BI Experts' Perspective

AM I READY FOR ADVANCED ANALYTICS?

Vinu Yamunan, Tracy Ring, Bill Franks, and Ben Daniel

Vinu Yamunan is senior manager for Deloitte Consulting, LLP.
vyamunan@deloitte.com

Tracy Ring is specialist leader in the technology alliances group for Deloitte Consulting LLP.
tring@deloitte.com

Bill Franks is chief analytics officer at Teradata.
Bill.Franks@Teradata.com

Ben Daniel is manager of CRM analytics for The Home Depot.
benjamin_daniel@homedepot.com

Kim Johnson is the BI director at Hayes Automotive, a small but growing company that helps customers keep their cars in peak operating condition. Kim and her team have built a data warehouse that supports company reporting needs and an enterprisewide set of dashboards. The team has also worked with several departments (including marketing and sales) to select and implement a leading data visualization tool.

So far, there has been limited use of predictive and prescriptive analytics. However, Kim senses that this about to change. She is increasingly hearing questions such as:

- **How do seasonal factors affect sales?**
- **How can we better cross-sell products?**
- **What are the factors that affect the profitability of a new store?**

Kim is uncertain that she and her team are prepared to move into the world of advanced analytics. Other than basic statistics classes that included some probability theory and linear regression analysis, they have had little to no advanced analytics training. In fact, only a few people at Hayes Automotive truly understand advanced analytics.

As Kim thinks about the future, help her answer these two questions:

- **What steps should she take–such as staff training or hiring a consultant–to prepare for the use of advanced analytics?**
- **What are the major problems that she might encounter in moving to advanced analytics and how might they be overcome?**

Vinu Yamunan and Tracy Ring

It's time for Kim to take a new approach to data, one in which CIOs and business leaders deploy the talent, data usage models, and infrastructure required to enable consistent results and scale. By "industrializing" analytics in this way, Kim can lay the foundation for an insight-driven organization that has the vision, underlying technology capabilities, and operating scale necessary to take advantage of data's full potential.

Kim's experience in building and delivering BI to her leaders and colleagues can give her an upper hand in the move to advanced analytics. However, there are some distinctly different considerations that must be addressed as Hayes Automotive begins building its advanced analytics capability.

Besides the typical considerations (development life cycle, technology, etc.), Kim may want to think about the governance system, operating model, and talent-resourcing models that will be required. This is particularly important if her first few projects and analytics solutions demonstrate significant business value and the demand for additional projects starts surpassing capacity.

In fact, going a step further, this kind of "big picture" thinking could be the differentiating factor between good and great. Beyond enabling scale and predictability of outcomes, it will help Kim understand data's possibilities and how her organization can make use of them.

Organizations that develop their analytics capability with this holistic approach are recognized as being insight driven. They are better able to gain tangible insight from data, turning everyday information into useful and actionable insights for decision makers. In such organizations, analytics is not the goal but a strategic enabler of business impact.

For Kim, focusing on targeted analytics projects is key to quickly demonstrating value and more important to not being overly ambitious. An effective way for Kim to identify a starting place is by detecting the following:

- A business problem that will unlock significant business value if solved
- A business stakeholder in this problem's functional focus that appreciates the value of data and analytical problem-solving
- Available data sources and data sets that would allow exploratory analysis and hypothesis testing

As Kim locates a candidate project that meets the three criteria listed above, she can get started setting up the other key components of this capability.

TALENT

Kim should think about retooling her existing workforce to develop an explicit talent and development model. One of the key elements of the move to advanced analytics for Hayes Automotive is finding people with the right skills and capabilities. Creating value from data requires talents ranging from traditional BI skills, such as data integration and cleansing, to data science. In many cases, organizations doing advanced analytics at scale are also paying attention to the interactive and intuitive

presentation of the underlying data and analytics results.

Kim may need to recruit experienced professionals who know the methods and have experience with modeling and big data analytics. Although technical knowledge is good, combining it with years of functional experience is better. She may also consider using a consulting firm to accelerate the transition and provide the people in her organization with an apprenticeship model to speed their learning.

CULTURE & COLLABORATION

The next step in the process is to foster a collaborative culture in which IT and business leaders work together closely every day. Because of the traditional structures that reflect the different roles people play across the organization, teams may have had little to no experience collaborating with each other.

For example, when looking at data scientists and business analysts, the former are generally the ones with the skills to derive mathematical models from data to obtain business benefits. However, if these IT professionals are not provided with an established, clear understanding of the organization's business goals, how are they supposed to derive the most accurate and valuable data to accomplish those goals? That is where many organizations are getting stuck.

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Advanced analytics will not work without a collaborative working environment across all business units. Kim will need to establish an enterprise-wide culture that encourages data scientists and business professionals to network across different business units on a regular basis, working at the intersection of Hayes Automotive's business goals, constraints, available data, and analytical possibilities.

USE CREATIVE OPTIONS FOR FINDING TALENT

Many organizations struggle with talent constraints and utilize crowdsourcing platforms (such as Kaggle, HourlyNerd, Topcoder, or Experfy) that tap into the "human cloud" and quickly enable them to "staff up" on an as-needed basis. This new and evolving trend allows companies to dynamically source specialized skills from virtually anyone, anywhere, to accommodate planned and unplanned business needs.

TECHNOLOGY

Analytics encompasses a range of technologies used to derive insights from data. Descriptive analytics, for example, provides the foundation for turning data into information. Predictive analytics provides advanced forecasts and the ability to model future results and outcomes. The top tier of analytics, referred to as prescriptive analytics, leverages machine learning techniques and dynamic rule machines to interpret data and recommend actions.

Kim should work with IT and business leaders at Hayes Automotive to expand their efforts to move the company beyond

traditional BI's limited focus on what happened. Advanced analytics will provide them with a much more detailed understanding of *why, what will happen*, and *how can we address it*.

Keeping data and analytics in the back office likely wouldn't require a change in the way people at the company do things. However, in order to tie analytics more directly to front-office business objectives, Kim is faced with the challenge of having to ask people to think and act differently in their roles. Why? Because a data-driven culture must be part of, not separate from, the business culture.

Similar to the way we react to change in everyday situations, getting people to embrace advanced analytics (something new to them) starts with making it a comfortable choice. Whether it is the risk of failure, cost, or lack of resources, most organizations are afraid of the *what if* when transforming their BI strategy.

Using insight means stepping outside expected patterns and will always carry some risk, which is no different from any business decision. Kim will need to step out of her comfort zone to help Hayes Automotive survive in the growing world of advanced analytics.

OVERCOMING THE BARRIERS TO ADVANCED ANALYTICS

There are four major barriers to adoption that Kim needs to consider when defining an analytics road map for Hayes Automotive.

Lacking a high-level analytics road map. Any effort to industrialize analytics should set forth the data agenda and outline its strategic objectives. Before anything else, Kim should plan how she can turn insights into actions and how she will measure results. This agenda, or road map, can help Kim define her organization's business strategy and vision for analytics as well as anchor efforts around key performance indicators that matter to the business.

Shortage of readily available resources. This doesn't have to be a deal breaker. As Kim starts her journey to analytics, she can recruit data-savvy employees to train and enhance their skills. Recruiting employees from the market can be expensive and time-consuming. Even so, new recruits can instill a new way of thinking and develop the capabilities of an organization's internal team, thereby playing a major role in the growth of the talent pool organically.

Another alternative is to partner with an analytics consulting firm to leverage its know-how and resource pool to scale up or down with project demand. To gain the most from this partnership, Kim should consider a firm's industry experience, technological expertise, and blended cost of delivery (using global development centers) when choosing a partner.

Investing in the right technological capabilities. Kim should always maintain a "business first" mindset during the journey. With all the technological capabilities available in the marketplace, it is hard to know which to invest in, especially if when working with minimal resources.

With a strong focus on the business, Kim should identify Hayes Automotive's business use case and need for analytics. She can then evaluate the pros and cons of various analytics tools and determine which will best fit these needs.

Organizations should always utilize analytics resources on defined outcomes with defined potential benefits. Building a road map that has a clear, concentrated vision in place will help Kim stay focused on the end results during the process.

Data architecture is imperative to the success of analytics. Acting as the physical end, this is where the data lives within your organization's database and where the processing occurs. Given the explosion of data from social networks, machine learning, and the Internet of Things (IoT), investing in the right tools and technologies should be coupled with an evolution of your organization's target data architecture to unlock the value in the masses of data.

Overcoming colleagues' skepticism regarding the value of analytics. In spite of skepticism, Kim can prove the value of analytics to her colleagues by quickly developing high-impact proofs of concept (POCs). In the early stages of implementing advanced analytics, it is best to pick a tight, focused project that can generate valuable insights and easy-to-execute recommendations. Moreover, it can help Kim line up stakeholder support by clearly describing how an overarching analytics strategy might benefit individual groups within the enterprise, as well as demonstrate the value of analytics internally to Hayes Automotive. POCs that communicate intent will be especially powerful here for Kim.

Bill Franks

First and foremost, Kim should realize that she is about to embark on an important but difficult endeavor. There is no doubt that incorporating advanced analytics will be of great benefit to her organization—as long as the effort is approached and executed correctly.

First, she should absolutely consider utilizing outside consultants to get started. With such a low level of competency currently in-house, she can't expect to make the necessary progress. Outside consultants can help her lay out a plan, draw up priorities, and implement the first few projects from start to finish. This will provide Kim some early wins and allow her to better quantify the costs, returns, and effort that will be involved over time for her organization.

After those initial successes, Kim should aggressively hire staff to take over the bulk of the effort. It is perfectly fine to continue to outsource some of the more difficult or cutting-edge initiatives, but Kim's organization should handle most of the ongoing work.

In addition, Kim should ensure that she and her team retain ownership of the underlying strategy and direction—and that those aspects of the program are not outsourced (covered in more detail in my recent article for Forbes.com).[1]

As part of the recruiting process, Hayes Automotive should engage one of the recruiting firms that specialize in analytics talent. Some of these firms have been around for many years and have large networks of hard-to-find talent. Equally important is the ability to help identify candidates with the necessary skills. It is almost certain that Kim's internal HR

[1] www.forbes.com/sites/teradata/2016/07/01/3-smart-tips-you-need-to-know-for-outsourcing-analytics/

team will not have experience recruiting analytics talent and will struggle to get started. A specialized recruiter can be a huge help here.

Although a program to cross-train existing staff is worth adding to the mix, history (and many failed projects) shows that existing staff usually can't make the transition from BI to advanced analytics. Therefore, internal training can be a piece (but not the bulk or entirety) of her plan.

Even with a strategy and talent in place, Kim and her organization will inevitably face some important challenges on their journey to advanced analytics.

First, the current systems housing Kim's corporate data are almost certainly not set up to easily enable advanced analytics, which requires a different depth and breadth of processing and data volume than many classic BI initiatives. For this reason, it can be expected that expansions to existing systems—or the addition of new systems—will be required. However, as long as it is recognized early on and budgeted as part of the road map, the systems modernization challenge can be overcome.

Related to systems and infrastructure modernization, Kim's organization will almost certainly need to allow greater access to a wider range of data. Advanced analytics requires not only a lot of data crunching but also the ability to analyze that data in new ways. Therefore, those who create the analytics will need different security and resource-access settings. Once again, there is often initial pushback, but demonstrating the success that comes from making limited exceptions in the early stages will help overcome it.

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In some organizations people are ready to accept and adopt new analytics, even if it means changing business processes and practices, while in other organizations resistance is stiff and long lasting.

To maximize her chance for success, Kim will need to do an honest evaluation of the level of resistance she can expect and, early on, plan for how to win over any major detractors.

In the end, Kim is smart to be driving her company toward the adoption of advanced analytics, which time and again has been proven to deliver new business value. The key will be to prepare her organization to accept not just the insights gained from advanced analytics but also the difficult cultural changes required for widespread adoption.

Ben Daniel

Taking the next step in advanced analytics can be a daunting task, but Kim will improve her chances of success with good planning and change management, as well as by tying her analytical methodology to clear business objectives.

Steven Covey's second habit in *The 7 Habits of Highly Effective People* reminds readers to "begin with the end in mind." In Kim's case, this means her first task should be to build a clear business case with specific, measurable business goals. If Hayes Automotive provides services (e.g., oil changes and tune-ups) and wants to understand how seasonal factors affect sales, its business case may be to reduce wait times—perhaps by always having a certain number of mechanics on staff to accommodate demand. She can discover these business cases (and potential pilot users) by meeting with senior management and talking to people in the field to understand the business challenges.

Getting executive leadership and support for advanced analytics is also a critical step in project preparation. The executive leadership team has to make a clear statement that it supports advanced analytics and expects frontline managers to do the same.

Kim should form a steering committee comprised of those affected by the use of advanced analytics to offer guidance and feedback as well as facilitate communication. Involving IT early on with a committee seat will enable better support through technology and personnel resources.

On her own team, Kim should have a chief scientist who can go deep on the data in addition to building and fine-tuning the analytical models. She should also recruit a business analyst to serve as the face of analytics to the rest of the organization. This analyst should be able to design the user experience and explain in plain terms what the model is predicting or prescribing. The results of the models can be published through enterprise reporting, which Kim and her team already support.

> It is imperative that the analytics team both understands the data it consumes and practices good master data management.

When engaging consultants, Kim should look for people who understand the data mining process. Because so much time is spent preparing data for analysis, she should talk to firms with people proficient in both ETL development and statistics. The consultants should also design the analytical system with growth and scalability in mind.

Finally, she should prioritize her business cases and go after the easiest first. These quick wins should involve her selected pilot users (i.e., those who indicated interest in using advanced analytics). Working on these first projects should build a measurable record of success that can be easily crafted into a PowerPoint story, such as "by better understanding seasonal factors affecting sales, we were able to reduce out-of-stocks by 15 percent, which improved top-line revenue by 100 basis points."

The pitfalls in analytical problems are many but are mostly associated with two things: data and change management.

Dirty data and the lack of "one source of truth" in either data or metric calculations severely impede adoption, because end

users can't trust the results coming out of the system. Just as quality engineers in manufacturing ensure that good-quality parts go into the goods they produce, the analytics team should have data quality procedures to ensure that good data goes into the models.

Hence, it is imperative that the analytics team both understands the data it consumes and practices good habits of master data management. With respect to agreement on metric calculations, reinventing the wheel is not advisable. If, for example, the finance team has a method of calculating store profitability, don't create a new calculation unless it is truly warranted.

The final major problem encountered when moving to advanced analytics is change management. On one of my former teams, we kept an equation written in the corner of a whiteboard: *value* = *capability* × *adoption*. We knew that our analytics capability meant very little if our user community failed to adopt it. Thus, we did our due diligence and went after quick, meaningful wins for the organization. This strategy will benefit the analytics team by creating champions who can influence others with success stories. There are always going to be people within an organization who are resistant, but introducing positive change in small steps with pilot users will minimize any detractor's negative impact on organizational adoption of data-driven management.

Advanced analytics is very powerful and can yield fantastic gains for businesses that make the leap to leverage their data assets. However, good leadership in planning and change management is needed to ensure that results are both credible and adopted to realize their full potential. ●

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