

ANALYTICS IN ACTION

Insurance Industry Survey Findings and Analysis

Survey conducted by *Tech Decisions* and Robert E. Nolan Company
Analysis prepared by Robert E. Nolan Company



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FOR INSURANCE

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*“Those companies that do not embrace technology and analytics
will be left behind in the dust of those companies that do.”*

— INSURANCE COMPANY EXECUTIVE

INTRODUCTION

Nearly one-third of the U.S. insurers have disappeared from the market over the last fifteen years, driven from the business by the challenges of sustaining profitability during difficult economic times. The result is fewer—and generally speaking—larger companies intensely competing for the attention and loyalty of extremely well-informed and demographically diverse consumers. Determining how to profitably access and continuously appeal to targeted segments of this market is core to achieving sustainable profitability.

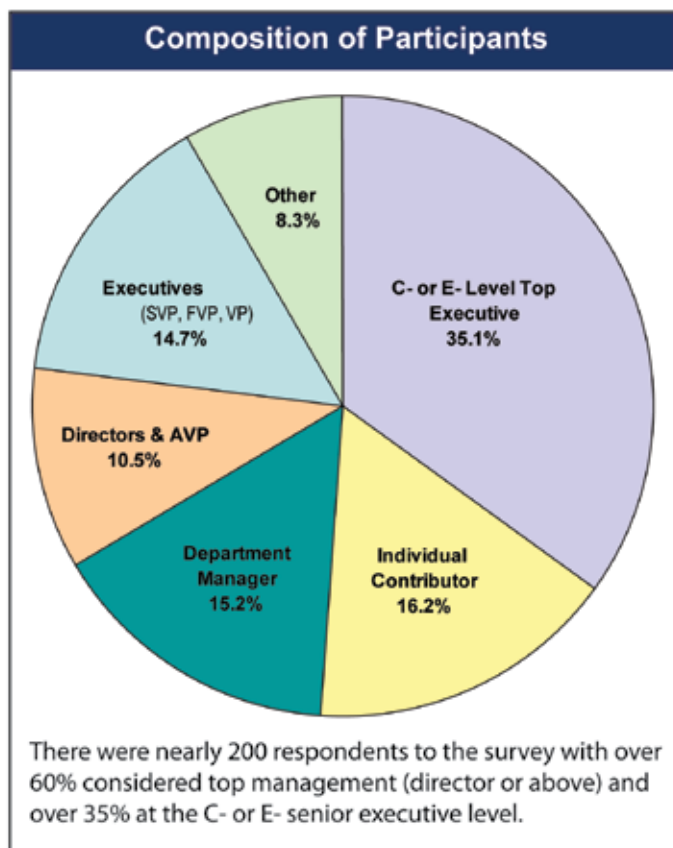
With no shortage of data, the industry's challenge is not in collecting it as much as in translating it into actionable decisions. Competition and low margins demand focus and an efficient leveraging of resources, from the risk management areas through distribution and operations. Decisions founded on predicted realities represent the ones most likely to produce the desired results.

Given already thin margins and years of intense expense reductions, carriers need to focus on leveraging revenue, investments, and claims management. Predictive models and business intelligence will provide the greatest potential for impact. Enterprise level models factor in consumer expectations, the

ability to deliver products meeting these expectations, the impact of timely and high-quality services, and managing the overall risk.

Significant but often hidden opportunities exist in customer segmentation, lead generation, managing channel efficiency, service differentiation, risk profiling, and claims practices. By modeling revenue generation, in force preservation, and claims management practices, better informed decisions drive increased profitability. In claims, for example, a mere one percent improvement in losses has a significant positive impact on returns from existing relationships. By applying available tools, improved margins are generated to fund growth without impacting resources. A recent IDC report showed that companies implementing predictive analytics achieve an average ROI of 145 percent while those that implement business intelligence initiatives achieve an average ROI of 89 percent—real returns generating real profits.

One clear conclusion from the survey is that analytics represent latent but as yet untapped potential. The ability to quickly translate that potential into profits will define tomorrow's leaders. Don't be "left in the dust" as was so succinctly stated by one of the responding executives—learn what, how, why, and where analytics are being applied today.



ANALYTICS BACKGROUND

What are Analytics

Specific scopes and definitions vary by source, but in simple terms, business analytics is about using software tools to access, extract, and manipulate enterprise-level data to provide new insights into what is driving the performance of the organization. Other terms that overlap with or are synonymous with "business analytics" include "business intelligence," "business performance management," and "data mining." The focus of business analytics can vary depending on the needs of the business.

Historical Perspective

The use of statistics to optimize organizational performance has its roots in the dawn of the Industrial Revolution. The advent of computing in the early 1960s made possible more complex analyses on increasingly large sets of data, and by the 1970s the term Decision Support Systems arose to characterize approaches for applying descriptive and predictive modeling techniques. During the late 1980s, Knowledge Support Systems and Perfor-

mance Support Systems were other names applied for the same concepts that we now include in the broad category of analytics.

Current State

Strategic areas of focus include improving profitability, customer service, customer retention, and operational effectiveness. Additionally, organizations are using business analytics tools to: develop new business metrics and ratios; segment markets; conduct financial planning, forecasting, and budgeting; detect fraud; and improve risk management. Many organizations are also striving for multidimensional views of costs and profitability, whether by customer, product, distribution channel, process, function, or line of business.

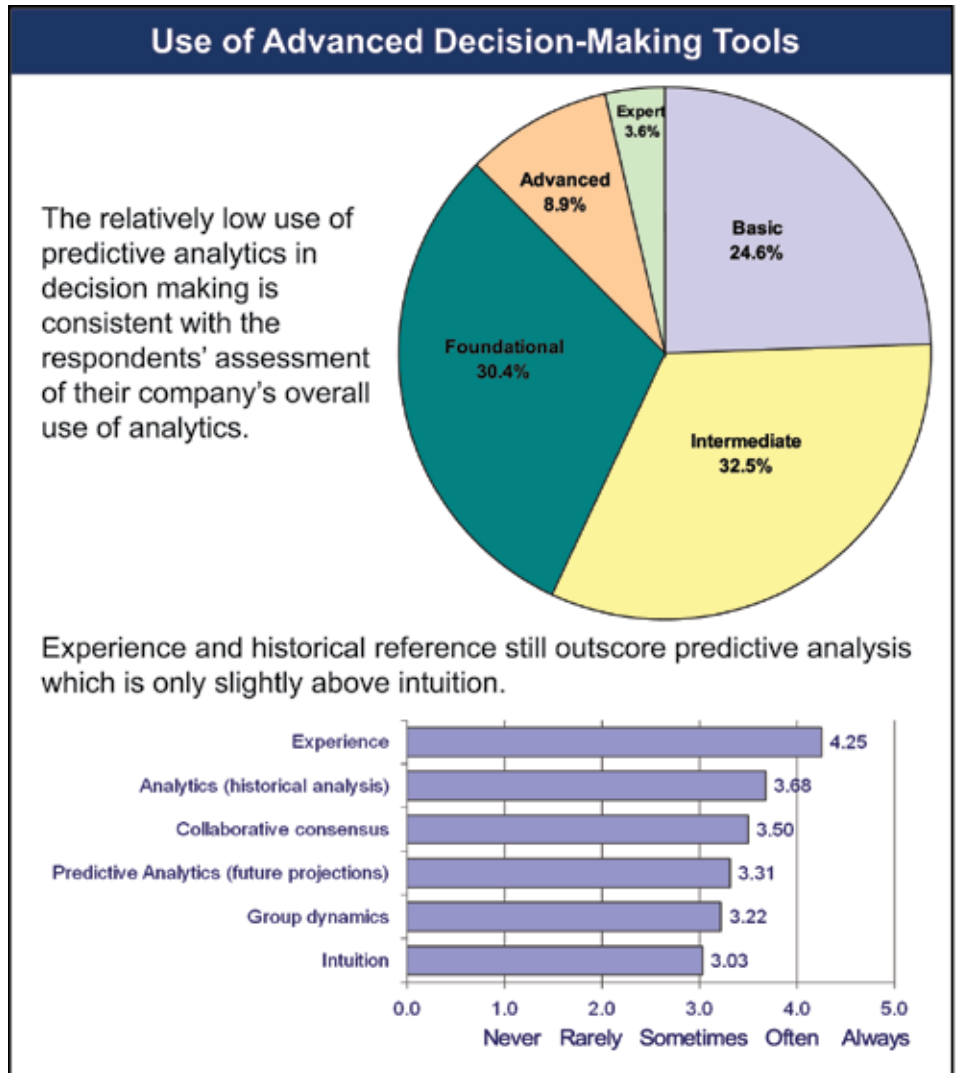
Relevance

Analytics are becoming a critically valuable basis for executive decision-making by providing information-rich insights into a variety of situations and opportunities. With the ability to handle far more dimensions than the human mind can manage, analytics make it possible to understand significant complexity. Analytics provide us perspective, so that we can act on the basis of new knowledge. Within the industry there are many instances of the successful application of analytics to grow revenue, improve profitability, and gain market share.

SURVEY SUMMARY

Survey Overview

The survey was targeted at senior executives within the insurance industry and focused on their use of analytics. It was understood that the responses would range from traditional budgeting, ratios, and benchmarks to more advanced predictive analytics and simulation. Most respondents were business executives while a few were from information systems leaders. Thirteen questions were asked, nine rating questions, one open ended comments question, and three categorization questions. This



analysis is based upon composite of the responses, the comments, and industry trends.

Of the 200 responses received, 35 percent C- and E-level top executives, 15 percent S/F VP executives, 26 percent AVP/Director Top Management, and 26 percent individual contributors. Companies under \$500M in revenue provided 60 percent of the responses with 18 percent in the \$500M to \$1B range, 17 percent in the over \$1B range, and 5 percent other. Property casualty companies represented 56 percent of the responses; life and annuity 13%; health 11 percent; and multi-line 20 percent. The resulting mix captured a broad range of perspectives from level of executive, size of company, and product line.

Strategic Application of Analytics

Analytics inform the decision-making process, ensuring a statistically valid, evidence based direction is taken. This represents new practices for the insurance industry, as traditionally decisions focused

primarily on a retrospective review of trends, ratios, variances, and experience analysis. In the field of predictive analytics, a prospective look at potential outcomes is taken, proactively guiding decisions in advance of taking action. To evaluate the extent that newer decision-making practices are being used, the survey starts by asking respondents to rank the basis for key management decisions in their organization.

The predominance of responses indicated that the traditional practice of using analytics for retrospective evaluation of decisions remained common. Experience and historical analysis—both based on a historical review of data—ranked as the top two approaches. Collaborative consensus, another retrospective approach, was third. Predictive analytics, which considers the likelihood of future events instead of the patterns of past events, was fourth and significantly behind the first three. The conclusion is that the industry is still relatively new to predictive modeling for strategic decisions, lagging in the use of these advanced decision-assisting tools.

The continued reliance upon historical trends and experience as a basis for decisions represents a significant opportunity for competitive advantage to companies able to harness the power of predictive models. Dynamic changes with consumers, markets, distributors, and products have converged to make a prospective look based upon current data more relevant and competitive than the traditional process.

The second question asked respondents to rank their company's use of analytics across operations as being:

- **Expert:** leveraging real-time, predictive, and situational current data,
- **Advanced:** using forward-looking explanatory and predictive models,
- **Foundational:** taking a look at trends, models, and dashboards,
- **Intermediate:** focusing on historical analysis, comparisons, and ratios, or
- **Basic:** using spreadsheets and individual units of measures.

Findings reinforced the opportunity represented by greater use of predictive analytics, with over 88

percent of respondents indicating that the traditional retrospective views created by basic, intermediate, and foundational approaches remained the primary approach. Only 12 percent indicated their companies used more advanced analytical models. Again, the reliance upon historical trends in a market that has significantly shifted represents a material opportunity for improvement.

Companies would benefit materially from the application of relatively simplistic and readily available tools that assist with the mining and proactive modeling of data.

Broad categories can often be deceiving, so an additional question was asked to determine more specifically what analytical tools were guiding a company's decisions. This third slice further validated reliance upon traditional approaches to data analysis despite major advances in tools and practices over the past decade. In order of priority from highest to lowest, trending, competitor benchmarks, unit measures and ratios, and dashboards/scorecards all ranked as primary data analysis methods. More advanced methods of data mining, predictive modeling, content analytics, and segmentation/clustering ranked notably lower.

Existing customer, distributor, service, and product databases all represent a wealth of information ready to be leveraged. The financial impact for companies that invest in and effectively implement predictive analytics has averaged 145 percent ROI, with some examples as high as 250 percent in recent studies. Less than 20 percent of the "worst" implementations have resulted in no or negative ROI—so even the majority of these instances have shown a positive return.

The last question took a functional look at where they were being used from business application perspective. The responses for all functional areas were less than "completely" and "mostly integrated," with all functional areas being rated between "not at all" and "somewhat integrated." Average responses of the "somewhat" ranking had three clear functional groupings:

- Underwriting, new business, finance
- Service operations, claims, marketing, agency management

- Actuarial, research

Underwriting and new business use predictive analytics in determining risk management categories based upon predicting mortality, morbidity, and claims frequency/severity. Having finance show up in this group was a bit of a surprise as it is unclear how the predictive aspects of analytics are being used, something worthy of additional research.

While service operations' focus on trends and ratios is neither surprising nor necessarily strategically impactful, the lower ranking of claims, marketing, and agency management represents a truly material opportunity for positively impacting revenue and profitability. Claims improvements achieved via enhanced fraud detection, claims prioritization, or resource allocation can have as much as a 1:8 leveraged impact on a company's returns. Market segmentation, behavioral clustering, and risk profiling all contribute to reduced utilization and increased product profitability. Agency models of predicted performance, success characteristics, and geographic penetration and dispersion optimize sales efforts. Companies seeking an immediate return on their investment should consider the integration of predictive models into their risk and distribution management practices, as the result is a more targeted application of valuable resources creating a compounding return.

Claims, marketing, and agency management all represent significant opportunities for companies to improve their profitability through the application of predictive analytics tools and practices.

ORGANIZATIONAL IMPLICATIONS

Analytics offer the ability to look across the enterprise at product, market, agent, and customer characteristics holistically. Therein lays one of the greatest values offered by the multivariate models of predictive analytics: the opportunity to look across lines and claims events to determine the life-of-the-customer economic value. Unfortunately, most companies are not organized in a manner that takes advantage of this potential. Analytical units have tended to develop bottom up within the organization, fragmented across departments and specialized on specific data. The result is an inability

to gain the synergy of looking from an enterprise perspective at the patterns and models.

Given the advanced state of analytics, vendor supplied solutions provide the richest ongoing functionality and greatest return on investment.

The survey tested this theory by questioning respondents on how existing analytical resources are deployed. The most common answer was that analytical efforts were supported by key resources within individual departments—a fragmented view. Lagging this most common approach, but still prevalent, were two different centralized approaches—either a service within IT, accessed via the typical prioritization process, or a centralized service provided by actuarial and/or finance. The least common and most desirable approach is a single shared business analytics team. By consolidating the analytical efforts, companies are able to get an enterprise-wide view of economic value and risk management.

Technological advances have created a solution rich environment from which to select tools for a company's analytical toolset. Despite these advances and the functionally rich offerings they provide, most survey respondents are using individually developed and/ or homegrown departmental systems. The ideal approach, a purchased single-vendor solution used by a centralized analytics unit, rated very low. The lowest rated approach was multiple vendor solutions, which creates complexities and challenges that usually result in suboptimal efforts.

The internal development of an analytical toolset does not represent a core competency for an insurance company. Competitive advantage comes from the thoughtful application of a toolset and the resulting strategies.

OPERATIONALIZING ANALYTICS

Given the high ROI generated by successfully implementing analytics, why haven't more companies pursued the opportunity? Research indicates there are some significant hurdles to overcome in order to benefit from analytics advances. Respondents stated that the primary barrier to success were the intertwined legacy and home-grown solutions that permeate most companies. As was well-stated by one of the respondents in the comments section,

“The importance placed on analytics will grow, however there will be a disproportionate reliance placed on results, until management learns that garbage in/garbage out continues to cast its shadow.”

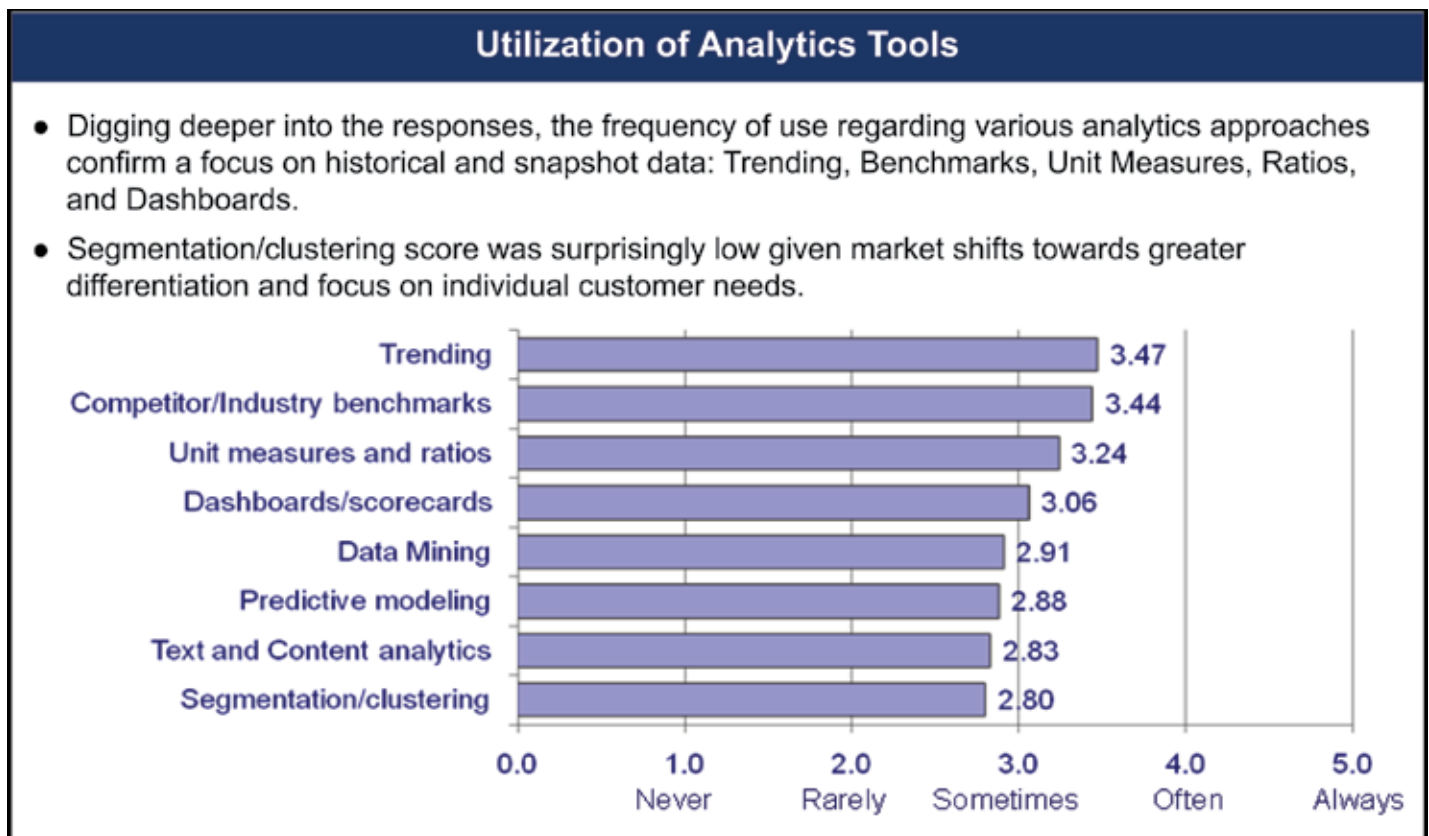
The survey and published articles all indicate that the number one barrier to the successful implementation of analytics is inaccurate, fragmented, or insufficient data.

Data compilation, consolidation, scrubbing, and supplementation represent the most difficult and time consuming aspects of an analytics project. Most companies are faced with fragmented, mixed quality sources of information preventing the development of effective models. Often missed by those who see this issue as insurmountable is recent advances in programmatic data reconciliation tools and the tolerance for error that the more advanced models incorporate. While still a hurdle, data quality should no longer prevent companies from moving forward on building analytical models into their decision-making processes.

Respondents indicated the second most common barrier was inadequate technology resources.

Given the availability of analytics experts from solutions providers and consulting firms, this appears to be an artificial barrier. Considering the ROI, companies should not allow the perception of resource constraints to prevent implementing analytics solutions. Turnkey solutions can be implemented at fixed costs negotiated either directly with the vendors or in conjunction with sub-contracted expertise. This same perspective holds true for the fifth reason given by respondents, the lack of business expertise. Again, external supplementation can address the void.

Respondents’ third and fourth most common barriers to implementing analytics solutions result from an apparent lack of awareness of their positive impact and value. The two categories, perceived costs outweigh projected benefits and lack of executive sponsorship, together represent organizational hurdles that require better communication of the material ROI achievable with analytics. Executives should be informed of the profitability improvements accessible with better information. According to a white paper by the Aberdeen Group titled “Predictive Analytics: The Right Tool for Tough Times.” Advanced solutions, available industry expertise, and alternatives for data scrubbing have all converged to create a competitively differentiating and



profit driving justification for raising the priority of analytics projects. This leads to the last significant barrier given by respondents, cultural opposition to data sharing. One respondent's perspective is indicative of the challenges often faced in integrating analytics-based decision-making processes into an organization:

"It really doesn't matter as most data currently produced comprises the basis for most uses necessary. Advanced techniques do not therefore produce 'advanced' data—the numbers are the numbers no matter how produced. Indeed, give me a room full of ladies in green eyeshades and Merchant calculators and maybe a punch card reader or two and I could be perfectly happy with managing the business, no matter how complex."

"Users of predictive analytics...have achieved a one percent improvement in operating profit margins over the last year, and a year-over-year increase in customer retention of six percent. Survey respondents that have not yet adopted predictive technologies experienced a two percent decline in profit margins, and a one percent drop in their customer retention rate."

Departmental and knowledge silos have long been a challenge to management when attempting to implement change. The same issue remains true in analytics, where typically segregated departments like claims, underwriting, and marketing must come together and fully disclose their data in order to develop organizational views. As with many barriers, the solution depends upon effective communication of the benefits of collaboration. Optimizing the benefits of analytics requires fully integrating cross-functional data stores.

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Given the tremendous benefits—the 145 percent median ROI on predictive projects and 89 percent median ROI on other business intelligence projects according to an IDC survey—the response to plans for future investments in analytic solutions was surprisingly low. Near term, or zero to six months, averaged just above the "not at all" threshold. Looking at the seven to 12 month horizon, averages shifted up slightly to the "somewhat" category and remained there looking out to two-plus years.

What is surprising is the apparent disconnect between these plans for limited increase in investments compared to the respondents' view of the importance of analytics. In the comments, over 35 percent of respondents described the growth in use of analytics over the next two years as "very important;" "critically important;" necessary for success;" "critical for success;" and "highly needed." This disconnect represents a misalignment between economic value and intent.

Other generalized insights in the comments section showed that some recognized the integral importance of analytics to future growth and profitability.

"Within two years it is expected that most carriers will at least have initiatives on models for selection and or pricing and we will see carriers form distinct line of business or class appetites based on those models."

"The future is in understanding the data."

Execution and translation into value are the critical challenges to be overcome. Specific to analytics, respondents indicated an awareness of the critical need for effective execution and described a staged approach:

- Determining best uses in priority order,
- Selecting a quick-to-market yet impactful isolated opportunity,

- Implementing the targeted solution,
- Integrating the resulting information into the decision-making process,
- Realizing the projected returns on the investment, and
- Gradually evolving and expanding the model into additional areas enterprise-wide.

These steps focus on companies that recognize the need to accelerate their use of analytics. Most responders likely will tend to gradually increase their use of disparate departmental systems applied to distinct sources of data. An integrated approach to predictive modeling across the enterprise will likely evolve over time as the early adopters leverage their competitive advantage, eventually forcing the followers to move to similar practices.

As it was so elegantly put by one respondent:

“Those companies that do not embrace technology and analytics will be left behind in the dust of those companies that do.”

Predictive analytics represent an accessible source of increased profitability, one that can be achieved with existing markets, distributors, and books of business. Executive awareness and sponsorship, an enterprise view of the data, developed or acquired expertise, and a strategic application of the toolset across functional lines provide the required foundation from which to realize the profits of competitive advantage.

FROM CONCEPT TO REALITY: APPLYING ANALYTICS

Real World Examples & Practical Applications Agency Performance and Best Practices

One example would be agency performance. A challenge common to all carriers is improving agency growth and profitability. The degree to which agency related data is available varies by organization; still, data pulled from systems only tells a portion of the story. Equally important is understanding how people in agencies spend their time and the results they achieve. This is accomplished by combining data from systems (e.g. volumes, premium, PIF, commissions, etc.) with agency time allocation survey data, agency expense data, and agency

tracked activity volumes. The result provides a powerful baseline that allows internal benchmarking and the identification of agency best practices to be shared across the agency force.

Benchmarking

Benchmarks are an element of business analytics to be viewed as a means to improve or validate performance, not to simply take measurements or make comparisons. If you embark on benchmarking, establish a solid link between the analytics and a comprehensive activity-based management program. In other words, formally incorporate the benchmarks into your ongoing improvement initiatives. Benchmarks are often thought of as an external comparison (e.g., relative to peers, competitors, or the industry), but are just as valuable when used internally to analyze different geographic locations (such as service centers or sales offices) in determining performance strengths, weaknesses, and best practices.

IT Assessment

IT costs and allocations are often not clearly understood. For example, a bank performance study found that the IT expense as a percent of total bank income at a participant bank were significantly but inexplicably higher than those of its peer group. An IT resource allocation analysis was conducted to determine whether the primary issue was on the operations side or the system development side. The data indicated that on the development side, over 40 percent of the activities being performed were not critical and could be streamlined, consolidated, or eliminated. This provided a business case to proceed with an initiative to develop and implement a new portfolio management process that would result in a capacity increase of 10 to 15 percent. Ultimately, this lowered overall IT costs and recast IT cost allocations more equitably.

Cross-Functional Expense Views

Many financial service organizations view expenses from a functional or business unit perspective. Functional managers are responsible for managing these expenses within the scope of their organizational structure. Business analytics tools can provide new and different views of expenses that identify new opportunities. Expenses that seem insignificant within a given unit can be significant when viewed more broadly. For example, expense line items such as travel can be selected and views

created at various levels, such as enterprise, function, line of business, region, and office. As a result, opportunities can be identified more quickly. With further investigation, those findings often lead to more effective policies, improved consistency, and reduced overall expense.

Unit Costing

Marrying expense and volume data from different perspectives can create interesting insights into unit costs. Unit costs are an ideal metric for measuring efficiency within an operation by simply looking at how many pieces of work the organization is getting and how much it is costing to get each piece done. The key is focusing on the core work volume and understanding its definition. If a global view is desired on the expense side of the equation, all expense line items can be included, as opposed to limiting expense scope to personnel-related costs. Alternatively, limiting expenses to personnel costs will provide a more precise view of productivity management effectiveness. The global view is more complex as it requires allocations of overhead, but it can provide a true view of what a function or process costs.

Product Costing

Product costs are useful for evaluating pricing and profitability. Accurate views require a fairly sophisticated business analytics capability, but the value can be significant. Understanding costs at this level

can help to ensure that products are priced effectively and profitably in each specific marketplace or to determine when it makes sense to under-price a product in order to gain market share. Identifying unprofitable products leads to their redesign or elimination in order to improve overall profitability.

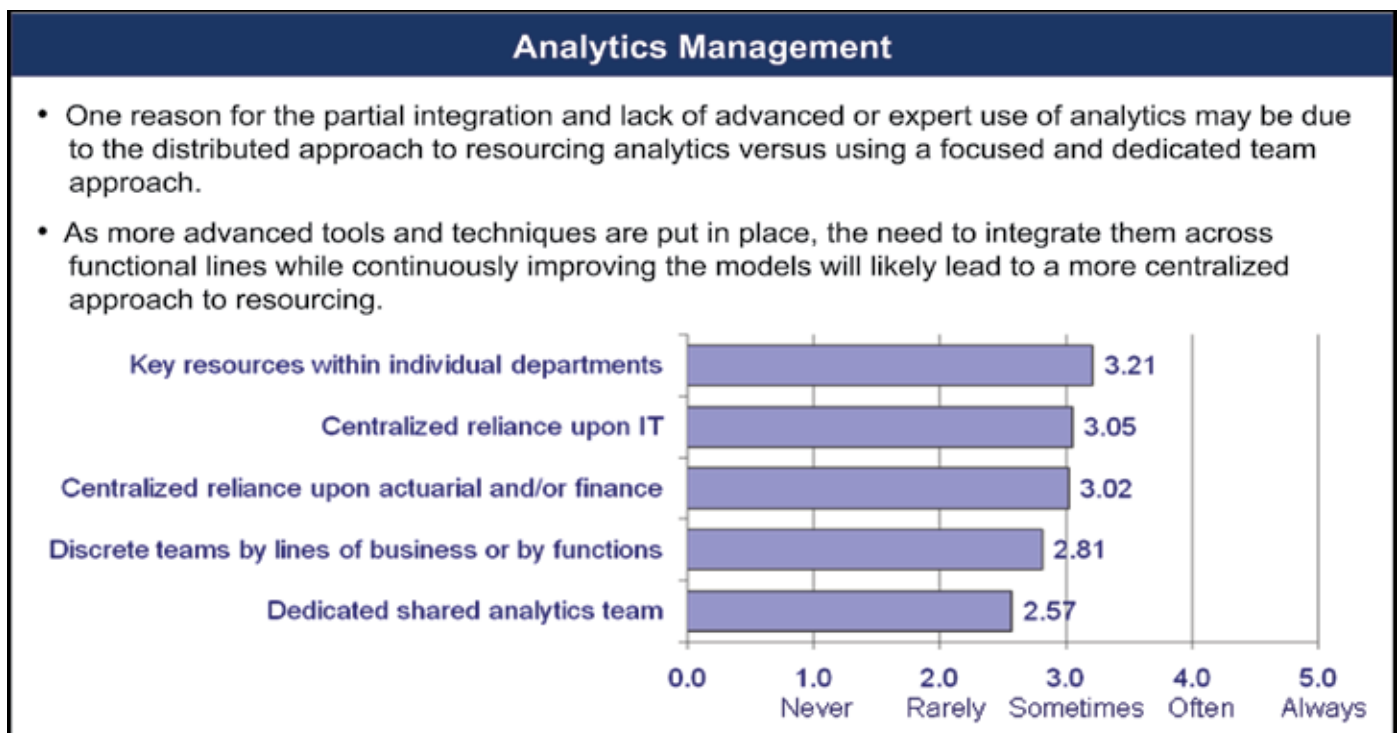
Incentive Plan Financial Soundness

The key here is to determine if there is a direct relationship between business results and what is being paid to employees in variable compensation. Ideally, business-result trend lines and incentive-payout trend lines should match one another to a degree, with the business result line climbing at a faster rate. Business analytics data can be developed for key business metrics and corresponding incentive payouts. These become the basis of incentive plan fine-tuning or redesign to ensure ongoing financial soundness and ROI.

Implementation Considerations—Moving From Concept to Reality

Effective approaches to implementing business analytics efforts include the following steps:

- Gain an understanding of the strategic direction and how analytics can support that direction.
- Take inventory and gain an understanding of any existing analytics efforts.
- Determine best functional placement of a shared services analytics.



- Establish a baseline of reliable data and reporting that tells a story in terms of potential opportunities.
- Gain a clear understanding of the involved functional areas and/or lines of business, helping them understand and fine-tune the data to identify and validate opportunities.
- Develop improvement initiatives that are structured and scoped to fully address each opportunity area.
- Lead or facilitate the improvement initiative in a manner that maximizes data visibility, participation, buy-in, and overall positive impact.
- Reinforce continuous improvement principles so that the overall analytics process is streamlined and fine-tuned with each initiative.

As can be expected, there will be obstacles, resistance, and challenges with implementation. Success requires change management skills and relationship building. It is also critical to clearly communicate to all business areas the goal is to help them improve their results. All involved business areas must be confident that the data is reliable and that the intent is not to “make them look bad,” but rather to help them and their team achieve a higher level of success.

ACHIEVING ROI

Business analytics’ primary goal is to identify improvement opportunities and generate improved performance (e.g. Effective Analytics = Improved Performance). An essential component of any successful implementation of business analytics is a deep understanding of the industry, products,

marketplace dynamics, processes, business drivers, and competitive factors, among other things. In health care, insurance, and banking, many companies have made significant investments and great strides in implementing business analytics software. Most, however, still struggle with effective use of the resulting management information. The missing piece is the lack of a clear link between data, how work is being done, customer experience, strategies, management practices, and execution. To be effective, analytics must go beyond identifying opportunities to improve. Achieving positive impact and ROI is essential for any analytics program.

From an execution perspective, the analytics team cannot sit in an “organizational silo.” The scope of the skill set required within the team needs to include understanding how to pull the data, create compelling views of the data, and consultative skills that allow them to go out and engage and work directly with the lines of business and functional areas of the organization in order to bridge the gap between piles of data and effective use of it. A key skill set is the ability to develop the data so that a business case for change is clear. In some cases, this may require supplementing the data with additional information such as resource allocation or activity based costing data, in order to make the data actionable.

ABOUT NOLAN

The Robert E. Nolan Company has served the insurance industry for 38 years, working with carriers to improve business performance and profitability through process innovation and effective use of technology.

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