

The application of the balanced scorecard (BSC) in the higher education setting of a Polish university

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Abstract

The increased competition both in the public and private sector has caused growing interest in quality improvement, designing, and implementing organizational performance measurement systems. Academic organizations also recognized the need for implementing such systems, for example, some recent works in organizational performance in higher education make use of Kaplan and Norton's Balanced Scorecard (BSC) to translate the characteristic strategic goals (e.g. research and teaching excellence) into performance measures. Currently, continuous quality improvement of organizational performance is required. In this paper BSC as performance measurement and strategic management system was described. Our research emphasized using BSC in higher education. The BSC model applied to a public university and the information system (IS) dedicated to supporting monitoring strategy. The proposition of future research is written in conclusion.

Keywords: BSC, performance measurement, higher education, measures, strategy

Introduction

The Balanced Scorecard (BSC) has been introduced and developed as a performance measurement concept over the last two decades (Kaplan & Norton 1992; Kaplan & Norton 2008). Since its inception, the conceptual framework has been changed and has been adopted by many companies (Kaplan & Norton 2004). The concept has generated enormous interest in academic and industrial communities (Barnabe & Busco, 2012; Kraus & Lind, 2010; Norreklit, Norreklit, Mitchell, & Bjomenak, 2012; Salterio, 2012). Examples of users include in the United States government, Intel, Apple; and in the United Kingdom BP Chemicals, Milliken (Butler, Letza & Neale 1997). The BSC was typically applied in business disciplines and in the strategic management area for industries (Lovaglio 2011). However, BSC can be also proposed in government agencies, universities, and non-profit organizations (Niven 2008; Pietrzak 2014).

In this article, the authors present an application of the BSC as a tool of performance measurement in Higher Education. Also the IS which supports the monitoring of the university strategy is described. The proposition of future research is presented.

BSC as performance measurement and strategic management system

Kaplan and Norton developed the BSC based upon study results taken from research on 12 leading American companies at the beginning of 1990's. Managers initially introduced and used the BSC as a new performance measurement system (Kaplan & Norton 2004). It was a set of measures that gives managers a complex view of their companies from four perspectives: financial, customer, internal, innovation and learning (Kaplan & Norton, 1992). In each of these perspectives objectives are defined. To each objective one or more measure (indicator) is matched to make the BSC more operational. Then, precisely defined and time-scaled targets have to be established by combining objectives, measures, and planning periods. BSC balances traditional financial indicators by the set of non-financial measures: customer, internal, innovation and learning perspectives (Kaplan & Norton 1996). The key feature of the BSC created in this manner is a holistic and balanced approach to the performance measurement. It guards the company against sub-optimization. By demonstrating targets and results from several perspectives, BSC forces executives to see the company as a systemic whole and helps them to achieve goals in one area without disturbing efforts in another area. The BSC balances measures related to the past (financial perspective) by indicators showing current effectiveness and efficiency (customers and internal perspectives), as well as measures related to the future development (innovation and learning perspective) (Kaplan & Norton 1996; Niven 2005).

The BSC has gained worldwide popularity. Spender (2014) noted that the BSC has been adopted in more than half of all major firms. As the BSC has been more and more extensively used, executives appreciated the comprehensive performance measurement system. However, they wanted to use this system in a more powerful way than just measuring performance. They wanted to use the BSC in a new application – as the strategy execution system (Kaplan & Norton, 2004). Various researchers have shown that 60-80% of companies do not succeed in achieving targets in their strategic plans (Kaplan & Norton, 2008; Niven, 2008). There are many reasons of strategic planning failures identified in the literature (Peel, 2012):

- Failure to understand customers,
- Inability to predict environmental reaction,
- Overestimation of resource competence,
- Failure to coordinate (inadequate structure and control systems),
- Failure to obtain managers and employees' commitment,
- Underestimation of time requirements,
- Failure to follow the plan (not follow through and no tracking progress without consequences),
- Failure to manage change,
- Poor communications.

The other problems and barriers are also listed by Cowley and Domb (1997):

- Forecasts are unrealistic,
- Goals are established arbitrarily,
- Lack of focus only on a few high-leverage goals,
- Lack of coherent system of goals,
- Lack of shared vision of the future,
- Activities are not strictly connected to the goals and are not reviewed in an ongoing basis,
- Lack of skills to do effective planning, particularly not recognizing that strategic planning is quite different from operational planning,
- Planning is regarded as an event and done in the absence of adequate data,
- Planning separated from implementation (lack of “ownership” of the plans).

These failures create serious limitations of the strategic management process. The growing popularity of the BSC used as a method for strategy execution proves that it could be helpful in overcoming some of these limitations and solve the serious problem managers faced – how to implement strategy. They recognized that if the measurement system will be strategy-driven, then such a system will be helpful to communicate and implement the strategy (Kaplan & Norton, 2004).

Currently, the BSC is treated as a complete strategy management system rather than just performance measurement method (Kaplan & Norton, 2008; Niven 2005; White 2004). One of the most powerful tools developed under the BSC concept umbrella is the strategy map. The strategy map could be seen as a one-page picture showing the paths of the firms’ movement from the present to the desired future. This poster outlines what the organization has to do in four perspectives of the BSC in order to successfully execute its strategy (Niven, 2008). The crucial feature of strategy map is its simplicity - one page picture can tell us the short story that explains how the organization defines its success and signals to everyone what must be done in order to execute the strategy (Niven, 2008; Smith, 2007).

Pietrzak (2014) described the role of the strategy map as a strategy communication tool. Here the emphasis will be put on the possibility of strategic hypotheses testing. Strategy maps consists of two elements: strategic objectives and cause-and-effect linkages between them. These linkages could be seen as a set of hypotheses about cause-and-effect relationships between goals in perspectives (Kaplan & Norton, 2001). If the measures of strategic objectives are tracked on a regular basis, it is possible to test strategy as a set of hypotheses. Testing hypotheses allows the process of double-loop strategic learning (Argyris & Schön, 1978; Kaplan & Norton, 2001).

Strategy concerns itself with the future, which is uncertain. Since we agree that uncertainty exists, the traditional approach of the one-shot best strategic plan must be replaced by concepts gradually development from strategy through ongoing strategic learning process. According to van der Heijden (1998), the crucial element of this process should be a *business idea*, which clearly expresses those aspects which are crucial for survival and development of any organization. Defining the business idea requires precision (van der Heijden, 1998):

- how the resources will be used to build the distinctive competences,
- how the distinctive competences will create competitive advantage,
- how competitive advantage will be converted into desired outcomes,
- how the outcomes will be used to feed the pool of resources for maintaining development based on positive feedback.

Business idea is quite similar to *the theory of the business* proposed by Drucker (1994). Drucker defined it as the set of assumptions. “These are the assumptions that shape any organization’s behavior, dictate its decisions about what to do and what not to do, and define what the organization considers meaningful results. These assumptions are about markets. They are about identifying customers and competitors, their values and behavior. They are about technology and its dynamics, about company’s strengths and weaknesses. These assumptions are about what a company gets paid for” (Drucker, 1994, pp. 95-96).

Strong, convincing business idea/the theory of the business is the key to success. However, it could be also the trap. Organizations with strong business ideas typically experience strong resistance to change. This leads them to relying on single-loop learning and in consequence to the situation when their theory of the business no longer works (Drucker, 1994; van der Heijden, 1998). In the turbulent environment the changes are inevitable and organizations need to learn basing on double-loop (van der Heijden, 1998). The theory of the business is a hypothesis and has to be verified constantly (Drucker 1994).

Moving back to the BSC, we can see that the equivalent of the business idea or the theory of the business is the concept of the strategy map. Every linkage between objectives on the strategy map is in fact the form of strategic hypothesis. Being a set of assumptions, strategy map is a close concept to that of Drucker’s theory of the business. A superior feature of the strategy map is that each of such hypotheses could be expressed in a measurable manner.

For example at Rockwater (owned by Brown & Root Energy Services), significant correlations were found between employees’ morale (learning and growth perspective) and customer satisfaction (customer perspective), which in turn was correlated with faster payments of invoices. Satisfied customers paid invoices from 30 to 90 day faster than the unsatisfied. This linkage led to a substantial decrease of accounts receivable and hence to a higher ROCE (financial perspective). Moreover, higher employees’ morale led to the higher number of employees’ suggestions (learning and growth perspective), which in turn caused the reduction of rework (internal business process perspective). Lower rework led to improvements of measures in financial perspective by lower operating expenses, which yielded a higher return on capital employed (Kaplan & Norton 1996, 2001). There are many examples of similar cause-end-effect linkages in the literature. Basing upon a simplified BSC framework, namely the employees-customers-shareholders chain, Yeung and Berman (1997) discussed and highlighted the paths through which HR practices can impact business performance on the examples of scorecards from Eastman Kodak, Sears, AT&T, and American Express.

Using BSC in higher education

Public agencies and institutions, such as public universities, are often seen as achieving inferior performance in comparison to the business sector. According to the New Public Management concept, the public sector organizations should try to be as efficient and elastic as business firms, particularly by following the set of key doctrinal components (Hood, 1991):

- hands-on professional management,
- explicit standards and measures of performance,
- emphasis on output controls,
- disaggregation of units and competition,
- private sector styles of management,
- discipline and parsimony in resource use.

Increasing competition, both in the public and private sectors raises the interest in measuring performance to better allocate resources (Jordan & Mortensen, 1997; Juhl & Christensen, 2008). Many organizations concentrated their efforts on designing and implementing adequate organizational performance measurement systems to manage and improve their quality. The efficient management of public universities also requires the use of various instruments. The BSC can be used as a tool for coordinating the activities of the academic and non-academic departments of a university and the mechanisms of budgeting and target agreements (Küper, 2013). The aim of the concept is to overcome the shortcomings of traditional performance measuring systems, which rely only on financial outcomes. The BSC offers the interesting possibility to improve the reporting process at the University (Karathanos & Karathanos, 2005; Nayeri, Mashhadi & Mohajeri, 2007; Papenhausen & Einstein, 2006; Umashankar & Dutta 2007). In this approach, various aspects of an organization can be presented. The advantages of this method are clarity, simplicity, and flexibility. On the other hand, the simplicity means that some aspects are considered secondary and are missing (Küper, 2013).

In the literature we can find different examples of implementing the BSC model in higher education (Tapions, Dyson, & Meadows 2005; Papenhausen & Einstein 2006; McDevitt, Giapponi, & Solomon 2008; Asan & Tanyas 2007; Umashankar & Dutta 2007; Juhl & Christensen 1997). Tapions, Dyson, and Meadows (2005) presented the alignment between an organizational strategy and performance measurement at Warwick University (UK), where the BSC applies to Hospitality Services. As Taylor and Baines (2012) notice, the universities in the UK have become increasingly concerned with the performance management in recent years. Those organizations began to use methods for performance management development in business and industry. For example, the BSC model is used by top management as a mean of enhancing their learning on the institution's strengths and weaknesses. Papenhausen and Einstein (2006) underlined that successful BSC implementation requires active contributions from everyone in the organization. Papenhausen and Einstein noted an example from College of Business at the University of Massachusetts – Dartmouth (U.S.A.). Another example from the U.S.A. was described by McDevitt Giapponi, and Solomon (2008) (University Division, Connecticut). The authors described the process and benefits of developing a custom BSC to

revitalize a faculty strategy. Asan and Tanyas (2007) connected the BSC and the Hoshin Kanri tool for strategic management to monitor an Engineering Management Graduate Program. Umashankar and Dutta (2007) discuss in what way the BSC approach may be applied to higher education in India. Juhl and Christensen (1997) presented the BSC concept to analyze the set of performance measures proposed by the Ministry of Science to allocate resources among Danish Universities. From the analysis of the papers, we can find that the BSC is well suited for organizational performance measure in higher education.

Application of BSC in one of the Polish universities

The BSC was used as a framework of development and monitoring of strategy in one of the Polish universities. This university was established at the beginning of XIX century and currently could be described at least as a medium size university. It is ranked at 16th position in Polish universities according to the size with the 1.4% share in the number of students. The university consists of 13 faculties (Agriculture and Biology; Veterinary Medicine; Forestry; Horticulture, Biotechnology and Landscape Architecture; Civil and Environmental Engineering; Wood Technology; Animal Science; Economic Sciences; Food Sciences; Human Nutrition and Consumer Sciences; Production Engineering; Social Sciences; Applied Informatics and Mathematics) where 27,000 students are enrolled. WULS-SGGW employs over 1,300 university teachers and instructors. At the University, there are approximately 34 study programs and 130 areas of specializations.

The Polish higher education system faced a rapid growth after the economic transition - the indicator of tertiary education increased from nearly 22% to over 70%. However, this growth was not supported by the increasing quality of the teaching. Moreover, according to demographic changes the number of the students has started to decrease - until 2020 the number of students will be reduced even by 35% (Pietrzak, 2013a). In such a context, higher education in Poland faces increasing pressure to change as the universities are getting forced to use performance measurement and strategic planning. According to the new law introduced in Poland for public entities in high education, it is obligatory to develop and implement strategy at the faculty and the university level. A special committee at this University started to work on strategy formulation and implementation in 2009. In 2010, the proposition of the strategy was accepted by the Senate (Borecki & Pietrzak, 2010). The actualized version was voted in 2013 (Pietrzak, 2013b). For this strategy, the BSC was used as a framework. In the proposed model some modifications were made to adjust it to the academic systems. The main modification was however to reduce the topsy-turvy logic of the perspective template. It was decided to choose Niven's (2008) concept with the elevated customer/stakeholder perspective with the financial perspective moved to the bottom and treated as an enabler. The mission was moved to the top as the ultimate definition of the success of the university. Figure 1 illustrates the logic of the "If-Then" reasoning used to tell the story expressing the strategy of the university. It also presents the main building blocks of the BSC framework and names of the perspectives.

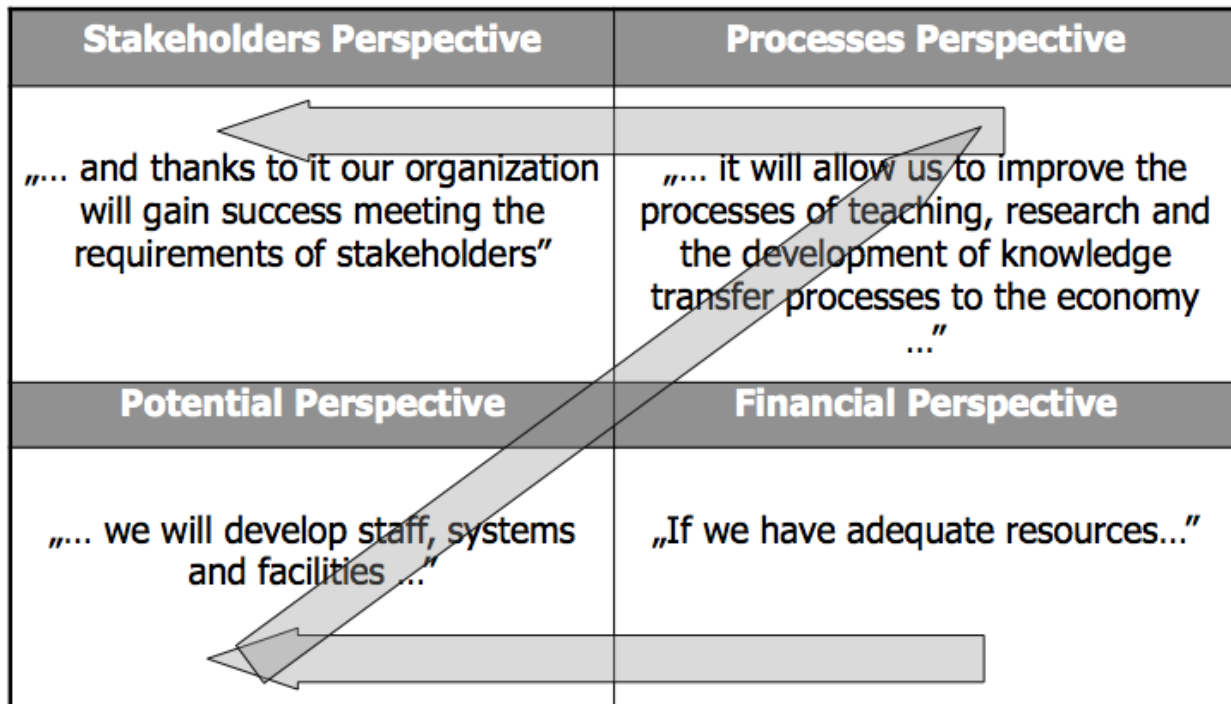


Figure 1. Modified framework of the BSC adjusted for the application in a University expressed in the form of “If-Then” reasoning – stylized on so-called “Theory Z”.

Source: own elaboration with application of idea of “Theory Z” (Olve, Roy & Werter, 2001).

Basing on the framework presented on figure 1, the strategic objectives of the University and the expected cause-and-effect relationships across them were established. The first strategy map covered 30 strategic goals. Those objectives were measured by 49 metrics (Borecki & Pietrzak, 2010). In the second map, developed after the actualization of the strategy, the number of objectives was reduced to 27, but the number of measures increased to 57, prompting the need to reduce the number of measures. Figure 2 presents an excerpt of the University strategy map. This form of strategy description is framed on the scheme of “Theory Z” (as shown in Figure 1).

Each of the objectives from the strategy map are measured by one or more measures. Such measurability allows to report actual performance and to monitor progress in strategy implementation (Figure 2). This creates the possibility of strategic hypotheses testing. As was mentioned above, the cause-and-effect linkages between strategic objectives from the strategy map could be seen as a set of hypotheses. Tracking the measures on the regular basis allows strategy testing expressed in the strategy map form and enables the process of double-loop strategic learning. As we can see in Figure 2, the strategy of the University seems to be workable and the assumed relationships are proper. The only exception is the “developing academic staff” strategic objective. There is not relevant progress observed in the two measures connected with this goal, thus delays may occur.

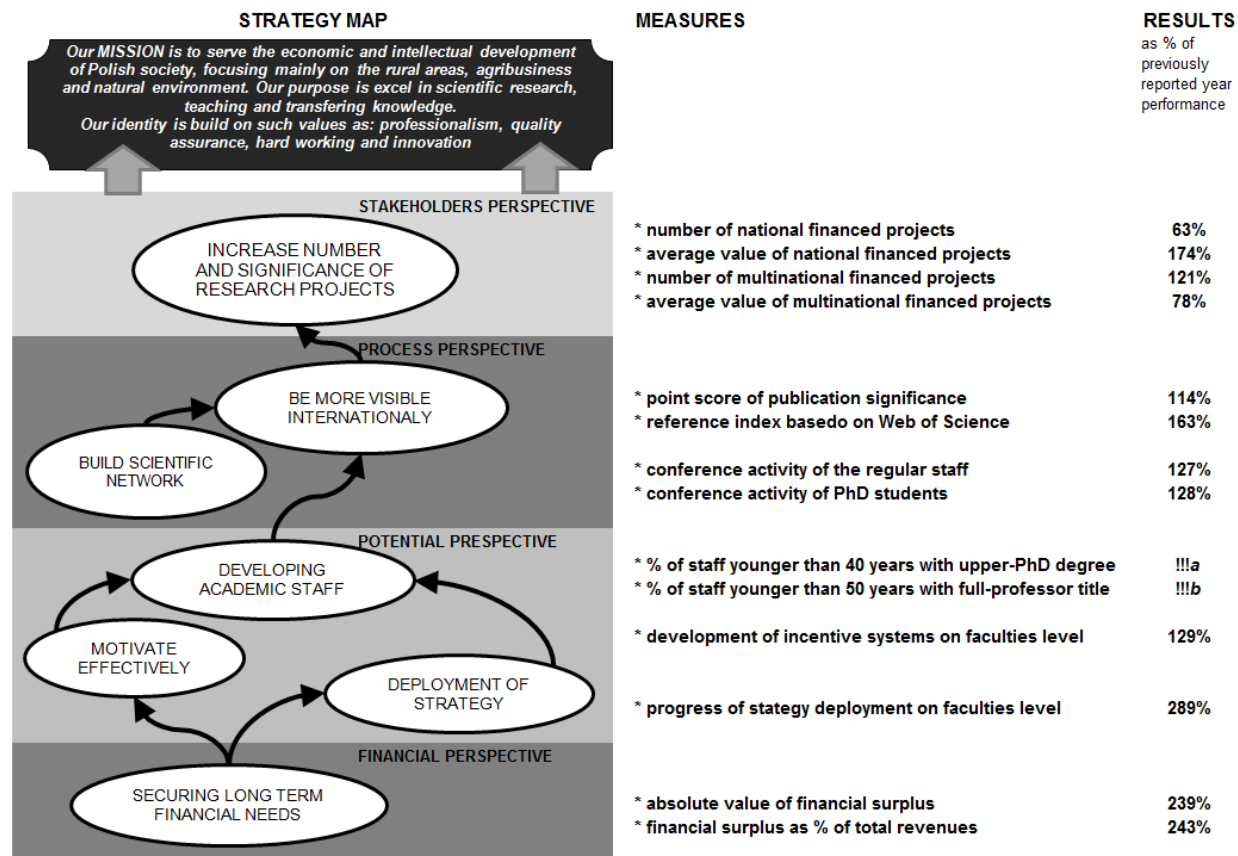


Figure 2. Excerpt of the strategy map, measures are the newest reported results of one Polish university.

a, b – the progress expressed as a percentage of previously reported year performance is high however the level of performance is very poor

Source: Own preparation based on University internal data.

IT support for reporting strategy

In 2014, the system to support reporting strategy in the described University was introduced. This implementation was financed by European Union Funds (project nr KSI – POKL.04.01.01 – 00-051/11 – 00). The main aim of this system was to monitor the strategic measures. The other objectives were:

- to acquire from the University the information needed to create the system of management,
- to acquire the information needed to create direction and development of University activities.

The system is helpful for the Rector and vice-Rectors, Rectors and Senate Commissions, Deans of Faculties, the people responsible for quality of teaching, Office of Science, and Office of Student Affairs.

People using the system have the possibility to:

- upload information from MS Excel or writing them directly into the system,
- modify measures,
- create analytical reports with different measures, which enables comparing the results in different years or between different University Faculties. The reports can be printed in pdf file or sent to excel file for further calculations.

There are three types of access to the system: for people who will upload the data, for people who will analyze the data, for people who can modify the measures.

Below, part of the system is presented. In this example, we would like to see the report for one of the measures – quality of results from secondary school certificate (I1M1). The next selections are as follows: the type of faculty (“Wydziały”), the type of the study (“Tryby”), the dates (“Lata”), name of the measure (“Mierniki”), level of the study (“Poziomy”), and semester (“Semestry”) (Fig.3).

Wydziały	<input type="text" value="Budownictwa i Inżynierii Środowiska"/> <input type="text" value="Inżynierii Produkcji"/> <input type="text" value="Leśny"/> <input type="text" value="Medycyny Weterynaryjnej"/>	Mierniki	<input type="text" value="I1M1"/> <input type="text" value="I1M2"/> <input type="text" value="I8M2"/> <input type="text" value="I8M3"/>
Tryby	<input type="text" value="stacjonarne (S)"/> <input type="text" value="niestacjonarne (N_Z)"/>	Poziomy	<input type="text" value="I stopnia"/> <input type="text" value="II stopnia"/>
Lata	<input type="text" value="2015/2016"/> <input type="text" value="2014/2015"/> <input type="text" value="2013/2014"/> <input type="text" value="2012/2013"/>	Semestry	<input type="text" value="zimowy"/> <input type="text" value="letni"/>

Figure 3. System supporting monitoring of University strategy – the reports.

At the next step, we can make the report from this data in pdf file or send them to excel. We can find information what was the value of the measure on the level of University; in this case 53,710 points, and we can analyze the data in division for faculties (Figure 4).

Faculty	Value measures
FACULTY OF CIVIL AND ENVIRONMENTAL ENGINEERING	60,502
FACULTY OF PRODUCTION ENGINEERING	55,844
FACULTY OF FORESTRY	53,747
FACULTY OF VETERINARY MEDICINE	74,365
FACULTY OF ECONOMIC SCIENCES	60,127
FACULTY OF ANIMAL SCIENCES	54,053
FACULTY OF HUMAN NUTRITION AND CONSUMER SCIENCES	55,170
FACULTY OF FOOD SCIENCES	15,987
FACULTY OF SOCIAL SCIENCES	46,692
FACULTY OF HORTICULTURE, BIOTECHNOLOGY AND LANDSCAPE ARCHITECTURE	54,712
FACULTY OF AGRICULTURE AND BIOLOGY	52,736
FACULTY OF WOOD TECHNOLOGY	49,561
FACULTY OF APPLIED INFORMATICS AND MATHEMATICS	60,365

Figure 4. System supporting monitoring of university strategy – report for IIM1 (Faculties)

Further, we can also analyze the data looking at main specializations of the study at every faculty. For example, at the Faculty of Economic Sciences there are five specializations that students can choose: Economics, Finance and Accountancy, Logistics, Tourism and Recreation, and Management. An example is presented in Figure 5.

Specializations	Value measures
Economy	60,294
Finance and Accounting	67,637
Logistics	63,280
Tourism and Recreation	50,856
Management	55,484

Figure 5. System supporting monitoring of university strategy – report for IIM1 (Specialization of one faculty).

The system is very simple and highly usable for finding the information needed for making decisions connected with managing the University. It does not need any special skills from people who will upload or analyze the data.

Conclusion

The public universities need organizational performance measurement systems that are tailored to and match their specific goals and characteristics. The proposed approach is a step towards introducing such systems. The main advantage of the proposed BSC model can be summed up as follows:

- Position in international rankings – A well designed and updated BSC model enables to understand the reasons of a specific positioning and improve the quality performance;
- The system can be adjusted to the changes in environment – BSC measures should be verified periodically and checked if the current set of indicators is still relevant to monitor the organizational performance;
- Measurement of intangible assets – in the academic field, this area can be critical.

Therefore, it is important to convince the decision-makers in the academic and non-academic departments of universities that such instruments are useful, whilst also clarifying their limitations. For example, Butler, Letza, and Neale (1997) considered its concept to be too general, pointing out that it might not fit into an organization's culture. Laitinen (2003) found the choice of the four basic dimensions problematic because the measures in practical applications appeared to connect loosely to each other and could not provide clues as to which organizational internal factors should be developed. Laitinen also noted that in its original form, the BSC might include non-critical perspectives and exclude critical perspectives.

The discussion presented in this article shows how previous studies have added significantly to the richness of the debate regarding the BSC and how to implement this model in practice. As also discussed, some researchers have pointed out the limitations of the BSC concept. This debate opens up some opportunities for future research.

A future study could investigate the influence of the BSC on individuals to behave in a manner that will contribute to the success within organizations. Also, it would be worthwhile to explore organizational members' views about the functioning of the BSC. Future research may examine how factors such as strategy, structure, and external environment determines the effectiveness of the BSC design. It could also identify contingent factors that have not been examined in the existing BSC research, and should be added to this model.

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Joanna Paliszkiewicz is a specialist in management issues connected with knowledge management, intellectual capital, and trust management. She holds the rank of University Professor of Warsaw University of Life Sciences and Polish-Japanese Institute of Computer Technologies. Prof. J. Paliszkiewicz is well recognized in Poland and abroad with her expertise in management issues. She has published over 137 original papers and 3 books. She serves on the editorial board for several international journals. She is the deputy editor-in-chief of Management and Production Engineering Review Journal. Prof. J. Paliszkiewicz has been awarded a number of grants sponsored by Polish Ministry of Sciences. In recognition of her outstanding teaching and research, Professor J. Paliszkiewicz has been the recipient of the two awards of excellence from the Rector of the Warsaw University of Life Sciences. Dr. Paliszkiewicz was named the 2013 Computer Educator of the Year by IACIS.

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