## *ЕКОНОМІКА ТА УПРАВЛІННЯ НАЦІОНАЛЬНИМ ГОСПОДАРСТВОМ*

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**V. V. Byba,** Candidate of Engineering Sciences,
Associate Professor,
**V. B. Vasiuta,** Candidate of Engineering
Sciences, Associate Professor,
**I. V. Miniailenko,** Degree Seeker

## START-UP: SEARCH OF WAYS OF INVESTMENT SUPPORT FOR DEVELOPMENT OF SMALL BUSINESS

***Urgency of the research.*** *The article is devoted to research of ways of investment support of small business as a driving force of the economy. The generalization of foreign experience has allowed to determine the main condition for the development of small business start-ups. Today, the implementation of startups is the future of an efficient economy.*

***Target setting.*** *Successfully designed and developed technique for evaluating the value of startups are part of the financial success of their implementation.*

***Actual scientific researches and issues analysis.*** *Famous foreign scientists as G. Kawasaki, M. Nijier, D. Wumek, J. Lyker, B. Feld and others have made significant contributions to the development of startups, their emergence in markets, the study of economic instruments for increasing profitability and attracting investments.*

***Uninvestigated parts of general matters defining.*** *At the same time, insufficient scientific works highlight the economic indicators of the effectiveness of the introduction of start-ups. Need additional research on the development of tools for improving the financial success of new projects of small enterprises.*

***The research objective.*** *Defining a system of economic indicators for the effective development of startups and testing tools for the costs of their identification and monitoring.*

***The statement of basic materials.*** *The methods of estimating the projects of the launch of pre-investment investments were analyzed. The calculation of the investment value of the company and the method of returning the venture capital through the final cost is tested. The optimal way of evaluating the Startup Start Cost Index is determined on the basis of the average Startup Cost and Segment Cost Index.*

*In order to take into account the costs of implementing the startup it is expedient to use the theory of solving inventive tasks "Lean production", which will allow to build an effective system of management of aggregate expenses and further control over their dynamics.*

***Conclusions.*** *The result of the introduction of effective startups is the intensification of investment and innovation activities, the development of small business, solving social problems.*

***Keywords:*** *startup; small enterprises; startup method for assessing project efficiency; factors startup; methods of valuation and startup costs.*

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**В. В. Биба,** к. т. н.,
доцент,
**В. Б. Васюта,** к. т. н.,
доцент,
**І. В. Міняйленко,** здобувач

## START-UP: ПОШУК ШЛЯХІВ ІНВЕСТИЦІЙНОГО ЗАБЕЗПЕЧЕННЯ РОЗВИТКУ МАЛОГО БІЗНЕСУ

***Актуальність теми дослідження.*** *Стаття присвячена дослідженню шляхів інвестиційного забезпечення малого бізнесу як рушійної сили економіки. Узагальнення зарубіжного досвіду дозволило визначити головною умовою розвитку малого бізнесу впровадження стартапів. На сьогоднішній день реалізація стартапів це майбутнє ефективної економіки.*

***Постановка проблеми.*** *Успішно розроблений та сформований інструментарій оцінки вартості стартапів є складовою фінансового успіху їх реалізації.*

***Аналіз останніх досліджень і публікацій.*** *Значний внесок у розвиток стартапів, становлення їх на ринках, дослідженні економічних інструментів для підвищення рентабельності та залучення інвестицій зробили відомі зарубіжні вчені: Г. Кавасакі, М. Нейджер, Д. Вумек, Дж. Лайкер, Б. Фелд та інші.*

***Виділення недосліджених частин загальної проблеми.*** *У той же час недостатньо наукових праць висвітлюють економічні показники ефективності впровадження стартапів. Потребують додаткового дослідження формування інструментів покращення фінансової успішності нових проектів малих підприємств.*

***Постановка завдання.*** *Визначення системи економічних показників ефективного розвитку стартапів та апробація інструментарію витрат на їх ідентифікацію та моніторинг.*

***Виклад основного матеріалу.*** *Проаналізовано методи оцінювання проектів запуску попередньо введених інвестицій. Апробовано розрахунок інвестиційної вартості компанії та способу повернення венчурного капіталу через кінцеву вартість. Визначено оптимальний спосіб оцінки індексу вартості запуску стартапів на основі середнього індексу вартості стартапа та з урахуванням сегменту.*

*Для врахування витрат реалізації стартапу доцільно використати теорію розв'язання винахідницьких задач «Lean production», яка дозволить побудувати ефективну систему управління сукупними витратами та подальший контроль за їх динамікою.*

***Висновки.*** *Результатом впровадження ефективних стартапів є активізація інвестиційної та інноваційної діяльності, розвиток малого підприємництва, вирішення соціальних завдань.*

***Ключові слова:*** *стартап; малі підприємства; метод оцінки стартап проекту; фактори ефективності стартапа; методи оцінки вартості стартапа та витрат.*

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**Urgency of the research.** The main task of startup is to transform ideas into products, to evaluate the response of consumers and then decide whether to make a turn or move the former rate. All processes of the project should be directed to the fact that as soon as possible to get feedback from consumers. To improve results of startup and support the responsible of the developers of innovation, it is needed to focus on the economic analysis, in terms of which to measure success, set breakpoints and priorities. The problem startups in Ukraine is the weak economy: 99% of new companies «die» at the start of their business. Difficulties arise in Pre-seed Stage. It seems everybody has (what they consider) a million-dollar idea, but making an idea into reality is very rare. Rarer still is the «great idea» that not only gets off the ground, but finds its perfect audience [1].

The use methodology of economic analysis will improve economic performance, minimize costs that will result the development of small business, solving social problems.

**Target setting.** Startup is one of the most popular way becoming company at the market, a set of actions the person uses to attract the most investors to rapidly develop scalable business model. A new project in the economic development is becoming increasingly important for improving social and economic problems. In particular: providing people with jobs, attract foreign financial investments for the development of small business, solving social problems.

A startup is a company which aims to solve a problem that's currently not solved. The solution may be not apparent and success is not guaranteed. Startup is the launch of innovations. To be considered a startup, the company must be young (3 – 5 years max), fast-growing and have fewer than 500 employees. Often, these are Internet – projects and IT projects.

**Actual scientific researches and issues analysis.** Most of the startup learning curve is a smart business strategies for building a technology startup and provides a comprehensive guide to building a financial model of the company. Different aspects of startup are referred in researches conducted by domestic and foreign economists. In the book Tom Y. Sawyer [2] explored smart business strategies for building a technology startup which provide a complete guide to building a financial model for the company. How to start the company and how to raise money are examined in the works Guy Kawasaki [3] and M. Neydzher [4]. Brad Feld [5] reveals major secrets of attracting investment, all legal aspects of doing business and the methods for determining the value of the business. However, contrary the significant amount of researches and basic technique for assessing the costs and the improvement of the financial success of the new projects are insufficiently studied and require further research.

**Uninvestigated parts of general matters defining.** Economic indicators of the effectiveness of the introduction of startups are not sufficiently highlighted in the scientific works of domestic and foreign scientists. Particularly in need of additional research on the development of tools for improving the financial success of new projects; definition of factors of achievement of economic stability of small enterprises.

**The research objective.** The purpose of research is the formation of economic indicators for the effective development of start-ups.

To achieve the goal, it is expedient to realize the following tasks:
- formation of technique for evaluating the value of startups;
- a description of the factors and factors that affect the benefits and costs of projects;
- establishing directions for improvement of small enterprises.

**The statement of basic materials.** First of all, you need to estimate the cost of a startup. In assessing the value of the company is important to understand whether it is prior to receipt of investments (pre-money valuation) or post-investment (post-money valuation) value. A pre-money valuation is a term used in private equity or venture capital that refers to the valuation of a company or asset prior to an investment or financing. Post-money valuation is the value of the company after the investment has been made. This value is equal to the sum of the pre-money valuation and the amount of new equity. It depends on the stage the company is in, as well as the industry the company is entering [6]. The preliminary estimation of the cost depends on:

1. general characteristics of the industry and company (its size), its partners, competitors and customers;

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2. financial documents (charter, constituent documents, balance sheet, profit and loss statement), which study is carried out with the help of such instruments: calculation of coefficients of financial stability, liquidity and profitability.

To assess the initial startup cost are two basic methods. The first – is based on the valuation of assets or net assets. The second – the amount of enterprise revenue from its activities (annual sales) or sales (turnover or sales) [7].

It is important to understand how a pre-money valuation affects the investors involved once the investment is made. For example, imagine that a group of investors decide that a new start-up company is worth 100,000 UAH; they decide to invest 50,000 UAH. Adding the pre-money total of 100,000 UAH to 50,000 UAH investment yields a total of 150,000 UAH, which would be the post-money valuation of the company [8].

The cost of the project can be found using the following formula:

$$S = R + D - M, \ R = Sh * St \tag{1}$$

where $S$ – the company's value;

$R$ – market capitalization of shares;

$D$ – long-term debt;

$M$ – cash and cash equivalents;

$Sh$ – the quantity of shares;

$St$ – the current market value.

The technique of calculating the company value firms demonstrating the best startup attractiveness for investors (Tab. 1).

*Table 1*

**Pre and Post – investment and investment-company value**

| Indexes | Pre-Money Valuation | | Post-Money Valuation | |
|---|---|---|---|---|
| | Cost, UAH | % property | Cost, UAH | % property |
| Startup | 100000 | 67 | 80000 | 61 |
| Investors | 50000 | 33 | 50000 | 39 |
| Total | 150000 | 100 | 130000 | 100 |

***Source:*** created by the authors

So pre-investment and post-investment company value important to determine: the amount of funds attracted by venture capital funding and in establishing market IPO; the price of each share; and the proportion of property [9].

The main method of assessment is a method of investment rate of return using the terminal value [10]. The terminal value may be calculated.

*PV = CF/(r – g)* where *PV* – is the present value as at the terminal date (it will have to be further discounted in the DCF itself), *CF* – is the actual final year cash flow, *g* – is the growth rate after the final year and, *r* – is the discount rate. The commonest assumption made for a growth rate used to calculate a terminal value is that it will be the same as long run economic growth.

The easiest way to diagnose a competitor's or similar firm's position is to identify the main indicators that characterize their business activity (number of customers, sales, market share, etc.). For example, if the forecasted net startup revenue in 3 years is $ 250,000, and the average net worth to comparable analog companies is 17, then the estimated value of the company will be $ 425,000 after 5 years. In order to determine the required share investor's investor, it is necessary to divide the future value of investments into the forecasted final value of the company upon withdrawal from the investment.

Both methods of calculating the "Rate of return method" and the pre-investment and post-investment company value are aimed at assessing the effectiveness of investment in the project. To attract investors - this is the main factor.

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The best way to assess the value of the index of the cost of startups and main characteristics by determining index value of new projects based on the calculation of the three main types of index value [11]:

1. The average value of the index starting a new project

$$Ist = \sum_{i=1}^{n} p/n \qquad (2)$$

where $n$ – the quantity of startups assigned to segments,

$p$ – the cost of the project.

2. The index of the cost of startups depending on the segment

$$Isegm = \sum_{i=1}^{n} p_{segm}/n_{segm} \qquad (3)$$

where $n_{segm}$ – the quantity of startups assigned to a particular segment,

$p_{segm}$ – the cost of the project in this segment.

3. Cost index for launching startups participating in specific projects

$$Irvc = \sum_{i=1}^{n} p_{rvc}/n_{rvc} \ , \qquad (4)$$

where $n_{rvc}$ – the quantity of startups participating in the projects,

$p_{rvc}$ – the cost of one project that is involved in projects.

The disadvantage of this method is that when assessing the startup it does not include such indicators as the competitiveness of firms in the market, it does not assess the market, plan the costs of creating the project and makes it impossible to write a business plan.

To calculate the costs applied Lean production. Lean production system is the western term for Toyota Production System. The basis of business is production. The advantage of lean production is the rapid dynamics of the transformation results that manifest themselves in a sharp reduction of losses - the muda – the Japanese word, which means losses, waste, that is, any activity that consumes resources, but does not create value [12].

Concept 3M (Muda, Mura, Muri) are the determines the obstacles to the effective operation of the operating system JIT. They are constantly searched and eliminated from the system. These are Japanese words and all of them start from English letter M, i.e. Muda, Mura and Muri [13; 14].

The seven wastes to be eliminated: losses of overproduction, loss due to defects and the need for redistribution, loss during personnel movement, loss during transportation of materials, billets, losses from excess inventory of goods (external and internal), losses from excessive processing, loss of waiting time (reset, etc.).

Optimal theory that best fits into this concept – TSIT – the theory of solving inventive tasks "Lean production". In solving problems of engineering and technology is necessary to focus on increasing the degree ideal – a reliable criterion in setting objectives, assessing and addressing its response. Increasing the ideal technical system can occur both within the existing structural concept, and as a result of radical changes in the design and the very principle of the system [15]. When perfection in TSIT refers to the ratio of useful functions performed by the system (quantity and quality of the functions F), to the amount of reckoning factors (cost, harmful functions f, and the system of fees):

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$$I = \frac{F_1 + F_2 + ... + F_n}{f_1 + f_2 + ... + f_n} \rightarrow MAX \tag{4}$$

Consider the formula more:

$$I = \frac{\sum F}{\sum f(P,V,L,T,E,\$)} \tag{5}$$

where $F$ – useful system functions require the consumer;

$f$ – cost function;

$P$ – the weight of the technical system;

$V$ – the amount of the technical system;

$L$ – the characteristic dimensions of the technical system;

$T$ – time costs;

$E$ – energy consumption;

$\$$ – value;

$I$ – the stage of perfectness.

Each component of the formula describes the factors that impact on the company improves.

$$F/V \rightarrow MAX, \ F/P \rightarrow MAX \tag{6}$$

The desire to implement as many useful features per unit volume and per unit weight of technical systems (microminiaturization technology).

$$F/\$ \rightarrow MAX \tag{7}$$

The essence of the application of functional cost analysis – increasing ideal technical system by increasing the quantity and quality of system functions or reducing their value.

$$F \rightarrow MAX \tag{8}$$

Increasing the quantity and quality of products useful functions required to the final consumer.

$$F/T \ (storage) \rightarrow MAX \tag{9}$$

Storage of raw materials and products in stock not add product value. Japanese technique of «Kanban» ensures the implementation of the principle of «just in time» production is a continuous conveyor then immediately sent product to the consumer.

$$F/T \ (transportation) \rightarrow MAX \tag{10}$$

Transportation doesn't add value. The method «just in time» (Just-in-Time) designed to reduce these costs.

$$F/T \ (resetting) \rightarrow MAX \tag{11}$$

Reducing changeover time sophisticated equipment from hours to minutes, and even a «one touch» - a powerful base of the ideal processes. For this Japanese technique designed SMED: Single Minute Exchange of Dies [16].

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$$F/E \rightarrow MAX \tag{12}$$

Reducing power consumption technology systems with constant increase in the cost of energy is one of the main ways to improve the ideal equipment.

$$F \rightarrow MAX \text{ while } f \rightarrow MIN \tag{13}$$

The «Kaizen» techniques – continuous improvement. Any improvement of a technological operation may be a problems in the upstream and downstream operations. There is a need for a comprehensive approach to improving the entire production chain. That should strive to improve the technology ideal throughout, not just its individual components.

**Conclusions.** The study suggested methods of valuation startup projects using techniques Pre and Post investment value of the company and the method of return method (venture capital) through the terminal value. The method estimates the value of the index launch and main characteristics of startups based index value determination start new projects based on the calculation of the three major indexes value.

Characterized factors influence the company's value, and variants of the factors that contribute to costs.

Established detection tool costs by using the theory of solving inventive tasks "Lean production" that will further develop an effective system to determine the aggregate costs of organizing and taking further control of their dynamics.

The results will improve the effectiveness of startups through attracting investment. The implemented cost management system aims to improve the small of company and deficiencies.

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| **Биба Володимир Васильович** | кандидат технічних наук, доцент, доцент кафедри економіки підприємства та управління персоналом, Полтавський національний технічний університет імені Юрія Кондратюка; https://orcid.org/0000-0002-0949-206X; Researcher ID: D-5641-2018; SPIN-код: 7632-4797; E-mail: Bibavv1979@gmail.com; |
| **Byba Volodymyr Vasylovych** | Candidate of Engineering Sciences, Associate Professor, Associate Professor at the Enterprise Economics and Personnel Management Department, Yuri Kondratyuk Poltava National Technical University; |
| **Васюта Вікторія Борисівна** | кандидат технічних наук, доцент, доцент кафедри економіки підприємства та управління персоналом, Полтавський національний технічний університет імені Юрія Кондратюка; https://orcid.org/0000-0002-7469-3968; Researcher ID: D-1717-2018; SPIN-код: 8637-7659; E-mail: Vasuta_V_B@meta.ua; |
| **Vasiuta Viktoriia Borysivna** | Candidate of Engineering Sciences, Associate Professor of Economics Department, Associate Professor at the Enterprise Economics and Personnel Management Department, Poltava National Technical Yuri Kondratyuk University; |
| **Міняйленко Інна Валентинівна** | здобувач, старший викладач кафедри економіки підприємства та управління персоналом, Полтавський національний технічний університет імені Юрія Кондратюка; https://orcid.org/0000-0002-0388-6199; Researcher ID: D-5662-2018; SPIN-код: 1775-3308; E-mail: inna.minyaylenko@gmail.com; |
| **Miniailenko Inna Valentynivna** | Degree Seeker, Senior Lecturer at the Enterprise Economics and Personnel Management Department, Poltava National Technical Yuri Kondratyuk University |