

# Metode za ocjenu efektivnosti investicija sa osvrtom na softverske alate

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**Rezime:** Investiranje u preduzeću predstavlja neophodan proces koji objezbeđuje kontinuitet poslovanja i od kojih zavisi mogući rast vrijednosti preduzeća. Stoga je veoma značajno donošenje odluka o dugoročnom ulaganju kapitala, čiji se efekti očekuju u budućnosti i na koje ima uticaj veliki broj faktora. Osnova odluke o investiranju je u procjeni da li će investicija uspjeti da obezbijedi povraćaj uloženog kapitala i prinose na taj kapital u skladu sa zahtjevima učesnika u finansiranju projekta. Ocjena efektivnosti investicija je neophodan uslov donošenja svake investicione odluke i zahtijeva primjenu odgovarajućih metoda, koje omogućavaju kvantitativno izražavanje pokazatelja uspješnosti realizacije investicionog projekta. Veći dio rada je posvećen analizama metoda za ocjenu efektivnosti investicionih projekata sa osvrtom na postojeće i dostupne softverske alate. Kao i ostale oblasti ekonomske analize, i ova je veoma pogodna za izradu i kasnije korištenje određenih softverskih alata i rješenja. Njih po namjeni možemo podijeliti na prostije alate koji na utvrđenu matematičku definiciju ocjene efektivnosti investicije, programskom implementacijom utvrđenog algoritma daju rezultate ocjene efektivnosti, čime značajno štede vrijeme potrebno za proračun zadat početnim i potrebnim parametrima (parametri neophodni u zavisnosti od elemenata koja data analitička funkcija ocjene efektivnosti uzima u obzir), i na kompleksna softverska rješenja koja uzimaju u obzir ogroman broj parametara koji mogu da utiču na rezultat i kompleksnim matematičkim aparatom daju predikciona rješenja sa određenim postotkom vjerovatnoće (ovakva rješenja koriste velike investicione kuće na globalnim investicionim tržištima, te zbog ograničenja pristupu nisu uzeta u opseg istraživanja ovog rada).

Dalje, svi softverski alati se mogu podijeliti na desktop ili mrežna serverska rješenja i na rješenja zasnovana na danas popularnoj WEB paradigmi (osvrt je fokusiran na određena WEB rješenja).

U zavisnosti od toga da li uzimaju u obzir „vremensku“ vrijednost novca metode za ocjenu efektivnosti investicija podijeljene su na dvije osnovne grupe: statičke i dinamičke. U okviru statičkih metoda obrađene su metode prosječne računovodstvene stope prinosa i metoda perioda povraćaja. Ove metode i pored velikih nedostataka, među kojima je i subjektivnost izbora kriterijuma za ocjenu efektivnosti investicija, imaju široku primjenu u praksi ocjene investicionih projekata. Radom su obuhvaćene u praksi najčešće korišćene dinamičke metode: metoda diskontovanog perioda povraćaja, metoda neto sadašnje vrijednosti, metoda indeksa profitabilnosti i metoda interne stope prinosa. Dosadašnja iskustva su pokazala da menadžeri preduzeća moraju da ovladaju sposobnošću da donose odluke o investicijama i da u većoj mjeri koriste savremene dinamičke metode za ocjenu efektivnosti investicija. Pokazalo se da metode za ocjenu efektivnosti investicija ne služe samo za odabir investicionih projekata, nego i ukazuju na potencijalne slabosti investicionog projekta, koje se mogu javiti u toku realizacije i na koje menadžeri preduzeća treba da na vrijeme obrate pažnju. Uočavanje ovih problema daje mogućnost da se izbjegnu ili umanje njihove negativne posljedice na realizaciju investicionog projekta, a u konačnici da se i koriguje sama investiciona odluka.

Korištenjem kvalitetnih softverskih alata, investicioni menadžeri mogu da se fokusiraju na rezultate dobijene odabranim metodama analize, drastično smanjujući vrijeme potrebno za samo izračunavanje na bazi datih parametara. Ovim se stvara i pretpostavka za mogućnost efikasne izrade analize na osnovu više različitih metoda po jednom projektu kako bi se jedan te isti projekat mogao sagledati sa više aspekata, u skladu sa prednostima i manama primjenjenih metoda.

**Ključne riječi:** metode za ocjenu efektivnosti, investicioni projekat, softverski alati.

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## Methods for Evaluating the Effectiveness of Investments With Emphasis on Software Tools

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**Summary:** Investing in the company is a necessary process that ensures business continuity and which determine the possible growth of company value. It is therefore very important to make decisions about long-term investment capital, whose effects are expected in the future and that has an impact a large number of factors. The basis of investment decisions in assessing whether the investment will fail to provide a return on invested capital and returns on that capital in accordance with the requirements of participants in the financing of the project. Rating the effectiveness of investment is a necessary precondition making any investment decisions and requires the application of appropriate methods that enable quantitative expression of performance indicators of realization of the investment project. Most of the work is devoted to analysis methods for evaluating the effectiveness of investment projects with emphasis on the existing and available software tools. As in other areas of economic analysis, and this is very suitable for the development and subsequent use of certain software tools and solutions. Them by purpose can be divided into simpler tools that the established mathematical definition marks the effectiveness of the investment, the implementation of the program established algorithm gives results of the evaluation of effectiveness, which significantly reduce the time required for the calculation of the default start and the required parameters (parameters necessary depending on the elements that data analytic assessment effectiveness is taken into account), and to complex software solutions that take into account the huge number of parameters which can influence the result and complex mathematical apparatus provide a predictive solutions with a certain percentage of probability (such solutions are used by large investment houses in the global investment markets, due to restrictions approach is not taken within the scope of this paper).

Furthermore, all software tools can be divided into desktop or network server solutions and solutions based on the now-popular Web paradigm (The review is focused on specific web solutions).

Depending on whether you consider the "time" value of money methods for evaluating the effectiveness of investments are divided into two main groups: static and dynamic. Within the static methods are treated by methods of the average accounting rate of return and payback period method. These methods, despite major shortcomings, including the subjectivity of choice of criteria for evaluating the effectiveness of investments, are widely used in practice assessment of investment projects. The paper covered in practice commonly used dynamic methods: discounted payback period, net present value, profitability index method and the internal rate of return. Past experience has shown that managers of enterprises must master the ability to make decisions on investments and to increasingly use modern dynamic methods for evaluating the effectiveness of investments. It turned out that the methods for evaluating the effectiveness of investment not only for the selection of investment projects, but also point to the potential weaknesses of the investment project, which may occur during implementation and that company managers should pay attention at right time. Spotting these issues gives the possibility to avoid or reduce their negative effects on the realization of the investment project and, ultimately, to correct itself and investment decisions.

Using high-quality software tools, investment managers can focus on the results obtained from the chosen analysis methods, drastically reducing the time required to calculate it on the basis of given parameters. This creates the precondition for the possibility of effective development of analysis on the basis of different methods per project as the same project could be reviewed from several different aspects, in accordance with the advantages and disadvantages of the methods used.

**Keywords:** methods for evaluating the effectiveness, investment project, software tools.