ISSN-L 2664-9969; E-ISSN 2706-5448

UDC 658:8:620.9
JEL Classification: M31, Q42, L26, D81
DOI: 10.15587/2706-5448.2025.326703

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INTEGRATION OF ENERGY INDEPENDENCE INTO MARKETING STRATEGIES OF SMALL AND MEDIUM-SIZED ENTERPRISES: STATE SUPPORT AND PROFITABILITY ANALYSIS

The object of research is the marketing strategy of energy independence of enterprises. One of the most problematic areas is determining the effectiveness of energy independence marketing strategies and their profitability due to limited access to official data, investment statistics, and reports on state programs for calculations.

The research used various methods. The logical method was used to justify the feasibility of energy independence, system analysis helped to assess its benefits and risks. Systematization and generalization methods were used to identify the main components of the concept, expert assessments were used to collect information, and statistical methods were used to assess the profitability of the activity.

The research results confirm that the implementation of a marketing strategy for energy independence of small and medium-sized enterprises, taking into account state support, can reduce electricity costs. Savings can range from 20 to 40 % over 5–7 years. The implementation of energy-efficient solutions contributes to an increase in the profitability of the activity by 3–5 %, which in the long term will lead to an increase in profit by up to 50 %. This is due to the fact that the proposed model of the marketing strategy for energy independence is to attract investment and state aid.

This provides the opportunity to reduce costs for alternative energy, increase profits due to business sustainability and increase the attractiveness of enterprises for environmentally conscious consumers and investors.

Compared to similar well-known traditional approaches to the so-called "green marketing", the implementation of the concept of energy independence provides significant advantages. The application of this concept in the marketing communications system of small and medium-sized businesses contributes to an increase in the level of trust from stakeholders. In particular, it ensures an increase in profitability due to state support and attraction of investments in energy-efficient technologies and alternative energy sources.

Keywords: *energy sustainability, business, green marketing, marketing strategies, government assistance, cost reduction, profitability.*

Received: 09.01.2025
Received in revised form: 08.03.2025
Accepted: 29.03.2025
Published: 12.04.2025

How to cite
Adamovska, V., Mishchuk, I., Porosla, P., Denysenko, D., Dashko, I. (2025). Integration of energy independence into marketing strategies of small and medium-sized enterprises: state support and profitability analysis. Technology Audit and Production Reserves, 2 (4 (82)), 24–32. https://doi.org/10.15587/2706-5448.2025.326703

1. Introduction

Today, energy independence is one of the key marketing trends worldwide. The rational consumption of resources has formed the basis for the development of marketing strategies of enterprises that are focused on energy independence and environmental friendliness. In this context, "green" marketing is of particular importance, which not only corresponds to modern environmental trends, but also contributes to the formation of a long-term strategy for sustainable development of enterprises.

The relevance of "green" marketing is confirmed by various studies by scientists, the main results of which are presented in Fig. 1.

"Green" marketing is a type of responsible marketing that ensures environmental responsibility during the development and implementation of advertising campaigns and marketing strategies. Such eco-marketing is more related to the long-term development strategy of enterprises [8].

Studies [9, 10] confirm that the technological backwardness of Ukrainian enterprises makes it difficult to conduct a comprehensive energy audit and implement energy saving measures. To adapt to modern standards, it is necessary to modernize energy supply, introduce alternative energy sources, and attract qualified specialists.

The authors [11] analyze the specifics of implementing a "green" strategy in different industries based on different benefits and risks for more efficient use of natural resources, production efficiency, implementation of environmental management and human resource development.

Before implementing a "green" concept into a business strategy, it is necessary to assess the factors that may affect its implementation. Researchers emphasize that the ecological transformation of enterprises is accompanied by risks associated with the level of development of the enterprise, the availability of investments and technologies. In addition, shareholders may face some resistance due to potential financial losses [12].

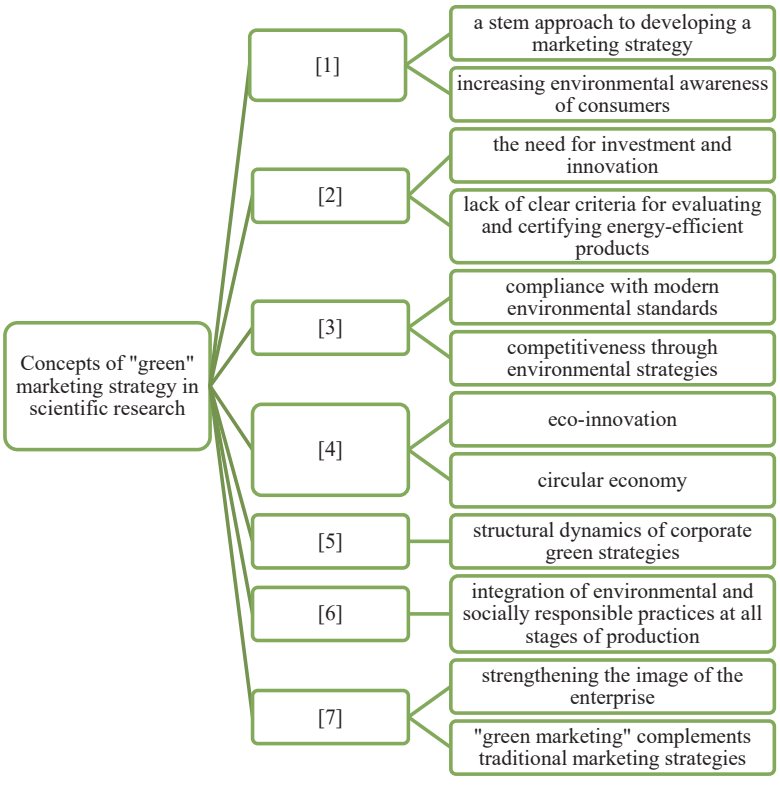

Fig. 1. The concept of "green" marketing in scientific research
Source: systematized by the authors based on sciences [1–7]

Green marketing aims to integrate environmental aspects into marketing strategies, which encourages companies to produce more environmentally friendly products. The implementation of a green marketing strategy is a necessary condition for the competitiveness of companies, since environmentally conscious customers expect businesses to comply with the principles of sustainable development. At the same time, the success of such a strategy depends on its comprehensive implementation in all aspects of marketing activities [13].

The work [14] examines the activities of enterprises with a "green" strategy. An example is BSM, which produces traditional batik using natural dyes, such production reduces the negative impact on the environment, which indicates the early development of ecological production. The SDM enterprise is an example of a family business that adheres to the principles of environmental responsibility by investing in waste management systems and supporting suppliers of natural materials. The study showed that these enterprises did not apply "green" approaches to other elements of the marketing mix, except for the product. In particular, the price of their products did not take into account environmental costs, and marketing communications did not focus on the environmental benefits of the product. At the same time, enterprises demonstrated an environmental orientation by applying eco-labeling and adapting to the environmental requirements of the market. The authors emphasize that state regulation plays an important role in stimulating the implementation of "green" marketing.

In [15], green marketing is described as a component of business strategies for enterprises that want to comply with environmental trends. Such a component as green marketing is aimed at satisfying consumer needs and ensuring environmental safety.

It is interesting that already in the study [16] the author emphasizes that environmental marketing goes beyond simple environmental labeling, it encompasses environmentally friendly methods in product delivery, product life cycle and corporate values of enterprises.

Studies [17, 18] analyze the impact of green marketing on consumer behavior and corporate strategies. They consider its significance for brand environmental equity and the integration of sustainability into business models.

Having analyzed the authors' work, let's consider it necessary to introduce the "energy independent" labeling into the enterprise's marketing strategy, which will ensure compliance with environmental standards. It is important to focus on developing a marketing strategy for enterprises that would take into account modern requirements, increase energy independence and stability, and also compensate for the costs of energy independence.

In modern conditions, especially in the context of martial law in Ukraine, business sustainability is becoming even more important. This is due to the growing number of works by both domestic and foreign authors that investigate the effectiveness and impact of state financial assistance on the development of entrepreneurship in wartime. Special attention is paid to small and medium-sized businesses, which are a key component of the state economy, because their sustainability and ability to recover determine the overall state of the country's economy.

In this context, it is important to analyze the main challenges that small and medium-sized enterprises may face. According to the survey results [19], the main problem for enterprises is power outages, which lead to significant financial losses and force businesses to suspend operations or close down altogether.

Given this problem, the issue of financial support for business becomes relevant. As recent studies show, such support is provided by state and international programs, for example: program USAID "Competitive economy of Ukraine" [20], grant "Own business" program [21], government the eWork programme [22], Horizon Europe [23] and EU 4 Business [24]. Despite the extensive list of financial programmes, the mechanism assistance what they provide is not finally settled. In addition, not all programs provide steps towards energy independence for enterprises.

However, there are programs specifically aimed at overcoming energy challenges. One of these is the lending program offered by PrivatBank, which is aimed at supporting enterprises that are facing unstable energy supply. The program provides possibility to buy on credit generators, sources uninterrupted power, batteries and systems communication Starlink [25]. It is also worth noting the state program "Affordable Loans 5–7–9 %" [26], which is aimed at financing the purchase of equipment for energy independence and uninterrupted communication.

At the same time, it is important to note that the above-mentioned financial assistance to enterprises from the state and investments in energy independence cover not only development, but also debt repayment, therefore this requires a careful assessment of financial performance and profitability. Therefore, *the aim of research* is to develop a marketing strategy for a small enterprise, where energy independence will become part of the image and competitive advantage, and to assess the profitability of energy-independent small and medium-sized businesses.

An analysis of the scientific literature shows a growing interest in the environmental aspects of enterprise marketing, in particular, "green" marketing. However, there is a lack of comprehensive research that would combine energy independence and state support for business. There is also a lack of analysis of the effectiveness of integrating energy independence into the marketing strategies of small and medium-sized enterprises, especially in the context of the war in Ukraine. It is necessary to investigate how the reduction of costs from the implementation of energy independence of enterprises and attracting state support affects the profitability of business. It is important to develop comprehensive strategies for integrating energy independence in marketing, and a methodology for assessing the profitability of energy independent enterprises in different sectors of the economy.

ISSN-L 2664-9969; E-ISSN 2706-5448

2. Materials and Methods

The object of research is the marketing strategy of energy independence of enterprises.

To achieve the aim of research, a set of theoretical and mathematical and statistical methods was used. The logical method helped to substantiate the importance of energy independence in the marketing strategies of small and medium-sized enterprises. It showed the connection between the instability of energy supply, the growth of energy prices and the need for renewable energy sources. The methods of system analysis, systematization and generalization allowed to identify key aspects of energy independence: diversification of energy sources, energy efficiency, the use of "green" energy and state support. The systematic approach helped to assess the risks and benefits of integrating these solutions into business. The abstract-logical method was used to form conclusions regarding the impact of energy independence on the competitiveness of enterprises. It showed that such technologies reduce costs, improve the company's image and increase customer loyalty. Mathematical and statistical methods helped to analyze the level of state support and financial efficiency of enterprises implementing energy-independent technologies. Correlation-regression analysis showed the relationship between the reduction of energy costs due to investments in energy independence and the profitability of enterprises. Using the method of expert assessments, the limits of fluctuations in the level of profitability of energy-independent small and medium-sized businesses in different sectors of the economy were determined.

The study did not involve the use of special equipment, software or conducting experiments, but focused on the analysis and synthesis of available information.

3. Results and Discussion

A study by experts [27] determined that the development of solar power plants for business needs was previously hampered by high investment costs and long payback periods (over 7 years). This significantly complicated access to bank lending.

At the end of 2022, due to the energy crisis caused by shelling, the demand for such solutions increased, but the lack of economic incentives and significant capital investments remained restraining factors.

In 2020–2023, most projects were implemented by large enterprises, in particular, retail chains ("Epicenter", "Fora", "Silpo"), as well as food industry enterprises ("Obolon", "Nestlé", MHP, etc.) [27].

The bulk of projects in the small and medium-sized business segment were implemented in such industries as agriculture, food industry, retail trade and light industry, and the capacities of solar power plants for self-sufficiency ranged from 100 to 500 kW, depending on the industry (Table 1).

According to the table, the highest rates were recorded in food industry enterprises – where the stability of power supply is critically important due to the risk of loss of production in the event of emergency shutdowns of production equipment [27].

In Ukraine, there are ample opportunities for the implementation of solar power plants in small and medium-sized businesses in various sectors of the economy.

Fig. 2 shows a clear picture of the potential construction of new solar power plants for self-sufficiency of electricity by small and medium-sized businesses in key industries by 2027 – the total potential covers approximately 1.000 enterprises [27].

Table 1

Capacity building potential solar power plants for own needs for small and medium-sized businesses by sectors of the economy on period to 2027 year, MW

Sector	Power, kW	Average investment, thousand USD	Total number of small and medium-sized businesses in the sector, units*	Average capacity of solar power plants, kW	Total capacity of solar power plants, MW
Rural household	150–250 (200)	200	6127	200	70
Logistics and trade	150–250 (200)	200	8930	200	30
Food industry	200–300 (250)	250	2219	250	30
Woodworking	150–250 (200)	200	1185	200	40
Furniture industry	100–200 (150)	150	752	150	10
Light industry	100–200 (150)	150	961	150	15
Total	–	–	20174	–	195

Notes: * does not include microenterprises and sole proprietorships; systematized by the authors based on [27]

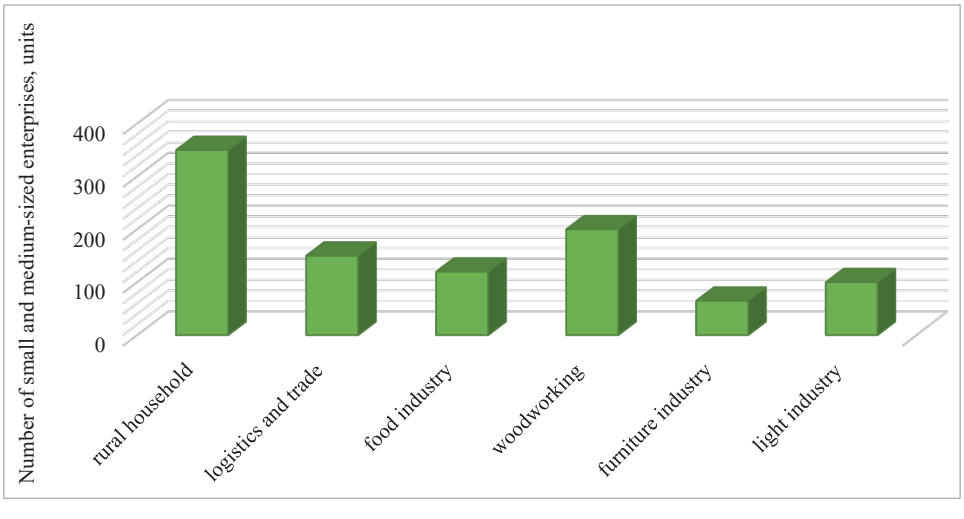

Fig. 2. Potential quantity small and medium-sized businesses ready to install solar power plants to 2027 [27]

Special attention should be paid to the prospects for the development of their own solar power plants at large industrial enterprises, especially in the mining and metallurgical sector. A significant part of their products is exported, in particular to the European Union countries, and the issue of transition to "green" energy is gaining strategic importance for them.

Accordingly, the rejection of traditional energy sources in favor of renewable ones, such as solar and wind power plants, is a key element of adaptation to new environmental standards.

In a survey conducted by experts [27], key aspects of their experience with implementing solar power plants were discussed with company representatives. The majority of companies surveyed indicated that the main reason for installing solar power plants was the desire to reduce the negative impact of power outages that began in late 2022 due to missile strikes by russia. Prolonged power outages and the desire to reduce electricity costs have stimulated businesses to look for alternative energy sources, including solar plants.

The biggest challenge when installing solar power plants was the financial component, in particular the difficulties in obtaining affordable and long-term financing – almost all respondents (9 enterprises) attracted credit funds, and 6 of them took advantage of the state program "5–7–9 %" [27]. During the operation of installed solar power plants, enterprises face a number of problems. Among such problems are the lack of an effective "Net billing" mechanism that would allow for compensation for unused electricity, as well as periodic delays in state payments for compensation of part of the credit rate within the "5–7–9 %" program.

Based on the analysis of the survey conducted by experts [27] and other additional data, it is advisable to also conduct a SWOT analysis of the implementation of solar power plants for self-sufficiency in electricity for small and medium-sized businesses (Table 2).

Currently, companies that have installed solar power plants cannot sell the electricity they produce without complex licensing procedures and a "green" tariff. As a survey of 5 industry associations and 12 small and medium-sized businesses showed, this leads to a loss of up to a third of the energy produced, which significantly affects the economic feasibility of such projects. As a result, the payback period of installed solar power plants increases to 7–10 years, which reduces their attractiveness for business [27].

Despite the challenges, the installation of solar power plants for small and medium-sized businesses has significant potential. Effective implementation of the Net billing mechanism will be able to sell excess electricity without complicated bureaucratic procedures. This will make investments in solar power plants more profitable [27].

In conclusion, the installation of solar power plants for small and medium-sized businesses has prospects, but it is hampered by significant obstacles (payback periods, regulatory complexities, and uncertainty regarding war risk insurance). However, improving the Net mechanism billing, state assistance, and the creation of other energy use models can significantly improve the situation and make such projects more attractive to business.

An important condition for the transition to energy-saving measures is an increase in tariffs for enterprises by 25–20 % in 2022–2023. Therefore, a business that will provide itself with energy will be able to avoid such fluctuations and ensure budget stability [28].

Also, it is important to introduce energy-efficient technologies, such as: LED lighting, the use of modern heating systems, and building insulation, which allows reducing energy use by 20–50 % [29].

These aspects are confirmed in the reports of the International Renewable Energy Agency and analytical materials of the Kyiv School of Economics. Therefore, energy independence is a real practice that is already being implemented.

Based on all of the above, it is proposed to integrate energy independence into all aspects of the marketing strategy of medium and small enterprises (Fig. 3).

The strategy includes the selection of marketing approaches to promote energy independence of business and work with the target audience for effective communication, as well as a methodology for assessing the profitability and profitability of the activities of energy independent enterprises.

Table 2

SWOT analysis of the implementation of solar power plants for self-sufficiency in electricity in small and medium-sized businesses

Strengths	Rating	Weaknesses	Rating
1) Protection against power outages	5	1) High implementation cost – significant initial investment	2
2) Reducing the cost of purchasing electricity from the grid	4	2) Lack of effective "Net billing" extends the payback period (over 7 years)	2
3) Reducing CO_2 emissions and complying with sustainable development	5	3) The high cost of batteries forces to lose some of the energy produced	3
4) Possibility of obtaining preferential loans under the "5–7–9" program	3	4) The need to go through bureaucratic procedures	2
5) Efficient energy use for businesses operating during daylight hours	4	5) Delays in compensation of part of the loan rate in the "5–7–9" program	3
Opportunities	**Rating**	**Threats**	**Rating**
1) Implementation of the "Net billing" mechanism will allow to sell excess electricity and increase your return on investment	5	1) Lack of clear mechanisms to stimulate small and medium-sized enterprises for the development of renewable energy	3
2) Improved lending conditions and additional subsidies through government reforms and grants	4	2) Threat of infrastructure destruction and lack of war risk insurance	2
3) Cheaper battery systems will improve the efficiency of solar power plants due to technological development	4	3) Additional requirements or restrictions on connecting solar power plants may arise due to changes in legislation	3
4) The possibility of obtaining "green" energy certificates, which will increase the competitiveness of the business	3	4) Financial difficulties of small and medium-sized businesses, namely the decline in profits, make it difficult to invest in renewable energy	2
5) Potential simplification of the process of connecting renewable energy generation	3	5) Additional costs and time spent on obtaining licenses due to lengthy bureaucratic procedures	3

Note: systematized by the authors based on [27]

ISSN-L 2664-9969; E-ISSN 2706-5448

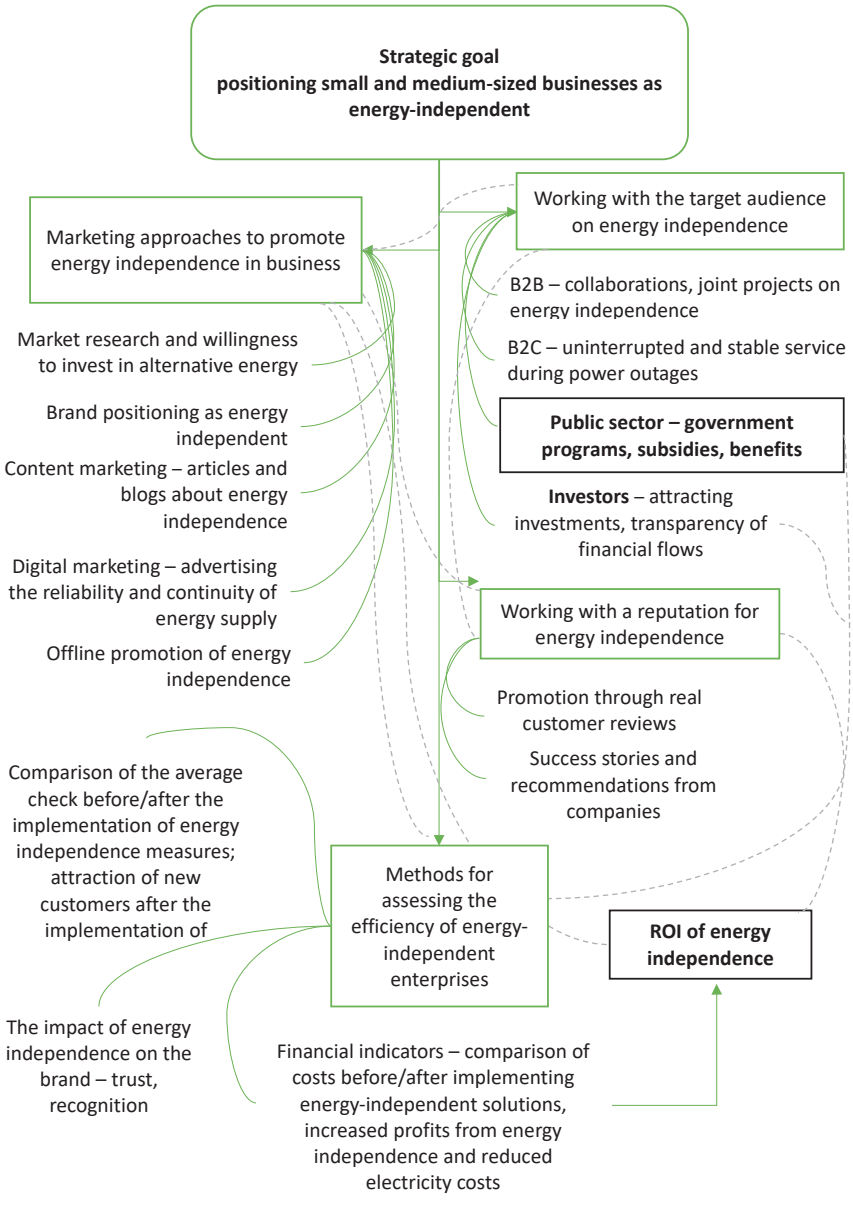

Fig. 3. Marketing strategies for energy-independent enterprise

The proposed approach is new, as it considers energy independence not only as a technological solution, but also as a tool for increasing competitiveness in the current conditions, when energy independence is marketing and economic security, a guarantee of stability and continuity of enterprise activities.

The main goal when implementing a marketing strategy for a non-energy-dependent small and medium-sized business is to create a positive image of the enterprise as a non-energy-dependent reliable partner, given the uninterrupted operation of its operations and the use of modern innovative equipment.

At the same time, energy independence is positioned primarily not as an effective technical solution, but primarily as a priority component of the company's brand in terms of its responsibility to customers, partners, and society. Adhering to the concept of energy independence as the main goal at all levels of marketing strategy implementation allows to build an algorithm of actions and attract consumers, partners and investors. In addition, the use of government support, grants or subsidies can help reduce the financial burden on business.

After enterprises clearly understand the main goal of the energy independence marketing strategy, market research is conducted, the experience of other companies is studied, and then the real readiness and capabilities for implementing solutions to create energy independence are assessed.

In conditions of wartime and moderate energy problems, the most relevant topic for business is energy independence, which will reduce losses during blackouts and continue the stable operation of enterprises under any conditions.

After the above research is completed, the process of forming the positioning of the company brand begins, which is associated with key values: energy independence, uninterrupted operation and financial reliability. The implementation of this goal is carried out using marketing approaches. Among the main ones is content marketing, thanks to which it is possible to build trust and increase consumer awareness. These are articles, blogs and videos about the benefits of energy saving, which are aimed at attracting the attention of the target audience. In addition, today a special place among the most effective marketing approaches is digital marketing, which covers a wide range of consumers on the Internet.

Fig. 4 shows the list of corrective measures when implementing the marketing strategy of energy independence of small and medium-sized enterprises for comparison with traditional marketing strategies.

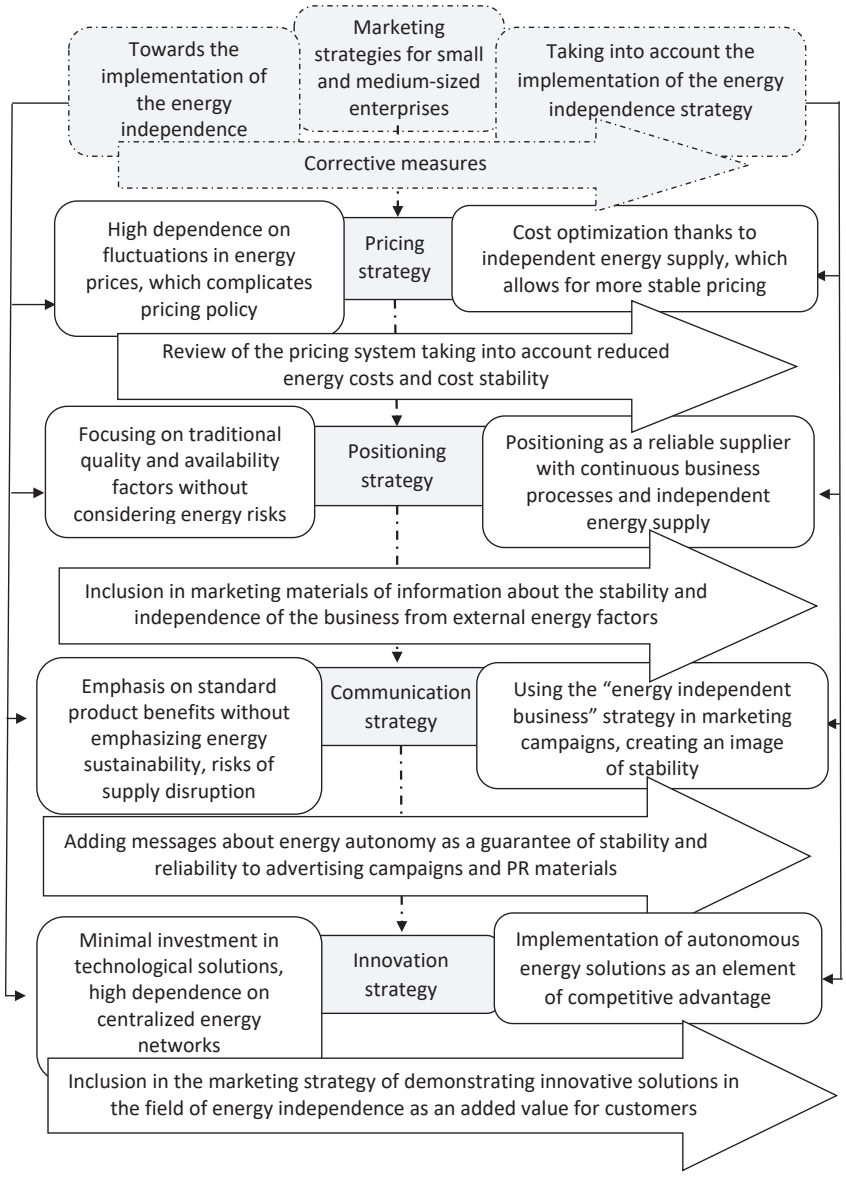

Fig. 4. Corrective measures for implementing the company's positioning as energy independent in marketing strategies

One of the important stages of implementing a marketing strategy for energy independence is active work with the target audience. For example, in the B2B sector, there are collaborations with enterprises that are looking for reliable partners and also seek to minimize their dependence on traditional energy sources. It can also be the implementation of joint projects to implement energy-efficient solutions.

And of course, reliable and uninterrupted operation of enterprises during power outages will become a key aspect in B2C cooperation.

In times of war, state support for business is invaluable, which is manifested in the provision of additional resources and opportunities for the implementation of energy-independent technologies in the form of state subsidies, grants, subsidies, and benefits.

Due to the specific purpose and scale, the implementation of the marketing strategy of energy independence is impossible without attracting investment credit funds. Mainly, medium and small enterprises use credit funds and favorable credit programs, such as "5–7–9 %", to achieve energy independence and purchase the necessary equipment. Of course, to receive funds, enterprises must provide transparent financial calculations and understandable indicators of the profitability of the investments involved.

It is important to correctly assess the effectiveness of the marketing strategy for energy independence of enterprises based on financial results to determine the level of profitability from achieving energy independence, marketing KPIs to assess customer engagement, the effectiveness of advertising campaigns and increased loyalty. Changes in the image and reputation of enterprises are also monitored due to the growth of trust in the brand of an energy independent enterprise.

Constant monitoring of the effectiveness of the implementation of an energy efficiency marketing strategy requires its constant adjustment, improvement of approaches to the promotion and positioning of enterprises, taking into account the current situation on the market and in the country.

Having calculated marketing and financial indicators, it is logical to move on to determining the profitability of medium and small enterprises from achieving energy independence, taking into account investments and state aid in the form of grants, benefits, and support programs.

Traditional indicators of enterprise performance do not take into account the impact of energy independence on reducing costs from the use of alternative energy sources and increasing profits in this regard.

ISSN-L 2664-9969; E-ISSN 2706-5448

Therefore, the authors of the paper proposed a modified indicator of the profitability of energy-independent enterprises (ROI_e), which allows taking into account the impact of government support and investments in energy-efficient technologies and alternative energy sources on reducing electricity costs and increasing enterprise profits:

$$ROI_e = \frac{R-(C+CE)+\alpha \cdot I_e+\beta \cdot D_s}{C+CE+I_e}, \quad (1)$$

where ROI_e – modified indicator of profitability of energy-independent enterprises; R – income of enterprises; C – total costs; CE – energy costs; I_e – investments in energy independence; D_s – state funding; α – efficiency coefficient of investments in energy independence; β – coefficient of efficiency of state support.

The formula for the modified indicator of profitability of energy-independent enterprises (ROI_e) includes the efficiency coefficients of investments in energy independence of enterprises and the efficiency of state support. Attracting and using investment funds is advisable provided that their profitability is achieved at least 30 %, i. e. the efficiency coefficient of investments in energy independence is determined by the expert method at 0.3, since on average energy savings are from 20 to 40 %. The efficiency coefficient of state support is determined at 0.4, since in Ukraine there are programs to support entrepreneurship, in particular, in the field of implementing "green" energy from both the state and international partners.

Thus, the proposed formula is innovative and aimed at integrating the costs of energy independence into the overall profitability model of enterprises using the example of small and medium-sized businesses.

It is possible to calculate the profitability of small and medium-sized businesses, taking into account investments in energy independence and state support and without them, in accordance with the potential for building solar power plants for their own needs for small and medium-sized businesses by economic sectors. When calculating the proposed indicator of profitability of energy-independent enterprises (ROI_e), information from the official website of the State Statistics Service of Ukraine as of 2023 was used [30] (Table 3).

Table 3

Profitability of small and medium-sized businesses by economic sectors, taking into account their energy independence, %

Sectors	Actual profitability (*ROI*)	Profitability with energy independence (*ROIe*)
rural household	15	20
logistics and trade	10	13
food industry	10	15
woodworking	14	20
furniture industry	10	15
light industry	10	14

According to the results of the conducted research, it was determined that such sectors as agriculture, logistics and trade, furniture industry, woodworking, light industry and food industry strive to become energy independent and, accordingly, involve alternative energy sources in the work of their enterprises. The use of such energy sources makes it possible to avoid interruptions in energy supply, which is important for enterprises where the work of production processes must be stable.

Given the conceptual model of the marketing strategy for energy independence with the involvement of investments and state support proposed in the work, calculations of the projected profitability of enterprises were carried out in comparison with the actual profitability. The calculations took into account the potential for construction of solar power plants by small and medium-sized businesses in various industries, the volume of investments in energy conservation and state aid.

In particular, in agriculture, the profitability of energy-independent enterprises has increased from 15 % to 20 %. In logistics and trade, profitability has increased from 10 % to 13 %. In the food industry, profitability has increased from 10 % to 15 %. In the woodworking industry, *ROI* has increased from 14 % to 20 %. The profitability of the furniture industry has increased from 10 % to 15 %; in light industry, the indicator has increased from 10 % to 14 %.

When calculating the profitability of the activity, special attention needs to be paid to determining the impact of attracting investments on the energy independence of the enterprise, which depends on its specifics. If the production mainly uses electrical appliances and/or other equipment, then the use of alternative energy sources will have a greater impact on the profitability of production.

According to the calculations, it was determined that in all sectors of small and medium-sized businesses there is a trend of increasing profitability due to energy independence by an average of 3–5 %, which indicates the feasibility of investing in alternative energy sources. Such measures in the long term will increase net profit by up to 50 %.

Therefore, the research results indicate that the goal of the marketing strategy for energy independence of small and medium-sized enterprises is not only to attract new customers and position the business as energy independent, but also to reduce electricity costs and increase the profitability of operations.

The practical significance of the results lies in the possibility of their application for the development of individual marketing strategies. They can be adapted to the industry specifics of small and medium-sized businesses. This will contribute to increasing the economic sustainability of enterprises and reducing dependence on traditional energy resources. The results can be used to calculate the profitability of energy-independent enterprises, taking into account state aid in the form of grants, benefits, support programs and investments in energy-efficient technologies and alternative energy sources.

The practical implementation of the proposed conceptual model of the marketing strategy of small and medium-sized enterprises with the integration of energy independence as a key element of image policy and competitive advantage strengthens the positioning among stakeholders, demonstrating the stability and continuity of business processes. The implementation of this model should be unified for each individual enterprise, taking into account the specifics of its activities and the sphere of the economy in which it operates. For more accurate calculations of the profitability of the activities of an energy-independent enterprise, it is also necessary to fill in and update the initial statistical data for each industry. It is also important to open access to most official sources of information (official data, reports on state programs, investment statistics).

The martial law conditions have affected not only the unavailability of statistical and other information in recent years, necessary for conducting research in the direction of energy independence of enterprises, but also the refocusing on sources of financing activities. Due to the decrease in the level of investment in the country's economy, economic instability and increased risks in the conditions of martial law, the financing of energy-efficient projects of small and medium-sized businesses has become significantly more difficult. That is why state support for business, which stimulates the transition to energy independence through the implementation of state programs to support enterprises, has become particularly important.

Due to martial law and damage to energy infrastructure and instability of power supply. The priorities of businesses that implement "green" technologies to gain competitive advantages, and consumers for whom the stability of the supply of goods and services has come first, have also changed. Therefore, enterprises need new approaches to forming a marketing strategy for energy independence, which would take into account all the listed components.

When implementing the conceptual model of the marketing strategy for energy independence of small and medium-sized enterprises in Ukraine, a number of obstacles may arise, related to the realities of recent years. In particular, among the possible and most global obstacles may be, first of all, high initial investments in the purchase of equipment. Enterprises often do not have free capital for such investments, especially in conditions of economic instability and rising production costs.

Most Ukrainian small and medium-sized businesses, due to economic instability in the country under martial law, do not have free capital to purchase solar panels, heat pumps, batteries and other energy-saving technologies. At the same time, a rather long payback period for such investments also has a great impact. investments, which accordingly reduces the motivation of small and medium-sized businesses to implement alternative energy sources, which pay back within 5–7 years.

Although various business support programs operate in Ukraine: grants from Diya. Business, donor funding from USAID or GIZ, it is difficult for small businesses to join them due to the complexity and length of the process of obtaining permits, grants, and financing. Most often, they lack experience, time, or a team. In addition, banks often refuse loans due to lack of collateral or unstable financial situation, or pile up bureaucratic procedures.

Many small business owners lack the appropriate skills and do not know how to make their enterprise energy independent, including taking into account the specifics of the industry in which it operates.

Another obstacle to the implementation of energy independence by businesses is the understanding of the "green tariff", the legality and algorithm of the procedure for selling excess energy to the network due to constant changes in legislation.

Due to the peculiarities of the development of the Ukrainian economy and the developed model of behavior in the market, domestic enterprises rarely advertise themselves as energy-independent. Because of this, customers do not know about their environmental efforts. As a result, businesses do not receive either trust or benefits from their investments. Although the majority of Ukrainian consumers are focused on price, not on environmental friendliness. Because of this, businesses do not see the point in spending money on "green" solutions, because they do not affect sales.

The introduction of the concept of energy independence into the marketing communications system of small and medium-sized businesses has significant advantages. It allows them to form their unique value proposition for consumers. In addition, the strategy increases the level of trust from stakeholders. In particular, enterprises can increase their profitability thanks to state support and attracting investments in energy-efficient technologies and alternative energy sources. This creates the prerequisites for the transfer of the obtained technological solutions to various sectors of the economy, ensuring the integration of the principles of energy autonomy into the business model of small and medium-sized enterprises. Further development of this concept will contribute to expanding the opportunities of enterprises in attracting additional investment resources. This will allow optimizing the mechanisms for providing state support, forming long-term partnerships and increasing their market adaptability in the conditions of the energy crisis in Ukraine.

4. Conclusions

The work determines that small and medium-sized businesses can use a comprehensive marketing strategy in which the main aspect of competitiveness is energy independence. The study showed that in modern conditions, especially in Ukraine, where one of the main problems of business operation is the instability of electricity supply, interruptions and rapid growth of tariffs, energy independence is gaining key importance. The trend for own energy generation among enterprises indicates their readiness to adapt to any conditions and create new initiatives in order to stand out among others in the market.

A study of obstacles to the implementation of energy-efficient solutions by small and medium-sized businesses has identified several major barriers. First of all, such barriers are the high cost of initial investments in renewable energy sources, low awareness of entrepreneurs about available technologies, and support for programs from the state. At the same time, state support has a number of shortcomings, in particular, regarding the effectiveness of the "Net billing" mechanism, which would allow businesses to sell excess energy generated to the network.

Energy independence, achieved through the implementation of such innovative technologies, becomes a competitive advantage that simultaneously contributes to economic benefits and environmental responsibility. Small and medium-sized enterprises should actively use these opportunities, integrating them into their marketing strategies. Such an approach not only stimulates the wider use of energy-saving technologies, but also contributes to economic growth and the stability of energy supply to enterprises in Ukraine during and after martial law.

The conceptual model of the marketing strategy of small and medium-sized businesses has been improved by integrating energy independence into them. The author's improvement consists in expanding the image component of the marketing strategy by positioning energy independence as a factor in increasing the trust of consumers, investors and partners focused on the sustainability and continuity of business processes. Unlike traditional approaches that interpret energy independence mainly in the context of cost optimization, the proposed approach forms it as a strategic competitive advantage capable of strengthening the market position of the enterprise.

Due to the orientation of enterprises towards energy independence, which is implemented through an effective marketing development strategy, traditional indicators of profitability assessment do not cover in all aspects data on cost reduction from the use of alternative energy sources and profit growth in this regard. Therefore, the paper proposes to calculate the profitability of energy-independent enterprises taking into account state aid in the form of grants, benefits, support programs and investments in energy-efficient technologies and alternative energy sources. The use of the proposed indicator made it possible to determine that in all sectors of small and medium-sized businesses there is a tendency to increase profitability by 3–5 % precisely due to their energy independence. This confirms the economic profitability of investments in alternative energy sources, which in the future may lead to an increase in net profit up to 50 % and raise the economy of Ukraine in the post-war period.

Conflict of interest

The authors declares that they have no conflict of interest in relation to this study, including financial, personal, authorship or other, which could affect the study and its results presented in this article.

Financing

The study was performed without financial support.

Data availability

The manuscript has associated data in the data warehouse.

Use of artificial intelligence

The authors used artificial intelligence technologies within the permissible limits to provide their own verified data, as described in the research methodology section.

ISSN-L 2664-9969; E-ISSN 2706-5448

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