BI Experts' Perspective

Business Intelligence as a Career Choice

Dave Schrader, Ron Swift, and Coy Yonce

Dave Schrader, Ph.D., just retired as director of big data marketing for Teradata. His popular "BSI: Teradata" video series on YouTube shows 12 different cases in which data scientists "solve" hard business problems using a mix of big data and traditional BI technologies. He is a board member of the Teradata University Network, which provides teaching tools and cases about BI for faculty and students (www.teradatauniversitynetwork.com). His Ph.D. in computer science is from Purdue and he worked at Teradata for 22 years.
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Q Susan Stephenson is the BI director for a national auto parts company. She has 10 years of BI experience, with the last three as director. Susan keeps up to date by reading, watching online seminars, and attending BI conferences.

After church last week, Susan was chatting with Craig Mercer, who teaches computers and information systems at the local college. At the end of their conversation, Craig asked Susan if she would be willing to be the speaker at the school's fall management information systems (MIS) banquet. About 100 students and faculty will attend, and she will speak after the social hour and dinner and before scholarships are awarded. Her talk should be about 15-20 minutes long.

Craig further explained that the current curriculum requires students to complete course work in programming languages, databases, systems analysis and design, telecommunications and networking, project management, and computing architecture, but there is little on BI. That is why he would really like Susan to speak.

When she asked what Craig would like her to cover, he responded, "What BI is, why it is important, what the career opportunities are, how to prepare for and start a BI career, and what technical and 'soft' skills a graduate needs to be successful." He also said that students want know what's currently "hot" in BI and what is likely to be important in the future.

If you were Susan, what would you tell the students?

A **DAVE SCHRADER**
Susan should begin by explaining the differences between traditional BI and the hot new areas. Traditional BI is about the use of traditional data by back-office business analysts—with the help of IT—to track product sales, inventory, costs, customers, promotions, and campaigns. This often includes dashboards and scoreboards as well as forecasting of demand and markets.

Some of this work can be done in Excel, but much of it uses tools such as MicroStrategy, Cognos, Business Objects, or perhaps Tableau

Software to access a data warehouse provided by Teradata, IBM, Oracle, or Microsoft. Current state-of-the-art projects using traditional technologies include putting dashboards and alerts on mobile devices (so people can work more hours!) as well as placing data and BI tools in the cloud. Of course, there are ever-increasing amounts of data to collect each year, and data is arriving at a higher velocity (sometimes "near real time," meaning seconds, or even "real time," meaning milliseconds, between data creation and ingestion).

What's hotter than hot at the moment is the entire area of "big data," which is a bit of a misnomer. Although big data partly includes new data types such as voice, text, and sensors ("the Internet of things"), it's more about the ability to use algorithms to transform raw, non-traditional data types into useful additional insights—finding the signal in the noise, because many of these data inputs contain low-density information. For example, these systems might transform a raw voice file into "what did the person at the call center say?" (voice to text) or "how irritated was the person?" (sentiment score). It might mean linking the symptoms a doctor types into patient notes (text) with other traditional data to find out if the doctor is over-prescribing or allowing off-label uses.

The most interesting BI trend is the need for new and different discovery tools, as well as the people who are able to drive them. The new

paradigm for discovery is "grab and go" for fast insights, often using dirty data that's not completely modeled and may not even have known schemas. This is exploratory work, often fast-fail. Only after you find interesting insights worth saving do you go back and perform the rigorous work associated with capturing, modeling, and storing information in a data warehouse for wider use within the enterprise.

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A new kind of data analyst—the data scientist—is in extremely high demand to do this discovery work. In fact, data scientists can command starting salaries of $90,000 with stock options—if they have the right skills. The role requires a blend of curiosity, statistics expertise, computer science, business domain knowledge, and communication skills. Almost no one has all five of these characteristics, but students in MIS who want to increase their marketability can acquire some of these skills, partly at school but also by watching online Webinars, reading books and articles, and finding faculty who understand this trend.

Specific tips include:

1. If you are an MIS major, choose a minor that provides domain expertise and take any classes that have "Computational" in the title. For example, "Computational Chemistry" or "Computational Biology" would provide background for a data scientist role with a pharmaceutical company doing genome discovery work.

2. Make sure you are well grounded in some of the hot areas within computer science such as Web analytics, visualization, or wearable devices/sensors.

3. Read any of the new books on big data and big data analytics. My personal favorite is *Taming the Big Data Tidal Wave* (Wiley, 2012) by my friend Bill Franks, Teradata's chief analytics officer.

4. Read anything—anything at all—by Tom Davenport. His landmark book *Competing on Analytics* (Harvard Business Review Press, 2007) is a classic. See also his white paper "The Rise of Data Discovery" (available on www.asterdata.com).

5. To see some examples of big data in action, take a look at my "BSI: Teradata" series, in which business scenario investigators (BSI) use data and BI to solve cases such as "The Case of the Dropped Mobile Calls" or "The Case of the Tainted Lasagna."

These are extremely popular with faculty and students learning big data and BI and will show you the new discovery tools in action.

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6. Finally, listen to Webinars or download reports from TDWI. TDWI research analysts Philip Russom, David Stodder, and Fern Halper publish excellent surveys of what companies are doing and what technologies those companies are adopting. Matching your learning efforts to the areas that companies are investing in will give you a tremendous edge in finding a great BI job.

All of these will help build up hard skills, but soft skills are equally important. You must be curious, like those investigators on the TV show *CSI*, who let the evidence and clues guide their investigations. You must also learn to communicate effectively—the buzzword in

the industry at the moment is "storyteller." Often I think of it as not just storytelling but translating as well. Anyone with the skills to translate needs and results between business users and IT groups is guaranteed a long and valuable career.

Those are my suggestions. I hope they help Susan build a great presentation!

RON SWIFT

Our BI director, Susan, has quite a challenge in truly informing and giving excellent advice to 100 graduating MIS students. What might be most important is to keep their attention through actual (real) examples from her career or others' experiences to enlighten and also entertain the audience.

Speaking to 100 varied minds is not an easy task. During my 40-year career, I've faced this daunting objective dozens of times, mostly with experienced long-term IT, BI, or business executives who were attending a conference or asking me to advise them on how to make big decisions about their future information technology investments and practices. These students will be making big decisions about their future employers and the technological expertise to be gained and utilized throughout their lives. This is the shared challenge that Susan must address.

In preparing for a speech about business intelligence, we might also include definitions and good

business examples of data warehousing, data integration, Internet traffic analysis, business analysis, and "big data" skills. These BI subjects (and skills) intersect in the appropriately defined IT and business organizational constructs, as well as in the skill sets to achieve a successful career in BI. Primarily, firms seek skills as well as business knowledge (accounting, budgeting, planning, marketing, services, operations, and educating a varied group of users).

There is an adage about making a great speech: "Tell them what you are going to them, tell them, and then tell them what you told them." With varied audiences, in a non-technical subject area, it is wise to add flourishes and great examples to the "info-tainment" aspects of the educational and informative speech. Primarily, I would make points using cases and examples of real experiences, including those of my peers and vendors.

Here are the key messages I would leave with this group:

1. Communication is the foundation of success. It helps you sell ideas, make your points, contribute to a team or project, and position yourself for additional interactions and opportunities. (Don't forget to become a great listener—don't speak over others' thoughts.) Becoming a great communicator will take you farther and faster than you imagined, and you will also be called upon to stand in for or replace others without such

skills (including high-ranking positions in your firm).

Part of learning to communicate is to practice, practice, practice. This goes for any speech, proposal, or presentation of ideas; if necessary, practice in front of your family, listening for questions and clarifications. An IBM class manager told me in 1970 that I was the worst presenter he'd ever seen among thousands of students passing through his classes. Ten years later, I was presenting to thousands in conferences throughout the world! Practice and learn.

2. Never stop educating and learning. This is the hallmark of a highly successful professional (especially in a technology field). The ever-increasing body of knowledge provides a challenge but also an opportunity to move on to more interesting jobs and higher salaries. For example, as a college graduate/trainee, I started as an IBM systems engineer and eventually became a nationwide marketing manager for data warehousing and business intelligence, before retiring early at age 47 and moving on to consulting and then a vice presidency in a similar field (marketing technology and ideas) to executives and technical people worldwide for NCR Corporation. Then I retired again at 62. Re-educating and learning from others constantly

throughout your career will provide unexpected pathways and opportunities.

2B. "Know what you don't know," and constantly seek people and resources where you can find information you need or at least pass your questions on. Many successful high-tech and analytical managers have benefited from this approach.

3. Networking is essential for succeeding in our business world. It can not only open doors to new jobs, but also build a volume of references, friends, supporters, mentors, and others who will be part of your joint success. Susan should tell the audience that their network starts right there in the very room where they are sitting, in all of their classes, and with all of their professors. Advise the students to build strong relationships with professors because they hear of jobs that may fit their skills and personalities. A professor can be a mentor for life.

Students should expand and maintain their network relationships, especially with all the new personal communication devices that are available now, and keep in touch throughout their career. They may need to choose between hundreds of Facebook "friends" versus networking with peers, especially those who are positive in their think-

ing and actions. Your network can get you jobs you never considered, and college alumni are with you forever if you keep up your participation. Do not lose these "friends." It is said that Harvard and Stanford are not colleges, but clubs for life!

4. Analytics skills are of the highest value today in many companies, and they can be useful in areas you might never think of when majoring in information technology (i.e., MIS). The Web offers a myriad of new opportunities and is the beginning of the major wave of the future, which is currently called "big data."

In fact, big data has been around for 30 years, depending on your perspective and the available technology to support it. What is different today: the unstructured data and the high volume and velocity of the data becoming available for analysis to bring value to the organization. Knowledge of sophisticated data management (meaning integration and analysis) of such volumes is key for most enterprises, many of which are not utilizing the available software and services to achieve the highest value. This is an area that will continue to blossom and provide massive numbers of jobs to construct and utilize the architectures and resources required to analyze and bring value to the data. This is still

an emerging area, but good examples exist from many BI vendors and would help round out Susan's message.

5. Positioning creates opportunities. One of the most practical but also the wisest of hints I received early in my career was: "Look smart, be smart, feel smart, speak smart, and listen to smart people around you." Using this as a guideline, develop a positive position with your peers and your upper management. Seek opportunities to interact with those who can advance your knowledge and experiences. Dress for your industry and your company (or department), but don't position yourself as a geek, even if you are one. You create your own brand.

    Make sure others desire to be around you. As a well-dressed professional, you may even be noticed on the elevator by someone who may be inclined to bring you onto their team. Positioning also means accepting challenges that may not be fully achievable but contribute to a team that has ambitious goals. Your contributions will be noticed, your attitude will be appreciated, and your teamwork will be a stepping stone to other teams.

    The right positioning will help you move within your organization. I have only had five formal interviews in my entire career

(after the first one at the job I accepted at IBM). Four of these interviews were internal and moved me into new positions where I was probably pre-sold by others who advised the team leader or the manager of my skills, experience, personality, teamwork, and contributions. These conversations were ultimately more of a check on my personality and career desires than interviews for the specific jobs.

The other interview was with a VP of data warehousing marketing at AT&T (to become NCR), who spent the better part of three hours showing me his plans and his slides about what they planned to do. I spoke for maybe 15 minutes during this time, mostly answering non-technical questions about industry contacts, relationships, and experience. I guess I was "pre-sold" to him!

6. Identify what you like to do. You have a myriad of questions on your mind about BI and a career, but consider this: you will probably have five to eight major jobs in your lifetime. Do you like sitting at a screen or working by yourself all day? You could be working in that mode for a long time. Do you like people, interactions, varied experiences, and new challenges? You will probably be offered many unexpected job opportunities to grow your skills, your network, and

your supporters. Think about successful people you know—beyond those single inventors of specialized technologies. I'll bet they all have communication skills, a great network, good peer recognition, create value for their audiences, and give food for thought. Do what you think you will enjoy, and seek out new joys!

7. There are many great opportunities in different industries: healthcare, pharmaceuticals, finance, transportation, logistics, supply/inventory, drones, marketing, services, and so on. Business intelligence provides both the foundation and the innovation behind these industries' power for financial success. If you can find a way to share in that, you will enjoy your career and secure a great retirement.

My additional suggestion for Susan and her audience is to read books by or about Bill Gates and Steve Jobs. These are important testimonies to the value of selling creativity and innovation in a difficult industry.

Remember, the gift of knowledge is one thing; the gift of being able to communicate and convince others of your ideas or your products, services, or value brings a whole new world of opportunities. Good luck!

COY YONCE

Susan has a unique opportunity to inspire an incoming group of eager BI professionals. At the same

time, she needs to ensure that she sets proper expectations about why organizations implement BI and how they go about creating successful deployments of a BI suite. Susan's success in properly exciting this group of young adults about BI will depend upon how she defines what BI is and why it is important. To this end, Susan's first task is to start at the beginning: Why do organizations leverage BI?

Business intelligence provides organizations with information to make informed decisions about their day-to-day business and long-term strategy. Susan would serve the students well by providing real-world examples for how BI helps organizations to be better at what they do. She should talk about how all of the bits of information that companies such as Best Buy and Amazon gather about their customers helps them to make better decisions about how to market to us, how to stock more of what we like, and how to determine prices to which we will respond positively. Even talking about how Facebook, Twitter, Google, Netflix, and Hulu use data to make decisions will go a long way toward getting these young adults excited about the usefulness of BI.

In addition, Susan should spend time explaining that BI is not a tool. It is the act of tying all business processes to actionable data and then understanding how to use that data to make better decisions. This will ensure that the students do not think that BI is just software. The software just makes it easier to

implement BI. This will allow for an easier transition into the next part of the conversation: a career in BI.

Susan's first task is to start at the beginning: Why do organizations leverage BI?

As business intelligence is tied to goals that ensure the long-term success of an organization, department, or project, Susan should speak about how all individuals within an organization are the consumers or creators of BI. Everyone who works for a company is responsible for ensuring that company's success. They all play a role both in using information and creating information for others to use. Susan should then speak about the more traditional roles of those who seek out, install, maintain, and deploy BI solutions, but she should note that this is really only a fraction of the story when it comes to a career involving BI.

Although getting the software installed and running are important, it's even more important to ensure that the organization understands how to leverage data toward the goal of becoming more agile and responsive. Susan should talk to the class about the role of business analysts as they help executives, upper management, and departments decide how to use data for activities such as

increasing public safety, starting new employee benefit programs, acquiring other companies, or shutting down a manufacturing plant.

Susan should highlight how important it is to ensure not only that accurate data is being used, but also that it is presented in a way that is easy for the consumers of that information to understand. Talking about the role of a data scientist and the study of information design will be an important part of Susan's discussion.

Rather than jumping into talking about preparing for a career in BI, Susan should focus her initial message on understanding how students can be good stewards of the organizations they are running or for which they work. She should then discuss how they can leverage their own strengths and passions toward the end goal of helping those organizations. If an individual is interested in programming, then their role in relation to BI could be working for a software company that is creating BI or helping the organization augment a chosen BI suite. If they are more interested in marketing, then perhaps their best role will be as a business analyst within the marketing department or working as the face of IT as they implement a BI solution. Trying to stick to the more traditional roles related to BI or condensing the message down to a list of roles would do a disservice to the importance of BI and will likely turn off the younger audience.

Susan should close by talking about the exciting things that are happening in BI, but she should do so within the context of how those exciting things are being used. Susan should also be wary of using buzzwords. Big data is a hot topic but not necessarily a new concept. There has always been lots of data available for analysis and consumption. What is new is the wide availability of technologies to process large amounts of data quickly.

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More important are the examples of how these technologies and data are being used. Susan should consider talking about Project Artemis, which is being run by IBM and UOIT (http://hir.uoit.ca/cms/?q=node/24). The project's goal is to capture and process large amounts of information about premature babies and then make the results available to physicians and nurses in real time.

Susan could also talk about how augmented reality technologies are being paired with business analytics by SAP. This combination could allow organizational leaders to track inventory, access machinery maintenance records, track sales of a product, or access patient's health records, all by pointing a mobile device at the product, machine, or person.

The end result of this approach to her speech will be an engaged and interested audience of students who are excited about the possibilities of BI. ■