Insurance analytics methodology
Executive summary

In the last few years, a range of powerful market forces and competitive imperatives have driven insurers across the industry to embrace advanced analytics. There is broad consensus that carriers need to adopt and expand analytics programs to improve insight into the business and decision making in everything from product design, marketing and distribution to underwriting and claims.

As insurance companies address key strategic, operational and technical issues, they will need to embrace a holistic approach to developing their analytic capabilities. This will require fundamental and coordinated change across every phase of the project life cycle.

This paper outlines the key elements of the EY methodology by raising a series of critical questions insurers must ask to generate full value from their analytics project. We provide a road map to help them prepare, design, implement and monitor activities that will generate the most from their investment.
Asking the right questions: find the answer to analytics success

Asking the right questions: a methodology for successful analytic projects

In the last few years, a range of powerful market forces and competitive imperatives have driven insurers across the industry to embrace advanced analytics. There is broad consensus that carriers need to adopt and expand analytics programs to improve insight into the business and decision making in everything from product design, marketing and distribution, to underwriting and claims.

However, many insurance analytics projects have failed to produce expected results. These failures are not the result of underinvestment in technology or a lack of effort. More likely, insurers deploying analytics struggle with a few common challenges:

- Resistance by end users reduces adoption and utilization of new tools.
- Current operating demands lessen the ability to make significant changes.
- Project focus is limited to data capture and model design rather than decision-making processes.
- There is a lack of buy-in from stakeholders, due to overly complex models disconnected from actual business processes.
- Business impact of analytics projects is difficult to measure.
- Experience gained from one-off projects is not leveraged for use in subsequent efforts.

Given that developing meaningful analytic capabilities could require significant investment, insurers are rightly concerned about maximizing return on their investments. One underappreciated driver of project success is a coordinated and comprehensive methodology to developing advanced analytics. Such an approach incorporates elements of strategic planning, technical design, project management and organizational change management. This methodology is designed to capture the knowledge and techniques generated by each analytics project to build the organization’s analytic capabilities.

Those insurers that execute successful analytics projects are likely to have addressed their key strategic, operational and technical issues by asking the right questions at the right time. These questions are applicable across the four phases of an analytics project, prepare, design, implement and monitor. The key questions are:

**Prepare**
1. Are we ready for advanced analytics?
2. What is possible?
3. What operating assumptions are holding us back?
4. How do analytics help us win?

**Design**
5. Do we have the data we need?
6. What’s the right technical math to analyze the problem?
7. What’s the best business math for decisioning purposes?

**Implement**
8. How do we generate buy-in and “commercialize” the analytics?
9. How do we orchestrate an effective rollout?

**Monitor**
10. How do we measure and define success?
11. What can we learn from our successes and failures?

These questions should be raised as soon as insurers begin to consider their analytics options. However, it is likely that they will need to be asked repeatedly, across every phase of the project life cycle. There are critical feedback loops – for example between the prepare and the implement phases. Success in advanced analytics calls for a holistic approach because it represents more than just a technology implementation; in fact, it speaks to how insurance leaders manage their businesses more effectively.
1. Are we ready for advanced analytics?
2. What is possible?
3. What operating assumptions are holding us back?
4. How do analytics help us win?

5. Do we have the data we need?
6. What is the right technical math to analyze the problem?
7. What is the correct business math for decisioning purposes?

8. How do we generate buy-in and “commercialize” the analytics?
9. How do we orchestrate an effective rollout?

10. How do we measure and define success?
11. What can we learn from our successes and failures?
The prepare phase of analytics projects focuses on properly setting the context and scope of the work to follow. This context setting requires performing research and aligning the perspectives of stakeholders across the business. Without capturing this knowledge and creating a consensus in the prepare phase, the subsequent design of the project is more likely to be flawed or incomplete. Here are the key questions to ask during the prepare phase:

1. **Are we ready for advanced analytics?**
   
   A necessary prerequisite to developing and implementing an analytics capability is assessing the current state of the organization. This assessment must objectively address current levels of analytics literacy, skills and resources. While nearly every organization has gaps, analytics programs do not have to wait for every issue to be resolved. Knowing the gaps and taking them into account when designing and implementing each analytics project is critical to long-term success.

   More generally, the company’s operations and finances must be stable enough to digest analytics-driven change. For companies with deteriorating financial positions, adoption of advanced analytics may be too challenging to undertake.

2. **What is possible?**
   
   Companies considering deploying advanced analytics tools must clarify the business problems they want to solve and innovation opportunities they want to seize. The possibilities are many. Some insurers apply analytics to help improve their fraud detection capabilities within claims operations, while others seek detailed insight into the performance of their distribution network or to identify policyholders at the highest risk of non-renewal.

   Perhaps the most direct question to ask is: what are the most important business decisions being made currently, and how can advanced analytics inform those decisions? The company’s strategy should serve as a foundation for ideas, but external scans of competitor activities, the larger insurance market and even non-insurance industries can yield useful ideas for applying analytics. Research and the perspectives of stakeholders across the business should also be taken into account.
3. What operating assumptions are holding us back?

Unleashing the full power of advanced analytics often requires identifying and challenging both explicit and implicit assumptions that are applied to the business and affect key operations. Typically, these assumptions are based on incomplete or outdated information but are maintained due to political or bureaucratic inertia.

The challenge review starts with identifying the assumptions being applied to the business and their effects on key operational decisions. For example, an insurer may assume a particular commission framework for compensating distribution channels. Given this framework, key operational decisions on product design, agent recruiting and claims management are all affected. By assessing the feasibility of modifying any given assumption, such as commission frameworks, the range of potential changes and thus potential competitive advantages are expanded. Challenging long-held assumptions is inherently disruptive but is a proven enabler of top analytics programs.

4. How do analytics help us win?

The final element in preparing for an analytics project is to understand how the company plans on altering the competitive landscape in terms of customer preferences, distribution channel constraints, new product opportunities or operational performance. Is the goal to offer new or different products? Change pricing? Improve customer loyalty? Increase operating efficiency? Examining these competitive levers, and then identifying those that could have a meaningful impact on business performance, will help insurers to determine in the design phase the specific ways the analytics project will drive market success.

The key output of the prepare phase must be a well-defined hypothesis of how the company will change its competitive position. Gaining visibility across the range of levers is critical in the prepare and design phases and can help establish a long-term analytics road map and align specific activities to that road map.
5. Do we have the data we need?

For skilled analytics teams and powerful analytics tools to meet their full potential, they need speedy, reliable access to high-quality, well-structured and granular data from operational and transactional systems. Typically, insurance company data is limited in at least one of these aspects. Such limitations will have an impact on model design and, ultimately, outputs from analytics applications.

To address data challenges, insurers typically have deployed data marts or sandboxes to support advanced analytics projects. While the single-purpose data mart does provide a solution, it can be a limited and restrictive approach. Insurers with sophisticated analytics capabilities are going beyond data marts to build an infrastructure that delivers the accessibility, granularity, speed and data links required to meet future analytics’ needs. Incorporating and utilizing external data is a key capability of the analytics infrastructure. The bottom line is that analytics leaders and program managers should expect an iterative design process as they work through these data issues, especially as new data sources are incorporated into modeling requirements.

6. What’s the right technical math to analyze the problem?

Constructing and testing the technical math typically receives the most attention and scrutiny during analytics projects. However, if the other prepare and design activities have been well executed, the modeling work should be fairly straightforward, provided it follows a few proven practices:

- Apply appropriate statistical and predictive techniques
- Select the right variables and use the smallest number of inputs that can provide model accuracy and effectiveness
- Accommodate data limitations in model design
- Don’t torture the data – reasonable correlation levels must be reached before committing to significant investment or process change
- Use intuition where appropriate – the logic of the model must be apparent to users or adoption rates will suffer

Following these practices and iterating the design appropriately will produce a model with the correct technical math critical for testing the hypothesis and for demonstrating how to improve performance.
What’s the correct business math for decisioning purposes?

Determining the best business math is another important element that is too often overlooked. As most business executives don’t typically model regressions or probabilities themselves, the key is to connect the outputs from technical models to business decision-making processes. This connection can and should be made in the design phase and not during implementation. The output of this step of the methodology is a compelling business case which answers the question: “How does this insight make money”.

The logic of the model must be consistent with business conditions and current operations. Line and field personnel should be consulted to reach an agreement on changes to decision making that are both feasible and practical. They should also help identify where new data and insights can add value in, for instance, highly iterative underwriting processes. Insights must be actionable – not just academic. If a modeling result doesn’t make sense or can’t easily explain how current decisioning processes should be modified, then there may be cause to re-evaluate the models.

Note that this design step may not result in a single outcome; there will most likely be options for such business changes. The modeling activity will not provide these options; rather, it’s up to the managers of the business to develop and evaluate the options for implementing the analytics insights.
Implement

A successful implementation phase consists of securing buy-in from the stakeholders responsible for implementation, gaining agreement on and documenting the changes to decision-making processes, and putting in place a practical and actionable rollout plan. By leveraging the testing and assessments performed in the prepare and design phases, the length, risk and uncertainty of the implementation phase will be minimized.

8.

How do we generate buy-in and “commercialize” the analytics?

Full management and operational support is perhaps the most critical predictor of success for analytics projects. Securing support and driving adoption are both top-down and bottom-up exercises. From the top, senior management must back the analytics project both financially and organizationally, with full recognition of the organizational impact. The leadership team should be involved directly to set priorities and ensure alignment with business strategy.

For bottom-up support, users and process stakeholders should be involved early and often, starting with the planning and design phases. This involvement has multiple benefits, model assumptions are checked; valuable input is captured relative to data issues, model design and process changes; understanding of new applications and process changes is shared organically across the organization; and unanticipated effects are uncovered early in the process, minimizing the risk of unpleasant surprises. When front-line talent participates in these ways, the probability of success of analytics projects is significantly increased.

“How Commercialization” comes into play when the project gains agreement on the implementation scope, approach, metrics and responsibilities. Assessments of the impact on the current process and decision making are appropriate and should include setting specifications of the process or product change and forecasting performance results following the changes. Organizational change management methods and shared terminology between management, the business and the analytics personnel can also help manage implementation risk.

9.

How do we orchestrate an effective rollout?

Because an analytics-driven process change involves many functions, rolling out the change broadly across the organization requires careful orchestration. Data, systems, work flow and control functions will all be affected. Deployment of new processes must be coordinated with other business changes and infrastructure upgrades. Market seasonality and distribution channel issues need to be considered as well.

New analytic applications will provide better visibility into drivers of performance. Greater visibility leads to the possibility of greater accountability, but this new accountability must be shared by all levels of the organization, including both senior leadership and operating managers. To properly align incentives and achieve buy-in, all stakeholders must be involved in the setting of new metrics and measures associated with the affected operations.

Deploying new tools and processes as pilots, with limited functional, product or geographic scope, has proven to mitigate implement risk while still providing useful results. Pilot results should be compared with initial projections to validate the original business case. Discrepancies should be used to troubleshoot specific data issues, revise expectations or refine the business case. When analytics applications are finally deployed into production environments, proper internal and external communication, training and change management techniques must be applied. By following the previous steps outlined here, resistance to change should be greatly reduced.
Monitor

Measuring and monitoring results represent the final phase of analytics projects. Among the factors that must be measured: decision-making impact, business returns of modified decisions, and knowledge captured from the project. Monitoring should incorporate both the individual project as well as the new analytics capabilities instilled in the organization.

10. How we do measure and define success?

It is important to note that analytics projects are not finished when new tools and processes are rolled out. Monitoring responsibilities, key performance indicators and supporting metrics all must be established. The project’s business case should be re-examined to understand how the business has changed and whether the objectives of the project have been met. The aggregate impact or value-change to the entire business – not just the narrow function implementing the change – should be determined.

Reporting tools and visualization techniques can link together the key decisions with associated business performance results. Wherever possible, this reporting should be built into existing operational cycles and be quickly accessible to the appropriate stakeholders. Proper time frames and sample sizes must be taken into account as executives and project teams evaluate the success of their analytics projects.

11. What can we learn from our successes and failures?

Regardless of their level of success all projects should be monitored with the same scrutiny. In many cases, there is more to be learned about customers, competitors and organizational capabilities from projects that fail to meet all objectives than from successful projects. Failures should be valued for the learning they produce.

In the case of failure, gaining a clear understanding of underlying issues is critical. Post-mortem analysis should examine every phase of the project. Was the prepare phase right? Was the right skill and resources involved? How did actual decision making change? How did customers and distributors react? Often, lack of complete success is attributed to a faulty model design when the real problem lies with the business implementation. In these cases, modelers are frequently asked to modify the parameters when the process that is applying the model is what needs adjustment.

Bottom line: analytics success requires a coordinated and comprehensive methodology

Experience shows that insurers generating the most value from investments in analytics embrace a coordinated and comprehensive analytics methodology, which never stops raising the appropriate questions. An analytics project needs to be more than a technology implementation; it should be a fundamental change in an insurer’s operations, decision making and performance management, coordinated across all parts of the business.
About EY
EY is a global leader in assurance, tax, transaction and advisory services. The insights and quality services we deliver help build trust and confidence in the capital markets and in economies the world over. We develop outstanding leaders who team to deliver on our promises to all of our stakeholders. In so doing, we play a critical role in building a better working world for our people, for our clients and for our communities.

EY refers to the global organization, and may refer to one or more, of the member firms of Ernst & Young Global Limited, each of which is a separate legal entity. Ernst & Young Global Limited, a UK company limited by guarantee, does not provide services to clients. For more information about our organization, please visit ey.com.

Ernst & Young LLP is a client-serving member firm of Ernst & Young Global Limited operating in the US.

EY is a leader in serving the global financial services marketplace
Nearly 35,000 EY financial services professionals around the world provide integrated assurance, tax, transaction and advisory services to our asset management, banking, capital markets and insurance clients. In the Americas, EY is the only public accounting organization with a separate business unit dedicated to the financial services marketplace. Created in 2000, the Americas Financial Services Office today includes more than 6,500 professionals at member firms in over 50 locations throughout the US, the Caribbean and Latin America.

EY professionals in our financial services practices worldwide align with key global industry groups, including EY’s Global Asset Management Center, Global Banking & Capital Markets Center, Global Insurance Center and Global Private Equity Center, which act as hubs for sharing industry-focused knowledge on current and emerging trends and regulations in order to help our clients address key issues. Our practitioners span many disciplines and provide a well-rounded understanding of business issues and challenges, as well as integrated services to our clients.

With a global presence and industry-focused advice, EY’s financial services professionals provide high-quality assurance, tax, transaction and advisory services, including operations, risk and technology, to financial services companies worldwide.

© 2013 Ernst & Young LLP. All Rights Reserved.

SCORE No. EGO126

1305-1085911

ED None

This material has been prepared for general informational purposes only and is not intended to be relied upon as accounting, tax, or other professional advice. Please refer to your advisors for specific advice.

www.ey.com