

**“IDENTIFICATION OF KEY PERFORMANCE INDICATORS OF
HIGHER EDUCATION INSTITUTIONS THROUGH APPLICATION
OF BALANCED SCORECARD”**

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ABSTRACT

The paper made identifying key performance indicators (KPI) and proposes a model of their choice through the use of the Balanced Scorecard (BSC) model. Identification of the KPI should contribute to the orientation of higher education institution (HEI) to calculate the financial and non-financial measures and connecting with the strategic objectives and the associated key success factors (KSF). In this way it can contribute to the integration of institution starting from performance measurement to strategic management.

Keywords: Key Performance Indicators, Balanced Scorecard, Higher Education Institution, Key Success Factors

1. INTRODUCTION

KPI are a clear instrument which quantitatively or qualitatively, across the KSF, expresses the set of organizational objectives depending on the priorities of the organization. KPI are used to determine whether the organization meets its goals and whether it is moving towards the successful implementation of its strategy. They are described as standards, which can be quantified and used to assess the efficacy compared to the expected results. KPI functioning as tool for achieving the desired activity, show employees how they can contribute to the overall organizational objectives, and management provides a tool that can determine overall progress compared to the strategic objectives. [1]. As their name suggests they just indicate or show the different states, both qualitatively and quantitatively. They point to the performance in key business areas / perspectives. Hence, KPIs are used to measure performance of business or, where KSF help the organization position itself to those areas that need to be improved or that are critical to the organization.

In the background of KPI “lie“ performance measures, wherein KPI represents measures derived directly from the strategy/ strategic objectives, while general title performance measures can be related to any performance measures in the organization for any reason.

Organizations must choose appropriate measuring systems which in practice must be related to strategic objectives [2]. Effective organizational measures include the measurement of the key components of the strategy [3].

In the strategic planning process based on the BSC methodology, KPI must be linked to strategic objectives, KSF and perspectives of BSC. Whatever KPI are selected, they must reflect the organization's objectives and must be the key to success. Using the KPI may determine the extent to which the achievement of a strategic objective has been more or less successfully, that is, how much progress has been made in achieving the goal.

2. DEVELOPMENT OF RESEARCH METHODOLOGY

During the research KPI were selected through the use of methods Analytic hierarchic process (AHP). The selection of KPI was carried out during the implementation of the BSC method on HEI. During the application of the BSC method overall functioning of the HEI is divided into four perspectives of the BSC method, which are divided and the final selected KPI. The advantage of KPI selection with the help of BSC method is that KPI are directly linked to the strategic objectives and KSF, and in that way derives directly from the largest hierarchical level/ management of HEI. During the research or selection of KPI of HEI the following steps were used:

1. Development of a KPI base.
2. Selection of potential KPI.
3. Identification of characteristics for selection KPI.
4. Drawing up AHP model for the selection of KPI.
5. Selection of KPI.

3. IMPLEMENTATION OF METHODOLOGY

The implementation methodology is provided through the use of activities mentioned in the previous section. In this section will be explained in detail each of implemented activities.

3.1. Development of a KPI base

This activity included the collection of all the available KPI to which will be translated strategic goals of the HEI. Their collection was carried out on the basis of the available literature, interviews with various experts, already used KPI of HEI, as well as KPI competitive HEI. The method of gathering was organized so that all possible KPI, which can consist of strategic objectives, divided according to the identified perspectives of the BSC method. Especially assured that all collected KPI correspond or be engaged with the KSF, which later must meet the strategic goals. The total is collected of 474 KPI.

3.2. Selection of potential KPI

Taking into account that the quite a number of KPI is collected, in this activity that number had to be reduced to a smaller number to the research could proceed unhindered. Through brainstorming methods a large database of KPI is reduced to a potential KPI while retaining links with existing strategic goals. 184 KPI was selected for further study.

3.3. Identification of characteristics for selection KPI

The next phase is selection of final KPI. Their selection will be defined through AHP method. This method involves the creation of hierarchical model with 5 levels of which one level represents characteristics of KPI on the basis of which to be determined final KPI. The selection of KPI will be conducted by respondents that will determine relative importance of offered KPI per perspective of the BSC method, and on the basis of characteristics for selection KPI. On the basis of available literature, of the total number of possible characteristics for selection KPI through brainstorming method the three characteristics were chosen: "indicator change", "stimulates continuous improvement" and "susceptibility to influences".

3.4. Drawing up AHP model for the selection of KPI

To select a KPI from a list of potential KPI, which should consist of the existing strategic goals, as well as to determine the relative importance of each KPI it was used structured approach based on AHP methodology. The reason for using this method is the participation of a large number of

respondents (experts) who will participate in the election of KPI, the existence of four perspectives of the BSC method, and the presence of characteristics which will make the final selection of KPI. Hierarchical structure shown in the following figure is selected for the KPI selection.

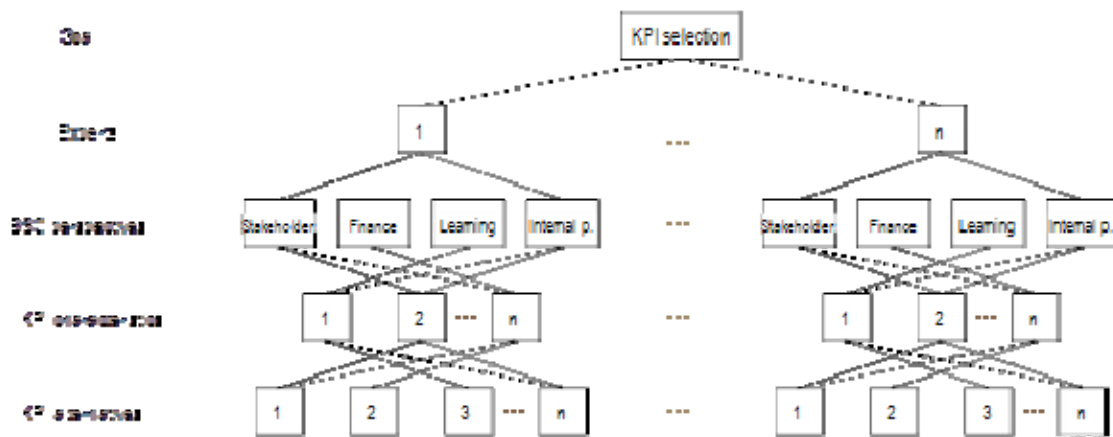


Figure 1. Hierarchical structure of AHP model for KPI selection

The primary objective is selection of KPI from the list of potential KPI that are associated with existing strategic goals of HEI. On the second hierarchical level the respondents are positioned that will do prioritization in pairs. The next hierarchical level represent BSC perspectives for which KPI should be chosen, then characteristics for selection KPI on the basis which the final selection should be conducted and at the last hierarchical level are alternatives, as offered KPI for selection.

3.5. Selection of KPI

KPI represents the factors that constitute KSF and strategic goals. Each KSF is consists of one or more of the KPI. Selection of potential KPS was done by filling in a questionnaire, and then entering the results of those questionnaires in the program Expert Choice for mutual comparison of potential KPI, determining their relative importance and relationship consistency. Expert Choice program is performed ranking and comparing of potential KPI in accordance with pre-defined hierarchical structure of the AHP model for the selection of KPI.

Methodology of KPI selection was conducted through principle that 1 KSF can not constitute more than 3 KPI [4]. Taking into account that for each KSF were offered from 2 to 18 KPS per BSC perspectives, KPI final selection was made by the following principle (in order to avoid that all KSF have the same number of KPI):

- For KSF which have up to 5 offered KPI, 1 KPI is selected,
- For KSF which have up to 5 to 8 offered KPI, 2 KPI are selected,
- For KSF which have from 8 and more offered KPI, 3 KPI are selected.

From a total of 184 potential KPI, 44 KPI are selected or 23,91 %.

Table 1. Overview selected KPI per KSF and BSC perspective

Perspective	KSF/ KPI		Selected KPI	No of selected KPI
	Selected KSF	Offered KPI		
Financial	Revenue growth	13	% of own revenues in the budget	3
			% of student fees in the own revenues	
			Revenues by research	
	Budget confirmation	5	Budget per student	2
			Annually budget	
	Investition	2	The total amount of investments	1
Cost management	5	The average annual cost per faculty	2	
		Expenses for personal income		
Stakeholders	Teaching staff	8	% of permanent in the overall structure of teachers	3
			Elections in Titles	
			Teaching staff with professional training	

	Students	11	Number of students I cycle	3
			Number of students II cycle	
			Number of students admitted in the first year	
	Social community	7	The amount of funding from industry	2
			Projects with outside academic institutions	
	Stakeholders satisfaction	9	Students' satisfaction with the study program	3
			Students' satisfaction with teaching staff	
			Satisfaction of staff	
	The impact of regulatory / government	5	The amount of public funding in the budget	2
			Public funds for research	
Alumni	5	The existence of alumni organizations	2	
		The number of registered alumni in the database		
Learning and growth	Mobility	4	Mobility of teachers to other institution	1
	Employee motivation	5	Percentage of the budget for training of staff	2
			The average net salary of staff	
	Technological Improvement	5	% of the budget spent on laboratories	2
% of the budget spent on information system				
Lifelong learning	3	Number lifelong learning programs	1	
Internal processes	The quality of study programs	12	Quality of students admitted in the first year	3
			The average number of hours of practical training of students	
			The number of revisions of study programs	
	RDI	18	The number of papers published in journals indexed by Web of Science	3
			The number of papers published in journals	
			The number of international research projects	
	Quality system	9	Number of accredited study programs	3
			The number of internal quality audits	
			Number of external evaluations	
	Library resources	9	The number of available research base	3
The percentage of available course publications				
Subscriptions to international scientific journals				
Infrastructure capacity	5	The total area for teaching	2	
		The number of computers by organizational units		
Complaisance	3	Number of dealer service students	1	
Total offered KPI		184	Total seelcted KPI	44

4. CONCLUSION

Through this research has proven that it is possible to carry out the identification of KPIs for HEI through the use of the BSC method. Through this research KPIs are derived from the strategic objectives, so that the strategic objectives are translated into action, respecting into understandable set of KPI per key perspectives. The reason for this kind of research is linking KPI selection with strategic goals, enabling their importance and further use. During the research an analysis of a large number of possible KPIs was conducted, which are through AHP method reduced from 184 KPI on the 44. In this way, KPIs are defined which are related to the functioning of all the segments of one HEI.

5. REFERENCES

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