

МАТЕМАТИЧНІ МЕТОДИ, МОДЕЛІ ТА ІНФОРМАЦІЙНІ ТЕХНОЛОГІЇ В ЕКОНОМІЦІ

DOI: <https://doi.org/10.32836/2521-666X/2019-2-64-24>

УДК 330.34

Kudrytska Zhanna

Candidate of Economic Sciences, Associate Professor,
National Aviation University

Seiz Anastasia

Master,
National Aviation University

Кудрицька Ж.В.

кандидат економічних наук, доцент,
Національний авіаційний університет

Сейз А.В.

магістр,
Національний авіаційний університет

MODELLING THE DIVERSIFICATION STRATEGY OF THE COMPANY TO REDUCE RISK DEGREE

МОДЕЛЮВАННЯ СТРАТЕГІЇ ДИВЕРСИФІКАЦІЇ КОМПАНІЇ ДЛЯ ЗНИЖЕННЯ СТУПЕНЯ РИЗИКУ

The article focuses on the recent tendency towards a decrease in the number of fixed telephone subscribers, which occurs every year. This is a global trend that has arisen due to the proliferation of mobile communications. One of the factors influencing the company's ability to withstand the spread of crisis processes and allows for more or less stable activity is the development and implementation of a diversification strategy as one of the strategic directions of development. The article deals with the possibility of diversifying telecommunication company activity. Within the framework of the study, an economic analysis of the telecommunications company is carried out and diversification projects are being developed that minimize the risks. On the basis of the projects under consideration, the economic effectiveness of the proposed projects will be assessed in the future.

Key words: *diversification, risk, fixed connection, telecommunications market, enterprise diversification project, efficiency, diversification efficiency, profitability of project.*

Сфера телекомунікаційних послуг є однією з пріоритетних галузей, яка покликана задовольняти потреби споживачів. Дохід від телекомунікаційних систем займає до десятої частини загального валового доходу країни. Таким чином, розвиток сфери телекомунікацій тісно пов'язаний з економічними процесами країни і розвиток телекомунікаційної системи може сприяти розвитку економіки. Оскільки телекомунікаційні технології стають усе більш поширеними і доступними, виникає необхідність застосування певних методів для зниження ризиків діяльності та збільшення прибутків. Одним із чинників, що впливає на здатність компанії протистояти поширенню кризових процесів та дає змогу забезпечити більш-менш стабільну діяльність, є вироблення та реалізація стратегії диверсифікації як одного зі стратегічних напрямів розвитку. Така стратегія дає змогу охопити всі напрями діяльності підприємства і діяти так, щоб закріпити свої позиції у різних галузях та забезпечити мінімізацію ризику й отримання прибутку. У статті розглянуто частку телекомунікаційних послуг, а саме фіксований зв'язок,

який представлений ПАТ «Укртелеком». Остання тенденція свідчить про те, що кількість абонентів фіксованого телефонного зв'язку зменшується з кожним роком. Нами було виявлено, що це загальносвітова тенденція, котру неможливо зупинити через поширення мобільного зв'язку, що з кожним роком приваблює все більше і більше абонентів та є надзвичайно зручним. Розглянуто можливість диверсифікації діяльності телекомунікаційної компанії. В межах дослідження на першому етапі проведено економічний аналіз телекомунікаційної компанії. На другому етапі дослідження проведено SWOT-аналіз для ПАТ «Укртелеком», у результаті чого з'ясовано, що кількість сильних та слабких сторін приблизно однакова. Але наявність ризиків залишається високою. Попередні дослідження дали змогу розробити проекти диверсифікації діяльності, котрі мають мінімізувати ризики. На основі розглянутих проектів у подальшому буде проведено оцінку економічної ефективності запропонованих проектів.

Ключові слова: диверсифікація, ризик, фіксований зв'язок, ринок телекомунікацій, проект диверсифікації підприємства, ефективність, ефективність диверсифікації, прибутковість проекту.

В статье уделено внимание последней тенденции уменьшения количества абонентов фиксированной телефонной связи, которая имеет место. Это общемировая тенденция, которая возникла из-за распространения мобильной связи. Одним из факторов, влияющим на способность компании противостоять распространению кризисных процессов и позволяющим обеспечить более или менее стабильную деятельность, является выработка и реализация стратегии диверсификации как одного из стратегических направлений развития. В статье рассмотрена возможность диверсификации деятельности телекоммуникационной компании. В рамках исследования проведен экономический анализ телекоммуникационной компании и разработаны проекты диверсификации деятельности, которые должны минимизировать риски. На основе рассмотренных проектов в дальнейшем будет осуществлена оценка экономической эффективности предложенных проектов.

Ключевые слова: диверсификация, риск, фиксированная связь, рынок телекоммуникаций, проект диверсификации предприятия, эффективность, эффективность диверсификации, доходность проекта.

Formulation of the problem. The current situation in the telecommunications market needs certain methods to reduce the risks of operations and increase profits. One of the factors influencing the company's ability to withstand the spread of crisis processes and allowing for more or less stable activity is the development and implementation of a diversification strategy as one of the strategic directions of development. The strategy of diversification covers all areas of the company's activity and allows it to act in such a way as to consolidate its positions in various fields and to minimize risk and profit.

Analysis of recent research and publications. The issue of diversifying the activities of business entities was considered in works written by foreign and domestic scientists, who have considered the theoretical and scientific and methodological foundations: O.O. Tsogla, M.D. Korinko, Z.M. Grushak, V.K. Bogachevskaya, G.O. Peresadko, P. Kotler, S.M. Popova, L.A. Shvayka, B.A. Rayzberg, J. Evans, and others. The authors considered the concept and classification of enterprise diversification, the algorithm for its implementation, fac-

tors influencing the diversification of enterprise activities, etc. In view of the dynamic changes in the market environment, there is the feasibility of further practical studies on this topic.

The purpose of the article is to compare the diversification projects regarding the activities of PJSC "Ukrtelecom" and to assess the effectiveness of these projects.

Presenting the main material. The selection and implementation of any business strategy require awareness of the shortcomings and benefits of this process. Diversification reduces the integral corporate costs due to the multifunctional use of resources. Diversification is the most justifiable and relatively less costly way to reduce the level of financial risk.

The strategy of diversification should be determined, taking into account the specific capabilities of the enterprise, its goals, and operating conditions. If we look specifically at the diversification of activities in order to reduce the risk, then it can be defined as a transition from a one-sided production structure to a multi-profile production or, in other words, an expansion of the range of services rendered or expansion of

production of goods, that is, the release of such goods that were not previously characteristic of this production.

In general, diversification is divided into two large groups: concentric and conglomerate. The concentration strategy of diversification is based on the fact that new products are created on the basis of what is already done by the enterprise. It does not require significant changes in technology and production process. The conglomerate strategy of diversification is based on the mastery of the production of new types of products or services that were previously not produced by the enterprise. This strategy is more cumbersome and more costly than concentric. It requires more material and technical resources for its implementation. To implement this kind of diversification, an enterprise must be financially stable and have a large amount of free money and resources.

In order to decide on the diversification of a particular company or company in the beginning, it is necessary to determine its financial status, to analyse what market share it occupies, and to assess its internal potential.

For the development of enterprise diversification projects, commonly used known matrix techniques are used to assess the company's position: BCG matrix, SWOT analysis, GAP analysis, SPACE, McKinsey, Thompson and Strickland.

The number of fixed telephone subscribers decreases each year. But it was discovered that this is a global trend that cannot be stopped due to the proliferation of mobile communications, which attracts more and more subscribers every year and is extremely convenient.

Based on this, the management of Ukrtelecom PJSC needs to pay attention to global trends and focus on those areas of activity that are in high demand from consumers. PJSC "Ukrtelecom", as a large telecommunications company, has, of course, its mobile operator "3Mob" but its positions on the market are rather weak. According to the author of the work, the mobile communications market should become one of the priority directions of the company's development. After all, the number of subscribers on

it every year only increases. This can be done by adding new, attractive tariffs for subscribers.

In general, in the telecommunications market of Ukraine, PJSC "Ukrtelecom" takes the 3rd place and controls about 20% of the total number of subscribers.

The conducted SWOT analysis for Ukrtelecom PJSC showed that the number of strengths and weaknesses is approximately the same (Table 1).

Business diversification projects should achieve synergistic effects. Synergies are called projects that increase the profitability of each other, and the profitability growth of one project can be based on both reducing costs and increasing benefits.

The analysis of existing diversification studies allows selecting a group of criteria, on the basis of which it is possible to recommend the most suitable directions and methods of diversification. These include: the market share occupied by the enterprise and the competitive position of the company in the market.

In our opinion, besides the indicated criteria, the choice of directions and methods of diversification is influenced by the starting financial condition of the enterprise. So, with insufficient financial resources and loss-making business, the company faces one task – to stay afloat; with a large amount of available free funds, the company aims to increase profits through diversification. In the first case, an enterprise is forced to seek diversification, which gives it the opportunity to maximize the full potential of existing capacity (primarily industrial) with minimal additional investment and a fairly high profit margin.

In the second case, the company searches for diversification, giving it the opportunity to invest in new areas to increase profits (including those where the rate of return on capital is lower than the existing, if further expansion in the traditional sphere is limited), with barriers to entry into the industry does not play a significant role for the enterprise.

Determining the starting financial condition of the company as a measure of financial stability, it is recommended to use the average rate of

Table 1

SWOT analysis of PJSC “Ukrtelecom”

S – Strengths	W – Weaknesses
1.1. A large number of subscribers and the prospect of expansion 1.2. Occupies a leading position in the telecommunication market 1.3. A wide and diverse range of telecommunication services 1.4. Great coverage area 1.5. Undisputed leader in the market of fixed telephony 1.6. Control over the largest fibre-optic network in Ukraine 1.7. Own network of customer service centres	2.1. A significant number of outdated communication lines and analogue stations 2.2. Lack of orientation to the needs of the consumer 2.3. Lack of a successful and effective portfolio strategy 2.4. Lowering the position of the company in the telecommunications market in recent years 2.5. The constant need for innovative investments 2.6. Depreciation of fixed assets 2.7. The need to constantly provide unprofitable services
O – Opportunities	T – Threats
3.1. Ability to purchase more modern equipment 3.2. Ability to use global communications networks at affordable prices 3.3. Distribution of new technologies 3.4. Increasing the quality of mobile communication 3.5. Demand for improved and new services based on the advanced information technology 3.6. Implementation of the latest technologies in the field of mobile communication 3.7. Expansion of the sphere of activity 3.8. Further development of the Internet technologies market	4.1. Lack of investment funds 4.2. Bad billing mechanisms 4.3. Lack of market legal regulation in the field of telecommunication 4.4. Reducing part of the fixed-line market 4.5. Aggressive competition policy in the IT field 4.6. The emergence of new competitors on the market, which will offer affordable services 4.7. It is possible to reduce the purchasing power of the population

growth of return on capital for several periods (K_φ), which is determined by the formula:

$$\overline{K}_\phi = \sqrt[n]{\prod K_i} \quad (1)$$

where n – number of periods,

K_i – coefficient of growth of return on capital in the i-th period.

$$K_i = \frac{P_i}{P_{i-1}} \quad (2)$$

where P_i and P_{i-1} – profitability of capital in the i-th and i-1-th periods

$$P_i = \frac{\text{ЧП}_i}{\text{БК}_i} \times 100\% \quad (3)$$

where ЧП_i – net profit received by the enterprise in the i-th period;

БК_i – the average value of equity in the i-th period.

The enterprise is:

– absolutely stable at $\overline{K}_\phi > 1$;

– stable with $\overline{K}_\phi \approx 1$;

– unstable at $\overline{K}_\phi < 1$.

According to official financial statements of PJSC “Ukrtelecom”, we calculated the indicator of financial stability of the enterprise.

$$P_{2017} = \frac{864407}{4681562} \times 100\% = 18\%$$

$$K_i = \frac{18}{12} = 1,5$$

$$\overline{K}_\phi = \sqrt{1,5} = 1,22$$

Since $\overline{K}_\phi > 1$, the company is considered absolutely stable. If the company is absolutely stable, it can diversify in any direction and using any methods: expansion of markets; absorption of competitors’ enterprises; development of new activities.

We reviewed two small projects for diversification of activities: Project A and

Project B. Project A was aimed at providing services for the repair of equipment: phones, smartphones, tablets, in the already established subscriber service centre of PJSC “Ukrtelecom” in Kyiv. Currently, the centres provide only services for connecting subscribers and their consultation, and after the implementation of the project, it will also be possible to repair this hardware. Project B was aimed at creating an online store selling equipment. Like the one that is, for example, in the company Kyivstar.

Projects can be considered as an example of related horizontal diversification due to the fact that they are implemented on the basis of the existing company and involve entry into additional competitive markets. The implementation of Projects A and B is scheduled for 4 months.

In order to open and operate the online store, it will be necessary to find and rent a room, but it is unnecessary for the service centre since it will be opened in an existing customer service centre. Accordingly, for each of the projects, it will be necessary to find staff, carry out certain work,

and purchase furniture or equipment for further work. Launching an advertising company is also an important stage in the project activity.

It was decided that for the implementation of Project A, 3 men will be hired in the service centre. For Project B, 4 managers and 4 couriers will be hired.

Graphs of project implementation are shown in Table 2-3.

Revenues are generated from the sale of the range of products offered on the site and depend on the category of products offered.

The payback period of the online store may fluctuate due to the selected product for implementation. But with proper calculations, good advertising, effective employee actions, and the right business plan for creating an online store should bring success to the company.

The economic efficiency of diversification is estimated on the basis of results obtained in the course of diversified activities. To assess the effectiveness of diversification of a company, it is necessary to analyse the financial performance of the company.

Table 2

Schedule of Project A implementation

Stage/Duration, month	July	August	September	October
Repairs				
Purchase of furniture and necessary equipment				
Search and hire of staff				
Staff training				
Launch of an advertising company				
The beginning of the service dividend				

Table 3

Schedule of Project B implementation

Stage/Duration, month	July	August	September	October
Hiring specialists to create a site				
Creating a site				
Search for suppliers				
Conclusion of contracts with suppliers				
Search for a room				
Conclusion of the lease agreement				
Purchase and installation of furniture				
Search and hire of staff to work in an online store				
Launching an ad campaign				
Getting Started Online Shop				

The estimated initial investment in Project A is shown in Table 4. According to the calculations, the amount of initial investment for Project A is 77,605 UAH.

Table 4

The initial investment in Project A

Equipment	Costs, UAH
Computer	12000
Table	2000
2 chairs	2000
Equipment for repair	
Soldering station	3850
Digital oscilloscope	3900
Digital meter	685
Vacuum tweezers	100
Antistatic bracelet	50
Antistatic brush	50
Ultrasonic bath	300
Power supply	290
Microscope	4200
A stand with lenses and clips	80
Screwdriver set	600
Stencil for rotation of taps on chips	200
Advertising	
Billboard	2800
Other expenses	
Room repair	20000
Postcards	500
Wages for 3 people per month	24000
Initial investment	77605

The financial results were projected for the next three years. It has been taken into account that there are such constant costs as advertising costs, specialist salaries and electricity. The rent costs will be absent as the service centre will be located on the premises of the customer service centre of PJSC “Ukrtelecom”.

The calculations were made taking into account that the average repair price is about 600 UAH. The number of clients per day in the first year – 3 men, the second year – 5, the third – 6. The result of the calculations of financial results for Project A is reflected in Table 5. According to them, NPV or net present value of the project and its payback period

were calculated. The discount rate is accepted at 16%.

$$NPV_A = \frac{149212}{(1-0,16)^1} + \frac{432604}{(1-0,16)^2} + \frac{574300}{(1-0,16)^3} - 77605 = 1682077$$

$$T_A = \frac{77605}{177632,83} = 0,43$$

The payback period of Project A is less than a year, namely about 4.3 months. NPV has a positive value. This suggests that this project will increase the cost of the company.

Similar calculations were made on Project B. Initial investment in Project B is presented in Table 6.

Table 5

Financial results for Project A

1. Income	1 year	2 year	3 year	Together in the project
1.1. Sales revenue VAT included	648 000	1 080 000	1 296 000	3 024 000
1.2. VAT	129 600	216 000	259 200	604 800
1.3. Net income excluding VAT	518 400	864 000	1 036 800	2 419 200
2. Costs				
2.1. Cash flow costs	337 600	337 600	337 600	1 012 800
2.2. Depreciation of fixed assets	5 309	5 309	5 309	15 926
2.3. All things	342 909	342 909	342 909	1 028 726
3. Finance result of the project	175 491	521 091	693 891	1 390 474
4. Payment on profit	31 588	93 796	124 900	250 285
5. The financial result of the project	143 903	427 295	568 991	1 140 188
6. Cash Flow project	149 212	432 604	574 300	1 156 115

Table 6

The initial investment in Project B

Equipment	Costs, UAH
2 computers	24000
2 tables	4000
2 chairs	2000
Other expenses	
Wages for 4 managers and 4 couriers	56000
Setup software support	2600
Creating and launching a site	26000
Start an advertising campaign	22000
Rent a room	18000
Hosting payment	6000
Initial investment	160600

The amount of initial investment in Project B is 160,600 UAH.

The calculations were made considering that the average price of the product on the site is 4000 UAH and the yield from the unit – 14%. For the first year, it was accepted that the number of orders per day would be – 7, the second – 10, the third – 12.

The fixed costs included rental costs, electricity, salary for employees, and payment for internet marketing services.

Financial results for Project B are shown in Table 7. According to the financial results, NPV of Project B and its payback period have been calculated.

Table 7

Financial results for Project B

1. Income	1 year	2 year	3 year	Together in the project
1.1. Sales revenue VAT included	1 411 200	2 016 000	2 419 200	5 846 400
1.2. VAT	282 240	403 200	483 840	1 169 280
1.3. Net income excluding VAT	1 128 960	1 612 800	1 935 360	4 677 120
2. Costs				
2.1. Cash flow costs	1 048 000	1 048 000	1 048 000	3 144 000
2.2. Depreciation of fixed assets	6 000	6 000	6 000	18 000
2.3. All things	1 054 000	1 054 000	1 054 000	3 162 000
3. Finance result of the project	74 960	558 800	881 360	1 515 120
4. Payment on profit	13 493	100 584	158 645	272 722
5. The financial result of the project	61 467	458 216	722 715	1 242 398
6. Cash Flow project	67 467	464 216	728 715	1 260 398

$$NPV_B = \frac{67467}{(1 - 0,16)^1} + \frac{464216}{(1 - 0,16)^2} + \frac{728715}{(1 - 0,16)^3} - 160600 = 1807096$$

$$T_B = \frac{160600}{80318,1} = 1,9$$

The NPV value for this project is slightly higher than that of Project A but the payback period is almost 2 years, which is significantly higher than that of Project A. Those projects, in which expenditures are returned earlier, are burdened with less risk in terms of uncertainty of the behaviour of the external economic environment than projects, in which expenditures are returned in distant periods (the accuracy of forecasts for a long period is known to decrease).

Accordingly, it can be concluded that the effectiveness of diversification in the first project will be greater than in the second. But in general, both projects will be profitable in the future and you can invest money in the creation of a centre for repairing phones, smartphones, and tablets, and in the creation of an online store.

Conclusions. Diversification is considered the most reasonable and relatively less costly way to reduce the level of financial risk. In view of this, in the article, two projects were proposed for diversification of activities: provision of equipment repair services in the already established Ukrtelecom subscribers' service centres in Kyiv and the creation of an online hardware store. Both projects are effective but the project of service centre creation was more positive due to a lower payback period. PJSC "Ukrtelecom" can be considered absolutely stable company ($K_{\phi} > 1$), therefore, the company can diversify in any direction and use any methods for significant minimization of risks and increase of profits.

References:

1. Sperchun A.V., Aparova O.V. (2019) Influence Of Telecommunication Services Market Development On Economic Development. *Informatsiini tekhnolohii, systemnyi analiz i modeliuвання sotsioekolohoekonomichnykh system: Zb. materialiv Kh Mizhnarodnoi naukoivo-praktychnoi konf. (Ukraine, Kyiv, March 19-20, 2019) (eds. Kasianova N.V.), Kiev: NAU, pp.191-193.*

2. Kilkist kliientiv kompanii «Ukrtelekom» [Number of clients of Ukrtelecom company]. Available at: <http://www.ukrtelecom.ua> (accessed 08.12.18)
3. Zvit pro finansovi rezultaty PAT «Ukrtelekom» za 2017r. [Ukrtelecom PJSC report for 2017.]. Available at: <http://www.ukrtelecom.ua/media/library/754.pdf> (accessed 08.12.18)
4. Korinko M.D. (2008) Orhanizatsiino-ekonomichniyi mekhanizm dyversyfikatsii diialnosti subiektiv hospodariuvannia [Organizational and economic mechanism of the diversification of the activities of business entities]. Aktualni problemy ekonomiky, no. 6. pp. 135-142.