

LABOUR ECONOMICS, PERSONNEL MANAGEMENT AND MARKETING

UDC 005.95:331.522.5:005.336.1

DOI <https://doi.org/10.26661/2414-0287-2023-2-58-15>

ASSESSMENT OF THE ECONOMIC EFFICIENCY OF THE PROJECT TAKING INTO ACCOUNT THE INCREASE OF PERSONNEL POTENTIAL AT THE PRODUCTION ENTERPRISE

Bekhter L.A., Bekhter S.O.

Zaporizhzhia National University
Ukraine, 69600, Zaporizhzhia, Zhukovsky str., 66
behter2018@ukr.net, kyz924@ukr.net
ORCID: 0000-0001-9931-9780

Key words:

personnel potential, project,
personnel, production technology,
cost, profit

It is noted that the most significant indicators of economic activity of any enterprise are those characterizing the efficiency of their activities, i. e., the ratio of the result obtained to the costs incurred. It is found that performance indicators are influenced by many factors that depend on industry specifics, territorial, marketing and management systems. The task of each enterprise in the context of efficient management is to reduce costs and obtain higher financial results, while taking into account the risks of the enterprise. It is determined that improving the personnel potential of a manufacturing enterprise cannot be solved without assessing the economic efficiency of the project. Assessing the economic efficiency of a project is one of the most important stages of project development and analysis. In turn, the assessment must be carried out following a certain sequence of actions that involve the qualitative preparation of initial information, calculation of financial indicators, calculation of the impact of inflation, and consideration of uncertainty and risk factors. The article considers the problems that the researched enterprise LLC "Progress Mashbud" will have to face in the process of assessing the economic efficiency of the proposed project, taking into account the increase in personnel potential. The peculiarities of the economic activity of the manufacturing enterprise are studied. The efficiency of the proposed economic project is evaluated. A possible direction for improving the personnel potential of the studied enterprise is proposed.

ОЦІНКА ЕКОНОМІЧНОЇ ЕФЕКТИВНОСТІ ПРОЄКТУ З УРАХУВАННЯМ ПІДВИЩЕННЯ КАДРОВОГО ПОТЕНЦІАЛУ НА ВИРОБНИЧОМУ ПІДПРИЄМСТВІ

Бехтер Л.А., Бехтер С.О.

Запорізький національний університет
Україна, 69600, м. Запоріжжя, вул. Жуковського, 66

Ключові слова:

кадровий потенціал,
проект, персонал,
технологія виробництва,
собівартість, прибуток

Зазначено, що найбільш вагомими показниками господарської діяльності будь-якого підприємства є показники, що характеризують ефективність їх діяльності, тобто співвідношення отриманого результату до понесених витрат. Виявлено, що на показники ефективності чинять вплив безліч факторів, які залежать від галузевих особливостей, територіальних, маркетингових та системи менеджменту. Завдання кожного підприємства в контексті ефективного господарювання полягає у скороченні витрат і отриманні вищих фінансових результатів, при цьому враховуючи ризики функціонування підприємства. Визначено, що підвищення кадрового потенціалу виробничого підприємства неможливо вирішувати без оцінки економічної ефективності проекту. Оцінка економічної ефективності проекту – це один із найголовніших етапів розробки та аналізу проекту. У свою чергу, оцінювання необхідно виконувати, дотримуючись певної послідовності дій, які передбачають якісну підготовку вихідної інформації, розрахунок фінансових показників, розрахунок впливу інфляції, облік факторів невизначеності та ризику. Розглянуто проблеми, з якими доведеться зіткнутися досліджуваному підприємству ТОВ «Прогрес Машбуд» у процесі оцінювання економічної ефективності запропонованого проекту

з урахуванням підвищення кадрового потенціалу. Досліджено особливості господарської діяльності виробничого підприємства. Проведено оцінку ефективності запропонованого економічного проєкту. Запропоновано можливий напрямок підвищення кадрового потенціалу для досліджуваного підприємства.

Formulation of the problem

The enterprise is an integral part of the economic and social system of the state with its own economic, scientific and technical, production and social goals. In turn, personnel potential is the main part of the management system of the production enterprise and a decisive condition that allows to ensure the achievement of the enterprise's goals and maintain its stability on the market. The study of approaches to increase the personnel potential of the past periods at the investigated enterprise allows us to assert that a person has always been considered as an auxiliary, secondary factor of production. And the modern view of personnel potential defines the employee as the most important, main resource and value of the enterprise.

The main condition for assessing the economic efficiency of the project, taking into account the increase in personnel potential in modern economic conditions for the enterprise under study, is the ability of the personnel to adapt in a timely manner in a dynamic market environment. Therefore, one of the primary tasks for the proposal, calculation and implementation of the project for the enterprise under study is the formation and assessment of its potential capabilities (personnel, material, physical). Of all the elements of the company's potential, only the personnel component is capable of active and independent response to dynamic changes in the external environment. Therefore, a mandatory element of the proposal for the implementation of any economic project at a production enterprise is the assessment of its economic efficiency, which is impossible without taking into account the personnel potential.

Analysis of recent research and publications

The study of assessing the economic efficiency of the project and the role of personnel potential in the growth of competitiveness of enterprises in modern conditions is devoted to the works of many scientists and scholars, including: S.K. Bogomolova [1], O.V. Podolska [1], T.V. Bilorus [2], V.A. Hontyuk [3], O.M. Kovaleva [4], O.V. Skoruk [5], O.G. Cherep [6, 7], O.I. Gaidai [6], L.V. Shostak [8], E.O. Boloban [8], Y.R. Yasinska [9].

Formulation of goals

The aim of the article is to assess the economic efficiency, taking into account the increase of personnel potential for the production enterprise LLC "Progress Mashbud".

Presentation of the main research material

Nowadays, high results of economic activity during the implementation of an economic project are obtained if the employees of the enterprise are sufficiently qualified, have the necessary skills and competences. Therefore, an important place in increasing personnel potential should be occupied by professional training of personnel. To achieve the goals of the organization, personnel development should

be considered as an investment in the future of the enterprise. That is why the personnel potential of the enterprise is an important strategic factor, because as a result, it determines the success of its activity. One of the components of the personnel potential of the enterprise is personnel training. Therefore, staff training is an activity aimed at staff development in order to maintain their professional skills at the appropriate level and increase their competitiveness.

Let's consider the assessment of economic efficiency, taking into account the increase in personnel potential at the production enterprise LLC "Progress Mashbud".

The company was founded in 2004 and for more than 19 years has been engaged in the production and supply of products for the railway industry, namely signaling, centralization, blocking (SCB) and road management equipment. The products of this enterprise are bought by all railways of Ukraine and abroad on a regular basis, including enterprises that have their own railway business. Working on the market since 2004, the company constantly expands the range of its products as much as possible and improves their quality due to the introduction of new technologies into production. Qualified specialists with experience and practical skills in this field work at the enterprise.

At the investigated enterprise, production is certified, both in the UkrSEPRO system and in the ISO 9001 system. All new products pass, and those that are produced have already passed certification and meet all the strict standards presented to them.

The company under study produces the following products:

- dwarf lens traffic lights;
- mast lens traffic lights;
- crossing traffic lights;
- automatic barriers for single and multi-track sections of the "ASHMR-U" type;
- electric traction rail butt welded connectors;
- cable branching boxes;
- track branching boxes;
- choke and inter-choke jumpers;
- universal cable couplings (UKM-12, UPM-24);
- cable branching couplings (RM-4, RM-7, RM-8);
- mast and dwarf lens sets;
- "Melentyeva" locks (to block unauthorized switching of switches on the railway track).

At this enterprise, until 2011, the mast traffic light body, regardless of its size, was made of cast iron castings, and since 2012, it has been made of stamped-welded aluminum billets. In 2018, Ukrainian railways began to receive requests in tender procurements for the supply of traffic lights with mandatory plastic (SMS) body material. Taking into account Ukraine's compliance with EU requirements for railways in terms of traffic safety and reduction of maintenance costs for the operation of mast traffic lights, the management of the relevant structural units of the railway decided to reduce the procurement of mast traffic

lights with nonplastic material in 2018–2021, and starting from 2022 this condition is mandatory for all suppliers to Ukrainian railways, but this condition does not apply to enterprises that have their own railway facilities. The use of a plastic mast traffic light housing has a higher level of anti-vandalism and reduces maintenance costs.

According to statistical data on the market for railways and third-party buyers, the volume of orders for traffic lights masts of various importance made of plastic material on average by year in pieces was as follows:

- 2019–480 pcs. (average price – UAH 54,000/pcs);
- 2020–560 pcs. (average price – UAH 56,700/pcs);
- 2021–645 pcs. (average price – UAH 61,236/pcs).

According to statistical data on the market for railways and third-party buyers, the volume of orders for traffic lights masts of various importance made of plastic material on average over the years in pieces was as follows:

- 2019–223 pcs. (average price – UAH 48,000/pcs);
- 2020–150 pcs. (average price – UAH 49,920/pcs);
- 2021–44 pcs. (average price – UAH 52,400/pcs).

From the above, it can be seen that the number of orders for mast traffic lights made of plastic material is increasing, while the number of orders for metal traffic lights is decreasing, and it can also be seen that the price of a traffic light made of plastic is higher, which is mainly due to the higher cost of the plastic material itself (SMS). The fact is that the requirements for a plastic body are strict, namely non-flammability, UV resistance, durability, resistance to negative temperatures, and so on.

The analysis found that suppliers purchase ready-made traffic light housings abroad, then complete them with brackets, ladders, connecting hoses, clamps, locks, fasteners, lens kits, and more.

Therefore, we consider it necessary to offer the owners of LLC “Progress Mashbud” to invest in setting up the production of mast-mounted traffic lights with a plastic body, taking into account that the specialization of traffic lights is one of the main areas of activity of the company under investigation.

Improving the personnel potential will give the company’s employees the opportunity to master the very technology of plastic case production, including the opportunity to learn how to work on new equipment.

The assessment of the economic effect will make it possible to understand what profit (or loss) the company will be able to receive in a 3-year perspective from the transition of production of the body from die-welding

aluminum billets to plastic and how much money should be involved for the implementation of such a project. The calculations are given in the Table 1 and 2.

The owners of the studied enterprise need to pay attention to increasing personnel potential by training staff to work with new equipment, including to maintain the share of profits, which, when analysed in 2019, began to decline significantly in terms of mast traffic lights, to find funds and switch to the technology of manufacturing plastic products.

This will allow the company to continue to make a profit and maintain the share of these products in the production of the entire enterprise. It should also be borne in mind that only 30% of the market for these products (in Ukraine) was considered in the calculations. If the quality of the goods and the price are appropriate, and given that this company has long been in the market of signalling, centralisation and blocking (SCB) products and given Ukraine’s strong European integration aspirations, it may be possible to supply these products abroad (Eurozone countries).

Conclusions

Increasing personnel potential is an important component of the development of any enterprise. This article examines the economic efficiency of implementing the project by increasing the personnel potential for its employees to undergo appropriate training on new equipment. In the course of the study, the feasibility of the decision-making by the owners of the researched production enterprise LLC “Progress Mashbud” regarding the implementation of the technology for the production of plastic housings for mast traffic lights was considered, and a financial and economic analysis of the project’s indicators was made, which was accompanied by certain difficulties. Overcoming them requires engineering and technical workers (to establish the production of traffic light housings made of plastic of appropriate quality and cost, and managers to complete the task of occupying at least 30% of the market share of orders per year for the corresponding products on the railway. Given that the process of implementing the economic project takes a significant period of time, its efficiency is affected by the uncertainty of both the internal and external environment of the enterprise under study. In view of this, when evaluating the economic efficiency of the project taking into account the increase in personnel potential at LLC “Progress Mashbud”, it was important not only to determine the expected level of the main indicator – the planned profit, but also to establish how likely it is to achieve it.

References

1. Bohomolova S.K. and Podolska O.V. (2020). Development of human resources of the public service body. *Ukrains'kyj zhurnal prykladnoi ekonomiky*. Vol. 5. No. 3. P. 74–81. DOI: 10.36887/2415-8453-2020-3-7
2. Bilorus T.V. (2018). Formation of the personnel reserve of the enterprise on the basis of a taxonomy method. *Visnyk Kyivskoho natsionalnoho universytetu imeni Tarasa Shevchenka*. Vol. 4 (199). P. 12–19. [in Ukrainian]
3. Hontiuk V.A. (2019). Competence approach in the system of staff potential management of the enterprise : Ph.D. Thesis : Economy. Vinnytsia. [in Ukrainian]
4. Koval'ova O.M. (2018). The essence of human resource capacity and directions for improving its efficiency. *Pryazovs'kyj ekonomichnyj visnyk*. Vol. 5 (10). P. 218–222. URL: http://pev.kpu.zp.ua/journals/2018/5_10_uk/39.pdf (Accessed 01 May 2023). [in Ukrainian]
5. Skoruk O.V. (2016). The oretical foundations of use of human resources and business entities. *Naukovyj visnyk Uzhhorods'koho natsional'noho universytetu*. Vol. 7. No. 3. P. 95–98. URL: http://vvv.visnyketsonom.uzhnu.uz.ua/archive/7_3_2016ua/26.pdf (Accessed 01 May 2023). [in Ukrainian]

Table 1 – Processes and analytical calculations for the studied enterprise

№	Processes	Number of employees, persons	Cost, UAH	Total, UAH	Period	Note
1	Training of the Chief/engineer	1	30 000	30 000	3 weeks	Training is possible at the company of the manufacturer of the automatic press (all the technology of work on the press itself + maintenance)
2	Training of a production master	1	30 000	30 000	3 weeks	Training is possible at the company of the manufacturer of the automatic press (work on the press itself + maintenance)
3	Locksmith for mechanical assembly works	2	20 000	40 000	1 week	Training is possible at the company of the manufacturer of the automatic press (direct control of the press itself)
4	Purchase of a press machine	–	–	1 200 000	1 week	Domestic manufacturer
5	Delivery of the press machine	–	–	60 000	3 days	Third-party transport
6	Installation of equipment in a production premises	–	–	40 000	1 week	On our own resources
7	Connecting and setting up the press	–	–	15 000	2 days	On our own resources
8	The cost of the form (production + delivery)	–	–	140 000	4 weeks	Domestic supplier, local
9	Processing the purchase of the main material, the purchase of the material itself, delivery + experimental work	–	–	14 000	1 week	Domestic supplier
10	Development of technical conditions (TC)	–	–	75 000	4 weeks	Third-party performer
11	Cost of certification + permission from SE Ukrzaliznytsia for supply	–	–	80 000	4 weeks	Third-party performer
12	Cost of economic calculations (Full)	–	–	30 000	1 week	Third-party performer
13	TOTAL capital investments	–	–	1 754 000	2 months	–
14	Planned cost price (full including overhead costs, without a share of capital investments to account for inflationary processes) of a 3-digit mast traffic light with an inviting signal assembly – 1 pc. by years	–	46 193	–	2024	–
		–	48 503	–	2025	–
		–	50 928	–	2026	–
15	Estimated number of possible procurement volumes in pieces (taking into account the number of procurements in previous years with a market share of 30% of the annual procurement volume, after the end of hostilities) by year	144 pcs.	–	–	2024	2019 year – 480 pcs. × 30%
		168 pcs.	–	–	2025	2020 year – 560 pcs. × 30%
		194 pcs.	–	–	2026	2021 year – 645 pcs. × 30%
16	The share of capital investments calculated on the 3 (36 months) annual volume of forecasted purchases by year, hryvnias/pc. (The calculation was carried out from 506 units of the forecast volume of implemented traffic lights with n-digit masts and the calculated amount of capital investments of only UAH 1.754.000.)	–	3 466	–	2024, 2025, 2026	3.407 UAH/pcs. in addition to the full cost price for each of the 506 pcs. sold traffic lights

Table 2 – Estimation of cost-effectiveness

Financial and economic indicators				Plan. sales, num.	Plan. price including inflation	Total sales, amount	Plan. total cost of sales including investment capital	Total from sales for the plan. cost price	Planned profit	
№	Name of the product	years	Meas.	pcs./year	UAH/pcs.	UAH/year	UAH/pcs.	amount, UAH/year	UAH by years	%
1	Lens mast n-digit traffic light on a reinforced concrete mast	2024	pcs.	144	61 236	8 817 984	49 659	7 150 954	1 667 030	23.31
		2025	pcs.	168	64 298	10 802 030	51 969	8 730 801	2 071 229	23.72
		2026	pcs.	194	67 513	13 097 462	54 394	10 552 472	2 544 990	24.12
2	In general	–	–	506	–	32 717 476	–	26 434 227	6 283 249	23.77

- Cherep O.H. and Hajdaj O.I. (2016). Management of Mizhnarodnij enterprises of engineer of the Zaporozhia area skilled potential. *Challenges and prospects for the development of the new economy at the global, state and regional levels* : coll. mater. XI International scientific-practical conf. Zaporizhzhia : Vyd-vo ZNU. P. 273–274. [in Ukrainian]
- Cherep O.H. (2019). The systemic nature of the formation of the mechanism of innovative development of the enterprise. *Bulletin of Zaporizhzhya National University. Series "Economic sciences"*. Iss. 1. P. 43–50. [in Ukrainian]
- Shostak L.V. and Boloban Ye.O. (2018). Foreign experience in personnel management. *Pryazovs'kyj ekonomichnyj visnyk*. Vol. 3 (8). P. 94–99. [in Ukrainian]
- Yasinska Yu.R. (2019). Rational personnel policy at the enterprise - a successful formula of entrepreneurial activity. *Bulletin of the Lviv Commercial Academy*. Iss. 46. P. 224–228. [in Ukrainian]