

УДК 339.138:339.9

DOI: 10.30857/2786-5398.2025.3.6

Serhii F. Nehoda

Kyiv National University of Technologies and Design, Ukraine

**FORMATION OF A CLUSTER BUSINESS MODEL BASED
ON MARKETING PRINCIPLES**

The purpose of the article is formation of a cluster business model based on marketing principles. The article presents the results of a study on the formation of a cluster business model on a marketing basis. It is substantiated that an effective tool for reforming the cluster business development management system can be a proactive management system, which is built on the analysis of past, identified current and possible future errors, and the timely formation of management business decisions on this basis, the creation of cluster models for effective implementation. The implementation of the marketing principle of proactive management requires the creation of a mobile organizational structure for cluster management, which would be flexible, dynamic; quickly adapt to unforeseen changes in external conditions; would have the ability to self-organize individual links as the task changes. It is established that the mechanism of state guarantees of investment projects should include assistance to innovative cluster business through insurance of investment risks in high-tech industries and the provision of guarantees to investors. Special attention should be paid to state stimulation of the investment process at all levels, the formation of a certain trust in the economic policy of the state. The smooth implementation of the proposed developments is possible under the conditions of introducing a regional-functional structure of the organization of cluster business management on the basis of marketing, which is characterized by the possibility of effective goods movement (due to an integrated, diversification direction), small branching and a clear division of duties and responsibilities.

Keywords: business; knowledge economy; integration; innovation; marketing; marketing strategy; modeling; clustering; cluster models of business development; synergistic effect.

Сергій Ф. Негода

Київський національний університет технологій та дизайну, Україна

**ФОРМУВАННЯ КЛАСТЕРНОЇ МОДЕЛІ БІЗНЕСУ
НА МАРКЕТИНГОВИХ ЗАСАДАХ**

Метою статті є формування кластерної бізнес-моделі, заснованої на маркетингових принципах. В статті представлено результати дослідження щодо формування кластерної моделі бізнесу на маркетингових засадах. Обґрунтовано, що ефективним інструментом реформування системи управління розвитком кластерного бізнесом може бути система випереджуючого управління, яка побудована на аналізі минулих, виявлених теперішніх і можливих майбутніх помилок, та своєчасного формування на цій основі управлінських бізнес рішень, створення кластерних моделей для ефективної реалізації. Реалізація маркетингового принципу випереджуючого управління вимагає створення мобільної організаційної структури управління кластером, яка була б гнучкою, динамічною; швидко адаптувалась до непередбачених змін зовнішніх умов; мала б здатність до самоорганізації окремих ланок по мірі зміни завдання. Встановлено, що механізм державних гарантій інвестиційних проектів має включати допомогу інноваційному кластерному бізнесу через страхування інвестиційних ризиків у високотехнологічних галузях та надання гарантій інвесторам. Особливу увагу слід приділяти державному стимулюванню інвестиційного процесу на всіх рівнях, формуванню певної довіри до економічної політики держави. Безперерйна реалізація запропонованих розробок можлива за умов впровадження регіонально-функціональної структури організації управління кластерним бізнесом на основі

маркетингу, яка характеризується можливістю ефективного руху товарів (завдяки інтегрованому, диверсифікованому напрямку), невеликою розгалуженістю та чітким розподілом обов'язків та відповідальності.

Ключові слова: бізнес; економіка знань; інтеграція; інновації; маркетинг; маркетингове стратегування; моделювання; кластеризація; кластерні моделі розвитку бізнесу; синергетичний ефект.

Problem statement. It is characteristic of Ukrainian economic modernization that all reforms faded away not due to the exhaustion of the market potential of enterprises, but due to the emergence of reverse (inverse) waves, the consequence of which, as historical experience shows, is a counter-market tendency, which, under certain ideological and political conditions, can lead to the emergence of a transitional type of economy.

Unresolved parts of the problem. The processes of innovative development are characterized by the presence of a close relationship between the phenomena of stability and instability, therefore the economic system is only relatively dynamically stable. The development process, although continuous, contains crisis situations that correspond to states of instability. The violation of relative stability occurs not only due to the accumulation of quantitative and qualitative changes in the elements of the system, but also in their relationships, which determine the state of the system structure.

Analysis of literary sources. According to the results of the analysis of literary sources [1–10], a number of factors that form the marketing environment of cluster business have been identified, showing that the most influential of them are:

- at the macro level: martial law, demographic (dynamics of the number and socio-economic composition of the population); socio-economic (consumption structure, purchasing power, standard of living of the population); natural and climatic (climate, resource availability, environmental situation); scientific and technological (scientific and technological progress, innovative activity); political and legal (state power, political stability, unambiguity of current legislation); cultural (value orientations, mentality, stereotypes of thinking);

- at the micro level: intra-enterprise: intra-production (cost of production, marketing costs, profitability); classification (product assortment and nomenclature); technical and technological (quality, operational properties, compliance with standards); ergonomic (hygienic, anthropometric, psychophysical properties); aesthetic (design, trademark, packaging, attractiveness, etc.); organizational (terms of supply, service, product credit, sales, relationships between functional units of the enterprise, professional and qualification composition of their personnel) and external business (competitors, suppliers, intermediaries, consumers, other persons interested in the product).

The purpose of the article is formation of a cluster business model based on marketing principles.

Presentation of the main material. Innovative development of industrial production is implemented on the basis of various cyclical patterns. The desire for crisis-free progressive development, its idealization contradicts the evolutionary mechanisms of development. Crisis-freeness, in this case, is identical to the delay in development, because it deprives the system of the basis for qualitative improvement.

We believe that the flexibility of a cluster business in relation to the use of its own market potential is the ability to obtain the necessary result, which allows it to absorb a certain number of products that can find demand in the market within a certain period and, in turn, will allow it to obtain the necessary result in the future period, which will ensure survival and development.

We have identified two areas of disclosure of the degree of use of the market potential of the cluster business model:

- to assess the results of activities in the current period, i.e. to obtain technical and economic indicators (result for recovery);
- to determine the relationship between business and the external environment, i.e. the ability to plan and predict the process of its development for recovery (ability to recover).

The first direction involves analyzing the formation of a mechanism for regulating the development of industrial production, the second involves assessing the market potential of cluster business and modeling the development of industrial production.

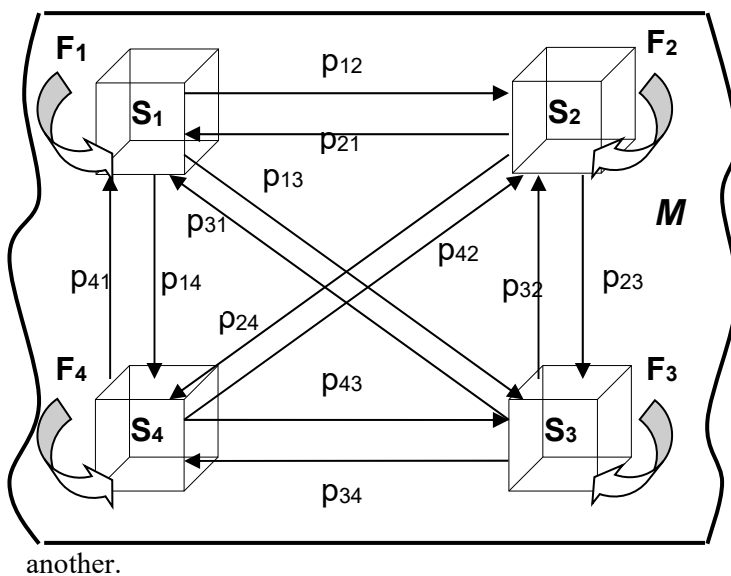
Regulation using economic methods allows business to retain the right to freely choose its behavior. Economic regulation is carried out using fiscal, budgetary, tax, monetary, depreciation and other instruments of state economic policy.

In order to adequately respond to constantly changing environmental conditions and maximize its market potential, business must ensure high efficiency of the functioning of the economic system through the most complete and rational use of all available resources.

Based on the above, we have clarified the market potential of the cluster business model, taking into account its future development. The market potential of clusters is the aggregate ability of the economic resources available to the business to maximize the possible production of goods and services that are in solvent demand in the market, in order to make a profit and meet social needs and effective communication marketing policy.

Based on a critical analysis of modern concepts of marketing management, theoretical aspects have been formulated, the essence and constituent elements of the marketing mechanism for managing the market potential of cluster business have been determined, on the basis of which its predictive and transformational model has been built.

The marketing mechanism (M) should be understood as an effective structural-dynamic organizational-functional system for managing the market potential of a cluster business with a discrete state, which consists of research (S_1), production (S_2), communication-sales (S_3) and controlling (S_4) subsystems, aimed at studying the market, competitive environment, consumer needs and focusing the manufactured goods on them (Fig. 1).



SYMBOLS:

S_1 – research subsystem of the marketing mechanism, defined by the analytical function F_1 ;

S_2 – production subsystem of the marketing mechanism, regulated by the function of the same name F_2 ;

S_3 – communication and sales subsystem of the marketing mechanism, equipped with the function of the same name F_3 ;

S_4 – controlling subsystem, the functioning and content of which are determined by the function of management and control F_4 ;

$p_{12}, p_{13}, p_{14}, p_{21}, p_{23}, p_{24}, p_{31}, p_{32}, p_{34}, p_{41}, p_{42}, p_{43}$ – conditional probabilities of sequential transition from one marketing subsystem to another.

Fig. 1. Predictive and transformational model of the marketing mechanism for managing the market potential of cluster business

The effectiveness of the marketing mechanism for managing market potential (E_M) is proposed to be defined as the success of mobilizing reserves to increase the performance of certain marketing subsystems through marketing actions according to the formula:

$$E_M = 1 - ((1 - E_{rs}) \times (1 - E_p) \times (1 - E_{cs}) \times (1 - E_c)) = 1 - E_{mm} \times E_p \times E_{cs} \times E_c, \quad (1)$$

де E_{rs} – effectiveness of the research subsystem of the marketing mechanism of cluster business activities; E_p – efficiency of the production subsystem; E_{cs} – efficiency of the communication and sales subsystem; E_c – effectiveness of the controlling subsystem.

Hence the reserves for increasing the effectiveness of marketing research: $P_{rs} = 1 - E_{rs}$; production $P_p = 1 - E_p$; communications and sales $P_{cs} = 1 - E_{cs}$; controlling $P_c = 1 - E_c$.

The difference of this method is in its predictability, since the application of the theory of random processes in combination with the theory of probability makes it possible to determine the effectiveness of the functioning of a cluster business and on the basis of the implementation of a marketing management mechanism in any period of time, taking into account the influence of certain factors. Due to this, it becomes possible to promptly make the right management decisions that can improve the current state of the cluster business, as well as the ability to assess the effectiveness of the marketing mechanism in the future according to the formula:

$$E_M(k=1) = \sum_{i,j=1}^4 E_i(k=0) \times p_{ij}(k=0), \quad (2)$$

where $k=0$ – base period (period of time taken as a reference point); $k=1$ – reporting period; p_{ij} – the probability of the course of marketing events in the economic activity of the cluster business (the order of implementation of marketing activities when forming marketing subsystems from the i -th to the j -th state (Fig. 1)); E_i – the effectiveness of a specific marketing subsystem.

A comprehensive approach to assessing the effectiveness of each of the component subsystems of the marketing mechanism for managing market potential at an enterprise in terms of marketing functions can be applied on the basis of a systems approach.

The marketing mechanism is initiated by a research subsystem. Marketing research should be carried out on an express survey of potential consumers (according to a modified scheme for constructing questionnaire questions). The degree of effectiveness of such research is recommended to be determined by formula (3), as a result of the influence of socio-psychological indicators based on verbal assessments:

$$E_{mm} = \sum_{i=1}^m \frac{Cr \times Cc \times Cpc \times \bar{R}}{m}, \quad (3)$$

де Cr – consumer response (return rate) is calculated as the proportion of returned questionnaires in the total number of questionnaires printed for the survey, $Cr < 1$; Cc – correction coefficient (the proportion of questionnaires that do not meet the completion requirements in the total number of returned questionnaires); Cpc – the priority coefficient of the target question, which takes into account the degree of mental load of the respondent when answering the target question (determined by the questionnaire developer), $0.4 < Cc < 0.6$; R – the average score (rating) of the returned questionnaires, which is defined as a weighted average; n – the number of marketing researches conducted by the company during the year.

The use of a systems approach and multifactorial technical and economic analysis in determining the efficiency of the production subsystem of the marketing mechanism allowed us to propose its assessment according to formula:

$$E_p = \frac{R_{FA} \times Lc \times Fcb \times kwc}{(1 - Zmp) \times w \times (Cgs + Me) \times I_{FA}} - 1, \quad (4)$$

де R_{FA} – profitability of fixed assets (FA) of cluster business; Lc – labor capitalization; Fcb – average working capital balances; kwc – turnover of working capital; Zmp – costs per UAH 1 of marketable products; Cgs – cost of goods sold; Me – marketing expenses; w – labor productivity; I_{FA} – active part of the FA.

Analyzing this dependence, it was possible to establish that along with the increase in the profitability of fixed assets of the cluster business, capitalization, average balances of working capital and the turnover ratio of working capital, as well as with the decrease in costs per 1 UAH of commodity products, its cost price, marketing costs (which increases the effectiveness of marketing-oriented production), there is a negative impact of the growth of labor productivity and the active part of fixed assets on production efficiency.

The communication and sales subsystem of the marketing mechanism for managing the activities of the cluster business is justified by the function of goods movement. Studies carried out on the basis of ABC-XYZ analysis have shown that the strategy of sales intensification involves movement both within one assortment group (from a subgroup of goods with a low inventory turnover ratio as a progressive direction of development of communication and sales policy and vice versa – as a regressive one), which is determined by the demand for the goods offered by the enterprise, and movement between assortment groups in general, which is determined by the production potential of the enterprise, on the one hand, and the purchasing power of consumers, on the other. In the practice of cluster business, both options for the development of events are observed. In view of this, it is necessary to focus on the inadmissibility of the situation of the predominance of the regressive direction in sales policy due to the constant study of consumer demand, the competitive environment, the introduction of innovations, the offer of new modifications of goods of well-established production, the intensification of rationalization within the enterprise.

The effectiveness of the communication and sales subsystem (CS) of the marketing mechanism of the cluster business management is proposed to be determined as the product of the product sales index (P_{SI}) and the marketing expenses index (M_{EI}) according to formula (5), where the first reflects the share of the product range (PR) that brings it real income as a result of sales (RP), the second determines the share of marketing expenses (MC) in the cost of sales.

$$E_{cs} = P_{si} \times M_{EI}, \quad (5)$$

Based on this, the author extends the Pareto rule to the sphere of evaluating communications and sales: if the marketing expense index is equal to $I_{mv} = 0.2$, and the degree of realization of commodity products $I_{RP} = 0.8$, then the optimal level of efficiency of the marketing subsystem of sales will be $E_{cs} = 0.16$.

The study of fluctuations in sales dynamics allowed us to establish an analytical relationship between sales volumes (RP) and the time factor (t), which is polynomial in nature (i.e., $RP = a + bt + ct^2 + dt^3 + \dots + pt^\lambda$), which indicates the presence of seasonal fluctuations (λ) (or cyclicity) in the sales of any product and explains the lack of stable, clearly formed demand for it.

The author's understanding of marketing controlling as a holistic subsystem that combines the processes of planning, forecasting, auditing and management of achieving effective final results

of the enterprise's management allowed him to develop a methodology for assessing its effectiveness despite the probabilistic nature of the defined process (Table 1). It was carried out on the basis of scaling marketing controlling processes.

According to the proposed methodology, the level of effectiveness of marketing controlling (E_c) is estimated as a fraction of a unit in the range of values from 0 to 1, which are marginal and unattainable in practice, with a step of 0.1. The highest assessment of effectiveness of controlling "0.9" is given in the presence of all the characteristics necessary for the successful implementation of the marketing mechanism of cluster business management.

Table 1

**Determining the effectiveness of marketing-controlling
the market potential of cluster business**

Characteristics of the implementation of the marketing mechanism of cluster business activities	Evaluation of the effectiveness of the controlling subsystem								
	low			average			high		
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Marketing is perceived as a superstructure over the production base, fully justifying any management decision.									
Marketing controlling is formed as a subsystem that fully corresponds to its functional purpose.									
Marketing subsystems are interconnected, their functioning is carried out in interaction with each other.									
The effectiveness of the marketing mechanism is determined by the effectiveness of the communication, sales and production subsystems.									
The effectiveness of the marketing mechanism is determined by the success of the research and production subsystems.									
The effectiveness of a marketing mechanism is determined only by its production capabilities.									
Controlling is carried out on a full scale, complying with the requirements of each stage and minimizing errors.									
The implementation of a marketing audit is entrusted to specialists who are familiar with the laws of demand formation.									
The marketing audit is performed within the established deadline, once with a minimum number of errors									

Symbols in the table:

-  – agreement with the statement given as a characteristic of controlling activities (i.e. "yes");
 – the negation of such a statement (i.e. "no").

Conclusions and prospects for further research. To analyze the degree of use of the market potential of cluster business, it is necessary to implement a comprehensive multivariate logistics model of effective activity management, on the basis of which it becomes possible to develop proposals for increasing the profitable activity of domestic business and improving its

image in a hierarchical market environment. The growth of commercial success of cluster business by intensifying product sales, increasing the efficiency of goods movement at the lowest possible cost is seen in the implementation of the tasks of the logistics part of the marketing mechanism for managing its activities.

The smooth implementation of the proposed developments is possible under the conditions of introducing a regional-functional structure of the organization of cluster business management on the basis of marketing, which is characterized by the possibility of effective goods movement (due to an integrated, diversification direction), small branching and a clear division of duties and responsibilities.

References

Література

1. Bavyko, O. Ye. (2015). Klasterna orhanizatsiia ekonomichnoi diialnosti yak upravlinskyi zasib rehionalnoho menedzhmentu [Cluster organization of economic activity as a management tool of regional management]. *Efektivna ekonomika = Effective economy*, № 6. URL: <http://www.economy.nayka.com.ua/?op=1&z=4131>.
1. Бавико О. Є. Кластерна організація економічної діяльності як управлінський засіб регіонального менеджменту. *Ефективна економіка*. 2015. № 6. URL: <http://www.economy.nayka.com.ua/?op=1&z=4131>.
2. Baula, O. V. (2018). Intehratsiini protsesy ta yikh orhanizatsiinyi suprovid u period rozvytku kompanii [Integration processes and their organizational support during the company's development]. *Visnyk Kyivskiy natsionalnyi universytet tekhnolohii ta dyzainu. Ekonomichni nauky = Bulletin of the Kyiv National University of Technologies and Design. Economic Sciences*, № 2 (121), P. 43–50. DOI: <https://doi.org/10.30857/2413-0117.2018.2.4> [in Ukrainian].
2. Баула О. В. Інтеграційні процеси та їх організаційний супровід у період розвитку компанії. *Вісник Київський національний університет технологій та дизайну. Економічні науки*. 2018. № 2 (121). С. 43–50. DOI: <https://doi.org/10.30857/2413-0117.2018.2.4>.
3. Buriak, Ye. V. (2020). Klasteryzatsiia yak mekhanizm zabezpechennia innovatsiinoho rozvytku rehioniv [Lasterization as a mechanism for ensuring innovative development of regions]. *Aktualni problemy ekonomiky = Actual problems of economics*, № 2 (224), P. 57–67. URL: https://eco-science.net/wp-content/uploads/2020/03/2.20._topic_Byrak-E.V.pdf.
3. Буряк Є. В. Кластеризація як механізм забезпечення інноваційного розвитку регіонів. *Актуальні проблеми економіки*. 2020. № 2 (224). С. 57–67. URL: https://eco-science.net/wp-content/uploads/2020/03/2.20._topic_Byrak-E.V.pdf.
4. Hanushchak-Iefimenko, L. M. (2014). Innovatsiinyi rozvytok pidpriemnytstva v Ukraini: stratehichni oriientyry: monohrafiia [Innovative development of entrepreneurship in Ukraine: strategic guidelines: monograph]. Kyiv: National Academy of Management 343 p. [in Ukrainian].
4. Ганущак-Єфіменко Л. М. Інноваційний розвиток підприємництва в Україні: стратегічні орієнтири: монографія. К.: Національна академія управління, 2014. 343 с.
5. Yermoshenko, M. M., Hanushchak-Iefimenko, L. M. (2010). Mekhanizm rozvytku innovatsiinoho potentsialu klasteroobiednanykh pidpriemstv: monohrafiia [Mechanism for developing the innovative potential of cluster-associated enterprises: monograph]. Kyiv: National Academy of Management. 236 p. [in Ukrainian].
5. Єрмошенко М. М., Ганущак-Єфіменко Л. М. Механізм розвитку інноваційного потенціалу кластерооб'єднаних підприємств: монографія. К.: Національна академія управління, 2010. 236 с.
6. Karpenko, A. V., Karpenko, N. M. (2023).
6. Карпенко А. В., Карпенко Н. М.

Mekhanizm upravlinnia rozvytkom klasteriv v Ukraini yak osoblyvoiu formoiu biznes-spilnot [Mechanism of management of cluster development in Ukraine as a special form of business communities]. *Ekonomika i orhanizatsiia upravlinnia = Economics and management organization*, № 2 (50), P. 61–75. DOI: <https://doi.org/10.31558/2307-2318.2023.2.6> [in Ukrainian].

7. Naumov, O. B., Danko, Y. I., Naumova, O. V. (2023). Mekhanizmy formuvannia klasternykh struktur u systemi vyrobnytstva ahrarnoi produktsii [Mechanisms of formation of cluster structures in the system of production of agricultural products]. *Development Service Industry Management*, No. 4, P. 124–129. DOI: [https://doi.org/10.31891/dsim-2023-4\(20\)](https://doi.org/10.31891/dsim-2023-4(20)) [in Ukrainian].

8. Nifatova, O. M. (2017). Formalizovane predstavleniia intehrovanooho brendynhu: sutnist ta osoblyvosti upravlinnia [Formalized representation of integrated branding: essence and features of management]. *Formuvannia rynkovykh vidnosyn v Ukraini: zbirnyk naukovykh prats = Formation of market relations in Ukraine: collection of scientific works*, № 12 (199), P. 157–163 [in Ukrainian].

9. Shkoda, M. S. (2022). Priorytetni napriamy rozvytku system klasterneho partnerstva v natsionalnii ekonomitsi v umovakh viiny [Priority areas for the development of cluster partnership systems in the national economy in wartime]. *Imperatives of economic growth in the context of implementing global sustainable development goals: abstracts of the reports of the III International Scientific and Practical Internet Conference (Kyiv, June 10, 2022)*: In 2 volumes, Vol. 1, P. 151–154. URL: https://er.knutd.edu.ua/bitstream/123456789/20401/1/IMPER_2022_V1_P151-154.pdf [in Ukrainian].

10. Porter, M. (1987). From Competitive Advantage to Corporate Strategy. *Harvard Business Review*, May/June, P. 43–59.

Механізм управління розвитком кластерів в Україні як особливою формою бізнес-спільнот. *Економіка і організація управління*. 2023. № 2 (50). С. 61–75. DOI: <https://doi.org/10.31558/2307-2318.2023.2.6>.

7. Наумов О. Б., Данько Ю. І., Наумова О. В. Механізми формування кластерних структур у системі виробництва аграрної продукції. *Development Service Industry Management*. 2023. № 4. С. 124–129. DOI: [https://doi.org/10.31891/dsim-2023-4\(20\)](https://doi.org/10.31891/dsim-2023-4(20)).

8. Ніфатова О. М. Формалізоване представлення інтегрованого брендингу: сутність та особливості управління. *Формування ринкових відносин в Україні: збірник наукових праць*. 2017. № 12 (199). С. 157–163.

9. Шкода М. С. Пріоритетні напрями розвитку систем кластерного партнерства в національній економіці в умовах війни. *Імперативи економічного зростання в контексті реалізації глобальних цілей сталого розвитку: тези доповідей III Міжнародної науково-практичної Інтернет-конференції* (м. Київ, 10 червня 2022 року): В 2-х т. Київ: КНУТД, 2022. Т. 1. С. 151–154. URL: https://er.knutd.edu.ua/bitstream/123456789/20401/1/IMPER_2022_V1_P151-154.pdf.

10. Porter M. From Competitive Advantage to Corporate Strategy. *Harvard Business Review*. 1987. May/June. P. 43–59.