FINANCIAL MODEL FOR ASSESSING THE ECONOMIC EFFECT OF CORPORATE ENTREPRENEURSHIP DEVELOPMENT

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Introduction. The purpose of the functioning of any business organisation is to create value not only for its shareholders (owners), but also for all its stakeholders (employees, consumers, partners, state institutions, etc.). A strong competitive position of a business organisation can be formed when the needs of different stakeholder groups are met, which confirms the importance of the existence of such a business organisation and proves its capabilities for strategic development.

The process of entrepreneurship in established business organisations is a promising vector of their development, focused on long-term growth and the training ("birth") of new leaders [1]. Corporate entrepreneurship is the process of generating new ideas, developing, implementing and managing new ventures within an established business organisation, carried out by internal entrepreneurial teams using the assets, market position, skills and resources of the parent business organisation. Corporate entrepreneurship requires an innovative and proactive approach to all the new challenges facing business organisations. Corporate entrepreneurs start with a bold idea, attract and organise resources and make every effort to achieve the main goal of the business organisation – to create added value for all its stakeholders. This confirms the importance of implementing the entrepreneurial function within an established business organisation and the need to stimulate the entrepreneurial spirit of its employees at all levels. The entrepreneurial spirit must be integrated into the mission, goals, strategies, structures, processes and values of a business organisation to ensure a constant flow of innovative ideas and growth in business metrics.

A number of studies [2–4] have demonstrated that corporate entrepreneurship has a positive impact on the performance of business organisations. At the same time, this scientific task requires further research and development in terms of developing tools for assessing the economic effect of corporate entrepreneurship development.

Analysis of recent research and publications. Ahmet Fis M. and Dilek Cetindamar [5] uncovered the relationship between corporate entrepreneurship and organisational performance by developing a comprehensive theoretical model. The reasoned model showed how organisational culture (values) causes a chain effect by influencing entrepreneurial orientation (attitudes) and managerial support (intentions), which ultimately activates corporate entrepreneurship (entrepreneurial behaviour of employees) and improves the performance of a business organisation.

Antonio Rodríguez-Peña [6] studied the impact of corporate entrepreneurship on the financial performance of subsidiaries in Colombian business groups. In particular, the influence of entrepreneurial orientation and corporate venturing on financial indicators (return on equity and profit growth) was studied, taking into account the effect of the dynamism of the external environment. The results of the study confirm the existence of a strong positive causal relationship between entrepreneurial orientation and corporate venture activity.
In addition, the financial performance of subsidiaries increases with the demonstration of entrepreneurial orientation and decreases with the implementation of corporate venture projects. At the same time, the results showed that the studied companies have not developed a sufficient resource and competence base to achieve growth in financial results in the implementation of corporate venture projects. The corporate venture projects of the studied companies are usually focused on strategic benefits rather than financial goals.

Umair Ahmed, Waheed Ali Umran, Umer Zaman, Sheraz Mustafa Rajput and Tariq Aziz [7] showed that corporate entrepreneurship leads to an increase in the performance of established firms (using the example of Pakistani business organisations) with the active involvement of employees in the process of implementing entrepreneurial initiatives. In the context of this study, business performance means the creation and delivery of value to internal and external stakeholders. At the same time, researchers focus on non-financial business indicators, as the use of these indicators can increase employee motivation, create a favourable organisational climate and encourage employees to achieve organisational goals in the most efficient way.

Krisada Chienwattanasook, Samanan Wattanapongphasuk Andi Luhur Prianto and Kittisak Jermsittiparsert [8] examined the relationship between corporate entrepreneurship and the performance of Indonesian logistics companies. They found that corporate entrepreneurship has a significant impact on the performance of the companies studied. The availability of working time to develop entrepreneurial initiatives, support from senior management and flexible organisational boundaries contribute to the growth of firm performance.

Bora Aktan and Cagri Bulut [9] examined the impact of four dimensions of entrepreneurship (weighted risk taking, proactivity, competitive aggressiveness, innovativeness) on the following financial indicators of Turkish firms: market share growth, sales profitability, asset profitability, business profitability. Multiple regression analysis has shown that the development of corporate entrepreneurship has a positive impact on the financial performance of business organisations. It was also shown that the strength of this influence depends on how well entrepreneurship is integrated into a business organisation's mission, goals, strategies, structures, processes and culture. The researchers concluded that the key task for managers is to determine the acceptable level of intensity of the internal entrepreneurial process for the business organisation as a whole and for each of its functional areas.

Korhan Karacaoglu, Ali Bayrakdaroglu and Firat Botan San [10] also examined the relationship between the financial performance of Turkish firms and the development of entrepreneurship in firms. Among the financial performance indicators, the researchers selected the following: return on assets (ROA), return on equity (ROE), profitability ratio (NMP), ratio of EBITDA to sales (EBITDA/S), ratio of EBIT to assets (EBIT/A), ratio of net income from sales to assets. Corporate entrepreneurship was considered from the point of view of its five dimensions: autonomy, innovation, proactivity, risk taking, competitive aggressiveness. Using structural equation modelling, it was possible to demonstrate that the five-dimensional model of corporate entrepreneurship, which includes all of the above dimensions of corporate entrepreneurship, does not have a positive impact on firm performance. Nevertheless, an alternative model based on three dimensions of corporate entrepreneurship: innovation, proactivity and risk-taking, explains its positive impact on firm performance. It should be noted that the closest relationship between the dimensions of corporate entrepreneurship studied is observed with such financial indicators as: return on assets, return on equity, ratio of net income from sales to assets.

Gemechu Abdissa, Abebe Ayalew, Csaba Bálint Illés and Anna Dunay [11] analysed the relationship between the dimensions of entrepreneurship (innovativeness, proactivity, risk-taking) and the performance of Ethiopian business organisations of different sizes and types of economic activity. The researchers used such indicators as sales volume, customer satisfaction and profitability as a basis for measuring the performance of business organisations. The results of the study showed that: 1) the ability of entrepreneurs, managers and business owners to introduce new products, processes or marketing methods plays an important role in increasing the productivity of their business organisations; 2) the ability of the manager to scan the external business environment and proactively respond to potential problems has a primary impact on improving the productivity of the business organisation; 3) risk-taking has a positive impact on the performance of a business organisation because of the potentially high return on investment.

Bennett Uchenna Eze [12] examined the impact of corporate entrepreneurship (described by the following elements: innovation, proactivity, risk-taking, strategic renewal, corporate venturing) on the non-financial performance of Nigerian manufacturing firms (market share and employee satisfaction). The results obtained showed that elements of corporate entrepreneurship (risk-taking, innovation, corporate venturing, proactivity, strategic renewal) improve the non-financial performance of manufacturing firms.
The above studies describe the relationship between the development of corporate entrepreneurship and the performance (results) of business organisations. The thesis that corporate entrepreneurship can have a positive or negative impact on business metrics, depending on the specifics of entrepreneurial projects, the internal context of a business organisation, the state of the external environment and other moderators, is proven. However, from a practical point of view, managers need tools that help to assess the economic impact of the development of entrepreneurship at the level of the business organisation as a whole. This will allow managers to make an informed decision about the feasibility of implementing this or that entrepreneurial initiative.

Objectives of the article. The purpose of the article is to substantiate a financial model for assessing the economic effect of corporate entrepreneurship development.

The main material of the study. The value of a business organisation can be determined on the basis of valuation and discounting of cash flows that are currently available and projected to be received in the future [13–15].

The development of corporate entrepreneurship leads to an increase in the efficiency of activities (and, consequently, cash flow) within the existing (parent) business organisation (the internal effect of the development of corporate entrepreneurship) and can also lead to the emergence of new business units with a different legal status, but retaining 100% ownership (control) of the parent business organisation (the external effect of the development of corporate entrepreneurship). The presence of the second type of effect is determined by the chosen organisational design of corporate entrepreneurship.

The development of corporate business affects such components of cash flow as:

1) **The amount of cash flow generation of the parent business organisation**, taking into account various internal innovations and entrepreneurial initiatives of employees that will be offered through the development of corporate entrepreneurship. This can lead to an increase in such cash flow growth factors as:

   - field of activity – \( V_{sales} \) (volume of product sales);
   - margin level of the existing niche (market) – \( L_{m} \);
   - level of operating expenses – \( L_{oe} \).

   In general, this can be reflected as \( \Delta CE \) – the increase in the above indicators due to the development of corporate entrepreneurship (introduction of innovations and/or creation of a new business unit).

2) **Return on assets of the new business unit**, which requires adjusting the base level (formed before the spin-off, i.e., the return on assets of the parent business organisation) by such adjustment factors as:

   - adjusting coefficient of attractiveness (profitability) of the new market – \( C_{m} \) (if the profitability of this niche/market is higher or lower compared to the traditional niche/market);
   - adjusting coefficient of riskiness of economic activity – \( C_{r} \) (if a new business unit is created or separated to conduct business in more risky conditions or under conditions of greater uncertainty);
   - adjustment factor for the manageability of the new business unit – \( C_{so} \) (if the management potential of the new business unit is less than that of the current (parent) business organisation due to less experience, professional knowledge and specific competences, which will have a negative impact on profit generation).

3) **Tax burden level** (\( L_{tax} \)), if the new business unit has a different tax status and a lower level of taxation of activities or the current tax burden level of the parent business organisation will change due to the proposed innovative solutions/ideas – change in the tax burden level (\( \Delta L_{tax} \)).

4) **Possibility of attracting additional financial resources and forming additional assets** (if the new business unit has better creditworthiness or investment attractiveness, which will allow attracting new capital (in particular, venture capital) and forming new assets – \( \Delta A_{p} \) and, accordingly, generating cash flow, in particular, making a profit based on the rate of return on assets expected for the new business unit.

The current value of the parent business entity (\( DCF_{PBO} \)) can be estimated using the cash flow modelling technique as follows:

\[
Value_{PBO} = DCF_{PBO} = \sum \left( V_{sales} \times (L_{m} - L_{tax}) \times (1 - L_{oe}) + D_{FE} \right) \times DF \tag{1}
\]

where \( V_{sales} \) – sales volume of the parent business organisation (basic); \( L_{m} \) – level of marginal income (gross profit) of the parent business organisation (basic); \( L_{tax} \) – level of operating expenses of the parent business organisation (baseline); \( L_{tax} \) – level of tax burden of the parent business organisation (basic); \( D_{FE} \) – depreciation of property, plant and equipment of the parent business organisation (basic); \( DF \) – discount factor.

For example, based on the inputs in Table 1, the value of the parent business entity at the current time would be 1,524 million UAH.

The cash flow of the parent enterprise taking into account the impact of the development of entrepreneurship (\( DCF_{PBO\_{pre}} \)), can be estimated by adjusting the corresponding components of the cash flow of the
parent enterprise by the effect (impact) of the development of entrepreneurship, i.e., innovative ideas/solutions/initiatives/projects for implementation proposed by the employees of the enterprise in the framework of the development of entrepreneurship within the existing (parent) enterprise:

\[ DCF_{\text{PBO adjusted}} = \left( \Delta V_{\text{sales}} \times (\Delta L_{\text{marg}} - \Delta L_{\text{pro}}) \times (1 - \Delta L_{\text{tax}}) + \Delta D_{\text{FE}} \right) \times DF, \]  

(2)

\[ \Delta D_{\text{FE}} = D_{\text{FE basic}} + D_{\text{FE new}}, \]  

(3)

\[ D_{\text{FE new}} = \frac{FE_{\text{new}}}{AP}, \]  

(4)

where \( \Delta V_{\text{sales}} \) is a change (increase) in the volume of sales of the parent business organisation’s products due to the proposed innovations within the framework of corporate entrepreneurship development; \( \Delta L_{\text{marg}} \) is a change (increase) in the level of marginal income (gross profit) of the parent business organisation due to the proposed innovations within the framework of corporate entrepreneurship development; \( \Delta L_{\text{pro}} \) is a change (increase) in the level of operating expenses of the parent business organisation as a result of the proposed innovations within the framework of corporate entrepreneurship development; \( \Delta L_{\text{tax}} \) is a change (decrease/increase) in the level of tax burden of the parent business organisation as a result of the proposed innovations within the framework of corporate entrepreneurship development; \( \Delta D_{\text{FE}} \) is the change in depreciation of fixed assets; \( D_{\text{FE basic}} \) is the depreciation of fixed assets (acquired for the implementation of corporate business projects); \( FE_{\text{new}} \) is the cost of new fixed assets; \( AP \) is the average useful life of new fixed assets (depreciation period).

Assume that the expected effects of corporate entrepreneurship development are characterised by the indicators presented in Table 2. Based on these model (forecast) data, the discounted cash flow of the parent business organisation will be 1,935 million UAH.

The cash flows of the new business unit (DCF_{\text{NBU}}) created as a result of the development of corporate entities can be projected as follows:

\[ DCF_{\text{NBU}} = (V_{\text{assets NBU}} \times R_{\text{assets new}} + D_{\text{FE new}}) \times DF, \]  

(5)

\[ V_{\text{assets NBU}} = V_{\text{PP}} + V_{\text{FE attracted}} + V_{\text{IE attracted}} \]  

(6)

\[ R_{\text{assets new}} = \left( R_{\text{assets new}} \times C_{\text{prof}} \times C_{\text{risk}} \times C_{\text{control}} \right) \times (1 - L_{\text{useful}}), \]  

(7)

where: \( V_{\text{assets NBU}} \) is the value of the assets of the new business unit; \( V_{\text{PP}} \) is the value of intangible assets transferred to the new business unit as a contribution to its share capital (estimated by experts as the cost of personnel and the value of intellectual resources of the parent business organisation transferred to the new business unit); \( V_{\text{FE attracted}} \) is the value of property, plant and equipment transferred to a new business unit as a contribution to its share capital; \( V_{\text{IE attracted}} \) is the cost of the new business unit’s fixed assets that were attracted from external sources; \( R_{\text{assets new}} \) is the return on assets of a new business unit within the chosen type of organisational design of corporate entrepreneurship and the chosen niche (market) of its activities; \( L_{\text{useful}} \) is the level of tax burden of a new business unit; \( D_{\text{FE new}} \) is the depreciation of fixed assets of the new business unit; \( AP_{\text{asset}} \) is the average useful life of new fixed assets (depreciation period) of a new business unit.

\( R_{\text{assets new}} \) is calculated by adjusting the parent business entity’s statutory rate of return \( \left( R_{\text{assets new}} \right) \) by the adjustment factors \( \left( C_{\text{prof}} , C_{\text{risk}} , C_{\text{control}} \right) \), which are calculated by experts based on a comparison of the attractiveness, riskiness and controllability of the new business unit.

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**Table 1**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main sales volume of the parent business organisation’s products (( V_{\text{sales basic}} )), million UAH</td>
<td>12 031</td>
</tr>
<tr>
<td>Underlying level of marginal income (gross profit) of the parent business organisation (( L_{\text{marg pbo basic}} )), %</td>
<td>28,04</td>
</tr>
<tr>
<td>Baseline level of operating expenses of the parent business organisation (( L_{\text{pro pbo pbo}} )), %</td>
<td>24,13</td>
</tr>
<tr>
<td>Base level of tax burden of the parent business organisation (( L_{\text{tax pbo pbo}} )), %</td>
<td>18,00</td>
</tr>
<tr>
<td>Current (basic) depreciation of property, plant and equipment of the parent business organisation (( D_{\text{FE pbo basic}} )), million UAH</td>
<td>1 882</td>
</tr>
<tr>
<td>Discount rate, %</td>
<td>22,00</td>
</tr>
</tbody>
</table>

**Source:** compiled by the authors
The inputs to the calculation of the discounted cash flow of the new business unit are presented in Table 3.

The inputs to the calculation of the discounted cash flow of the new business unit are presented in Table 3. Projected return on assets of the new business unit \( R_{\text{assets \ NB \ U}} \) is 31.83%:

\[
R_{\text{assets \ NB \ U}} = \left( R_{\text{assets \ PBO}} \times C_{\text{prof}} \times C_{\text{risk}} \times C_{\text{control}} \right) \times (1 - L_{\text{tax \ NB \ U}}) = (25 \times 1.5 \times 1.15 \times 0.9) \times (1 - 0.18) = 0.3183\text{ or }31.83\% . \tag{9}
\]

The depreciation of fixed assets of the new business unit \( D_{\text{FE \ NB \ U}} \) is 265 million UAH:

\[
D_{\text{FE \ NB \ U}} = \frac{V_{\text{FE \ attracted}} + V_{\text{FE \ transferred}}}{AP_{\text{NB \ U}}} = \frac{750 + 575}{5} = 265\text{ million UAH} . \tag{10}
\]

Thus, the discounted cash flow of the new business unit will be 675 million UAH.

The value of the parent enterprise taking into account the impact of the development of corporate entrepreneurship (\( \text{Value}_{\text{PBO \ CE}} \)) can be estimated as the sum of the discounted cash flow of the parent enterprise, \( (\text{DCF}_{\text{PBO \ adjusted}} \) ) and the discounted cash flow of the newly created business unit \( (\text{DCF}_{\text{NB \ U}} \) )

\[
\text{Value}_{\text{PBO \ CE}} = \text{DCF}_{\text{PBO \ adjusted}} + DCF_{\text{NB \ U}} . \tag{11}
\]
The results of the valuation of the parent business organisation, taking into account the development of corporate entrepreneurship, are shown in Table 4. The value of the parent business organisation, taking into account the impact of corporate entrepreneurship development, is 2,610 million UAH.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discounted cash flow of the parent business organisation taking into account the impact (effect) of corporate entrepreneurship development ((\text{DCF}_{\text{PBO}})) , million UAH</td>
<td>1 935</td>
</tr>
<tr>
<td>Discounted cash flow of the new business unit ((\text{DCF}_{\text{NBU}})) , million UAH</td>
<td>675</td>
</tr>
<tr>
<td>Value of the parent business organisation, taking into account the impact of corporate entrepreneurship development ((\text{Value}_{\text{PBO CE}})) , million UAH</td>
<td>2 610</td>
</tr>
</tbody>
</table>

Source: compiled by the authors

Consequently, the value (economic effect) of corporate entrepreneurship development (\(\text{Value}_{\text{CE}}\)) can be estimated as the increase in the value of the parent business organisation achieved through corporate entrepreneurship development minus additional costs aimed at corporate entrepreneurship development:

\[
\text{Value}_{\text{CE}} = \text{Value}_{\text{PBO CE}} - \text{Value}_{\text{PBO}} - \text{C}_{\text{CE}},
\]

\[
\text{Value}_{\text{CE}} = \text{DCF}_{\text{PBO adjusted}} + \text{DCF}_{\text{NBU}} - \text{DCF}_{\text{PBO}} - \text{C}_{\text{CE}},
\]

\[
\text{Value}_{\text{CE}} = \Delta \text{DCF}_{\text{PBO}} + \text{DCF}_{\text{NBU}} - \text{C}_{\text{CE}},
\]

where: \(\text{C}_{\text{CE}}\) is an additional expenditure aimed at developing corporate entrepreneurship; \(\Delta \text{DCF}_{\text{PBO}}\) is the increase in the value of the parent business organisation through the development of corporate entrepreneurship.

The calculation of the cost (economic effect) of corporate entrepreneurship development is presented in Table 5. The projected value is 307 million UAH.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
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<tbody>
<tr>
<td>Value of the parent business organisation, taking into account the impact of corporate entrepreneurship development ((\text{Value}_{\text{PBO CE}})) , million UAH</td>
<td>2 610</td>
</tr>
<tr>
<td>Current value of the parent business organisation ((\text{Value}_{\text{PBO}})) , million UAH</td>
<td>1 524</td>
</tr>
<tr>
<td>Additional expenditures aimed at developing corporate entrepreneurship ((\text{C}_{\text{CE}})) , million UAH</td>
<td>780</td>
</tr>
<tr>
<td>Value (economic effect) of corporate entrepreneurship development ((\text{Value}_{\text{CE}})) , million UAH</td>
<td>307</td>
</tr>
</tbody>
</table>

Source: compiled by the authors

Business organisations can use the proposed tools to model the growth of their business value when choosing different types of corporate entrepreneurship organisational design and/or when choosing between different entrepreneurial initiatives supported by corporate entrepreneurship development.

Conclusions. Innovation is a key factor in the success of many business organisations. As business organisations strive to increase their productivity and ensure sustainable growth, the ability to create innovation becomes an integral determinant of the development of business organisations. That is why owners and managers should pay attention to strategies, tools and business practices for the development of corporate entrepreneurship. Realisation of entrepreneurial function within established business organisations can lead not only to improvement of innovation indicators, but also to increase of their productivity, competitiveness and creation of stable competitive advantages.

The proposed financial model for assessing the economic impact of developing corporate entrepreneurship allows investors, managers and academics to understand the value that can be generated by initiating and implementing employee entrepreneurial initiatives within the framework of the parent company organisation. The described tools will help to approach the decision on the development of corporate entrepreneurship in a reasonable and rational way. The results of the study can be used as a basis for making recommendations that will help to assess the economic impact (value) of corporate entrepreneurship development on the way to building a financially successful business organisation.
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JEL M29


The study highlights the importance of developing applied tools to assess the economic impact of the development of corporate entrepreneurship within established business organisations. It was found that preliminary studies focus on the positive impact of the application of the entrepreneurial management style on the performance of business organisations, but there is a lack of specific proposals for assessing the impact of the implementation of employees' internal business initiatives on organisational performance. The financial model for assessing the economic impact of the implementation of innovative solutions, ideas and projects proposed by employees and the creation of new business units based on them has been substantiated. The results of the authors' calculations are presented, which confirm the practical possibility of applying the proposed model and demonstrate the positive impact of the development of corporate entrepreneurship and the creation of new business units on the value of the business organisation as a whole.

Key words: entrepreneurship, corporate entrepreneurship, entrepreneur, corporate entrepreneur, innovation, financial model, economic effect.
Лігоненко Лариса Олександрівна, доктор економічних наук, професор. Мисилюк Влада Сергійвна, доктор філософії у галузі підприємництва, торгівлі та біржової діяльності, Київський національний економічний університет імені Вадима Гетьмана. Фінансова модель оцінювання економічного ефекту розвитку корпоративного підприємництва.

У дослідженні розкрито важливість розроблення прикладного інструментарію щодо оцінювання економічного ефекту розвитку корпоративного підприємництва в рамках усталених бізнес-організацій. Виявлено, що попередні дослідження акцентують увагу на позитивному впливі застосування підприємницького стилю управління на показники діяльності бізнес-організацій, однак, спостерігається відсутність конкретних пропозицій щодо оцінювання впливу реалізації внутрішніх бізнес-ініціатив працівників на результати діяльності бізнес-організацій. Обґрунтовано фінансову модель оцінювання економічного ефекту реалізації запропонованих працівниками інноваційних рішень, ідей та проєктів та створення на їх основі нових підприємницьких одиниць. Наведено результати авторських розрахунків, які підтверджують практичну можливість застосування запропонованої моделі та демонструють позитивний вплив розвитку корпоративного підприємництва та створення нових підприємницьких одиниць на цінність материнської бізнес-організації в цілому. Виявлено, що реалізація інноваційних рішень, ідей та проектів, які знаходять підтримку в рамках впровадження ініціатив щодо розвитку корпоративного підприємництва, сприяє збільшенню рівня операційних витрат, зменшенню рівня податкового навантаження тощо. Показано, що нова підприємницька одиниця, створена на основі інноваційних рішень, ідей та проєктів, реалізованих за рахунок розвитку корпоративного підприємництва, здатна генерувати значні обсяги грошових потоків внаслідок створення нових підприємницьких одиниць.

Ключові слова: підприємництво, корпоративне підприємництво, підприємець, корпоративний підприємець, інновації, фінансова модель, економічний ефект.