

APPLICATION OF IMITATIVE MODELING IN RISK- MANAGEMENT

There are two permanent and essential characteristics that usually accompany innovative activity of modern enterprise: risk and uncertainty. Nowadays scientific R&D sector to a greater extent focuses on the developing of different risk-management evaluation methods and procedures. To less extent researchers concentrate their scientific interests upon numerous aspects of transformation existing uncertainty into more manageable risk. But at the same time in practice difficulties in making relevant predictions of innovative projects results are widely diffused. In accordance with this investigation of appropriate converting techniques to improve prognostication innovation activity results comes into special current importance.

Rising of innovative results predictability is achieved by taking into account the greater amount of impact-factors. Sceneries' Method, Sensitivity Analysis and Imitative Modeling are the most relevant between existing evaluating methods in deciding foregoing goals. But at the same time their comparative analysis emphasizes a great deal of disadvantages. In such way, impact of incoming parameters upon innovative project efficiency is estimated separately from other significant project factors. Also exact identification of incoming parameters fluctuation probability (probability of their increase or decrease) seems to be stubborn. Imitation Modeling eliminates mentioned imperfections and allows raising the quality of innovative activity results prognostication. Majority of researchers emphasizes on high reliability and long-term potential of using Imitation Modeling as a risk estimation technique.

In general imitation implies test conducting mathematic models of economic reality. First of all Imitation Modeling relies on advantages of Games Theory and allows getting empirical evaluation of degree numeral result defining factors'

influence. Imitation Modeling (or Monte-Carlo's Method) has wide application in practice of estimation innovation projects' effects. This method is usually used in following cases:

- when there are some difficulties with exact defining of crucial project's parameters (prices, costs, production volumes);
- when necessity of identification an impact of several factors on project's results exists;
- when it is important to eliminate manager's subjectivism during estimation of project's efficiency.

Monte Carlo methods (or Monte Carlo experiments) are a broad class of computational algorithms that rely on repeated random sampling to obtain numerical results; typically one runs simulations many times over in order to obtain the distribution of an unknown probabilistic entity. The name comes from the resemblance of the technique to the act of playing and recording your results in a real gambling casino. They are often used in physical and economic problems and are most useful when it is difficult or impossible to obtain a closed-form expression, or infeasible to apply a deterministic algorithm. Monte Carlo methods are mainly used in three distinct problems classes: optimization, numerical integration and generation of draws from a probability distribution [1]. The modern version of the Monte Carlo method was invented in the late 1940s by Stanislaw Ulam, while he was working on nuclear weapons projects at the Los Alamos National Laboratory. It was named by Nicholas Metropolis, after the Monte Carlo Casino, where Ulam's uncle often gambled.[4] Immediately after Ulam's breakthrough, John von Neumann understood its importance and programmed the ENIAC computer to carry out Monte Carlo calculations.

General-known mechanism of forming Imitative models diffuses in research circles [1], [3], [5]. It consists of connecting stages that presuppose modeling of numeral variants of project's parameters and include estimation the probability of their fluctuations. Important imperfections of using imitate methods are defined by author. Among them there are:

- difficulties with understanding and accepting imitative models by project managers cause of numeral external and internal factors of such models;
- appearance of necessity to attract additional leading specialists and Imitation Modeling consultants;
- probability of getting different evaluation results in comparison with other estimative methods.

Thus, present algorithm of forming Imitative Modeling is improved by author (figure 1). Suggested improvements allow making more exact expecting estimate results.

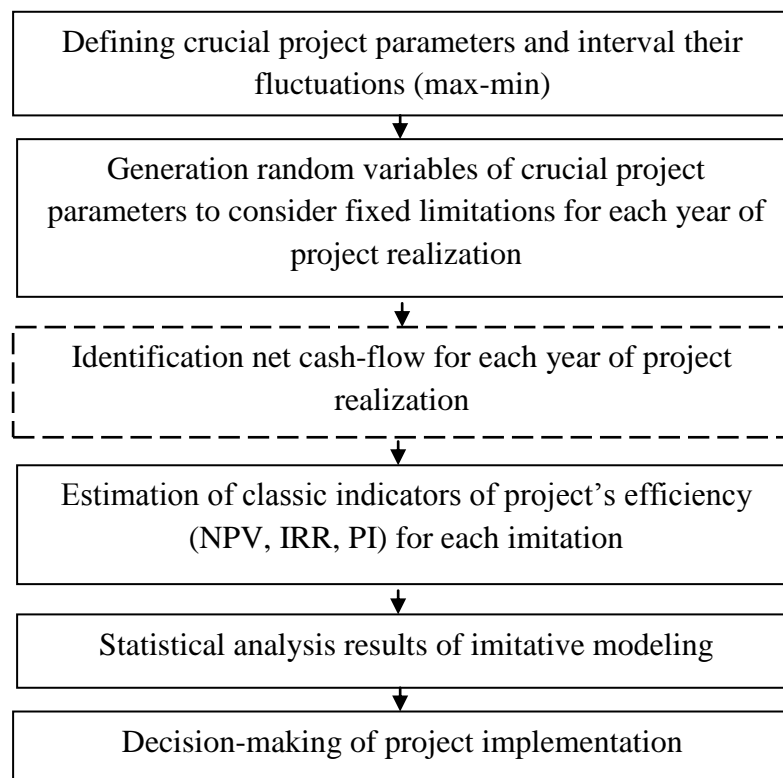


Figure 1 – Improved algorithm of forming Imitative Modeling

Improved algorithm of realization imitative modeling allows decision-making person to estimate potential uncertainty of future decision. It becomes possible to define expediency criterion for decision-making and to compare its value with own standard that stands on personal tendency to risk.

In conclusion it is important to underline, that urgency of using Imitation Modeling for estimation risks of Ukrainian enterprises' innovation activity is

determined with subjectivism, dependency from political, social factors and high degree of uncertainty which characterize modern national economy. So, Imitative Modeling gives an opportunity to take into account highest possible quantity of factors internal and external environment for effective manager's decision-making and decreases risks of wrong estimation innovative projects' results.

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