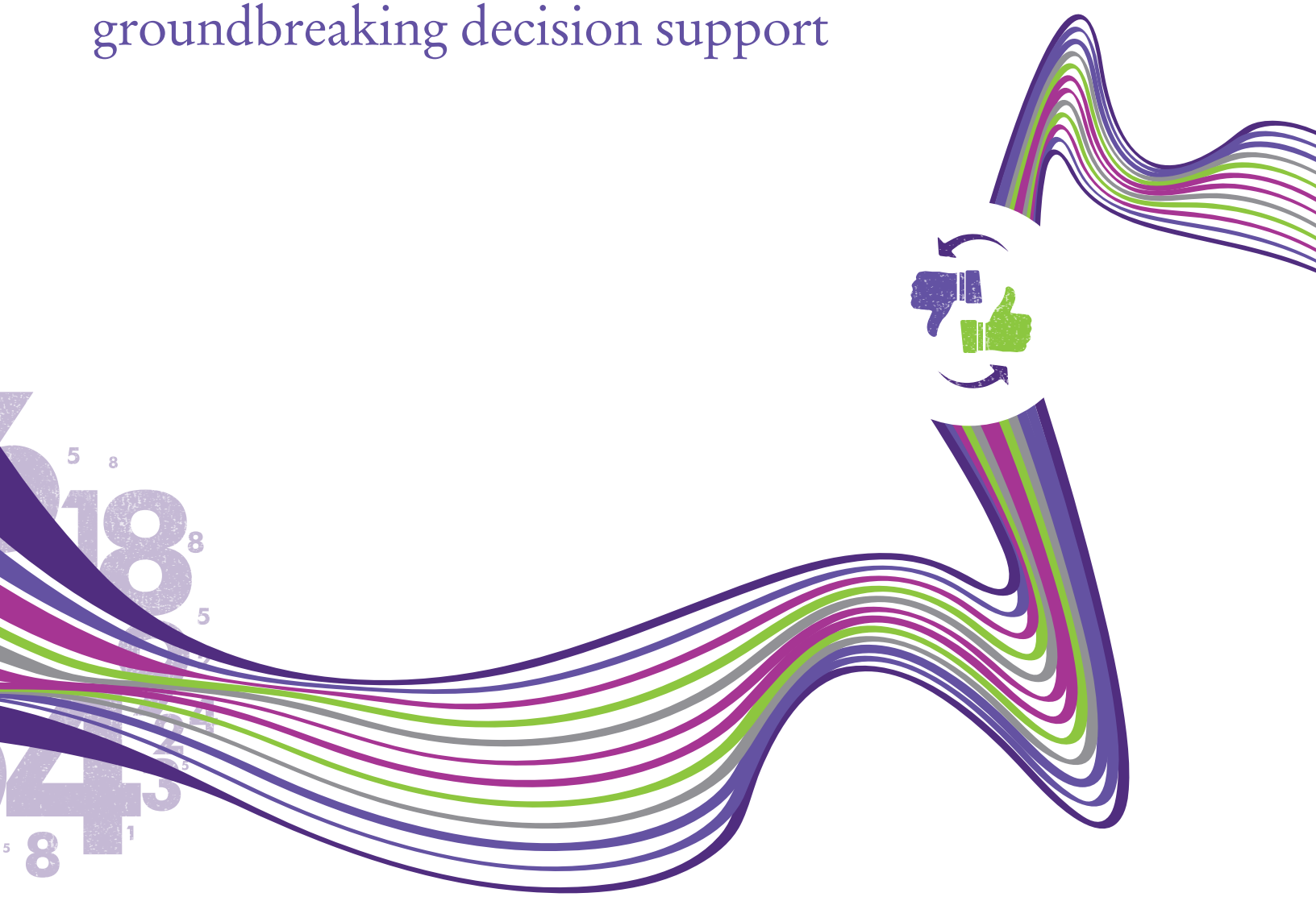
Grant Thornton

An instinct for growth™

Predictive and prescriptive analytics

Transform the finance function with groundbreaking decision support



ferf
financial executives
research foundation

an affiliate of financial executives international

Contents

Contributors

Thomas Thompson Jr.
Senior Associate, Research
Financial Executives Research Foundation

Philip Higginbotham
National Director of Analytic Solutions, Business Advisory Services
Grant Thornton LLP

Executive summary

We hear the term "big data" thrown around so much that it is difficult to imagine that prior to the mid-'90s, few businesses even knew what it meant. In case you're still unsure, big data is any collection of data sets so large and complex that it is difficult to analyze using traditional data processing applications.

All companies should address data challenges to support decision-making or risk falling behind. Businesses are collecting, storing and analyzing more data than ever before, and the trend is continuing to gain momentum. However, it's not who has the most data that wins. "There is a big data revolution," says Gary King, director of Harvard University's Institute for Quantitative Social Science. But it is not the quantity of data that is revolutionary. "The big data revolution is that now we can do something with the data.[1]"

Since much has been written about descriptive and diagnostic analytics, we will focus on predictive and prescriptive analytics — technologies that will transform the finance function by providing forward-looking insights; aligning the enterprise to the optimal course of action; quantifying trade-offs fast and with a low cost of ownership; and increasing the ability to communicate and collaborate across functions. These transformative characteristics will lead to significant performance improvements.

Companies are already harnessing these technologies to predict trends and prescribe the proper course of action to optimize the enterprise's core objective (e.g., profits). In this report, we'll highlight insights derived from in-depth interviews with senior-level executives conducted by Financial Executives Research Foundation Inc. (FERF) and Grant Thornton LLP. The four case study organizations cited in this report use advanced analytics in their businesses, and are gaining significant profit improvements.

Some key findings include:

- The knowledge economy is here. While technology alone doesn't give you much, when combined with the knowledge of your people, it is a powerful enabler.
- The speed of change is increasing. Prescriptive analytics helps finance leaders and their companies react quickly to proactively shape desired outcomes.
- Information for information's sake isn't any good if it doesn't provide actionable, forward-looking insights.
- Predictive analytics answers what will happen, while prescriptive analytics quantifies trade-offs using optimization to answer what-if scenarios. Used in combination, these practices yield maximum benefits at the enterprise level.

[1] Shaw, Jonathan. "Why 'Big Data' is a Big Deal," *Harvard Magazine*, March-April 2014.

Introduction

The category of business intelligence (BI) began gaining traction at the millennium. It is defined as all investments required to move data and automate reporting. However, the data being analyzed is backward-looking, while decisions are always about the future. Analytics became significant as technologies were introduced to bridge that gap, providing forward-looking information. Analytics is the high-value content delivered over the BI technology infrastructure.

According to Gartner, predictive and prescriptive analytics will be incorporated into less than 25% of business intelligence/ business analytics projects, but will deliver at least 50% of business value.[2] Combining business and financial modeling and statistical/optimization techniques will create a new generation of analytic solutions.

The transformative nature of this next analytics revolution is the ability to couple predictive technologies with prescriptive technologies. Prescriptive technologies, such as advanced modeling and optimization software, are currently present in approximately 3% of companies.[3] However, there are several factors driving an acceleration in adoption:

- The computer-intensive processing required for optimization has traditionally been associated with very long solve times, but with advances in hardware, it is now near real-time and easily available at low cost through cloud service providers like Microsoft and Amazon.
- With enhanced prescriptive architectures, the creation and maintenance of business rules is much less expensive and time-consuming, which leads to broader adoption across all planning cycles.
- The effort is now business-driven, not IT-driven. The content has to reside with the knowledge workers and those that have a good understanding of where major payoffs can be found.

In a recent white paper, Grant Thornton Principals Anthony Hernandez and Kevin Morgan echoed these points. "The science of business analytics has and will continue to evolve at exponential speeds. This evolution is due to: (1) the availability of more and more data, and (2) the increasing strength and computing power of the various tools and capabilities.[4]" Given this environment, advanced analytics will differentiate companies in the marketplace. "Those who do not integrate advanced analytics in their everyday operations run the risk of falling behind their competition."

[2] Rayner, Nigel. "Next-Generation Analytics Will Impact Business Decision Making," Gartner, Sept. 18, 2013.

[3] Van Rijmenam, Mark. "Understanding Your Business with Descriptive, Predictive and Prescriptive Analytics," BigData-Startups, Sept. 11, 2013.

[4] Hernandez, Anthony, and Morgan, Kevin. "Prescriptive analytics: Winning in a competitive environment," Feb. 20, 2014.

"Those who do not integrate advanced analytics in their everyday operations run the risk of falling behind their competition."

The timing of these innovative breakthroughs in prescriptive technologies is appropriate given the current business environment. In a hyperconnected world with increasing volatility and shorter life cycles, with data projected to grow by a factor of 44 from 2009 to 2020, traditional business decision-making models cannot keep up.[5] Companies must move from basic analytics on the lower end of the maturity scale to advanced analytics (predictive and prescriptive) — a much more sophisticated form of analytics that provides insights not previously possible.

Typically determined during the basic analytics phase, the ownership of a company's data may fall to any number of functions, such as IT or finance. However, the processes involved in the collection, assimilation and reporting of data generally fall to the finance function, given their expertise in control processes and responsibility for communicating performance to all stakeholders. Therefore, the CFO plays an integral part in a company's analytics.

We explored predictive and prescriptive analytics in place with four companies and discovered significant benefits:

- A one-time decrease in costs from ZAR900 million to ZAR600 million (an approximate decrease of $28 million) due to fundamental changes in South African Federal Reserve cash management policies supported by an advanced analytics solution
- ZAR70 million to ZAR90 million ($6.5 million to $8.4 million) in recurring savings due to improved planning
- Discovering a $1 million per year savings by reallocating production of a product line with no additional capital required
- Quantifying the marginal value of a constrained in-house process (over $1,000 per hour) and changing outsourcing policies to capture that value and become more profitable
- Negotiating with an understanding of quantified positions — both financially and operationally — from a single, integrated model

These case studies demonstrate the profound effect analytics has had — and will continue to have — on the enterprise, and how the finance function has been able to dramatically improve performance as measured by more efficient operations, improved returns on allocated capital and increased profitability.

[5] Gantz, John, and Reinsel, David. "The Digital Universe Decade: Are You Ready?" IDC, May 2010.

Analytics and transforming the finance function

The finance function creates value by accurately quantifying financial health and allocating scarce capital to meet the organization's objectives. According to Financial Executives International's (FEI) most recent *CFO Quarterly Global Outlook Survey*, 89% of U.S. and European CFOs say their finance division/function consistently provides useful information for making critical business decisions.[6] However, the latest technological innovations have left financial executives facing deficiencies in decision support:

- Data gathered from source systems used in decision-making is backward-looking.
- Decision-making is silo-based and supported by silo-based technologies.
- Planning is sequential. At the strategic level, you start with a financial model and translate to operations and demand. At the operational level, you start with demand and translate to operations and financials.

With the ability to dynamically model the entire business, these shortcomings are erased, providing the opportunity to optimize the enterprise and significantly improve performance.

For example, what is your company's hurdle rate for investing in new projects? What is your company's overall return on equity? For most companies, there is a significant difference between these two numbers — the hurdle rate being much higher than the actual return on capital. This happens because capital projects are analyzed in isolation, while constraints that impact the decision are left out or ignored; the supporting technology is not robust enough to provide a holistic perspective. We now have the ability to represent these constraints and understand the unintended consequences before the decision is made.

With predictive and prescriptive analytics, the holy grail of business planning has arrived. We can now deliver high visibility into the business, the ability to predict change and the agility to react. These forward-looking insights and the ability to quantify trade-offs realistically drive strategy. Advanced analytics provides financial executives with the tools to transform their value to the business. It is a game-changer.

[6] Thompson, Thomas. "CFO Quarterly Global Outlook Survey," Financial Executives International, July 1, 2014.

Visibility into the business

If a plane takes off from London's Heathrow Airport bound for Dallas/Fort Worth International Airport and is one degree off course, the plane will land in Mexico City. More than 90% of planes are at least one degree off course, yet they land where they intended to go. How? The pilots' knowledge, combined with technology, provides them with the visibility of where they were, where they're going and how to get there. They possess the knowledge and agility to self-correct when and as needed.[7]

Companies that can successfully utilize advanced analytics, such as those highlighted in our case studies, gain the visibility required to rise above their competition.[8] That visibility goes beyond the income statement, balance sheet and cash flow statement. It also goes beyond the numbers required to manage the business effectively — the fixed and variable costs and contribution margin of products or services. It is a combination of quantifying the contribution margin and understanding how changes to the fixed costs and variable costs structure of the business impact the income statement, balance sheet and cash flow statement before action is taken. "With the appropriate framework to shape financial knowledge, the management accounting function should become an organization's principal decision-support platform.[9]"

The melding of structured and unstructured data from various systems companywide into a single source of truth is a challenge for senior-level financial executives. An even bigger challenge is knowing what data is required to support decisions and what is just collected and stored. The vast ocean of data becomes manageable when this distinction is identified. Because a prescriptive model is a dynamic mathematical representation of the business to support decisions, by definition, the model itself will make this distinction. The benefit is a simplified world, with the enterprise focused on tracking important data — ignoring data that does not inform decision-making — and knowing the difference.

With predictive and prescriptive analytics, the holy grail of business planning has arrived. We can now deliver high visibility into the business, the ability to predict change and the agility to react.

[7] Srinivas, Srikanth. "Effective Performance Management," *Journal of Business Logistics*, Vol. 30, No. 2, 2009.

[8] Hernandez, Anthony, and Morgan, Kevin. "Prescriptive analytics: Winning in a competitive environment," Feb. 20, 2014.

[9] Manners, George E. "Six Levels of Financial Knowledge," *Strategic Finance*, August 2006.

Predictive insight

The value of all this big data is drawing a deeper understanding of the behavior of something important to your business and what that behavior may look like in the future. The most common example is the demand for products and services. Others include understanding how the price of oil impacts mode of distribution, or how weather patterns might impact premiums for an insurance company heavily invested in agriculture in the Midwest or home insurance in Florida. You gain these insights through statistical modeling that draws on the power to analyze trends, relationships and drivers. The result is some level of confidence in understanding how an important variable to your business will trend in the future.

Prescriptive course of action

Now that we have predictive insight, what course of action should be taken? For some companies, this is a billion-dollar question. Most businesses are a complex set of nonlinear relationships with constraints across demand, supply and financials. Senior management's job is to gain clarity and determine the actions to be taken at all levels. They must determine where to allocate capital; decide which products to fund and cut; establish policies across the business; and create operational schedules. These actions all have the same purpose — to maximize the company's primary objective.

Prescriptive analytics is not statistical modeling; it is deterministic. The purpose is to quantify trade-offs and understand the impact of various positions before action is taken. With the ability to apply optimization to these scenarios, finance executives can discover significant value.

As River Logic President Carlos Centurion points out, "Companies gain tremendous value when applying prescriptive analytics to make better decisions. First, users gain accuracy by modeling business processes and constraints in greater detail. Second, the decisions improve as the software will deal with complexity to find a better answer and support what-if analyses. Finally, the business gains agility by spending time analyzing only the best scenarios and through deeper organizational learning.[10]" These themes — accuracy by modeling, software to handle business complexities and business gains by analyzing best scenarios — are central to an organization's finance function. Other departments often look to the finance function for its expertise in these areas.

[10] Centurion, Carlos. "Enterprise Optimizer: Next Generation Prescriptive Analytics," November 2013.

SBV Services (Pty) Limited

"Cash is a very cyclical business," according to Carsten Schubert, head of consulting and solutions at SBV Services. SBV is South Africa's largest cash management service provider and is jointly owned by the country's four major commercial banks.

- Cash supply industry
- Established in 1986, jointly owned by four major banks
- Financially optimized output transformed planning across the business
- Improved planning processes saved ZAR300 million per year

"There is a significant amount of total cash in circulation, of which approximately 12% is held in the SBV cash centers. Bear in mind that the South African rand is also widely used in three or four of our neighboring countries," Schubert says.

SBV's objective is to store cash at the lowest possible cost and simultaneously ensure the correct supply of notes in all denominations across all geographies. This means managing complex cost trade-offs between funding, logistics, processing and storage, insurance capacity, and Central Bank charges. SBV has implemented forecasting and business optimization technologies to create a planning platform for the South African cash management industry.

Issues

If the velocity of cash — or how quickly the money moves — is slow, the company will need to introduce new notes into circulation. "What SBV strives to do is keep the notes in circulation to a minimum," Schubert explains.

The movement of cash from urban economic hubs to rural areas is another problem. "For example, a significant amount of income is generated in the country's main economic hubs and then taken back to the rural areas where it is spent. Now that the cash has shifted to rural areas, you end up with a surplus of notes in those locations. SBV then has to take that money back from the rural areas to the economic hubs, so the environment is hugely complex and the costs associated with getting it wrong are very high," Schubert says.

Solutions

SBV's technology motivations are essentially needs-driven. As Schubert explains, "When you get to a point where there is too much complexity for manual processes, you need to look at introducing new technologies to automate processes and simplify things."

Currently, SBV uses an accounting system called CISPro and vault management technologies, using a "best of breed" approach. The company utilizes a fourth-party logistics provider cash planning platform developed by Business Modelling Associates (Pty) Ltd (BMA) in combination with the Prophecy Forecasting tool developed by BMA and Automatic Forecasting Systems Inc.

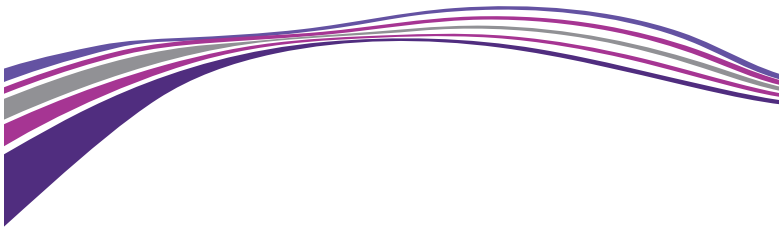
"Typically, we have a forecast and the next thing we need to apply is the inventory on a daily basis. We use the Supply Planning Workbench (SPW) to obtain our inventory position and Prophecy Forecasting to forecast for three months. Then there are a myriad of scenarios and constraints that you need to factor in with their associated costs," Schubert says.

"At the heart of the planning platform, the SPW uses River Logic's Enterprise Optimizer (EO) to prescribe movements and balance activity — deposit this cash in that vault, take this cash to that cash center, for this denomination the best place to get it is the cash center down the road or the Central Bank, etc. So EO manages all those trade-offs and provides the best recommendations," explains Schubert.

"In my view, forecasting is the predictive side where we've got forecasts based on history per denominations, channel and customer, and within that we've got to apply certain parameters to try and get each one on the predictive side as accurate as possible," he says.

"Once we are happy with the forecast, we'll then put it through the SPW, which will prescribe to us what we should be doing," states Schubert. "Obviously the more accurate our forecast, the better the input into the prescriptive tool will be. The interdependency between these two predictive and prescriptive modules is key. If the forecast is very bad, the confidence level in the output of the plan will be equally low."

"Incorporating predictive and prescriptive technologies into the business has been a challenging yet rewarding journey."



Results

Incorporating predictive and prescriptive technologies into the business has been a challenging yet rewarding journey, says Schubert. "On the predictive side, we took actual data going back 18 months from the enterprise resource planning (ERP). The data was initially quite difficult to analyze and came from multiple sources. We then created what we call a 'sandbox environment,' where we can evaluate different forecasting techniques and methods to certain product streams and apply different parameters until we find the best-fit parameter to apply to the specific denomination within a channel or customer."

As for the prescriptive side, "We took our SPW, and starting from scratch at one cash center, we began to understand the cash flow process. We then represented these product flows, costs, and business and operational constraints in an EO model. We were then able to replicate this across all the other cash centers. We've now successfully operationalized our plan and it is run though the SPW daily."

The key for SBV was the realization that "technology on its own doesn't give you much more than sophisticated decision support and the ability to rapidly consider the impact of alternative scenarios; it's an enabler. Having people on board who fundamentally understand your operations and business is critical," Schubert says.

Value

The value of the cost savings derived from these supporting technologies has been significant. "At a gross level, we've changed the operating model with the Central Bank and convinced them of the capability of the advanced planning platform that we've got in place. The Central Bank used to be actively involved in the cash supply chain, which required us to deposit notes with them at quite a high cost," Schubert explains. "As an industry, we've proved that with a cash-planning platform in place, we could successfully manage the notes in circulation without increasing them. For that, the Central Bank took a less active role in the cash supply chain and allowed the industry to continue with that process."

He continues, "That process saved effectively ZAR300 million per year on a spend of about ZAR900 million annually. If you add in the fact that the Central Bank has dropped some prices and fees — one could argue that they wouldn't have done that if they didn't have the confidence that we could manage the cash supply chain — that brings in an additional ZAR70 million to ZAR90 million in annual savings."

It is difficult to identify and assign all the monetary value because of the size and complexity of the entire industry. SBV originally implemented this solution to help manage its own business. The banks have subsequently decided that given the strategic importance of the platform, they will position it in a different entity, now known as CashLogix, which will be owned and operated by the industry but still from within the SBV business unit.

Large consumer packaged goods company

At this family-run company, business analytics is supervised by the vice president of planning. He also oversees the supply chain, logistics, managerial accounting and demand planning.

- Privately held, 70-year-old family company
- Decision-making at the margin led to significant profit improvement
- Potential $1 million per year savings uncovered

"We do have a fairly robust internal IT department, and a number of our applications are written internally," the VP says. "Over the past several years, we've been re-engineering our basic order fulfillment process of how finished goods flow through the system, and have written a very complex system to manage that flow from production through making sure that product gets where it needs to be in a timely manner."

The company's sales and operational planning analyst adds, "Business analytics is really my role — from the data collection and organization, gaining insights about the data, and a deeper understanding beyond sums and averages. I am also doing goal modeling and prescriptive modeling. I provide deeper insight and incorporate the learnings into best practices."

Issues

According to the VP, customer service, costs, and forecasting demand or inventory management are current issues for the company.

When asked about concerns with decision-making today, the VP responds, "Ten years ago I would have said not enough data, but today it's the ability to effectively use all the data we have now. There are so many opportunities with the data, but we don't always have the ability to effectively turn that data into actionable information."

This is a two-part issue: The first component is using descriptive and predictive analytics to summarize and correlate data and turn it into valuable information. The second part is how many additional decisions and trade-offs the information brings to light, and how to make optimal decisions across large, detailed sets of information that can change daily.

The analyst adds, "Today, what business analytics is doing is letting us say, 'Forget about asking the right question.' If we have the right data and perform the right analysis on it, let the data speak to you and tell you where you should go. Do not let the data prove a point, but let it speak for itself. We are starting down a very new path with respect to analytics."

Solution

This company has had an extremely positive experience with technology. The VP says, "One of the things we did back in the '80s when all of these big ERP systems were coming out was to make the decision to go down the path of 'best of breed.' That created some opportunities and some challenges in terms of our data being scattered across disparate systems. It also gave us the opportunity to structure the data in data warehouses the way we wanted to so we could use some new technologies, such as River Logic's Enterprise Optimizer." The company looked at software that would support their business processes instead of fitting their business processes to existing software.

He continues, "We have lots and lots of data, but the ability to go through that data quickly, to be able to glean valuable business insights out of that data is what's pushing us in that area. We've been using some of those prescriptive models for a number of years now, and it has gone from being a tool we used to analyze things to becoming embedded in our everyday processes. We routinely run a couple optimization models a day to make business decisions, and that's all automated. When I see an opportunity for the new technology to help us answer a business question better, faster and more reliably, that's what has pushed us into predictive and prescriptive analytics."

In addition to using EO, the company still uses "everyone's favorite analysis tool: Excel." The analyst says, "I've used some of the regression analysis tools in Excel, and we do have smart forecasts as far as time series data for predictive analytics. Right now, we are using SAS for predictive and Enterprise Optimizer for prescriptive." The analyst is also exploring IBM's SPSS modeler application and R programming environment.

Predictive analytics has provided the company with the "ability to ask more questions of your data in more ways than traditional analytics," says the analyst. "We have decision trees and neural networks and all the different ways we can apply models to data to gain insights and see hidden patterns."

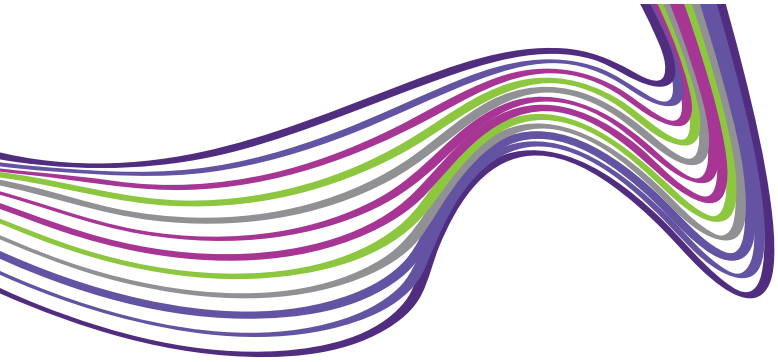
Prescriptive analytics has helped the company "leverage business insights to achieve business goals in a formal way."

Results

According to the vice president, "These technologies really change people's jobs from scheduling production to making sure that the environment in the decision model reflects reality so that you'll have confidence in the schedule it puts out. It's a very big shift in what those people are used to doing, and to some degree a change in the skills they need to be successful." Expertise is being redefined from being able to quickly develop a good schedule based on knowledge, skill and experience, to being able to support a decision model and its data needs to make optimal decisions.

The VP adds, "I just can't overemphasize the importance of good data. If somebody doesn't have reliable data in the structure and the format that's needed to be consumed by these sophisticated tools, they are wasting their time and their money going down that path until they clean up their data and are comfortable with it."

"When I see an opportunity for the new technology to help us answer a business question better, faster and more reliably, that's what has pushed us into predictive and prescriptive analytics."



Value

"I personally feel what is most valuable is the ability to make better decisions and gain new insights, but those are also the most difficult to define upfront. It's hard to define what you don't know," the VP notes. The journey of data validation, model design and model validation each provide value beyond the completed model.

"For example, the very first model we ran with EO was looking at where products are made and consuming that managerial accounting variable cost data. It showed us very quickly that we could save roughly $1 million per year if we quit making one of our products in one plant and moved it to another plant, made it there and transferred it back to the original plant."

The analyst adds, "Another key to the process is involving all those business experts and creating a model to define what's important, where your data is coming from, how you define your data, etc. Even for the people that have been doing it, it just raises the bar in the organizational level of knowledge around that activity."

The return on investment seems immeasurable. The VP says, "I don't know that in hard terms. When I look back to where we were maybe 10 years ago, our ability now to put together good plans in an efficient, timely way and make better decisions is light-years ahead of where we were. We wouldn't be close to where we are without that technology." The company has incorporated decision modeling into tactical and strategic decision-making to such a degree that it has culturally changed how it approaches its most challenging problems.

Cox Industries

Matt Yaun is the chief administration officer at Cox Industries, and he oversees all enterprise-wide functions. He has been with the company for eight years, the first five years in sales and marketing. His role changed recently when the company reorganized its two main business units.

- Lumber treatment industry
- Privately held, family-owned business
- 12 facilities
- Realized savings of over $1,000 per hour

Issues

In the pressure-treated wood manufacturing industry, Yaun sees these top three issues:

1. The ability to be agile: The financial crisis and housing downturn taught the company very quickly that the ability to scale your business down in a high fixed-cost business is not always easy.
2. An aging labor force: One-quarter of Cox's force is over 55 and the company has a high turnover rate with new hires. Should these jobs be automated? What can Cox do to keep employees interested and engaged?
3. The increase in regulations: The current regulatory environment is absolutely staggering and one of the reasons Yaun has his role. The amount of regulations doesn't translate into any added value.

"We've been talking about this for years, but everyone has to be able to deal with change. The resounding theme these days is the speed of change. Whether that's regulation or business environment — I don't think anyone would have predicted the rate of collapse of the housing market and the speed at which it did so," Yaun says. "Luckily, before that we had already started on 10%, 20%, even 50% revenue reduction plans. Within a matter of weeks of those estimations, we were executing on them."

As the speed of change continues to accelerate, it is essential for companies to stay agile so they can remain ahead of the curve and make quick, informed decisions.

Solution

Cox Industries is focused on innovation, and technology is a huge part of that initiative. Its quest for technology is driven by the need to innovate.

Yaun notes, "We've experienced a period of pretty rapid growth in the last five to six years, and we've had to embrace technology quite dramatically in the last few years. We came to the realization that we just really didn't have good data. We couldn't trust it and it just wasn't valid. If you don't believe your speedometer, it's kind of hard to tell how fast you're going. So when we started looking at this Enterprise Optimizer journey, we started looking at the data and realized we couldn't answer many of the questions. That gave us pause, and we went back to square one."

Cox Industries has an industry-specific ERP called LumberTrack and uses Great Plains for the financials. The company is currently going through a version upgrade. "That is really our base system of record for our entire inventory. Once we put that in, figured it out and started growing with it, we determined it had some pretty big shortcomings," Yaun says.

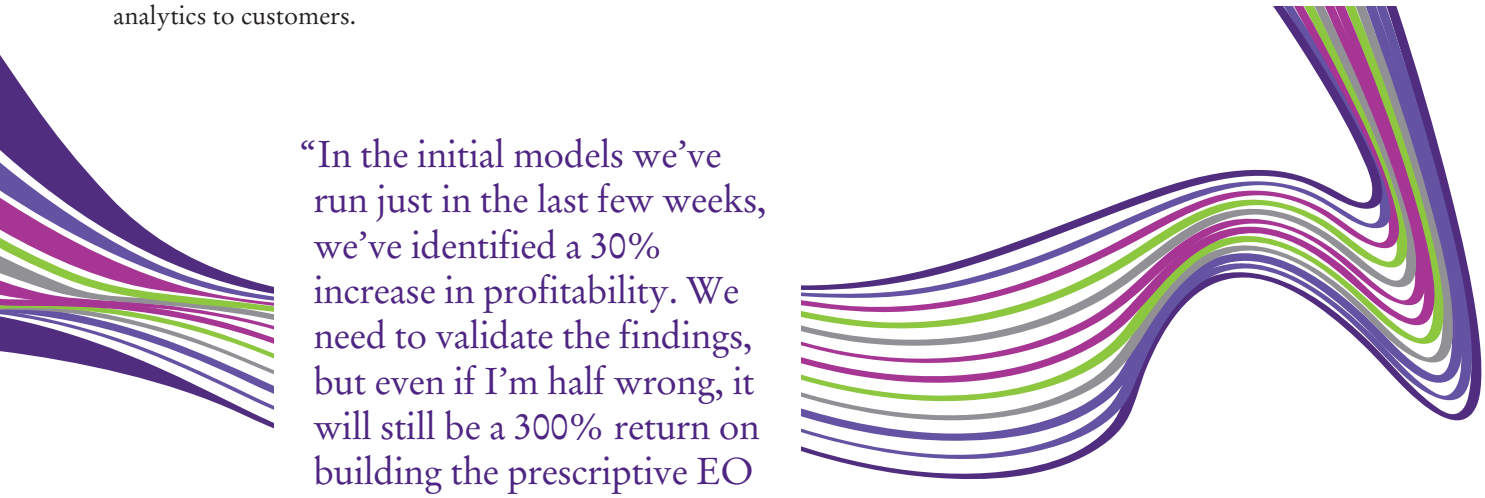
The primary shortcomings were the ability to analyze inventory and the need for customer relationship management. The company recently finished developing its own proprietary treating software. Additionally, it has a very robust Web portal that allows its dealers to place orders. The orders automatically feed the ERP, which provides pricing and analytics to customers.

Recently, Cox has been doing more sophisticated what-if modeling. "EO really allows us to do that prescriptive work and what-if analysis. For me, predictive is pretty basic. When we talk predictive we're taking historical data and applying some sort of macro or best-case rule on top," explains Yaun.

"Now prescriptive is trying to make judgment calls based on trend changes. There's a lot of talking to your customer base and understanding the market and market analytics. That's where we use the what-ifs in EO. So what if our product mix or customers change? What does that do to our margins or volume requirements?"

Regarding data quality, Yaun says, "We have excellent data that is validated quite frequently. We're pretty darn good now; for certain given volumes and certain given market conditions, we could probably predict within 5% of what we'll make. We've really shifted to where someone sees something in our metrics or data that doesn't make sense and alarm bells go off and people ask questions quickly. That visibility on the data throughout the organization has really helped avoid the big problems."

Yaun continues, "In the initial models we've run just in the last few weeks, we've identified a 30% increase in profitability. We need to validate the findings, but even if I'm half wrong, it will still be a 300% return on building the prescriptive EO model."



"In the initial models we've run just in the last few weeks, we've identified a 30% increase in profitability. We need to validate the findings, but even if I'm half wrong, it will still be a 300% return on building the prescriptive EO model."

Results

“I wish I could give you a multimillion-dollar success story right now, but we just identified where those successes are, so now the question is can we go do it and realize it?” Yaun asks.

In 2009, Cox implemented some of its biggest technology initiatives. As the company began to change to an enterprise mindset, it required a lot of data to be shared across many departments so that decision-making could be brought down to a lower level. This way of thinking has made a big difference in the organization.

Optimized use of these technologies took time. Yaun explains, “After you pass the adoption hurdles, you need to have a clear business goal in mind. When everybody got new information, I had a thousand requests for reports. We spent all this money for a customized report, but people weren’t making faster decisions. Now, we have a stringent vetting process of understanding the true business need for that data request and what decision is going to be made with that information.”

Value

To measure value, Yaun says, “We normally have an effectiveness or efficiency metric involved in this. Again, what’s the business goal? Did it do what it was supposed to do?”

For example, the company owned its own peelers, so it would buy logs and bring them in for peeling. “We’ve always done some peeling, but we used to peel about 25% and then source the rest. As we started using EO, we performed analytics on statistical yields and standard distribution of a ton of a particular ‘barky’ from a particular vendor,” Yaun says.

"We realized that in certain areas we could peel certain profiles way cheaper than in other areas. What we came to realize is that we needed to peel. Now we are peeling 81% in-house. That move from a 20-80 to an 80-20 split has made an incredible difference in the profitability of that business unit. Year over year we have increased the profitability of our industrial business by 14%, primarily due to a new focus on our peeling resources,” according to Yaun.

“We are now getting more constraints in the model, but EO gives us an opportunity value (defined as a fully constrained marginal value) for the next hour of production at that particular bottleneck. That was one of the first ‘ahas.’ When we first ran the model, bar none one of the biggest opportunity values that popped out was peeling. We thought we had a mistake, so we went back and did the analytics on the yields and understanding everything. It said another hour of peeling is worth $1,047 to the company.”

After that, the company bought two more peelers. It changed the way the company allocates capital. “We began to understand the level of value we could create in that process,” Yaun explains.

“Opportunity values help us define where the next lean project is going to be. When that complex analysis tells you something that you don’t believe, that’s usually one of the best lessons. Then you can go disprove it or find out why it really is true. That has been extremely valuable to us from a margin and profit perspective,” Yaun says.

Encore Enterprises Inc.

"I review deals for all divisions and act as the financial police and company conscience," says Mahesh Shetty, COO and CFO. He is responsible for IT, HR, finance and accounting, and is involved in every sector as a board member. "I also mentor other staff around how they want to position deals and the finance structures."

- Diversified real estate investment company; each sector is a private company with its own president
- Shared services for all sectors
- Analytics drives the company's deal strategy

Issues

The herd mentality is the overall biggest issue in real estate. "When the market is good, everyone rushes in. The mid-2000s real estate boom was a good example of how the market bubbles up," Shetty explains.

"We've never been able to cure the cyclicality as an industry. When we start to see people rushing into the market, we look to get out."

According to Shetty, large organizations are dealing with insecurity about information. "There is no such thing as perfect information, but do we know enough to make good decisions?"

"Our biggest problem is having good data to make investment decisions. As velocity climbs, it's easy to drink the Kool-Aid and say this looks really good — let's do it — and not analyze the deal and make sure you've covered all the bases," Shetty warns.

"It's about getting the right location in the right market at the right time and doing the research. What technologies can we adopt to enable that?"

Solution

Encore made a fundamental decision a few years ago that it was a real estate company and not a technology company, which changed how the company operates.

"We gravitated to the cloud a few years ago so everything we do is on the cloud —our accounting application, HR application, workflow application and point-of-sale application. Even now we are in the midst of deploying a call center where every technology related to the center will be on the cloud," Shetty says.

"We streamlined our IT staff to one vice president of technology, one manager, one help desk support and a project manager because we are working on a new accounting application. Everything else is on the cloud."

In terms of predictive modeling, the company does that for each sector. "I can forecast my occupancy for each of my sectors one year into the future. From the prescriptive angle, if I know what my occupancy rate is going to be in the future, I can then compare it to last year and decide if we need to have a special promotion or how we compare to budget," Shetty says.

"For example, in hotels, the person that books last minute is the most profitable. So we can't book all our rooms because then we are leaving money on the table," he explains. "Once we predict our optimal occupancy, we can then leave a percentage of rooms available for last-minute bookings."

The organization depends on finance for the single source of truth, and with predictive and prescriptive analytics, it can deliver that and more.

Encore does a lot of market research and pulls data points from several different sources. “Part of the predictive modeling is understanding what areas of the country are good. We have to map out ahead of time where we are going to start looking at deals, and we came up with 20 markets for each of the sectors. With further analysis, we can drill down to the ZIP code to figure out what’s happening in that market and stay ahead of our competition,” Shetty says.

“The prescriptive part comes in when we look at where we should be next year. This is more of a strategic planning issue. We use a combination of different sources of data to come up with our own proprietary model.”

Shetty continues, “Our technologies support mathematical optimization or what-ifs. For example, we can change the unemployment numbers in the Atlanta area and then rank the markets and see what impact it has on our occupancy rates, etc. It’s a completely dynamic model and we can change it. Predictive and prescriptive go hand-in-hand. If you don’t have the predictive you can’t really do the prescriptive.”

Shetty notes, “One of the things we have not completely gotten rid of in the organization is Excel, which is something I would like to gravitate out of because everybody has their own way of doing things in Excel. If we are going after one version of the truth, then Excel shouldn’t have a seat at the table. We are driving toward everybody on one system looking at the same data points so we don’t have different people coming in with different spreadsheets to the conversation.”

He explains, “It’s not really a data quality issue so much as a process improvement issue. We try to minimize where the human contact with the data occurs and verifying whether or not that process is free of errors.”

Results

Encore’s planning processes are completely integrated and done in the system itself. “Once we have all the information from the sector leaders, we then consolidate that and review the data to help us plan our strategy.”

Shetty continues, “Our data should help us predict how many deals we are going to do in a particular year. We then have a planning meeting with the sector leaders and prepare a budget for the entire company.” The organization depends on finance for the single source of truth, and with predictive and prescriptive analytics, it can deliver that and more.

Shetty specifically notes the importance of providing accurate numbers. “If we are in a meeting and the sector leaders have come up with their own spreadsheet of numbers different from what the finance people have, then the finance function has failed the organization. Period. Having one set of true numbers is a litmus test of how good an organization we are.” Advanced analytics has helped provide reliable information to be able to make fast, informed decisions and help Encore stay ahead of the competition.

Value

Since it has started using these technologies, Encore has been able to generate clear, accurate and timely information with actionable data points. These systems have contributed to improved corporate profitability.

For example, in its hotels and resorts sector, the company can predict occupancy levels and then plan rate strategies to increase occupancy or room rates. Encore can also use future occupancy data to plan workforce utilization to attain standard labor hours per occupied room. In its retail shopping centers sector, the company uses market occupancy data to maximize renewal rates for leases. Data also helps Encore target new tenants.

These technologies have become a significant part of the organization’s operations. They add a much-needed layer of intelligence to financial and operations data, which empowers the users to make informed decisions.

Conclusion

Employing basic analytics is not enough to keep up anymore in our information-rich, data-driven environment. Companies need to understand and implement a more sophisticated form of analytics to get ahead.

The finance function is in an advantageous place, having already worked with financial data and reporting. Financial executives need to employ technologies that support the knowledge worker by providing forward-looking content that identifies where the market is going and what actions need to be taken to maximize profitability. These are the next big innovations.

Big data and predictive analytic solutions alone are not the answer; companies also need a prescriptive understanding. By using these complementary tools, a knowledge worker can be empowered to identify profit-maximizing decisions, understand trade-offs and improve communications, collaboration and trust. Financial executives can transform the business — and their function in it — by making forward-looking, rich content available for the enterprise's consumption.

About the authors

Thomas Thompson Jr.
Thomas Thompson Jr. is a Senior Associate, Research at Financial Executives Research Foundation Inc., and author of more than 40 published research reports and white papers. He received a BA in economics from Rutgers University and a BA in psychology from Montclair State University. Prior to joining FERF, Thompson held positions in business operations and client relations at NCG Energy Solutions, AXA Equitable and Morgan Stanley Dean Witter.

Thompson can be reached at tthompson@financialexecutives.org or +1 973 765 1007.

Philip Higginbotham
Philip Higginbotham is the national director of Analytic Solutions within Grant Thornton's Business Advisory Services practice, based in Dallas. Higginbotham has particular experience in helping dynamic companies establish leading-edge prescriptive analytic and modeling capabilities across various industries, including health care, manufacturing, retail and utilities. He also has experience in management and restructuring consulting, assisting in the reorganization of financially distressed companies. Previously, he served as a manager in the restructuring practice of PricewaterhouseCoopers and as a senior consultant in the operations practice of Deloitte Consulting. He received an MBA from New York University's Leonard N. Stern School of Business, and bachelor's degrees in civil engineering and finance from Clemson University.

Higginbotham can be reached at philip.higginbotham@us.gt.com or +1 214 561 2580.

Financial Executives Research Foundation (FERF) gratefully acknowledges these companies for their longstanding support and generosity.

Platinum major gift
$50,000 +

Exxon Mobil Corp.
Microsoft Corp.

Gold president's circle
$10,000 – $14,999

Cisco Systems Inc.
Cummins Inc.
Dow Chemical Co.
General Electric Co.
Wells Fargo & Company

Silver president's circle
$5,000 – $9,999

Apple, Inc.
The Boeing Company
Comcast Corporation
Corning Incorporate
Credit Suisse AG
Dell, Inc.
DuPont
Eli Lilly and Company
GM Foundation
Halliburton Company
The Hershey Company
IBM Corporation
Johnson & Johnson
Lockheed Martin, Inc.
McDonald's Corporation
Medtronic, Inc.
Motorola Solutions, Inc.
PepsiCo, Inc.
Pfizer Inc.
Procter & Gamble Co.
Sony Corporation of America
Tenneco Inc.
Tyco International Management Co.
Wal-Mart Stores, Inc.

About Grant Thornton LLP

The people in the independent firms of Grant Thornton International Ltd provide personalized attention and the highest-quality service to public and private clients in more than 100 countries. Grant Thornton LLP is the U.S. member firm of Grant Thornton International Ltd, one of the world's leading organizations of independent audit, tax and advisory firms. Grant Thornton International Ltd and its member firms are not a worldwide partnership, as each member firm is a separate and distinct legal entity. In the United States, visit grantthornton.com for details.

About Financial Executives Research Foundation Inc.

Financial Executives Research Foundation (FERF) is the nonprofit 501(c)(3) research affiliate of Financial Executives International (FEI). FERF researchers identify key financial issues and develop impartial, timely research reports for FEI members and nonmembers alike, in a variety of publication formats. FERF relies primarily on voluntary tax-deductible contributions from corporations and individuals. FERF publications can be ordered by logging onto ferf.org.

The views set forth in this publication are those of the authors and do not necessarily represent those of the FERF Board as a whole, individual trustees, employees, or the members of the Advisory Committee. FERF shall be held harmless against any claims, demands, suits, damages, injuries, costs, or expenses of any kind or nature whatsoever except such liabilities as may result solely from misconduct or improper performance by FERF or any of its representatives.

© 2014 by Financial Executives Research Foundation, Inc.

All rights reserved. No part of this publication may be reproduced in any form or by any means without written permission from the publisher.

International Standard Book Number 978-1-61509-166-9

Authorization to photocopy items for internal or personal use, or for the internal or personal use of specific clients, is granted by FERF provided that an appropriate fee is paid to the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923. Fee inquiries can be directed to Copyright Clearance Center at +1 978 750 8400. For further information please visit the Copyright Clearance Center online at www.copyright.com.

Content in this publication is not intended to answer specific questions or suggest suitability of action in a particular case. For additional information about the issues discussed, consult a Grant Thornton LLP client service partner or another qualified professional.

Connect with us


grantthornton.com


@grantthorntonus


linkd.in/grantthorntonus

"Grant Thornton" refers to Grant Thornton LLP, the U.S. member firm of Grant Thornton International Ltd (GTIL). GTIL and its member firms are not a worldwide partnership. All member firms are individual legal entities separate from GTIL. Services are delivered by the member firms. GTIL does not provide services to clients. GTIL and its member firms are not agents of, and do not obligate, one another and are not liable for one another's acts or omissions. Please visit grantthornton.com for details.

© 2014 Grant Thornton LLP | All rights reserved | U.S. member firm of Grant Thornton International Ltd