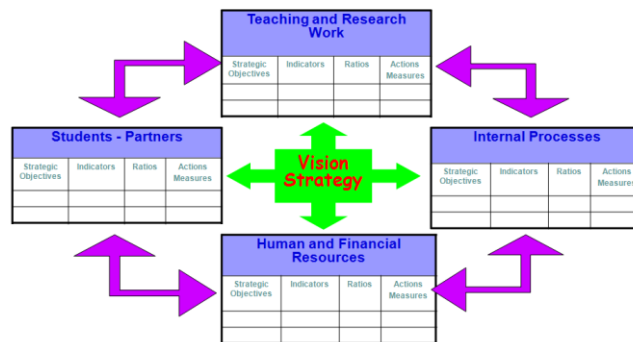


Figure 2: Four perspectives of BSC for HEI

Based on this approach of the BSC methodology, all indicators of the evaluation process can be linked to each one of these four perspectives and thus to see if the objectives have been achieved. Fulfillment of the mission of academic excellence requires successful engagement with a number of constituency groups, and for each desired and potentially-measurable outcomes can be identified (Brent D. Ruben, 1999, p.4):

- Prospective Students: Applying to a university/program as a preferred choice, informed about the qualities and benefits they can realize through attending.
- Current Students: Attending their university /program of choice with well-defined expectations and high levels of satisfaction relative to all facets of their experience; feeling they are valued members of the university community with the potential and support to succeed.
- Research Contract Agencies and Other Organizations or Individuals Seeking New Knowledge or the Solution to Problems: Actively seeking out the university and its scholars for assistance.
- Families: Proud to have a family member attending the university/program, supportive of the institution; recommending it to friends and acquaintances.
- Alumni: Actively supporting the university/program and its initiatives.
- Employers: Seeking out university /program graduates as employees; promoting the university/program among their employees for continuing education.
- Colleagues at other Institutions: Viewing the university/unit as a source of intellectual and professional leadership and a desirable workplace.

- Governing Boards: Supportive of the institution and enthusiastic about the opportunity to contribute personally and professionally to its advancement.
- Local Community: Viewing the institution as an asset to the community; actively supporting its development.
- Friends, Interested Individuals, Donors, Legislators, and the General Public: Valuing the university as an essential resource; supporting efforts to further advance excellence.
- Faculty: Pleased to serve on the faculty of a leading, well-supported institution/program, enjoying respect locally, nationally and internationally.
- Staff: Regarding the institution/unit as a preferred workplace where innovation, continuing improvement and teamwork are valued; recommending the institution/unit to others.

As a part of its *Excellence in Higher Education* (Ruben, 2000a, 2000b; Ruben & Lehr, 1997a, 1997b, Lehr & Ruben, 1999), a Baldrige-based self-assessment program, the Rutgers Quality Continues Improvement (QCI) program is working with academic and administrative units within the university to define an appropriate array of excellence indicators that broadly reflect the university and unit mission and other critical success factors. While very much a work-in-progress, the general framework that follows is emerging, and may well be of use to other institutions. The fundamental mission of research universities and their academic units and programs is the advancement of excellence in the creation, sharing and application of knowledge, typically described in terms of teaching, scholarship/research, and public service/outreach.

Strategic management enhance the quality in HEI by using the Balanced scorecard approach

Strategic management is a matter of mapping the route between the perceived present situation and the desired future situation (West-Burnham, J. 1994). Well-formulated institutional policies can help to guide decisions and future actions in educational development. It is important that policies promote the coordination and success of programmes and projects. The formulation of a "good policy for education" is a necessary step in promoting the emergence and effective implementation of action plans, programs and projects 0. Balanced Scorecard is considered as one of the most useful methodologies for Strategic Management. It was introduced by Kaplan and Norton and has become the mechanism for planning, creating strategic awareness among the members of the organization and translating the strategy into action. The typical balanced scorecard framework includes four perspectives:

- **Financial**: encourages the identification of a few relevant high-level financial measures. In particular, designers are encouraged to choose measures that help in the formulation of an answer to the question "How do we see stakeholders?"
- **Customer**: encourages the identification of measures that answer the question "How do customers see us?"
- **Internal Business Processes**: encourages the identification of measures that answer the question "What must we excel at?"
- **Learning and Growth**: encourages the identification of measures that answer the question "Can we continue to improve and create value?"

The results of the study of Kettunen & Kantola - 0 apply to the availability of the balanced scorecard to be used in evaluation, as described in **Error! Reference source not found.**

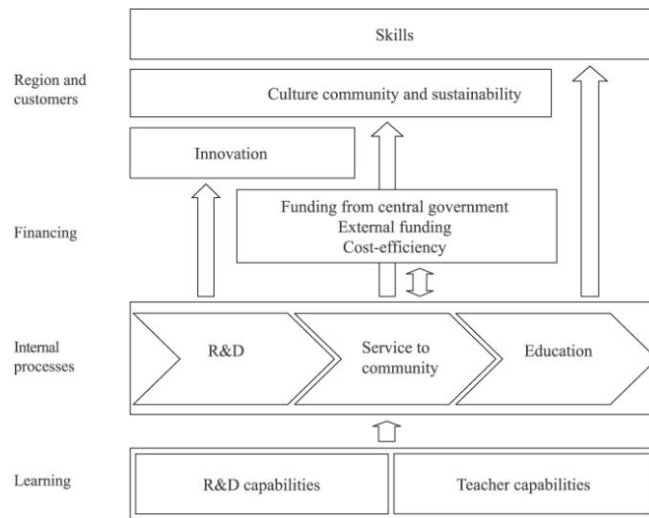


Figure 3: Balanced scorecard - quality map

Thus, by adopting the methodology suggested by Kettunen & Kantola - 2008 we could define the external objectives of the environment and customers, the objectives of finance (taking into consideration the budgeting process as well), the objectives of internal processes describing the value chain of activities, and the learning objectives which lead to future performance.

The application of Balanced Scorecard (BSC) Model in Informatics Department

Elements of BSC for Informatics Department

The Department of Informatics - TEI of Athens -a large, Technological Institution of Greek Higher Education-has the vision of becoming "the first in academic excellence department in Greece". In addition its mission is "the providing a high level of technological education, which seeks to create high-level scientists with knowledge, skills and experience in information technology and communications". The four perspectives translated into the reality of the academic environment of TEI of Athens and especially in Department of Informatics with appropriate adjustments are:

Table 2: Department of Informatics Personalized Balanced Scorecard

Perspective	Focus
Financial	Sustainability: What resources are needed to achieve the mission of the department? What strategies will balance revenue generation with management costs?
Customer & Stakeholders	Students, Faculty Staff and Society: How do we satisfy the needs of our customers and exceed their expectations? Which view we have on our society? Read our list below is in particular our customers?
Internal Processes	Administrative procedures and processes: In what areas should excel so as to satisfy our customers &

	stakeholders? How do we ensure the integrity to meet their needs?
Innovation and Learning	Personnel and Infrastructure: What should be the training, education and support to the staff has the ability to work effectively?

Department of Informatics, TEI of Athens prides itself on being a strategic, forward-thinking organization. Department of Informatics-TEI of Athens kept this framework as their foundation when personalizing the four perspectives and outlining their foci for the implementation and application of the Balanced Scorecard. The starting point for strategic planning is commitment to the vision and mission of the Department. Each strategic and operational objective structured and monitored for optimal reaching the vision of the parameters. In this first modeled with the tool ADOSCORE 2.0 is the vision for the department's mission and ultimate individual goals. Department of Informatics values these four perspectives as tools and provides the organization with the following foci to further define the perspectives. This has been translated into four specific organizational areas deemed necessary for achievement of the vision (see Table 3):

Table 3: Goals and Perspectives of Informatics Department Balanced Scorecard

Strategic Goals of TEI of Athens→Strategic Goals of Faculty of Technological Applications→Strategic Goals of Informatics Dept. (interaction of goals)
Vision & Mission of The Department of Informatics - TEI of Athens
Teaching & Research Seeks to promote maximum teaching and research
Students & Stakeholders Seeks to maximize value added for students and stakeholders
Internal Procedures Seeks to simplify and optimize the procedures and processes
Human & Financial Resources Seeks to develop techniques and skills and the efficient use of resources

The basic approach for monitoring these strategic goals is to list the factors for success (measures) per perspective. Appropriate grouping of success factors, constitute the strategic objectives and operational targets we set. In the tables are following presented the correspondence of the above four perspectives per strategic goals and per success factors. Table 4 presents the analysis for the "Teaching & Research" perspective:

Table 4: Analysis and correspondence of "Teaching & Research" perspective with goals and measures

BSC PERSPECTIVE	STRATEGIC GOAL (Objectives or Targets)	SUCCESS FACTORS (Measures)
	Promoting quality and	1)proportion of students served
		2)Students are requested by companies
		3)New target identification of teaching methods
		4)evaluation of teachers
		5)Quality of lecturing
		6)Lifelong Learning
		7)postgraduate education
		8)Innovative methods of teaching

Teaching & Research	attractiveness of a future-oriented European education	9) curriculum development which is oriented to the labor market	
		10) choice of scientific orientation offered	
		11) multilingual curriculum	
		12) highly-motivated and critically thinking graduates	
		13) networking courses	
		14) connection to other specializations graduates	
		15) assessment of added value and quality of lectures	
		16) development of doctoral studies	
		17) European orientation in the structure of curricula	
		18) selection of curricula according to research objectives	
		19) short curricula courses	
		Achievement of High Quality Research and Education	1) acquisition research associates
			2) number of publications, patents
	3) amount and value of awards		
	4) high donor's satisfaction		
	5) publish the results publications and research		
	Maximizing of the production of scientific work	1) achievement of high quality research and education in promoting quality and attractiveness of a future-oriented European education	

Similar to the Table 4, Table 5 below shows the analysis for the "Students & Stakeholders" perspective with a customer oriented approach.

Table 5: Analysis and correspondence of "Students & Stakeholders" perspective with goals and measures

BSC PERSPECTIVE	STRATEGIC GOAL (Objectives or Targets)	SUCCESS FACTORS (Measures)
Students & Stakeholders	Maximizing and capitalizing on the reputation of the Department of Informatics / TEI of Athens	1) increase the level of awareness/recognition
		2) promotion of the Departments and Schools of TEI
		3) Research results are taken up in market
		4) image creation and dissemination of research/scientific results
		5) organization of scientific meetings / lectures
	Institution's projects and actions are oriented to students	1) maintaining contact with alumni
		2) Students satisfaction
		3) number of scholarships
		4) number of foreign students
	Institution's projects and actions	1) "customer" satisfaction
		2) "customer" loyalty
		3) research collaborations/partnerships

	are oriented to partners and stakeholders	4) internationally recognized research results
		5) maintenance of scientific collaborations/partnerships

Table 6 below shows the analysis for the "Internal Procedures" perspective. In that perspective two strategic objectives identified for the Informatics Department.

Table 6: Analysis and correspondence of "Internal Procedures" perspective with goals and measures

BSC PERSPECTIVE	STRATEGIC GOAL (Objectives or Targets)	SUCCESS FACTORS (Measures)
Internal Procedures	Simplifying administrative procedures and management control	1) flexible administration
		2) modernization of administration
		3) formation of units services
		4) achievement of simple and transparent organizational units
		5) transparency of internal processes
		6) Improving Services for students
		7) optimization of time for administrative tasks
		8) continuous review and optimization of flow processes
		9) management accounting
		10) introduction of financial management tools
		11) efficient and robust management structure
	Optimization processes of teaching and research	1) infrastructure on demand
		2) enhanced interdepartmental cooperation
		3) offer specialized lectures
		4) Catholic teaching plan
		5) continuously improving support for students
		6) " effectiveness of research
		7) evolution of education process with new tools and techniques
8) introduction of modern technologies		

Table 7 below shows the analysis for the "Human & Financial Resources" perspective. In that perspective five strategic objectives identified for the Informatics Department.

Table 7: Analysis and correspondence of "Human & Financial Resources" perspective with goals and measures

BSC PERSPECTIVE	STRATEGIC GOAL (Objectives or Targets)	SUCCESS FACTORS (Measures)
	Strengthening motivation colleagues	1) culture of feedback
		2) team spirit
		3) motivation and satisfaction

Human Financial Resources	and matching them with the objectives of the Department / TEI	4) strategy goals are known to colleagues and ensures their participation	
		5) ensure effective internal communication within the university	
		6) days of absence of faculty staff	
		7) highly motivated to participate	
		8) sickness absence rate	
		Ensure best financial/economy options	1) reduce overheads
			2) clear definition of costs/expenses
			3) performance agreements
	4) number of students		
	5) income from postgraduate programs		
	Improve faculty staff skills	1) improving teaching education	
		2) faculty staff development programs	
		3) further education of faculty staff	
		4) improve qualifications of faculty staff	
		5) acquisition of visiting professors	
		6) acquisition of distinguished professors	
		7) objectives-oriented guidance	
		8) systematic evaluation of partners (adjunct professors)	
		9) targeted selection of professors and researchers	
		10) Continuous training, establishment of exchange programs	
11) career planning			
Increased resources from third parties	1) assertion projects with third parties		
	2) mentoring of suppliers and supporters network		
	3) identify sources of sponsorship		
	4) Incomes from associates collaborations		
	5) number of associates collaborations		
	6) search of other		
	7) optimization of time for administrative tasks		
Maximizing of intellectual & scientific capital of Informatics Dept./TEI	This goal is expressed as a direct consequence of the achievement of the previous four goals		

The performance indicators are modeled in the model indicators. Are qualitative and quantitative, broken down by perspective, and from this point can be assigned directly to sources of data (database field, cell worksheet Excel).

Appropriate software for BSC data modeling and management

The ADOScore 2.0

There are a lot of software tools on the market with different focuses and features. ADOScore 2.0 is a tool that has a model based approach. With different model types from the Strategy to the Measures the development and documentation process is supported. For the

controlling and managing of the BSC a Controlling Cockpit is functions etc. The ADOscore 2.0 model types are:

- Strategy: Vision, Mission, Strategy are derived and documented.
- BSC-Map: This model gives the possibility to visualize the hierarchical organization and to link the developed BSC to the strategic business unit.
- Success Factors: Success factors are placed and assigned to the different perspectives. The clustering of some factors leads to the objective.
- Cause-and-Effect: Gives the possibility to build up the cause-and-effect chain with the objectives and measures
- Key Figures: All the measurement systems needed for the cause-and-effect-model can be build up and be documented.
- Elementary Key Figures: The measures for the measurement system are generated and linked to the data sources
- Initiatives: In the Action-model the activities for achieving the set objectives are documented.

The display of ADOscore 2.0 screens for the above BSC factors are presented in Figure 2.

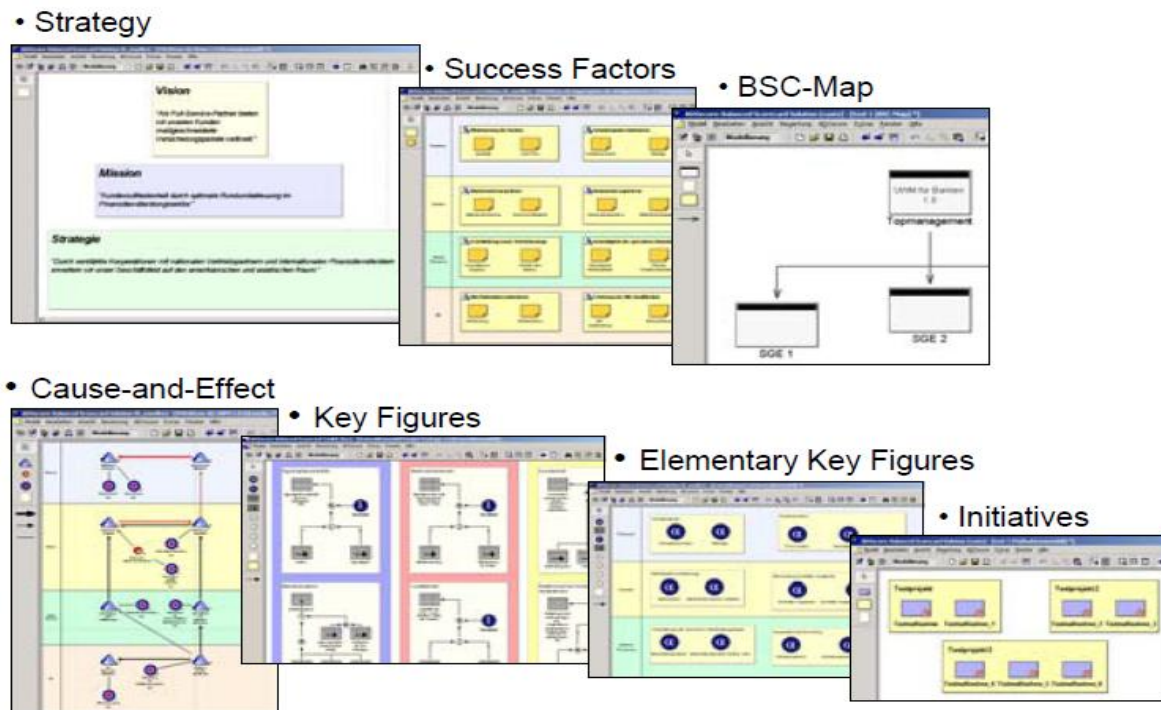


Figure 2: ADOscore 2.0 screens for the BSC factors

Summary

Translating the balanced scorecard to the complex world of academia is a challenge. Skepticism exists on campuses regarding the notion that a university's performance can be measured quantitatively. Published rankings systems that change methodology and produce new orderings or that can be "gamed" encourage distrust in new institutional evaluation schemes. Using the balanced scorecard process, with its emphasis on

integrative analysis and trade-offs, can move the discussion of performance management from an externally driven concern for image and rankings to an internally driven concern for improved institutional effectiveness. For the support of the academic evaluation, a quality assurance information system (QAIS) is being proposed which will interact with the BSC tool and thus will help the administration entities to observe all performance indicators in order to support the administration of the institute in taking decision for the improvement of the quality of the educational and operational processes and in setting its strategic objectives. For this purpose an adaptation of the four perspectives of the BSC methodology to those best fit to HEI, has been proposed. We believe that the QAIS of TEI of Athens fulfills the needs of a HEI's administration as well as the requirements for information and interoperability of HQAA (E. Chalaris, A. Tsolakidis, C. Sgouropoulou, I. Chalaris - BCI 2011).

In addition, the correlation with the Hellenic Quality Assurance and Accreditation Agency (HQAA/ADIP) internal evaluation model (*Internal Evaluation Report, Axes-Criteria-Indicators, type of variables and sources*), shows that the coverage of the axes of the methodology is partial, with characteristic lack of basic reference point of order (Chalaris I., Bursanidis Ch., 2009). It is not clear how is documented the statement of a strategic goal, how it serves the vision and mission of the department, and in which realistic criteria (success factors) will be evaluated. Besides, there are not clearly some or recorded performance indicators. There are worded, but as not as reasonable factors associated with the goals or more complex indicators. The paradox is that while there are almost all these components, they are just random worded and positioned in the HQAA/ADIP external evaluation model applied without the relationships that will implement the mechanism mentioned above. All these data are valuable for better organization of both the operating procedures of TEI and for an effective evaluation process in the future (Chalaris I., Bursanidis Ch., 2009).

In summary, the Balanced Scorecard is a valuable tool as it is used within Informatics Dept. Since its implementation in 2011, it has shaped the Informatics Dept. and allowed for Informatics Dept. to operate outside of the traditional higher education structure. This tool provides Informatics Dept., and therefore TEI of Athens, with an advantage over other higher education organizations in meeting the new roles and expectations of higher education and responding to the limited funding, because it operates in a metrics-driven environment that is not typical of most higher education organizations. The Balanced Scorecard (BSC) approach offers an institution the opportunity to formulate a cascade of measures to translate the mission of knowledge creation, sharing and utilization into a comprehensive, coherent, communicable and mobilizing framework - for external stakeholders, and for one another. As pressures for performance measurement and accountability mount, the need to rethink and reframe our excellence measurement frameworks has never been more pressing.

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References

- ADOSCORE 2.0 - Usermanual - BOC Information Technologies Consulting 2007. <http://www.boc-group.com/products/adoscore/>
- Alexander, F. K., (2000), "The changing face of accountability: Monitoring and assessing institutional performance in higher education", *Journal of Higher Education*, **77**(4), 411-431
- Balanced Scorecard organization (2012), <http://www.balancedscorecard.org>
- Behrouz Aslani-Dr. (2009), "Challenges and Benefits of Implementing Clear Strategy Execution in the Public Sector", American Institute of Higher Education Resources (White Paper), www.qpr.com
- BOC GmbH, Balanced Scorecard Solution ADOScore®, <http://www.boceu.com>
- Chalaris I., Boursanidis, Ch. (2009), "Evaluation of a High Educational Institute using the balance scorecard technique", The first experiments from the first experiences with the Department of Informatics, TEI of Athens", 3rd Conference of Administrative Sciences, 8-10 October, University of Crete
- Chalaris E., Tsolakidis, A. Sgouropoulou, C. Chalaris I. (2011), Developing an Information System for Quality Assurance in Higher Education using the Balanced Scorecard Technique - The case study of TEI-A, BCI
- HQAA (Hellenic Quality Assurance Agency for Higher Education), (2011) *Internal Evaluation Report, Axes-Criteria-Indicators, type of variables and sources* (<http://www.adip.gr/>)
- Hoque, Z. and James, W. (2000), Linking balanced scorecard measures to size and market factors: Impact on organisational performance, *Journal of Management Accounting Research*, **12**, pp. 1-17 [ERA - A*]
- Juran, J. M., World War II and the Quality Movement, The Juran Institute, Reprinted in adapted form in B. D. Ruben, (ed.), 1995, *Quality in higher education*, (pp. 65-78). New Brunswick, NJ: Transaction
- Gwang-Chol CHANG, Strategic Planning in Education: Some Concepts and Methods, DIRECTIONS IN EDUCATIONAL PLANNING: SYMPOSIUM TO HONOUR THE WORK OF FRANÇOISE CAILLODS, 2008
- Kaplan, R. S., (2001), "Strategic performance measurement and management in nonprofit organizations", *Nonprofit Management & Leadership*, **11**(3), pp. 353-370
- Kaplan, R., and Norton, D. (1996), "Using the Balanced Scorecard as a Strategic Management System", *Harvard Business Review* (January-February), pp. 75-85
- Karagiannis, D. Lichka, Chr. (2004), "Steuerung der Universitäten anhand der Balanced Scorecard", Uni Wien (www.dte.univie.ac.at/)
- Karathanos, D. & Karathanos, P. (2005), "Applying the Balanced Scorecard to education", *Journal of Education for Business*, **80**(4), pp. 222-230
- Kettunen, J. & Kantola, I. (2005), "Management information system based on the balanced scorecard", *Campus-Wide Information Systems*, **22**, pp. 263-274
- Poustourli, C. (2011), PhD Thesis-dissertation, *Development of Robust Method for Continuous Improving of Integrated Quality Management System*, The Balanced Scorecard, (pp. 105)

- Rollins, A. M. (2011), PhD Thesis-dissertation: *A Case Study: Application of the Balanced Scorecard in Higher Education*, External and Business Affairs unit at University of California, San Diego
- Ruben, B.D., (2000a), *Excellence in higher education 2000: A Baldrige-based guide to organizational assessment, planning and improvement*. Washington, DC: National Association of College and University Business Officers, 2000 (in press)
- Ruben, B. D. & Lehr, J., (1997a), *Excellence in higher education. A guide to organizational self-assessment, strategic planning and improvement*, Dubuque, IA: Kendall Hunt
- Stewart Alice C. and Carpenter-Hubin J. (2001), "The Balanced Scorecard Beyond Reports and Rankings", *Planning for Higher Education*, pp. 37-42
- West-Burnham, J. (1994), "Strategy, policy and planning", in Bush, T. and West-Burnham, J. (Eds), *The Principles of Educational Management*, Longman, Harlow, pp. 77-99