Predicting project risks improves success

How predictive analytics provides the insight to unlock the value of your program investments
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This insight on governance, risk and compliance (GRC) is part of a series of boardroom reports focused on program risk management (PRM) – please see ey.com/ prm

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# Introduction

## Avoiding the causes of project failure

**For all but the simplest of projects, success means avoiding many separate causes of failure.**

Industry performance in executing complex projects continues to be a challenge and, overall, disappointing. Despite the many advances in project management, development techniques and the growing body of program management knowledge, the overall rate of successful, challenged and outright project failures has not changed appreciably over the past 15 years.

However, the cost of failure has gone up. EY’s analysis, shows that approximately US$682b is wasted on underperforming projects across the globe annually. The significant wasted amount of project costs, unrealized benefits and team “burnout” is unfortunate and unnecessary. Since most projects are being done to meet the strategic objectives of the organization, this failure in unlocking the full potential of an organization’s program investment is a crucial factor in reducing market competitiveness.

It is important to examine the impact of project success beyond just the short-term focus of projects costs and schedules to meet the minimum “go-live” acceptance criteria and short-term benefits. Project success needs to be viewed in a broader perspective; to understand the degree that project (or larger program) success plays in the success of the business and in the confidence of the organization’s customers. There is also a need to understand how the project’s success will impact teams and how it will affect the organization’s preparations for the future.

Based on EY’s experience of reviewing hundreds of projects across varied industries, we have found consistent themes that result in poor performance:

- Companies are not adapting the individual project’s approach, governance, controls, processes and tools to account for the complexity of the project
- Symptoms of project issues are being treated instead of determining the root causes
- Projects do not take residual risks, predictive risks and discrete risks into account, thereby skewing the overall project risk picture
- Organizations assume that larger, more complex projects can be run in a similar way to the smaller, less complex projects that have been successful in the past.

**Avoiding these causes of failure is the key to unlocking the value of your program investments.**

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1. National Institute of Science & Technology, Gartner, Forrester, CIO magazine, The Standish Group, Steven’s Institute of Technology, MORI Captains of Industry, EY CBK, Dept. of Trade & Industry
Predicting project risks improves success
Are you ready to run a major project?

Understanding complex programs is challenging

Complex programs often involve multiple initiatives, a web of internal and external dependencies, geographically dispersed teams, and numerous stakeholders with varying agendas. In addition, they must be considered in the context of evolving business and regulatory environments, along with a rapidly changing technology landscape.

This complexity introduces risk and uncertainty, making it very difficult to get a good grasp of the relationship between the dimensions of cost, schedule, scope, quality, organization and benefit realization. Understanding the potential repercussions resulting from changes to any of these dimensions can be even more challenging.

Matching capability to project complexity

Organizations need to be able to understand the nature and potential impact that risks will have on the project and then, most importantly, act on this information. Most project teams will be able to identify known risks (called discrete risks), but very few organizations understand that there is inherent risk in every project that is driven by its complexity. These inherent risks often remain unknown to the team until late in the project phases, when mitigation actions are the most costly and have the largest negative effect on schedules and benefit targets. Furthermore, complexity drives inherent risk at an exponential rate. There are key inflection points where small changes in complexity have a magnified impact on risk. In other words, larger and more complex programs are exponentially more risky than smaller programs and cannot be managed in a similar manner.

A number of factors that span the entire project must be considered when determining complexity:

- Scope and requirements
- Project team
- Supplier ecosystem
- Timeline
- Development and deployment
- Organizational change

Why not just reduce a project’s complexity and thus the risk?

The answer is that the higher complexity areas in a project are usually the greatest drivers of benefits.

There are many industry examples where project simplification has been attempted with the objective of reducing the risks and their potential impacts; however, what that leads to is a reduction of benefits or extended time before benefits can be realized. This result impacts both the business objectives of the project and, potentially, the organization’s competitive advantage in the market. Also, when organizations attempt to reduce the complexity to help a challenged project, they usually target difficult areas of scope – which are the same areas that usually drive the largest business benefits.
So what can be done to identify complexity and reduce risks?

The goal should not be to reduce the complexity of the project, but to reduce the risk associated with that complexity. Risk reduction is normally attempted by applying company standard governance, controls and processes; however, this approach generally results in under-controlling larger, more complex projects and over-controlling smaller, less complex projects. Both approaches lead to disappointing results.

While risk cannot be eliminated from a project completely, it can be reduced if the project approach, governance, controls, processes and the team's maturity is adapted to address the specific areas that are driving the complexity of the project. The amount of inherent risk remaining after adaptation is called “residual risk”: what and how much adaptation is performed determines the amount of residual risk in a project. The objective is to reduce the residual risk so it is below the organization's tolerance for risk and predictive impacts on outcomes are acceptable.

Figure 1: Residual risk reduction

Factors of complexity
- Scope and requirements
- Team
- Supplier ecosystem
- Time
- Development and deployment
- Organizational change

Inherent risk is driven by complexity in an exponential manner

Net decrease in risk for same level of project complexity achieved through effective application of governance, controls, activities and tools

Residual risk should be brought below the organization's risk threshold

EY's client experience reinforces that governance and management play a significant part in managing a program's complexity.
Predicting implementation risks from residual risks

Failure to identify and address residual risk is a key factor in poor project performance. By analyzing complexity, a forward-looking view of implementation risks can be gained that can enable executives to make decisions concerning the project approach, governance and processes to reduce the residual risk so that it is below acceptable organizational risk thresholds. The earlier these needs are understood, the more impact decisions can have and the higher the chance of project success – it is best to adapt the project at its earliest stage to have the greatest influence.

Figure 2: Complexity, adaptation and residual risk graph

EY’s complexity analysis measures complexity across 17 factors. This analysis aids organizations in understanding the amount of residual risk remaining due to the difference between the project’s inherent risk complexity and the project team’s current ability (maturity) to effectively manage that inherent risk.

We find that visually depicting the complexity/risk relationship helps in management understanding and decision-making.

If the complexity analysis identifies high residual risk, the governance, processes, tools and team maturity should be adapted to match the level of complexity in the areas driving residual risk. Failure to properly adapt will lead to project inefficiencies and sub-optimal performance and outcomes.

In the complexity analysis diagram above, residual risk remains for factors where the complexity (gray) area exceeds the team’s capability in adapting to that complexity (yellow). This example reveals high residual risks in the team, supplier and organizational change areas. If the organization has historically struggled in those areas, or has not dealt with this level of residual risk before, the governance, processes, tools and team maturity should be better adapted to match the level of complexity being undertaken.

Key questions answered by complexity analysis

- What areas of the project do our standard governance, organizational capability, team maturity and controls fail to mitigate the inherent risk driven by the complexity of the project?
- Are the remaining residual risks outside our tolerance threshold and therefore need to be addressed?
- What specific mitigation actions can we take to reduce the residual risks to bring them within our risk tolerance?
- How will the business case be affected by the mitigation actions taken for the residual risks?
- Are there residual risks that are systemic across our organization based on analyses of multiple projects?
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Is your project set up for success?

Predicting risks based on planned governance, management, processes, controls, suppliers and the project team

The foundation for a successful program is set before the project even starts. Avoiding or taking shortcuts in the crucial pre-planning and formation areas, (as outlined in figure 3), will lead to a significant impact on project success. This impact may take the form of missed deadlines, budget overruns, reduced benefits and burned-out teams.

Proper pre-planning and formation involves adapting the project selection, governance, project management processes, team and suppliers to the complexity of the project. Each of these areas should be reviewed to determine if risks are being introduced to the project due to poor adaptation, or if risks are being mitigated due to effective adaptation.

EY has found that higher maturity companies take the time to have effective reviews to determine if proper planning was done in the pre-planning and formation phases and the degree to which the project is ready to start. Lower maturity organizations tend to rush into project execution or wait until issues arise due to poor readiness and then react by “firefighting” problem solving and decision-making.

Figure 3: “Ultimate” vs. “proximate” risk impacts

<table>
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<th>Program risks are created and grow due to missteps in the pre-planning and formation phases of a program.</th>
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<th>Execution</th>
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Measuring predictive risks

Prior to the start of a project, there is usually an optimistic atmosphere of looking forward to successfully delivering the project. However, executives are also usually pushing the project team to start work so progress can be seen. Therefore, it is imperative that a forward-looking view of anticipated challenges and risks be given to executives prior to project start. We call these forward looking risks “predictive risks.”

Providing predictive risks early in the project will allow adaptations to be made when there are more options and time available to address these risks. Waiting to address these predictive risks until later in the project life cycle reduces the ability to effectively address the risk and increases the cost of any action taken. However, analyzing predictive risks later in the project, prior to challenges, is better than no analysis at all.

EY’s predictive risk analysis helps to provide insight into 10 areas of potential risks and identifies:

- **Areas that introduce risks** – these areas will have a negative impact on the project and should be the focus of mitigation plans
- **Areas that mitigate risks** – these areas will have a positive impact on the project and should be maintained and, if possible, strengthened
- **Areas that are risk neutral** – these areas will have a marginal impact to the project, but this is often where low-effort improvements can have a high impact on success

EY’s predictive risk analysis helps determine areas that should be strengthened to stop the introduction of risks and areas that should be maintained to continue the mitigation of risks.

Figure 4: Predictive risk analysis

Figure 4 shows a sample predictive risk analysis – areas introducing risk are those where the forces are pointing to the left. In this example, many areas are introducing risk that will result in negative project impacts; three areas are risk neutral, and while positive they still have risks; and only one area, suppliers capability, has a positive impact. The impact of the risks being introduced will then be examined, and there is a high likelihood that adjustments will need to be made to lower the risks due to how the project is set up.
Identifying the impacts of predictive risks

After the predictive risk analysis is complete, the impact on project success can be anticipated and assessed. EY uses six factors that define project success: time, cost, benefits, scope, quality and team organization. The impact of predictive risks is identified as the risk of a factor being missed or encountering slippage.

Prior to the project start, leadership should determine the definition of success based on the relative priority of these six factors. At most, two of these factors should be the primary definition of success for the project. The other factors are successively lower priority in the definition of success. For example, if the project must achieve the expected benefits (i.e., return on investment) and is cost critical (i.e., ROI is very sensitive to cost), then benefits and cost would be the two primary factors of success. The other four factors must be given some freedom to change to allow the team to meet the primary goals.

Figure 5: Predicted risk impact

The diagram above shows the impact of the predictive risk analysis featured previously (page 8). In this example, there is a high risk of a disorganized project team, of the project going over budget and of the organization not realizing the benefits of the project. If any of these factors have been identified as a high priority for success (as benefits usually are), then the areas introducing risk outlined in the predictive risk analysis need to be addressed to lower the risk and risk impacts for the project. Given the previous example where benefits and cost are the primary factors of success, the predicted impact poses a serious threat to project success and immediate action should be taken by management and the project team to reduce the risks to benefits and the budget. Secondly, decisions to reduce organization disruption risks, or team absorptive capacity, could be “traded-off” for a higher risk in missing the timeline.

Key questions answered by predictive risk analysis

- Are we structuring the project for successful execution and outcome?
- What areas should be addressed that have the greatest impact in reducing risks around our priorities?
- Are our project priorities clearly outlined and not at high risk of missing deadlines or slippage?
- During program execution, are there risks being introduced that will negatively impact performance or outcome?
Predicting project risks improves success.
Improving project outcomes

A holistic approach to project risk management will yield the greatest impact in improving project success and outcomes. Effective risk analysis provides a fact-based understanding of residual risk, predictive risk and discrete risk that enables early and effective decision-making that can have a direct impact on project success.

A combination of periodic complexity analysis and predictive risk analysis, along with regular qualitative and quantitative discrete risk analysis, a feedback loop process that can effectively identify risks at the earliest possible time and provide the basis for remediation actions that can increase the chances of project success through improved schedule performance, improved budget performance and improved benefit realization – thereby unlocking the full potential of your program investment.

The foundation for a successful program is set before the project even starts. Based on the analysis of key start-up areas, future challenges can be predicted.
Becoming more proactive

Projects usually find themselves in one of two groups – reactive or proactive.

- The reactive group most probably is in a challenged state and is experiencing a lack of visibility into its true state of health, a lack of confidence in the current budget and schedule, a lack of accountability, and a lack of effective governance. Unfortunately this environment breeds a “hero” culture of rewarding firefighting instead of the correct proactive planning.

- The proactive group has the desire and discipline to look into the future to better manage risks and maximize benefits. This environment tends to consistently and more predictably achieve greater short- and long-term successes.

In which group does your project reside?

**Reactive indicators:**
- Are you experiencing schedule delays and cost overruns and can’t seem to get control?
- Do you have recurring issues that never seem to be resolved?
- Are you regularly experiencing “new surprises” that have a detrimental impact to your program’s progress?
- Would you like to regain control of your project and have sufficient visibility into an informed continue or stop decision?

**Proactive indicators:**
- Have you experienced project failures in the past and would like to have a different future experience?
- Are you in the early stages of project planning and want to ensure that a thorough analytical view of risks is complete and incorporated into the plan?
- Are you interested in increasing your confidence level in project success and benefit realization?

The effective use of complexity and predictive risk analysis can help your project become more proactive and successful. A proactive approach helps to provide a true forward looking picture of those areas that could impact program outcomes; armed with this information, management will have a better ability to make informed decisions earlier, the point of greatest influence, and can simulate multiple options.
A predictive approach helps to reduce project costs, improve schedule performance and achieve greater benefit results.

**Accelerate time to market TMM**
- The gray line represents the cumulative frequency of simulation.
- The yellow line represents the cumulative frequency of simulation end dates after mitigation.

In this example, mitigation efforts are forecasted to reduce TTM by 4 months.

**Reduce program costs**
- The gray line indicates pre-mitigation forecasted costs.
- The yellow line indicates post-mitigation forecasted costs.

In this example, mitigation efforts are expected to result in significant cost reduction, at 80% confidence level.

**Increase benefit realization**
- The window of opportunity for a solution can be short-lived. The sooner the solution is deployed, the more benefit can be realized prior to obsolescence.
- Mitigation efforts that reduce solution TCO will also drive increased benefits.

Benefits realized are a factor of solution total cost of ownership (TCO). Considering solution TCO as part of program assessment and mitigation can reduce cost of ownership and increase benefits. Additionally, providing a solution faster typically translates into greater penetration.

Market or business opportunity expires and solution becomes obsolete.
Predicting project risks improves success.
Predictive analytics can help to improve project success

Embedding program predictive analytics can provide leadership with the foresight and knowledge to make truly impactful decisions at the earliest possible time, thus providing the greatest influence over successful outcomes.

Projects are complex undertakings that have the potential to deliver significant business value. However, they also have significant risks. The only certainty is that projects will be exposed to a broad set of what appear to be unexpected events.

A predictive risk framework provides an environment where those seemingly unexpected events can be foreseen, often very early in the project life cycle. A project assessment approach, which incorporates this framework, has the potential to help you avoid these events — saving time and money and improving outcomes.

The ability to more successfully execute the right projects in an effective manner will help in business competitiveness in the marketplace.

How can EY help?

Our ability to provide a holistic approach to predicting project risks can help your organization to regain control of your investments and deliver meaningful value, aligned with your organization’s business strategy and risk tolerance.

Depending on your particular need, our predictive project risk review can be performed from three perspectives — portfolio strategy, planning and operations — which can provide a comprehensive view of your organization’s risk position and supports effective risk management from either a reactive or proactive position.

It is important to note that more value can be realized in the proactive position, as the corrective actions are made earlier and the benefits are therefore greater.

In addition to our predictive risk assessment, we can develop a prioritized road map and provide support assistance as you work to address those critical areas that will have the greatest impact in helping to manage your key risks and strengthen your organization’s risk culture.
Want to learn more?

*Insights on governance, risk and compliance* is an ongoing series of thought leadership reports focused on IT and other business risks and the many related challenges and opportunities. These timely and topical publications are designed to help you understand the issues and provide you with valuable insights about our perspective. Please visit our Insights on governance, risk and compliance series at ey.com/grcinsights.

**Unlocking the value of your program investments:** how predictive analytics can help in achieving successful outcomes  
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If there's no reward without risk, can risk be a good thing?

Every challenge and every opportunity an organization faces today demands change. And with change comes risk. Some risks you can see, some you can predict, some you can plan for, and some you can’t.

For EY Advisory, a better working world means solving big, complex industry issues and capitalizing on opportunities to help deliver outcomes that grow, optimize and protect our clients’ businesses.

Our understanding of the issues around risk — about the risks you can see as well as the ones you can’t — inspire us to ask better questions. By teaming globally with you we co-create more innovative answers that help you see risk management as a means to accelerate your performance.

Together, we help you deliver better outcomes and long-lasting results, from strategy to execution.

The better the question. The better the answer. The better the world works.
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In a world of unprecedented change, EY Advisory believes a better working world means solving big, complex industry issues and capitalizing on opportunities to help deliver outcomes that grow, optimize and protect clients’ businesses.

Through a collaborative, industry-focused approach, EY Advisory combines a wealth of consulting capabilities – strategy, customer, finance, IT, supply chain, people and organizational change, program management and risk – with a complete understanding of a client’s most complex issues and opportunities, such as digital disruption, innovation, analytics, cybersecurity, risk and transformation. EY Advisory’s high-performance teams also draw on the breadth of EY’s Assurance, Tax and Transaction Advisory service professionals, as well as the organization’s industry centers of excellence, to help clients deliver sustainable results.

True to EY’s 150-year heritage in finance and risk, EY Advisory thinks about risk management when working on performance improvement, and performance improvement is top of mind when providing risk management services. EY Advisory also infuses analytics, cybersecurity and digital into every service offering.

EY Advisory’s global connectivity, diversity and collaborative culture inspires its consultants to ask better questions. EY consultants develop trusted relationships with clients across the C-suite, functions and business unit leadership levels, from Fortune 100 multinationals to leading disruptive innovators. Together, EY works with clients to co-create more innovative answers that help their businesses work better.

The better the question. The better the answer. The better the world works.

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