

Balanced Scorecard Framework for Evaluating the Entrepreneurial Potential of the University. Analyzing the Case of a Romanian University

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Abstract

Studies addressing the use of Balanced Scorecard for measuring the management performance generally focus on private organizations and less on non-profit organizations, particularly on universities. On the other hand, there is a great research interest in defining the entrepreneurial university dimensions. In this context, the objective of this study is to explore the evaluation of the entrepreneurial potential of the university using Balanced Scorecard, based on the understanding and development of the concept of entrepreneurial university.

Adopting the method of qualitative analysis and using primary data obtained from the university's official strategic planning documents, the study analyzes the entrepreneurial potential of the university using BSC as an evaluation tool.

The analysis is made at the “Alexandru Ioan Cuza” University of Iași level. This university located in Romania, together with other Romanian universities are taking the first steps towards becoming entrepreneurial by: introducing entrepreneurship courses, setting up student entrepreneurial societies, supporting competitions that stimulate entrepreneurship among students, creating technology transfer offices.

The results reflect the perspective of using BSC as a useful management instrument for evaluation and development of the entrepreneurial potential of university.

The study can contribute to a better understanding of using BSC as a management tool for evaluating entrepreneurial universities.

Keywords: Balanced Scorecard, Entrepreneurial university, Management performance

1. Introduction

Since its determination in 1992, BSC has evolved from concept to management tool and opened new perspectives on innovative leadership in performance creation, both for private, nonprofit and public organizations. The BSC framework is based on the fact that not only the financial perspectives are important to reflect the performance of the organization, but also to capture the connection between mission, vision and objectives that represent the foundation of the strategic management of the organization.

The aim of this paper is to explore the use of Balanced Scorecard to assess the entrepreneurial potential of the university, based on the perspectives of defining and understanding the concept of entrepreneurial university.

Burton Clark is among the first researchers who introduced the concept of entrepreneurial university. He uses the term entrepreneurial because he considers it more illustrative in terms of the effort of organizational change (Clark, 1998). The transformations at the university level are not accidental, says the same author, who considers the measures coming from the central level of higher education administration to be obtuse. Also the measures planned within the organization, but which are supported only by small groups among their members, are considered ineffective. Collective entrepreneurial action at all levels of the organization is at the heart of the “transformation phenomenon” (Clark, 1998).

Clark lists five defining elements of the university's path to entrepreneurial transformation: a “strengthened steering core” that reconciles managerial and academic values, an “expanded developmental periphery”, a “diversified funding base”, a “stimulated academic heartland” and an “integrated entrepreneurial culture”.

The organizational transformation of universities to the entrepreneurial archetype is a result of pressure from external factors (political, economic, social, environmental, etc.) and the current global context caused by the coronavirus crisis, further demonstrates the need to adapt and connect these organizations to the real world. A brief list of the circumstances that may lead to the transformation to an entrepreneurial university includes the following:

- Financial circumstances determine the first set of changes in the reconfiguration of these organizations. The reduction in funding for students received by public universities from the government has led universities to look for new sources of income. Rethinking income sources has also led to a change in the structure of courses, as noted by (Marginson, 2002), many courses in the fields of art, humanities and social sciences being transformed into branches of business economics. The origins of what Marginson calls "Enterprise Business" lie in the past, being a neo-liberal response to the New Left movement, which culminated in Europe with student riots in France in 1968. Proclaiming participatory democracy for universities will change the traditional education system and the shaping of a new power

structure at the level of universities, respectively the executive structures.

- External circumstances related to the role of education and research on the economic and social environment, determine new changes, such as creating structures that facilitate technology transfer and creating structures that allow and encourage the marketing of research results.

Thus, we considered that the entrepreneurial transformation pursued at the university level is the element of strategic development that can be approached using BSC. Using the method of document analysis and comparison, BSC is analyzed as a tool for assessing the entrepreneurial potential of the university. The BSC can reveal a new perspective on approaching the development of an entrepreneurial university. Based on the analysis of the literature, the presumed hypothesis is that BSC can be used to assess the entrepreneurial potential of the university.

The work continues as follows: Section 2 presents, on the one hand, the literature studied to identify the perspectives from which the entrepreneurial university can be analyzed in order to assess its potential and on the other hand, to determine the characteristics of BSC in education. Section 3 describes the methods used to conduct the research in this paper. Section 4 presents the representative results of the research, their interpretation and their significant discussions for the objective of the paper. Section 5 highlights the conclusions of the study and shows the ideas on which further research will focus.

2. Literature Review

2.1 The Concept of Entrepreneurial University

Starting with Burton Clark, who added the “entrepreneurial” attribute to the university for the first time (Clark, 1998), the promoters of the concept of entrepreneurial university were looking for defining elements specific for this type of organization. It carries out entrepreneurial activities both for its own advantages, but also to contribute to regional and national development (Etzkowitz, L., Leydesdorff, L., 2000), produces knowledge but also disseminates knowledge to the economy and society (Guerrero, M., Urbano, D., 2012), resists the competitive environment, by adapting their own strategies and through the development of the relations between education and research (Kirby, 2006).

“Embryonic” elements of the entrepreneurial university can be identified in any academic organization (Etzkowitz, 2013). Institutional transformation does not only focus on intensifying the activity of marketing the results but also involves the harmonious combination of strategic objectives aimed at both capitalizing on research results and personal development of researchers and in overall available human resources existing in organization. Etzkowitz (Etzkowitz, 2013) considers that there are three stages in the evolution towards an entrepreneurial university, as follows:

- The initial phase (“University Entrepreneur One”) in which the university adopts its own strategic vision and sets priorities on resources;
- The secondary phase (“University Entrepreneur Two”) in which the university assumes an

active role in commercializing the research results and establishes its technology transfer capacity;

- Tertiary phase (“University Entrepreneur Three”) in which the university expands its collaboration with the economic environment and the government, through active involvement in the regional innovation ecosystem.

Yusof, M., & Jain, K. (2010) studied and selected from 1989-2006 the literature dealing with three categories of research in which the concepts were frequently used, sometimes interchangeably, namely “entrepreneurial university”, “academic entrepreneurship” and “technology transfer” at university level. The research revealed a much greater interest in technology transfer compared to the other two categories. This topic was studied both from the perspective of the impact of technology transfer, commercialization of research through patenting and licensing but also through the attention paid to individual researchers, the institutional context that includes science parks and incubators and the organizational context that determines technology transfer at universities. (Yusof, M., Jain, K., 2010). The study aimed to identify a framework that illustrates the relationships between the entrepreneurial level of the university, industry and the external environment.

After studying the literature and based on the defining elements of Clark's entrepreneurial university (Clark, 1998), we propose the following model of conceptual analysis, for exploring and evaluating the entrepreneurial university.

Table 1. Model of conceptual analysis for exploring and evaluating of the entrepreneurial university

Perspective	Elements of analysis
Institutional	Organization
	Promoting, recognition
Knowledge and innovation	Entrepreneurial culture
	Stimulating academic activity
	Influence on the regional economy
Management strategic	Mission, Vision
	Diversified funding sources
	Internationalization
	Regional, national networking

The above model proposes both the investigation of formal factors (mission, vision, sources of funding, organization, internationalization, regional and national networking) and informal factors (entrepreneurial culture, promotion and recognition of academia, stimulating academic activity).

The following indicators can be used to assess these factors (for each of the three perspectives analyzed):

Institutional perspective:

- Organization: number of hierarchical levels, number of departments;
- Promotion, recognition: motivation system

Knowledge and innovation perspective:

- Entrepreneurial culture: number of programs / courses for entrepreneurial education;
- Stimulation of academic activity: number of centers of excellence, volume of research funding;
- Influence on the regional economy: number of contracts / collaborations with the private economic environment, technology transfer infrastructure.

Strategic management perspective:

- Mission, Vision: statement on entrepreneurial orientation;
- Diversification of financing sources: volume of financing from public sources and from own revenues;
- Internationalization: number of study / practice / research mobility, number of foreign students, number of study programs in foreign languages;
- Regional, national networking: number of partnerships with public institutions / institutions and private companies, number of participation in research networks, number of participation in entrepreneurship networks, clusters.

2.2 Balanced Scorecard Frame in Education

In the early 1990s, Kaplan & Norton developed BSC, a tool for evaluating the performance of a company through four main perspectives (Kaplan, Norton, 1992).:

- a. financial perspective (how an organization manages financial resources);
- b. customer perspective (how customers perceive an organization);
- c. the internal business environment (what an organization should excel at);
- d. organizational learning or development (the way in which an organization continues to improve and create value.

This model allows a holistic and integrated vision of a company's activity. Each perspective has assigned indicators and dependency relationships. The four perspectives provide a balance between objectives, results and determinants in achieving the objectives.

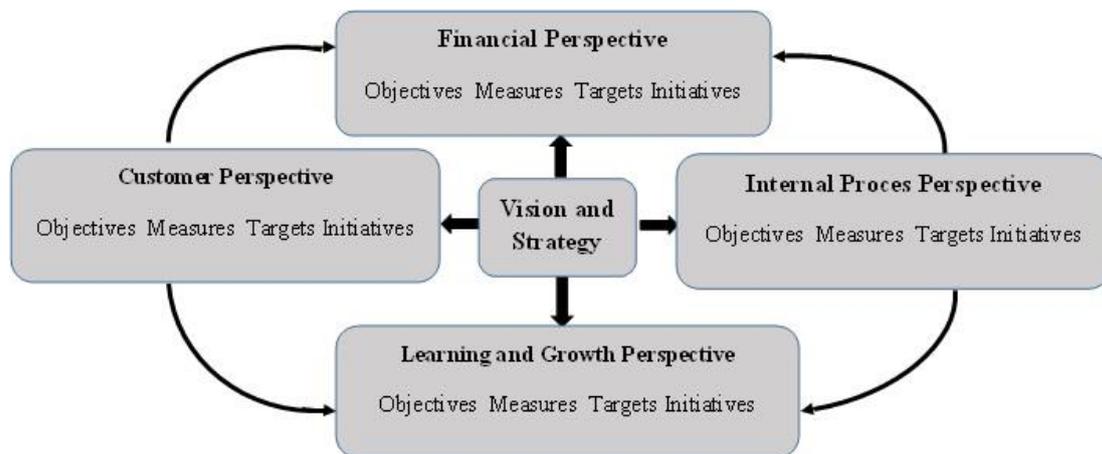


Figure 1. The Four Perspectives of BSC

Source: (Kaplan, 2010), pp.4

There is an opinion that the use of BSC would be more appropriate for profit-oriented organizations than for those in academia (Yu, M.L., Hamid, S., Ijab, M.T., Soo, H.P., 2009). Although there are universities that use this management tool in the U.S. (University of California, Richmond Public School) and in Australia (Bond University, St Paul’s School Brisbane), the literature is not very rich on the analysis of the use of BSC in the management process in universities. Some of the first arguments for the use of this tool in academia were supported by O’Neil et al. (1999), motivated by the fact that higher education institutions are increasingly responsible for the services they provide (Lira, A., M., Naas, I., A., 2015).

BSC aims through key strategic elements of performance indicators to ensure that the organization meets the strategic objectives. Related to this, there are pros and cons of using a performance management system in universities, given the difficulties of estimating performance indicators and formulating statements on the mission and vision of the organization (Nistor, 2010). Universities through their structure have a slow response mechanism to the potential constraints imposed by a high-performance management system. The factors that determine this reaction are identified by (Granof, M.H., Platt, D.E. Vaysman, I., 2000) in a study dedicated to the analysis of the introduction of the ABC method (Activity Based Costs) in US universities. Among these factors are the following:

- University professors are associated with “free spirits” who choose university careers to avoid organizations with authoritarian structures. They pursue the scientific purpose, the costs associated with the research not being an important aspect for their activity;
- Faculty administrators are not invested with the authority of managers to decide on the appropriateness of expenses;
- Universities use fund accounting systems designed primarily for legal compliance, rather than providing the information needed for effective management;

- Universities do not have well-defined objectives.

In a study on the perception of Romanian universities regarding the use of the BSC tool, (Nistor, 2009) identifies university-specific indicators that can be included in each of the model perspectives. Thus, from a financial perspective, these indicators refer to increased revenues, reduced costs, use of assets. From the perspective of internal processes, the proposed indicators refer to the number of new services, publications, products available; the time required for the development of a new service, publication, product; the percentage of books / materials / publications requested by students and provided from the book fund held; the number of hours required for the training of academic and administrative staff; the number of attendances or absences made by academic and administrative staff. The perspective of learning / innovation and development can be analyzed by: the professional degree of the academic and administrative staff; the process of implementing staff suggestions; ease of use of the information system; the number of published research papers; the number of grants approved. From the customers' perspective, the analysis can be done through market share; customer satisfaction (students); number of students; customer (student) income; the time required for customer satisfaction (students).

Also, the argument addressing approaching the entrepreneurial spirit at university level is relevant for the present study, namely that the study concludes, among other things, the importance of the impact of this management tool on the entrepreneurial profile of the university.

A search in Web of Science using the phrase "Balanced Scorecard in the Context of Higher Education Institutions" indicated 12 articles on this topic, in the period 2012-2019. Al-Hosaini and Sofian make a more comprehensive analysis of the literature on this topic and make an inventory of the application of BSC in the context of universities, the reference period of the articles being between 2009-2015 (Al-Hosaini, F., F., Sofian, S., 2015). In "A Review of the Balanced Scorecard Framework in Higher Education Institution (HEIs)", they present an analysis of how different organizations, public and private, use this tool from different perspectives. Thus, the four conventional perspectives are enriched with elements such as community participation, innovation, strategic partnership, research excellence.

In the table below we have summarized the main connections between the perspectives of the BSC model / tool and the perspectives of the entrepreneurial university, information resulting from the investigation of the more recent articles mentioned above, from the Web of Science.

Table 2. Balanced Scorecard in the perspective of the entrepreneurial university

Nr.crt.	Author	BSC Perspective	Entrepreneurial University Perspective
1.	(Rahimnia, F., Kargozar, N., 2016)	Using a strategic map to formulate the strategic objectives of the university	Attracting additional financial resources Commercialization of research results Creating an efficient management system
2.	(Lira, A.M., Naas,I.,A., 2015)	BSC application by using performance indicators	Institutional Management Activities for the community
3.	(Abdullah, N.,A., Rahman, S.,A., 2011)	Using BSC to formulate a strategy	Innovation, Networking
4.	(Manville, G., Karakas, F., Polkinghorne, M., Petford, N., 2019)	Using BSC to evaluate collaborative research projects in open innovation strategies; knowledge transfer	Innovation, Knowledge transfer
5.	(Mohd Ali, H., Ayodele, L.A., Ibrahim, M.B., 2019)	The implementation of public quality policies in the management of organizations together with the application of BSC directly and significantly influences the sustainability of higher education institutions	Organizational climate
6.	(Breus, S., V., Khaustova,Y., B., Denysenko, M.,P., 2017)	The use of BSC from the perspective of ensuring the financial security of the university	The financial perspective, attracting resources
7.	(Pastrana, R., Manabat, A., 2014)	Using BSC with Deming PDCA Cycle and QMS, Baldrige Framework - Education Criteria for Performance Excellence (MBNQA, 2010) to reformulate public education policies	Strategic Management

3. Methodology

The studied literature led to the formulation of the following ideas:

a). The capacity of the university to generate an entrepreneurial process can be analyzed

using Balanced Scorecard frame, by correlating the four perspectives of the analysis with the perspectives of the concept of entrepreneurial university (defined in Table 1 of this study); this stage represents the projection of the concept of “entrepreneurial potential” at the level of the organization;

b) Using the BSC Kaplan & Norton model and the conceptual elements related to the entrepreneurial university, respectively by correlating the four perspectives of the BSC analysis with the perspectives of the entrepreneurial university concept, we identified a relevant framework content for the entrepreneurial university.

Specifically, we compared the perspectives of the two reference concepts from which we started the research, BSC frame and the entrepreneurial university, respectively, on the example of the “Alexandru Ioan Cuza” University of Iași, Romania. To define the objectives and measures we used the existing information in the strategic documents of this organization, respectively the Strategic Plan for Institutional Development 2016-2020.

"Alexandru Ioan Cuza" University of Iași is a university included in the category of universities of education and advanced research, according to Romanian legislation. Together with other Romanian universities is taking the first steps towards becoming entrepreneurial by: introducing entrepreneurship courses, setting up student entrepreneurial societies, supporting competitions that stimulate entrepreneurship among students. More recently, a technology transfer office was created in 2019, aiming at valorizing the research results and bringing the research development to market.

In this context we can appreciate that there are elements characteristic of an emerging entrepreneurial university. The steps in assuming this status involve transformations in redefining the organization's strategy, an exercise we proceed using BSC frame.

The new mission and vision will state the entrepreneurial role.

Table 3. BSC Perspectives for the Entrepreneurial University

I. Financial perspective			
Objectives	Measures	Targets	Indicators
I. 1. Diversification of funding sources [Alternative funding sources]*	Funding from public sources (grants for research projects, other projects)	Increase	Revenues from public funds
	Funding from other sources (own revenues) Commercial contracts with public and private organizations	Increase	Own revenues
	Valorization of the research results	Monitoring	Patent applications / Patents

*Action included in the “Alexandru Ioan Cuza” University of Iași 2020 Operational Plan
Source:http://www.uaic.ro/wp-content/uploads/2020/01/PO_UAIC_2020-din-28.11.2019.pdf

II. Clients			
Objectives	Measures	Targets	Indicators
II.1. Stimulation of academic activity [Student-centered education]*	Development of centers of excellence	Increase	Annual funding centers of excellence
	[Correlation of bachelor's and master's degree programs with the needs of the business environment]♦	Diversification	Annual funding
	[Completion offer study programs with vocational training]♦	Diversification	Curriculums
II.2. Internationalisation [International mobility]*	[Increasing the number of research projects carried out in partnership with other universities / research centers abroad]♦	Increase	Number of study / practice / research mobility
3. National and regional Networking [Cooperation with the economic and social environment]*	[Preparation of an investment project for the creation of an innovation and transfer center capable of ensuring the use of the results of the research activity in the economic environment]♦	Development	Innovation and technology transfer methods

*Action/Measure ♦ included in the “Alexandru Ioan Cuza” University of Iași 2020 Operational Plan

Source: http://www.uaic.ro/wp-content/uploads/2020/01/PO_UAIC_2020-din-28.11.2019.pdf

III. Internal perspective			
Objectives	Measures	Targets	Indicators
III.1. Adapting of the organizational structure	[Ongoing evaluation of the achievement of operational objectives and adjustment of strategies to achieve them]♦	Monitoring	Number of researcher positions Number of students enrolled in entrepreneurship courses Number of infrastructures created to support entrepreneurship (student entrepreneurial society, business incubators for students)

*Action/Measure ♦ included in the “Alexandru Ioan Cuza” University of Iași 2020 Operational Plan

Source: http://www.uaic.ro/wp-content/uploads/2020/01/PO_UAIC_2020-din-28.11.2019.pdf

IV. Learning and Innovation / Development			
Objectives	Measures	Targets	Indicators
IV.1. Promoting and recognition	[Promoting the image of the university] ♦	Increasing	Positioning the university in international rankings
IV.2. Research*	[Development of facilities for technology transfer] ♦	Increasing	Number of technology transfer infrastructures Number of patents Number of patents transferred to the business environment
	[Strengthening international recognition for quality research] ♦	Increasing	Positioning the university in international rankings

*Action/Measure ♦ included in the “Alexandru Ioan Cuza” University of Iași 2020 Operational Plan

Source: http://www.uaic.ro/wp-content/uploads/2020/01/PO_UAIC_2020-din-28.11.2019.pdf

Using the “Alexandru Ioan Cuza “University of Iași Strategy Implementation Plan for 2020, we introduce some actions, indicators and 2020 targets related to achievements from previous year and then embed them in the BSC frame (see Table 4).

Table 4. Overview of the BSC perspectives for 2020

I. Overview of the financial perspective’s objectives			
Objective	Actions	Indicators	2020/2019
Alternative funding sources	On time elaboration of the budgetary projections and of annual budgetary reports; Maintaining/increasing of the revenues from other sources (tax, non-reimbursable funds, own revenues)	Balance sheet for 2019; Budget surplus compared with 2019.	111% increase of own revenues
II. Overview of the Clients perspective’s objectives			
Objective	Actions	Indicators	2020/2019
Student-centered education	Correlation of bachelor's and master's degree programs with the needs of the business environment;	Analysis of admission and graduates from the last 5 years; Labor market analysis	118% Increase of budgetary allocation/stu

	<p>Organization of meetings between university representatives, employers, students and professors;</p> <p>Reviewing curricula so that they have specific references to quality of educational services;</p> <p>Evaluating the quality of the teaching process from the students' perspective.</p>	<p>study;</p> <p>List of training needs of employers and graduates;</p> <p>Minimum 2 meetings with employers;</p> <p>Revised curricula;</p> <p>Report analyzing the results from student feedback;</p> <p>Minimum 25 partnership agreements with companies on the labor market</p>	<p>dent</p> <p>100% Revised curricula</p>
International mobility	<p>organization of Staff Training Week within Erasmus programs;</p> <p>Offering study / practice / training / teaching internships to members of the academic community by continuing ERASMUS programs and existing partnerships</p> <p>organization of ERASMUS + welcome days, event dedicated to international students;</p> <p>Accreditation of new specializations with teaching in international languages;</p>	<p>Minimum 2 new programs in foreign languages initiated for accreditation;</p> <p>30 participants in international staff mobilities;</p> <p>New partnership agreements with universities in Europe and other continents;</p> <p>50 international participants in JASSY 2020 International Summer School;</p> <p>250 international students participating in the Welcome Days;</p> <p>700 Erasmus + internships for foreign students</p>	<p>100% increase of international mobility</p>
Cooperation with the economic and social environment	<p>Continuous dialogue with members of the academic community, of the local community, important actors on the labor market, with the alumni community and with future students</p>	<p>At least 25 new partnerships;</p> <p>1 caravan and visit of at least 100 high schools;</p> <p>15 applied research projects</p> <p>500 internships;</p> <p>30 thematic fairs.</p>	<p>115% increase of revenues from contracts with busines</p> <p>100% increase of cooperation activities</p>

III. Overview of Internal Perspective			
Objectives	Actions	Indicators	2020/2019
Adapting of the organizational structure	<p>Specific action for implementation of internal management control standards</p> <p>Risk evaluation and developing measures to mitigate their effects</p> <p>Inventory and analysis of internal regulations</p> <p>Inventory and analysis of procedures</p>	<p>Risk register</p> <p>Map of Procedures for 2020</p> <p>Virtual space of common procedures for faculties and administrative services</p>	100% in place procedures
IV. Overview of Learning and Innovation / Development			
Objectives	Actions	Indicators	2020/ 2019
Promoting and recognition	<p>Promoting the image of the university through participation of academic community members at scientific events</p> <p>stimulating the publication of scientific research results, especially in renowned ISI publications in the field</p>	<p>1000 of published articles;</p> <p>400 books and book chapters published;</p> <p>200 research project proposals submitted in national and international competitions;</p> <p>Award-winning articles.</p>	100% increase of published articles, books and book chapters published
Research	<p>Development of facilities for technology transfer through: raising researchers' awareness on intellectual property rights, information sessions regarding technology transfer and cooperation with the business environment, dissemination of research results</p>	<p>Development of "PrivateSky" technology transfer Center</p>	100% operational
	<p>Strengthening international recognition for quality research through: informing the faculties about the QS, THE, RankPro Academic Ranking; data collection and provision, analysis of indicators</p>	<p>Positioning the university in international rankings</p>	Improving the positioning in national and international ranking

4. Results

The four perspectives of the BSC (Financial Perspective, Clients, Internal Perspective, Learning and Innovation / Development) provide an analysis framework in which we can transfer the objectives of an entrepreneurial university (Diversification of funding sources, Stimulation of academic activity, Internationalization, National and regional networking, Adaptation of the organizational structure, Promotion and recognition, Research), as reflected in the graphic representation below (fig.nr.2).

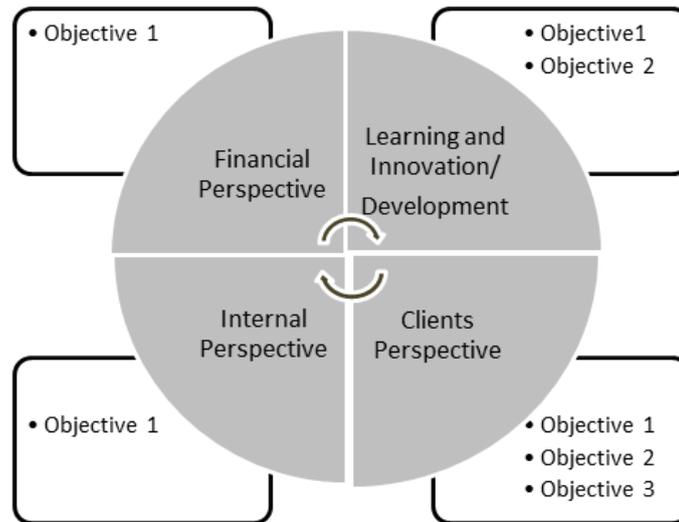


Figure 2. Representation of BSC frame for University (based on the institutional plan of “Alexandru Ioan Cuza” University of Iași, 2020)

Some of the proposed objectives can be identified in the “Alexandru Ioan Cuza” University of Iași 2020 Operational Plan. Also, in this Plan there are measures for achieving them and indicators able to measure the progress. The role of BSC frame is to offer another perspective for strategic management actions oriented to an entrepreneurial path.

5. Conclusion

The new vision and value system of the university in the context of the cultural change in academic environment but also influenced by economic and political factors, must be translated in well-defined institutional objectives. In order to achieve the entrepreneurial transformation of the university, the study found that Balanced Scorecard can be a useful management tool to assess and develop the entrepreneurial potential of the organization.

The conventional perspectives of the Kaplan & Norton model are amplified by correlating them with the perspectives of the entrepreneurial university (institutional perspective, knowledge and innovation perspective, strategic management). In Romania, Balanced Scorecard is not a model used in formulating strategies at university level. This study proposes the use of BSC as a tool to monitor the university's transition to become more entrepreneurial. Thus, it is essential to formulate a convergent mission and vision to fulfill

this role. Further study will aim to improving the design of BSC architecture for enhancing its ability to reflect the entrepreneurial transformation of the university.

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