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ASSESSMENT OF INVESTMENT ATTRACTIVENESS AND MATURITY OF IT PROJECTS: A SELECTION METHODOLOGY FOR MARKET LAUNCH

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ABSTRACT

The selection of IT projects for market launch is complicated by the fact that purely financial metrics produce biased estimates at early stages, when most of the outlay goes into intellectual work and the value of the product rests on untested behavioural hypotheses. The objective of this study is to formulate a selection methodology that couples the assessment of investment attractiveness with the assessment of product maturity and of the environment in which the product will operate. The study is based on a comparative analysis of the literature on investment attractiveness, of technology readiness scales (TRL, TPRL) and of enterprise digital maturity models, followed by their adaptation to software products. A three-loop methodology is proposed: an investment loop, a product and technology loop, and a market and organisational loop. Each loop is unpacked into twelve to eighteen criteria scored on a five-point scale with a verbal descriptor for every score, supplemented by stop-factors acting as a logical filter rather than a weighted criterion, and by a minimum threshold calculated separately for each loop. The results are aggregated in an attractiveness-versus-maturity decision matrix whose four quadrants correspond to four management actions: launch, staged further investment, alternative use of the finished solution, and closure. Recording readiness by component rather than for the project as a whole, and repeating the procedure at life-cycle control points, prevents high scores on one dimension from masking critical gaps on another. The methodology is applicable to product portfolio management in IT companies.

Keywords: Investment Attractiveness; IT Project; Technology Readiness Level; Digital Maturity; Scoring Model; Market Launch

1 INTRODUCTION

Information technology stopped being a support function long ago. For banks, retailers and manufacturers it is now a revenue stream in its own right, and often the main one. A large company runs dozens of product initiatives at the same time, from internal automation platforms to customer-facing services aimed at the external market. There are always fewer developers than ideas, and competition for a team inside the portfolio turns out to be tougher than competition for budget. Hence a question that comes back every year: which projects to fund, which to rework, and which to close honestly before they ever reach the market. The cost of error is asymmetric. Turn down a promising initiative and the company forgoes the upside; rush a half-baked product out the door and it gambles with customer trust, which is far more expensive to win back.

The first group of difficulties stems from the nature of IT projects themselves. Most of the money goes not into equipment but into the intellectual work of the team and into intangible assets, which do appear on the balance sheet, though rarely at anything like fair value. Product life cycles are short: three to five years on average, and shorter still once a disruptive technology arrives. Early-stage money is committed against hypotheses about user behaviour that nobody has yet tested. Classical discounted cash-flow analysis is formally applicable here. The trouble lies elsewhere: its output is so sensitive to assumptions that net present value becomes a measure of the forecaster's optimism rather than a property of the project.

The second group of difficulties concerns the maturity of the solution. A project may look attractive on the financial model and at the same time remain a concept, confirmed by neither a working prototype nor pilot operation. When these two dimensions are mixed, a classic portfolio-management error follows: heterogeneous initiatives are compared on a single scale, and the winner is not the best project but the best-presented one. Tools that separate attractiveness from readiness have been developing along the lines of technology readiness levels and digital maturity models. Transferring them to software products, however, takes some caveats, since they were built for other domains.

The aim of this article is to formulate a methodology for selecting IT projects for market launch that couples the assessment of investment attractiveness with the assessment of product maturity and of the environment in which the product will have to operate. Three objectives follow from this aim: to delimit the concept of investment attractiveness and establish the limits of financial metrics for early-stage IT projects; to analyse existing readiness and maturity scales and determine the conditions under which they can be transferred to software products; and to design a selection procedure with explicit scoring rules, stop-factors and decision rules that can be embedded in a regular portfolio-management cycle.

2 MATERIAL AND METHODS

The study is conceptual and methodological in character; its empirical base is the body of published work on the assessment of investment attractiveness, technology readiness and digital maturity. Fourteen sources were selected for detailed analysis: peer-reviewed articles in Russian and international journals on project investment attractiveness and IT project efficiency, publications describing technology readiness scales and their extensions, systematic reviews of digital maturity models, the methodological guidance of the U.S. Government Accountability Office on technology readiness assessment, and foundational work on project portfolio selection, stage-gate governance and real options pricing for information technology investments. Sources were included when they either defined the constructs under study or described an assessment instrument in enough detail to be reconstructed and compared.

Three methods were applied in sequence. First, conceptual analysis was used to separate investment attractiveness from investment efficiency and to identify the assumptions under which financial metrics lose their discriminating power at early stages. Second, comparative analysis of assessment instruments was carried out along four attributes: dimensionality of the scale, granularity of the object being assessed (system as a whole versus individual components), the evidentiary requirements attached to each level, and the extent to which market and organisational context is captured. Third, the properties established in this way were synthesised into a design: a multi-loop scoring construct with anchored verbal descriptors, non-compensatory stop-factors, loop-specific minimum thresholds and a decision matrix mapping assessment outcomes onto management actions. No human or animal subjects were involved, and no primary data were collected; consequently the methodology is presented as an analytical construct whose validation on a live project portfolio is stated below as a direction for further work.

3 RESULTS AND DISCUSSION

3.1 Investment attractiveness of an IT project: the content of the concept and the limits of financial metrics

The term “investment attractiveness” is used in the literature in several senses. A review of interpretations shows that the concept is frequently confused with efficiency, and that certain calculation approaches artificially inflate a project's final indicators [1]. For selection practice the distinction is fundamental. Efficiency describes the ratio of outcome to cost under given assumptions. Attractiveness is something else: it is the view of a specific investor, with that investor's planning horizon, risk appetite and alternatives. The same banking service is attractive to an internal sponsor who needs to retain a customer and of no interest to an external fund waiting for revenue to multiply. Attractiveness, then, is a relative quantity, and a selection method must state explicitly whose point of view is taken as the baseline.

Financial tools remain the core of the analysis, and nobody proposes abandoning them. Net present value, internal rate of return, payback period and total cost of ownership give comparable benchmarks and work well wherever cash flows are predictable. The method for determining the efficiency of an IT project consists of three consecutive stages: assessing the benefits to the organisation, assessing the costs of development, implementation and support, and

assessing the risks of delivery [2]. Benefits split into direct ones, such as revenue growth and cost reduction, and indirect ones: quality of management, speed of launching subsequent products, reputation. The indirect group is harder to measure. Remarkably, it is precisely this group that most often becomes the main argument when a budget is being defended.

The early stage, when requirements are only partly fixed, causes the most trouble. The cost side of the model boils down to estimating development duration, and an error at this step propagates through every subsequent calculation [2]. Practice shows a persistent bias in one direction: teams underestimate integration with legacy systems, the volume of information-security work and the cost of post-launch support. There is a simple remedy: keep a history of deviations between planned and actual timelines for completed projects and apply a correction factor to new estimates. The remedy is unsophisticated. Yet it adds more accuracy than another refinement of the discounting formula.

Intangible assets deserve separate attention. Their growing role calls for integrating an IT company's financial indicators with an assessment of the rights and know-how it owns; otherwise the economic analysis remains incomplete [3]. For an information product the intangible part includes registered software, accumulated data on user behaviour, and proven integrations with counterparties and partner platforms. All of these are transferable between projects and make subsequent initiatives cheaper, so it is sensible to value them as a contribution to the portfolio rather than as an attribute of a single product. For early stages the logic of real options is also appropriate: funding is split into tranches, and each tranche buys the right to continue rather than an obligation to see the project through, an approach justified for IT investments as far back as the late 1990s [4]. None of these techniques, however, answers the main question: how ready the product is to meet the market.

3.2 Maturity of an IT project: technology readiness scales and digital maturity models

The Technology Readiness Level (TRL) scale describes the development path in nine steps, from the formulation of basic principles to proven operation of the system in a real environment. It forms part of the Technology Readiness Assessment methodology and is valued for its clarity and for making conversation between engineers and investors easier [5]. In United States government programmes, technology readiness assessment is formalised as standard practice, with best practices for conducting it described in detail [6]. Applied to software products the steps have to be reinterpreted: a laboratory mock-up corresponds to a prototype with limited functionality, testing in the operating environment to a pilot with a real customer group, and industrial application to operation under full load. The translation is not mechanical. Organisations adopting the scale usually write their own descriptor for every level.

The scale has well-known weaknesses. It is one-dimensional, takes little account of a system made up of several subsystems at different readiness levels, and barely notices market context. One proposal is to make it more informative with an additional visual indicator showing the number of subsystems at each level and the ordinal number of the subsystem being assessed at the moment [5]. A survey of practitioners applying TRL in industry identified some fifteen typical challenges, grouped around system complexity, planning of the assessment and validity of its results [7]. For an IT product this matters. A platform may have a mature computational core and a raw reporting module, and an aggregate mark of “level six” simply hides the gap. Hence a requirement for the selection method: record readiness by component, not for the project as a whole.

A balanced methodology for assessing the readiness of science and technology projects for commercialisation, known as TPRL, developed the one-dimensional approach further. It makes it possible to see the dynamics and balance of project development and draws on unified approaches already used in technology readiness assessment; it was tested on projects of federal targeted programmes [8]. The key idea is parallel scales: technological, production, market and organisational. A project is considered balanced when the values on the scales diverge only slightly, while a noticeable gap works as a risk signal. A level-nine technology with level-two market readiness is not a finished product. It is an expensive laboratory development that has yet to find a buyer.

A model for the comprehensive assessment of technological readiness formalises the expert procedure and is used both when selecting applications for funding and for measuring readiness as the project progresses [9]. Formalisation solves the comparability problem: without common descriptors, experts interpret levels differently and comparison between projects loses its meaning. Experience of applying readiness assessments in the management of technology projects confirms that a clear toolkit helps to monitor project dynamics and the effectiveness of supporting institutions, although the subjectivity of judgements and the laboriousness of the procedure do not go away [10]. The cure is calibration: training experts on reference cases and requiring every score to be backed by artefacts such as test protocols, pilot metrics and signed contracts. Guidance on readiness assessment in acquisition programmes is built in much the same way, with a level assigned only on the basis of documented evidence [6].

The maturity of a project is inseparable from the maturity of the environment in which the product will have to live. Enterprise digital maturity models describe the state of business models, organisational culture and company agility

and serve as a basis for a digital transformation strategy and programme [11]. A systematic review of some two dozen such models found that most of them give an incomplete picture of maturity and pay little attention to the cultural dimension, while specialised models for the service sector are almost absent [12]. When an IT product is launched on the external market, the assessment of the environment takes on a double meaning: what matters is both the organisation's own readiness to support a mass customer base and the digital maturity of the target segment. An IT service that requires the customer to run a sophisticated accounting system is unlikely to find demand where settlements are still done by hand, however elegant its architecture.

3.3 A methodology for selecting IT projects for market launch: assessment loops, scoring and decision rules

The proposed methodology is based on three loops. The first is the investment loop: expected financial result, amount of investment needed, payback period, sensitivity of the model to key assumptions, and value of the intangible assets created. The second is the product and technology loop: component readiness, architecture quality, accumulated technical debt, compliance with information-security requirements, and confirmed pilot results. The third is the market and organisational loop: size of the target segment, competitive environment, sales channel, readiness of support units, and regulatory constraints. The division of the procedure into pre-screening, individual assessment and portfolio selection follows the integrated framework for project portfolio selection, in which each stage solves its own task and does not substitute for the others [13]. The loops are calculated separately and are not collapsed into a single number at the first step. Otherwise the information about gaps is lost, which is precisely what the assessment was designed to uncover.

The individual loops are unpacked into a set of criteria with a five-point scale and a verbal descriptor for each score. The descriptor is indispensable: it converts an expert's subjective impression into a verifiable statement and makes scores comparable between projects, which is what the logic of formalised readiness models requires [9]. In all three loops, a reasonable number of criteria is twelve to eighteen. A longer list means a heavier review, not a more accurate one. Criteria weights are set by the business sponsor. Revising them more than once a year is unwise, since otherwise the results of different sessions cease to be comparable.

Scoring is supplemented by stop-factors: conditions under which a project is eliminated from consideration regardless of its total score. These include unremovable legal hurdles, lack of rights to key components, reliance on a single supplier with no alternative, and incompatibility with regulatory requirements. A stop-factor is not weighted. It serves as a logical filter, and keeping it separate protects the process from the compensation effect, in which a high financial score masks a critical defect. The role of such a filter in portfolio selection was described long ago: pre-screening against mandatory conditions cuts off obviously non-viable projects before costly detailed evaluation [13]. A minimum score for each loop is calculated separately, so that a project must score well across the board and cannot compensate for a weakness in one loop with strength in another.

The results are summarised in a matrix of investment attractiveness versus maturity, with each axis divided into two intervals. High attractiveness and high maturity means market launch with a full marketing budget. High attractiveness and low maturity means further investment against a fixed list of work and reassessment in one or two quarters; in effect this is the purchase of an option to continue rather than an unconditional commitment to fund the project to the end [4]. With low attractiveness and high maturity, the search for a different use of the finished solution is more common: internal use, licensing, or sale of the technology to a specialised player. Low values on both axes mean project closure. The logic of the quadrants directly inherits the idea of balanced project development along parallel readiness scales [8].

The approach only works if it is embedded in the regular portfolio-management process. Evaluation takes place at control points of the life cycle: on the way from idea to prototype, from prototype to pilot, and from pilot to industrial operation, following the same logic of gates through which a product passes from idea to market and at each of which the decision is made to continue or to stop [14]. Each control point implies updating the financial model with actual costs: attractiveness is a dynamic quantity, which changes together with assumptions and market conditions [1]. After launch, hypothesis-confirmation metrics are measured: customer acquisition cost, share of active users, retention, and gross margin. The comparison of forecast and fact is fed back into the assessment model for subsequent projects and increases its accuracy step by step.

The principal limitation of the study follows from its design. The methodology is an analytical construct derived from published instruments rather than a model calibrated on observed outcomes; the number of criteria, the position of the thresholds and the boundaries of the matrix quadrants are therefore starting values to be refined against a company's own portfolio history. Two directions for further work follow: retrospective testing of the decision rules on a set of completed projects with known outcomes, and the accumulation of forecast-to-fact deviation statistics that would allow the weights and thresholds to be estimated rather than assigned by expert judgement.

4 CONCLUSION

The market introduction of IT projects cannot be reduced to a financial calculation. Attractiveness and maturity are two separate dimensions, and a high score on one does not compensate for a low score on the other. Once these dimensions are unpacked, many of the decisions that experienced managers make instinctively can be explained: why a product with good economics is delayed, and why a technically perfect solution is shut down before it ever gets to sales.

The proposed methodology consists of three assessment loops (investment; product and technology; market and organisational), a set of criteria with written descriptors, a system of stop-factors and a decision matrix linking the outcome of the assessment to a specific management action. Recording readiness by component rather than for the project as a whole, and requiring every score to be backed by documented evidence, are the two conditions on which the comparability of assessments rests. The procedure is intended to be repeated: it is run at control points of the life cycle and accumulates a history of discrepancies between forecast and fact, turning the company's portfolio experience into a measurable resource.

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS

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Disclosure of conflict of interest

The author declares no financial or non-financial conflict of interest in connection with the research, authorship or publication of this article.

Statement of ethical approval

This study is conceptual and methodological in nature. It involved no human participants, no animals and no personal data; accordingly, ethical approval and informed consent were not required.

REFERENCES

- [1] Rybkina EA. [Investment attractiveness of a project: essence and approaches to assessment]. PNRPU Sociology and Economics Bulletin [Internet]. 2016 [cited 2026 Sep 18];(3). Available from: <https://cyberleninka.ru/article/n/investitsionnaya-privlekatelnost-proekta-suschnost-i-podhody-k-otsenke>. Russian.
- [2] Kulikova LL, Shvakin VYu. [Features of IT project efficiency assessment]. Proceedings of Irkutsk State Technical University [Internet]. 2010 [cited 2026 Sep 18];(3). Available from: <https://cyberleninka.ru/article/n/osobennosti-otsenki-effektivnosti-it-proektov>. Russian.
- [3] Makurin VV, Davydenko AA. [Intangible assets and other criteria for investing in an IT project]. Economic Analysis: Theory and Practice [Internet]. 2016 [cited 2026 Sep 18];(7). Available from: <https://cyberleninka.ru/article/n/nematerialnye-aktivyi-i-drugie-kriterii-pri-investirovanii-v-it-proekt>. Russian.
- [4] Benaroch M, Kauffman RJ. A case for using real options pricing analysis to evaluate information technology project investments. *Inf Syst Res*. 1999;10(1):70-86. doi:10.1287/isre.10.1.70.
- [5] Anokhov IV. [The technology readiness level (TRL) scale and prospects for its modification]. *Business Strategies* [Internet]. 2022 [cited 2026 Sep 18];10(11). Available from: <https://cyberleninka.ru/article/n/shkala-urovnya-tehnologicheskoy-gotovnosti-trl-i-perspektivy-ee-modifikatsii>. Russian.
- [6] U.S. Government Accountability Office. Technology readiness assessment guide: best practices for evaluating the readiness of technology for use in acquisition programs and projects. GAO-20-48G [Internet]. Washington, DC: GAO; 2020 [cited 2026 Sep 18]. Available from: <https://www.gao.gov/products/gao-20-48g>
- [7] Olechowski AL, Eppinger SD, Joglekar N, Tomaschek K. Technology readiness levels: shortcomings and improvement opportunities. *Syst Eng*. 2020;23(4):395-408. doi:10.1002/sys.21533.
- [8] Petrov AN, Sartori AV, Filimonov AV. [Comprehensive assessment of the state of science and technology projects through technology readiness levels]. *The Economics of Science* [Internet]. 2016 [cited 2026 Sep 18];(4).

Available from: <https://cyberleninka.ru/article/n/kompleksnaya-otsenka-sostoyaniya-nauchno-tehnicheskikh-proektov-cherez-uroven-gotovnosti-tehnologiy>. Russian.

- [9] Komarov AV, Petrov AN, Sartori AV. [A model for the comprehensive assessment of the technological readiness of innovative science and technology projects]. The Economics of Science [Internet]. 2018 [cited 2026 Sep 18];4(1). Available from: <https://cyberleninka.ru/article/n/model-kompleksnoy-otsenki-tehnologicheskoy-gotovnosti-innovatsionnyh-nauchno-tehnologicheskikh-proektov>. Russian.
- [10] Dzenzelyuk NS, Novosad VM. [Readiness level assessment as a tool for managing technology projects: objectives, problems and specifics of application to research and education centre projects]. Bulletin of the South Ural State University. Series: Economics and Management [Internet]. 2022 [cited 2026 Sep 18];16(3). Available from: <https://cyberleninka.ru/article/n/otsenka-urovney-gotovnosti-kak-instrument-upravleniya-tehnologicheskimi-proektami-zadachi-problemy-i-osobennosti-primeneniya-dlya>. Russian.
- [11] Gileva TA. [Digital maturity of an enterprise: methods of assessment and management]. Bulletin USPTU. Science, Education, Economy. Series: Economy [Internet]. 2019 [cited 2026 Sep 18];(1). Available from: <https://cyberleninka.ru/article/n/tsifrovaya-zrelost-predpriyatiya-metody-otsenki-i-upravleniya>. Russian.
- [12] Teichert R. Digital transformation maturity: a systematic review of literature. Acta Univ Agric Silvic Mendelianae Brun. 2019;67(6):1673-87. doi:10.11118/actaun201967061673.
- [13] Archer NP, Ghasemzadeh F. An integrated framework for project portfolio selection. Int J Proj Manag. 1999;17(4):207-16. doi:10.1016/S0263-7863(98)00032-5.
- [14] Cooper RG. Stage-gate systems: a new tool for managing new products. Bus Horiz. 1990;33(3):44-54. doi:10.1016/0007-6813(90)90040-I.