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EVALUATION OF START-UPS AND SPIN-OFFS BY USING ECONOMIC OR NON-ECONOMIC VARIABLES

The article shows that suitable measurement of start-up and spin-off firms as a form of feedback could help improve the services provided by business incubators. The aim of this paper is to propose a new approach to start-up firms' measurement combining economic and non-economic objectives. The performed analysis under BLUES methodology was carried on the example of a Czech start-up.

Keyword: *start-up; performance measurement; economic and non-economic indicators; business incubators.*

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ОЦІНЮВАННЯ СТАРТАПІВ ТА СПІН-ОФФІВ ЗА ДОПОМОГОЮ ЕКОНОМІЧНИХ ТА ПОЗАЕКОНОМІЧНИХ ПОКАЗНИКІВ

У статті доведено, що адекватне вимірювання діяльності стартапів та спін-оффів як форма зворотнього зв'язку може сприяти підвищенню якості роботи бізнес-інкубаторів. Запропоновано новий підхід до оцінювання фірм-стартапів, що об'єднує в собі економічні та позаекономічні показники. На прикладі одного чеського стартапу продемонстровано використання методології BLUES.

Ключові слова: *стартап; оцінка діяльності; економічні та позаекономічні показники; бізнес-інкубатор.*

Табл. 7. Літ. 16.

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ОЦЕНКА СТАРТАПОВ И СПИН-ОФФОВ ПРИ ПОМОЩИ ЭКОНОМИЧЕСКИХ И НЕЭКОНОМИЧЕСКИХ ПОКАЗАТЕЛЕЙ

В статье доказано, что адекватное измерение деятельности стартапов и спин-оффов как форма обратной связи может способствовать повышению качества работы бизнес-инкубаторов. Предложен новый подход к оценке деятельности фирм-стартапов, которые сочетает в себе экономические и неэкономические показатели. На примере одного чешского стартапа продемонстрировано использование методологии BLUES.

Ключевые слова: *стартап; оценка деятельности; экономические и неэкономические показатели; бизнес-инкубатор.*

Introduction. Spin-off and start-up firms contribute to the transfer of new findings and innovative solutions for new business ventures. Activity in the establishment of start-ups and spin-offs in Czech Republic is very low in comparison with the USA and Israel (Senor, 2011). Incubator and science parks are important policy tools to support start-ups evaluated as the most promising, including also spin-offs (O'shea et al., 2005; Link and Scott, 2003, 2006, 2007). However in Czech Republic there is no institution monitoring the number of start-ups and spin-offs and neither is there a tool for performance evaluation of such business entities.

The existing methodologies are focused mainly on viability evaluation of start-ups and spin-offs or on the evaluation of provided services and processes in business incubators with the use of non-economic variables. Currently in Czech Republic

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BLUES methodology has been used for evaluation of start-ups and spin-offs and EBN marks have been used recently for business incubators evaluation. Success of an examined business entity is not based on economic parameters, but on effective functioning measured by product quality, the ability to innovate, the art of utilizing employees skills etc. Less attention is paid to economic criteria, assessing the development of economic variables. The aim of the paper is on the basis of the assessment of BLUES methodology created for measurement of start-up firms' performance to propose a new approach to start-ups firms' measurement combining both economic and non-economic objectives.

Literature review. New businesses are an important source of economic growth (Fritsch, 2013). The growth since 1980 in the number of US business incubators suggests that it was desirable to try to help "weak-but-promising" firms avoid failure by incubating them (Hackett and Dilts, 2004a, 2004b). The incubator model is frequently developed within a science park, in which an incubator is an important cornerstone. The question whether business incubators are really effective in supporting young firms is still without an agreed answer (Rowe, 2002). In general, the growth in science parks has fostered an academic debate concerning whether such initiatives directly enhance the performance of corporations, universities and economic regions over time (Link and Scott, 2007). Start-ups and spin-offs represent highly innovative small and medium-sized enterprises which lack capital but are expected to generate high profits after overcoming the initial barriers (Polacek and Antl, 2006; Wessner, 2009; Kislingerova, 2011; Kuratko, 2011). On the basis of the research realized in 2012 (Peterkova et al., 2014), the key characteristics of start-ups and spin-off in Czech Republic were determined.

Start-ups are mainly small and medium enterprises in the field of IT, the owner is usually a natural person who accepts the related high business risks; the average incubation period is 36 months. Start-ups bring innovative solutions, use own financial resources and money from gained projects, while resources from foreign investors have not been used very often. The research showed that spin-offs are also small and medium enterprises doing business with the lack of capital and are expected to generate high profit, the owner is university or individual subject, level of risk is high and the main idea is bringing new innovative solutions. Financial resources come from university or from various projects (Peterkova and Wozniakova, 2015), see Table 1.

Starting and running start-ups and spin-offs in the first several months is very difficult and it is necessary to support such business entities by innovation institutions. Business incubators play an important role in supporting young firms by providing the required background such as discounted rent, consulting in doing business etc.

The realized earlier research (Peterkova and Wozniakova, 2014) showed that the biggest group of incubators (44%) maintained activity from 4 to 6 years; while the second biggest group (33%) provided their services for more than 6 years. Only 23% of all monitored incubators existed for 3 or less years. Incubators are primarily established by universities and together with towns. It is necessary to note that there is no institution in the country reporting on the real number of business incubators. The largest number of start-ups and spin-offs are businesses related to information technologies (IT), programming and other IT services such as creation of web portals, web hosting etc.

Table 1. **Start-up and spin-off characteristics** (Peterkova and Wozniakova, 2015)

Criteria	Start-up characteristics	Spin-off characteristics
Scope of business	Mainly IT and the related activities	According to the realized survey it cannot be determined conclusively
Firm size	Small and medium	Small and medium
Character of entrepreneurship	Doing business with the lack of capital and expecting high profit after overcoming the initial barriers	Doing business with the lack of capital and expecting high profit after overcoming the initial barriers
Owner	Individual (private person)	University, individual
Level of business-related risk	High	High
Length of incubation period	Max 36 months	Max 36 months
Idea	Very innovative firm bringing a new innovative solution	Very innovative firm bringing a new innovative solution
Financing	Using own financial resources and money from the gained projects. Money from foreign investors (business angels, private equity etc.) is not used very often	Using money from university and from various projects

Problem statement and research objective. Currently in Czech Republic the BLUES methodology and EBN quality mark have been used for evaluation of start-ups and spin-offs and some business incubators. The BLUES (Bussiness Leadership & Startup Evaluator) methodology for evaluation of start-ups was developed by the South Moravian Innovation Centre. It is a simple and repeatable methodology for evaluation of start-ups that can be used as a basis for creation of their annual development plan and assessment of their viability by investors or other interested parties.

The output of BLUES methodology provides the opportunity to compare company's ratings to the optimal points and to monitor the development over time within the firm or as compared to other firms in the database by the selected criteria. BLUES model adopts the system of evaluation criteria from EFQM Excellence Model. This methodology evaluated firms in 7 areas: product, customers, finance, information, processes, people and motivation (Table 2).

Each area is divided according to evaluation criterion, which have their scores. The maximum number of points that a firm can get for each criterion is multiplied by the weighting criteria for the entire model. The BLUES application provided the following results. Each firm obtained final points which are the result of firm's comparison with the maximum determined result and the second number results from a firm's comparison with other firms already listed in the database.

The other way of evaluating the results of start-ups and spin-offs represents EBN quality mark. It offers another possible way for evaluation. Quality system here is based on TQM (Total Quality Management) approach (EFQM model) using self-assessment, benchmarking reports. EBN is a network of 160+ quality-certified EU|BICs (business and innovation centres, incubators, accelerators and other support organizations) and 100 Associate Members that support the development and

growth of innovative entrepreneurs, start-ups and SMEs. EBN offers a quality & benchmarking system for incubators & accelerators recognized by the EU, and other international institutions such as ESA, UNDP etc. EBN carries out the evaluation of the structure, services and performance – both qualitative and quantitative in order to determine organization's compliance with the EU|BICs quality mark. The criteria that must be met to be awarded the EU|BIC label are grouped under headings: 1) Mission; 2) Organization; 3) Services to Innovative Individual Entrepreneurs/ Start-up Enterprises and SMEs; 4) Activity Measurement and Evaluation; 5) Quality.

Table 2. **Evaluation of firms' ability to survive** (South Moravian Innovation Centre)

Area	Criterion	Prioritized areas with regard to the development phase of a company
Product	1. Owner's ability to make a product. 2. Feasibility of product's concept.	The area necessary for company establishment
Customers	3. Knowledge of customers' needs. 4. Winning customers.	
Finance	5. Sufficient cash for entrepreneurship. 6. Sufficient cash for individual need. 7. Practicable plan of costs and revenues. 8. Practicable plan of cash flow. 9. Knowledge and calculation of break-even point. 10. Prices and cost calculations.	Areas essential for preservation of the company
Information	11. Information network of partners. 12. Strategic planning (business plan).	
People	13. Insuring personal support of the family. 14. Selection and recruitment of employees. 15. Motivation and fluctuation of employees. 16. The ability to delegate.	The area necessary for company's development
Processes	17. Process and control mechanisms. 18. Level of ICT use. 19. Capacity planning.	
Motivation	20. Owner's motivation.	

Key results in the field of evaluation of the chosen start-up firm. BLUES was applied at a start-up firm Projektove.cz located in a business incubator in Czech Republic. According to the classification CZ-NACE firm Projektove.cz is listed in J – Information and communication. The length of existence of this start-up is two years, it employs from 3 to 5 employees. BLUES was implemented via a personal interview with a firm's executive. Personal interview was based on the questionnaire which contained 20 questions. Each question had 5 possible answers. Evaluation was structured in 7 areas: product, customers, finance, information, people, processes and motivation. The results for each area are evaluated on the basis of given criterion and have various meanings for evaluation of start-up's viability (Table 1).

1. Results of using BLUES methodology – comparison with the maximum. The chosen start-up was evaluated as compared to the maximum available results and also compared to the sample of 40 firms from the same section of economic activities in the database. Start-up Projektove.cz earned 239 points from maximal possible 300 points which means 79.7% of the maximal results (Table 3).

Table 3. **Evaluation of Projektove.cz performance as compared to the maximum,** *authors' own investigation using BLUES methodology*

Area	Criterion	Maximum number of points	Reached number of points	Deviation from the maximum	Share of points reached by the company on the maximum possible number of points, %
Product	1. Owner's ability to make a product	35	28	-7	80
	2. Feasibility of product's concept	15	12	-3	80
Customers	3. Knowledge of customers' needs	15	9	-6	60
	4. Winning customers	35	28	-7	80
Finance	5. Sufficient cash for entrepreneurship	35	35	0	100
	6. Sufficient cash for individual needs	15	12	-3	80
	7. Practicable plan of costs and revenues	10	6	-4	60
	8. Practicable plan of cash flow	10	6	-4	60
	9. Knowledge and calculation of the break-even point	5	5	0	100
	10. Prices and cost calculations	5	3	-2	60
Information	11. Information network of partners	20	12	-8	60
	12. Strategic planning (business plan)	10	6	-4	60
People	13. Support of the family	15	15	0	100
	14. Selection and recruitment of employees	10	6	-4	60
	15. Motivation and fluctuation of employees	10	6	-4	60
	16. The ability to delegate	5	3	-2	60
Processes	17. Process and control mechanisms	5	4	-1	80
	18. Level of ICT use	15	15	0	100
	19. Capacity planning	10	8	-2	80
Motivation	20. Owner's motivation	20	20	0	100
Overall evaluation		300	239	-61	80

It follows that the start-up Projektove.cz is a less successful firm, especially in the areas of Customers and Information, followed by People, Finance and Product. On the other hand, processes are a less problematic area.

The owner of Projektove.cz uses the calculation of break-even point, has enough cash for his entrepreneurship and uses ICT to the highest extend. He also has strong motivation to run business and strong support from his family. Information network of partners, owner's ability to make a product, winning customers are the areas that were determined as weaknesses of this start-up. The BLUES methodology provided also the list of strengths and weaknesses of the start-up Prokejtove.cz. In comparison with the selected sample Projektove.cz reached more points than the average number in the sample. The average number of points in the sample is 188.7, while Projektove.cz reached 239 points. Only in one criterion (information network of partners) the surveyed start-up reached lower points than the sample. In relation to the selected sample Projektove.cz has the following strengths: winning customers, suffi-

cient cash for entrepreneurship and owner's motivation. On the other hand, a practicable plan of costs and revenues, prices and cost calculations, the ability to delegate belong to the weaknesses of the start-up Projektove.cz (Table 4).

Table 4. **Strengths and weaknesses of Projektove.cz,**
authors' own investigation using BLUES methodology

Strengths	Weaknesses
Knowledge and calculation of the break-even point Sufficient cash for entrepreneurship Personal support of family Owner's motivation Level of ICT use	Information network of partners Owner's ability to make a product Winning customers

2. Comparison with the selected sample. The size of comparative sample is 40 enterprises in the branch of IT. In comparison with the selected sample Projektove.cz reached more points than the average number of in the sample. The average number of points in the sample is 188.7, while Projektove.cz reached 239 points (Table 5).

Only by one criterion (information network of partners) the surveyed start-up reached lower number of points than the sample. In relation to the selected sample Projektove.cz has the following strengths: winning customers, sufficient cash for entrepreneurship and owner's motivation. On the other hand, practicable plan of costs and revenues, prices and cost calculations, the ability to delegate belong to the weaknesses of Projektove.cz in comparison to the selected sample of 40 firms. In relation to the compared sample strengths and weaknesses were determined (Table 6).

The proposed evaluation based on economic criteria. In case a start-up wants to be successful, it must have a comprehensive overview of its operations. The basis is the use of a complex approach to firm evaluation, which is based on the assessment by economic and non-economic criteria. BLUES provides mainly non-economic characteristics, which should be extended by certain economic variables, while specific features of the start-up and the scope of business should be considered. The proposed added criteria are presented in Table 7.

Conclusions and directions for further investigation. For managing business a sufficient amount of complex information about its operation is needed. Complex evaluation should include both economic and non-economic criterion. Business practice shows that many start-up firms do not work out any evaluation or do it partially. Monitoring of business incubators showed that for the evaluation of start-ups business the incubators use mainly BLUES methodology and EBN marks.

BLUES provides mainly qualitative information obtained by comparing with the maximum points and the average number in the points of selected sample. BLUES was implemented for the company Projektove.cz in 7 areas: product, customer, finance, information, people, processes and motivation. The obtained results were compared both with the maximum possible points and with the average number of points in the selected sample of start-ups. This can be considered as a basic overview of successes and failures of the rated companies. Projektove.cz should clarify customers' needs and should use market research, necessary for future development. Even though the product is defined and delivered, operational problems related to the completion of the development of the offered product have emerged and should be reduced.

Table 5. **Comparison with the selected sample,** *authors' own investigation using BLUES methodology*

Area	Criterion	Average number of points reached by the selected sample of evaluated companies	Number of points reached by the evaluated company	Deviation from the compared sample	Share of points reached by the evaluated company on the average number of points reached by the selected sample, %
Product	1. Owner's ability to make a product	24.2	28	3.8	115.80
	2. Feasibility of product's concept	10.2	12	1.8	117.90
Customers	3. Knowledge of customers' needs	8.8	9	0.2	102.10
	4. Winning customers	16.1	28	11.9	173.70
Finance	5. Sufficient cash for entrepreneurship	24.4	35	10.6	143.50
	6. Sufficient cash for individual needs	10.1	12	1.9	118.90
	7. Practicable plan of costs and revenues	5.8	6	0.2	103.10
	8. Practicable plan of cash flow	4.7	6	1.3	126.90
	9. Knowledge and calculation of the break-even point	2.6	5	2.4	189.70
	10. Prices and cost calculations	3	3	0	100.00
Information	11. Information network of partners	12.7	12	-0.7	94.30
	12. Strategic planning (business plan)	5.7	6	0.3	105.30
People	13. Personal support of family	12.2	15	2.8	123.10
	14. Selection and recruitment of employees	4.4	6	1.6	137.50
	15. Motivation and fluctuation of employees	5.5	6	0.5	110.00
	16. The ability to delegate	2.8	3	0.2	106.50
Processes	17. Process and control mechanisms	2.3	4	1.7	171.40
	18. Level of ICT use	11.7	15	3.3	127.90
	19. Capacity planning	5.7	8	2.3	140.40
Motivation	20. Owner's motivation	15.8	20	4.2	126.90
Overall evaluation		188.7	239	50.3	126.60

Table 6. **Strengths and weaknesses of Projektove.cz in relation to the compared sample,** *authors' own investigation using BLUES methodology*

Strengths	Weaknesses
Winning customers	Practicable plan of costs and revenues
Sufficient cash for entrepreneurship	Prices and cost calculations
Owner's motivation	The ability to delegate

Table 7. **The proposed economic evaluation criteria to be added,** *authors'*

Economic criterion	Required value
Sales of goods/services	The higher, the better
Profit after tax	The higher, the better
The share of financial resources on revenues at the end of the period	> 15% – very good 10–5% – good 5–0% – bad
Break-even point	In the first year

For a more detailed analysis it would be useful to complement BLUES with quantitative data in the following areas: sales of goods and services, profit after tax, share of financial resources on revenues at the end of the period and break-even point analysis in order to get a more comprehensive tool for evaluating start-ups and spin-offs, and this will be the topic for future and deeper research.

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