CONCEPTUAL APPROACH TO FINANCIAL SUPPORT OF REGIONAL TERRITORY INFRASTRUCTURE DEVELOPMENT

Purpose. A theoretical overview of the conceptions related to financial support of the city government, as well as scientific and applied substantiation of the conditions necessary for the formation of the territorial infrastructure, which will enhance potential prospects of its enterprise development.

Methodology. By way of scientific generalization, we have determined the peculiarities of using enterprise approach to creating the objects of territorial community infrastructure and developed an analytical approach to assessing the schedule of the received payment disbursement in terms of credit price, provided a quantitative assessment to different options of liabilities discharge.

Findings. Analysis has been used to justify the dependence of the raised funds costs on the schedule of their disbursement. Economic prerequisites, which significantly influence the final results of the enterprise project, have been specified. Emphasis has been made on the possibility to optimize financial and credit relationships between business subjects and banks. The optimal interest rate, which ensures satisfactory demand for credit financing, has been identified. Feasibility of the accelerated schedule of credit resources disbursement has been proved for the conditions of putting the object into the starting operational capacity. Organizational and economic prerequisites of financial solutions to social problems associated with the territorial community demands were determined in terms of enterprise approach principles.

Originality. It has been established that there is an analytical dependence between the total costs of the credit reimbursement and the term of the business object commissioning into operation. It was found that the crediting schedule (accelerated, regular, slow) influences the value of the involved costs. The advantages of using enterprise approach to implementation of projects related to the development of infrastructure on the community residential territory have been determined.

Practical value. It was proposed to apply an alternative approach to ensuring development of the territorial community in conditions of limited target financing.

Keywords: territorial community, infrastructure, business object, enterprise, credit financing, bank interest, credit price

Introduction. Decentralization and city governments force the subjects of territorial community development (power bodies, scholars, entrepreneurs) to seek for efficient financing of the processes associated with creation of economically feasible administrative territorial units. The search for the relevant financial resources can be related to the local budget, state and regional development programs, international technical assistance etc. However, due to insufficient possibilities and complex conditions of using these financing sources municipal governments of most territorial communities, especially small ones, do not have financial resources in the amount sufficient to carry out the functions prescribed by law [1, 2]. Hence, it is vital to change priorities in financial support of territorial communities’ development, by rejecting paternalist funding model in favor of transition to efficient use of their own social, economic and financial resources [3]. One way to solve this problem is to draw on resources of bank and non-bank crediting institutions and to use them for implementing various programs of economic development. From our perspective, this will expand possibilities of entrepreneurship as an acting component of the system “authority – administration – responsibility”, facilitate solution of social problems, pump up the local budget revenues, develop infrastructure and improve economic situation in general.

Literature review. Many specialists in the sphere of state administration and municipal government focus on the problem of funding. Sukharska L. [4] identifies principal criteria for creating an efficient system of financial support of amalgamated territorial communities’ development. To ensure funding of such development, I. Stornianska and A. Pelekhatyi [3] suggest increasing the amount of non-budget financial resources. Financial aspects of the above problems are treated in the works of L. Melnychuk [5] and M. Kovalenko [6]. Other publications [7] emphasize that profitability of the production and the enterprise on the whole depends on their competitiveness. In scientific works [8, 9], effective structures of organization of entrepreneurial activity in machine-building enterprises for the support and development of its competitive advantages are proposed to be formed on the basis of intrapreneurship.

In view of limited resources available for the territorial community, credit financing can be used for developing its infrastructure. Economic approaches to lending in line with the real demand for loans largely determine the effectiveness of the implementation of a particular business model of the enterprise [10]. Dynamics of the bank interest is a peculiar indicator of observance or violation of the credit limits. Regulation of bank interest rate is a key factor for designating economical limit of the credit and ensuring that the bank system complies with it. The author of [11] states that inflation is the main component of nominal interest rates. Findings of this research are based on the linear multifactor model of the interest rate.

Generally, it should be noted that most studies are focused on the options to improve the processes of forming and performing local budgets. At the same time, the lack of conceptual base for financial support, and the necessity to define the tasks concerned with territories and community resources potential development explains the topicality of this issue.

Unsolved aspects of the problem. Most scientific publications analyze general issues of funding territorial units. It is necessary to provide assessment and conduct a more grounded research into the sources of financing and their real possibilities in the current economic conditions of the branch that will be
connected with the activities of municipal government. Departing from the currently accumulated experience, the state can provide a limited financial support for the territorial communities by giving them subventions for organization of infrastructure operation. From such perspective, credit financing looks much more attractive — it ensures regular and stable availability of sufficient monies for creating an infrastructure object according to the plan of the community social and economic development. Via crediting, enterprises specializing in manufacturing finished products mostly targeted at local markets with limited demand and local raw material sources — can create their business objects. These enterprises produce food, clothes, footwear, provide minor building services, etc.

As a rule, using credit is a challenging form of money ownership for an entrepreneur who takes part in setting up a local infrastructure. They have to return the credit interest and the principal part of the debt irrespective of their activities’ success. Financing at one’s own expense is less risky for an entrepreneur as they can use property financial tools (stocks). The above research, which will result in solving the tasks of decreasing entrepreneur’s risk and improve the conditions of small business implementation, has scientific and applied significance. Scientific literature pays insufficient attention to the above issues in the context of municipal government possibilities.

According to the assessment of project leaders from various foreign companies that build industrial, trade, and other objects, commissioners pay attention to the level of pre-investment justification, particularly, to the reliability of the costs assessment and the level of the prospective performance costs.

**Purpose.** In our opinion, the most prospective source of region development is to involve entrepreneurs, because besides economics development and building the most community-friendly infrastructure, businessmen will be engaged in solving social issues, particularly in creating new job opportunities and improving living conditions of residents. To support enterprise projects, municipal governments can apply their authority and regulate investment, land and financial relationships between the community and the private capital.

Involvement of business tools is unalienably related to conditions of bank monies reception. Enterprise projects can be invested through the relevant transfers (donations, educational and medical subventions, subventions for community infrastructure development, etc.), which are allocated to amalgamated territorial communities by the state to fulfill their delegated functions. Whatever the source of financing, attractiveness of the infrastructure development projects for business will be assessed by their profitability, which will commission the business object into operation. Thus, it is vital to research and formulate a conceptual approach to enhance community financial opportunities as for renovation and development of its regional territory infrastructure.

Before all, such approach is meant to provide scientific and applied justification of the conditions which will facilitate economic results of entrepreneurial activities. It can be beneficial for municipal government in the field of controlling and regulating the conditions and methods of solving the problems associated with setting up a local infrastructure. The local authorities will commission projects on the enterprise basis, thus developing investment attractiveness of its territory in favor of its community, because the taxes paid by businessmen will contribute to the rise in living standards of residents.

**The purpose** of the article is to provide a theoretical overview of the conceptions related to financial support of municipal government and to give a scientific and applied justification for such conditions of territorial infrastructure creation that will facilitate potential opportunities and enterprise development. Due to this approach, communities will be able to make independent investments in business projects, thus contributing to their own social and economic development.

**Methods.** To reach the goal, we first evaluated the schedules of credit proceeds disbursement in terms of credit price related to the pattern of business object commissioning. Further, analysis was conducted with the view to defining such conditions of granting a credit which can be improved for a businessman, and, finally, a quantitative assessment was applied to different schemes of the credit reimbursement.

**Results.** While designing a feasible schedule of capital investment, it should be noted that creation of any business object can follow one of the schedules of putting the planned capacity into operation: accelerated, regular and slow. The character of crediting changes according to these schedules: in case of the accelerated schedule, the monies are initially granted in large sums, and then — in smaller ones (Fig. 1).

When the schedule is slow, crediting has the opposite character. Let us consider how credit monies are granted and how the interest is paid in two cases — when the object is first put into starting capacity and then — into full operational capacity.

The schedule of crediting has a significant effect on the investment value of the project according to which the object is put into service. This value comprises the sum of the received credit and the sum of the interest paid during the crediting period. In the course of time, the following sums of the starting credit \( K_S \) and the primary loan \( K_p \) will be accumulated

\[
S_t = K_S + B_t + K_e + B_e,
\]

where \( K_S, K_e \) are sums of the credit received during the periods of putting the object into its starting and operational capacities; \( B_t, B_e \) are sums of interest paid for the granted credit \( K_S \) and \( K_e \) respectively.

\[
K_S = \sum_{i=1}^{r} K_i; \quad \left(1\right)
\]

\[
K_e = \sum_{i=1}^{r} K_i + \sum_{i=1}^{n} K_i; \quad \left(2\right)
\]

\[
B_t = p_t \sum_{i=1}^{r} K_i; \quad \left(3\right)
\]

\[
B_e = p_e \sum_{i=1}^{n} K_i; \quad \left(4\right)
\]

where \( T_S, T_e \) — duration of the periods of putting the object into its starting and operational capacities; \( p_t, p_e \) — bank interest for the starting and primary loan.

The above sums of the credit and paid interest according to the \((1–4)\) are given by means of their discounting before the time \( T_t \) of the object creation.

The starting credit \( K_S \) needed for putting the object into service with the starting capacity \( Q_S \) can be calculated by the formula

\[
K_S = Q_S / F_p, \quad \left(5\right)
\]

![Fig. 1. Graph showing the change of the enterprise total costs spent on the object creation:](image)

- \( B_t, B_e \) — credit interest; \( K_S, K_e \) — credit receivables
where \( F_s \) is yield on capital assets put into operation at the starting stage of the object creation; \( Q_s \) is starting capacity of the business object.

It is assumed in the (5) that the yield \( F_s \) is the indicator of capital assets efficiency based on the principle of juxtaposition of the output volume \( Q_s \) and the total amount of the capital assets used for this purpose. The value of yield on the capital assets is determined by the credited project. The profit gained from the sold product together with the credit resources can be used for further development of the object to the moment of its putting into full capacity. The planned value of the profit is calculated by

\[
D_s = K_s \cdot R_{st},
\]

where \( R_{st} \) is profitability of the output produced at the starting stage of the object creation.

The enterprise can reduce the volume of the credit resources at the expense of the gained profit \( D_s \) and, consequently, reduce the sum of interest paid for the credit during the time \((T_s - T_3)\) between the moment of putting the object into starting capacity \( T_s \) and the moment of putting the object into full operational capacity \( T_c \). The value of credit resources economy in such case will be

\[
B_s = p_{st} \cdot D_s \cdot (T_s - T_3).
\]

At the same time, the enterprise should pay more interest for the bigger sum of the credit at the starting stage before the moment of putting the object into starting capacity \( Q_s \). The value of credit resources needed at this stage can be calculated by

\[
K_{st} = Q_s \cdot C_s \cdot F_c,
\]

where \( C_s \) is release price of the product; \( F_c \) is yield on the capital assets of the business object.

The value of yield on the capital assets is determined by the project data about the created object. In comparison to the conventional regular approach, the credit sum \( K_{st} \) available during the time \((T_s - T_3)\) for putting the object into starting capacity \( Q_s \) should be increased by value \((K_s - K_{st})\), given

\[
K_{st} = T_s \cdot (K_s + K_{st}) / T_c.
\]

Values \( T_s, T_c \) are measured by the number of settling periods (months, quarters, half-years, years). The sum \((K_s + K_{st})\) determines the volume of investment necessary for putting the object into starting capacity. This sum results from bigger credit monies at the starting stage of crediting. Reasonability of such decision depends on the condition that the amount of the interest paid for the increased credit does not exceed the paid interest calculated according to the (3) for the regular schedule of the object capacity commissioning.

As for the analytical approach previously described, we can evaluate the feasibility of any crediting schedule, using as an example creation of a certain object of a local infrastructure. For the purpose of comparison, let us analyze three schedules of credit resources disbursement: regular, accelerated and slow. Accelerated schedule of the loan disbursement relates to putting the object into starting capacity of the total value UAH 4 mln after the first year since the beginning of the object creation. The profit of the proposed measure is calculated as the profit from the invested capital considering the profitability level of 28 %. During the next two years of the object operation, its value will come up to UAH 2 240 000. This sum can be subtracted from the volume of the loaned monies, i.e. the credit volume can be reduced to UAH 7 760 000 (Table 1).

The terms of credit disbursement may be improved by (first of all) negotiating the preferable interest rate with the entrepreneur. Bank- and non-bank credit granting institutions change this rate, departing from a number of indicators, including the probable number of credit recipients. There is a certain dependence between the number of credit recipients and the interest. The graph of this dependence can have a convex, straight or concave shape. This dependence between the above factors has been determined on the basis of their change. We have considered the examples of changing the rate of the curved schedules, which complicates the problem solution. As for the above graphs, we have obtained the following equation of correlation:

- for the convex graph

\[
Y = -0.0025X^2 + 0.205X - 2.07; \quad (R^2 = 0.97); \quad (6)
\]

- for the concave graph

\[
Y = 0.0035X^2 - 0.141X + 2.50; \quad (R^2 = 0.91), \quad (7)
\]

where \( Y, X \) – the rates at which the number of credit recipients and the credit interest change.

Judging from the shape of the graphs drawn on the basis of (6, 7), we can conclude that for the case of concave graph even the slight increase of the bank rate results in the significant decrease in the number of credit recipients, while for the convex graph the same increase of the bank rate results only in the slight decrease in the number of credit recipients.

The rate of the interest change can be described by the correlation equation

\[
Y = 0.005X^2 - 0.253X + 4.172; \quad (R^2 = 0.88).
\]

We have found a reasonable interest rate, which will ensure satisfactory demand for credit financing. Equal rates of change in

<table>
<thead>
<tr>
<th>Schedule</th>
<th>Indicators</th>
<th>Half - year</th>
<th>Total payments</th>
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<tr>
<td></td>
<td></td>
<td>1  2  3  4  5  6</td>
<td></td>
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<tr>
<td>Discounting index</td>
<td></td>
<td>1.07 1.14 1.23 1.31 1.40 1.50</td>
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<tr>
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<tr>
<td></td>
<td>Paid interest</td>
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<tr>
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<td>Discounted interest</td>
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<td>3.86</td>
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<tr>
<td>Accelerated</td>
<td>Received credit</td>
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<tr>
<td></td>
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</tr>
<tr>
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<td>0.24 0.48 0.59 0.71 0.82 0.93</td>
<td>3.77</td>
</tr>
<tr>
<td></td>
<td>Discounted interest</td>
<td>0.22 0.42 0.48 0.54 0.59 0.62</td>
<td>2.87</td>
</tr>
<tr>
<td>Slow</td>
<td>Received credit</td>
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<td>10.00</td>
</tr>
<tr>
<td></td>
<td>Discounted credit</td>
<td>1.40 2.63 3.66 4.58 5.71 6.67</td>
<td>6.67</td>
</tr>
<tr>
<td></td>
<td>Paid interest</td>
<td>0.18 0.36 0.54 0.72 0.96 1.20</td>
<td>3.96</td>
</tr>
<tr>
<td></td>
<td>Discounted interest</td>
<td>0.17 0.32 0.44 0.55 0.69 0.80</td>
<td>2.97</td>
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</table>
the number of credit recipients and in the bank interest rate were accepted as the condition of feasibility. The credit interest ensuring this condition has been calculated and established for the convex graph as 20.93 %, and for the concave graph as 37.07 %. If the interest rate is higher than the calculated values, it will result in proportionally bigger decrease in the number of the credit recipients, and, consequently, the creditor will obtain a smaller profit.

For an enterpriser whose business is concerned with the development of regional infrastructure, it is important to know the value of payment \( D_p \), which is necessary for reimbursement of the loan balance and paying the interest on it. This payment can be calculated by [12]

\[
D_p = \frac{K_{inv} \left( 1 + \frac{p}{100} \right)^{s} - \sum_{j=1}^{s} \frac{K_{inv} \left( 1 + \frac{p}{100} \right)^{j-1}}{\left( 1 + \frac{p}{100} \right)^{j-1}}}{s}
\]

where \( j \) is ordinal number of the period of interest and loan balance payment, \( j = 1, 2, \ldots, s \); \( K_{inv} \) – the sum of credit proceeds, which remained unpaid till the time of putting the object into service, UAH; \( p \) is bank interest for the using the loan, part of the principal.

We have calculated the value of payment sufficient for loan reimbursement in three years. During 6 half-years, the enterpriser should pay for the loan balance and the related interest on it (24 % annually). Table 1 shows that when the crediting schedule is regular, the loan balance at the time of putting the object into operation is UAH 10 000 000; while for the accelerated schedule this value is UAH 7,760,000 (Fig. 2). It was calculated that depending on the crediting schedule, the sums of credit reimbursement increase from UAH 1 232 000 to UAH 2 172 000 (regular schedule) and from UAH 1 096 000 to UAH 1 932 000 (accelerated schedule). The respective decrease in interest related to these reimbursement values will be from UAH 1 200 000 to UAH 263 000 (total UAH 4 596 000) and from UAH 1 066 000 to UAH 230 000 (total 4 075 000). Thus, accelerated reimbursement of the received loan allows to significantly reduce the sum of interest (by more than 10 %), which is the evidence of the advantage of such decision for the enterpriser.

Enterprise approach can be applied for development of roads, water supply and discharge systems, gas supply networks, social and cultural objects, natural resources utilization etc. Efficiency of this approach application mostly depends on conditions and ways of solving the problem of the local infrastructure development, which is subjected to control and regulation on the part of the city governmental bodies.

The paper has been written on the basis of the materials obtained as a result of the state-financed scientific research project “Economic and managerial substantiation for increasing the power of territorial communities as an integrated result of public and business subjects’ activities” (state registration No. 0119U000253).

Conclusions.

One of the ways to ensure the development of the regional territory infrastructure is to use the resources from bank- and non-bank crediting institutions for implementation of various programs related to creation of social and economic infrastructure objects on entrepreneurial basis.

To stimulate entrepreneurship on the community territory, the city government should provide most favorable conditions for enterprisers to create business objects and put them into service. This will improve financial potential of the community as for the regional territorial infrastructure renovation and development.

Methodological basis has been developed for implementing the project of creating an infrastructure object according to the accelerated schedule of loan disbursement, which ensures a pre-schedule product manufacture. The amount of the additional investment needed for this purpose is calculated on the basis of the designed yield on the capital assets. The enterpriser can reduce the loan amount for putting the object into service and the sum of interest (by 20 % and more) at the expense of profit obtained from selling of the products. It is also possible to reduce the interest sum (by more than 10 %) during the period of the credit reimbursement.

The enterpriser can be further motivated to create a business object by favorable conditions of investment activity. For this end, it is important to ensure accelerated loan disbursement for putting the object into starting capacity and to charge a lower interest rate, which will attract maximum number of borrowers (by the agreement with a bank or other funding organization).

Business projects for creating regional infrastructure objects require thorough economic and administrative substantiation, which raises their attractiveness for investors, municipal government and community organizations. The created objects are bound to improve life quality of people residing on a definite territory, which is a vital task for further development of the present research.

References.

Концептуальний підхід до фінансового забезпечення розвитку інфраструктури регіональної території

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Цель. Теоретическое обобщение концепций финансового обеспечения органов местного самоуправления, а также научно-прикладное обоснование благоустройства территориальной инфраструктуры в направлении условий, в которых будут содействовать повышению потенциальных возможностей развития этой структуры при использовании предпринимательского подхода.

Методика. Методом научного обобщения обоснованы особенности предпринимательского подхода к созданию объектов инфраструктуры территориальной общины, разработан аналитический подход к оценке графика поступления привлеченных средств с точки зрения стоимости кредита, проанализированы условия предоставления кредита, дана качественная оценка разных схем погашения долговых обязательств.

Результаты. Обоснована аналитическая зависимость стоимости привлеченных средств от графика их поступления. Систематизированы экономические предпосылки, которые существенно влияют на конечные результаты предпринимательского проекта. Сделано утверждение о возможности оптимизации финансово-кредитных отношений между субъектами бизнеса и банками. Определена оптимальная процентная ставка, в которой будет обеспечиваться удовлетворительный спрос на кредитное финансирование. Показана целесообразность ускоренного графика получения кредитных ресурсов при условии ввода объекта на пусковую мощность. Изложены организационные и экономические предпосылки финансового решения социальных нуж территориальной общины на принципах предпринимательского подхода.

Научная новизна. Установлена аналитическая зависимость между суммой расходов на погашение остатка кредита и сроком ввода пусковой мощности бизнес-объекта. Обосновано влияние графика кредитования на возможность оптимизации финансово-кредитных отношений и определения оптимальной процентной ставки, которая будет обеспечивать удовлетворительный спрос на кредитное финансирование. Показана целесообразность ускоренного графика получения кредитных ресурсов при условии ввода объекта на пусковую мощность. Изложены организационно-экономические предпосылки финансового решения социальных нуж территориальной общины.

Практическая значимость. Предложен альтернативный подход к обеспечению развития территориальной общины при ограниченном целевом финансировании.

Ключевые слова: территориальная община, инфраструктура, бизнес-объект, кредитное финансирование, банковская ставка, стоимость кредита