



*White Paper Series*

## **Help Wanted!**

*Overcoming the Shortage of  
Business Intelligence and  
Analytic Professionals*

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# Help Wanted! Overcoming the Shortage of BI and Analytics Professionals

## Overview

*Many Business Intelligence (BI) and Analytics projects are in development across the corporate world right now, and employment opportunities are plentiful. So, why are so few properly trained individuals available?*

## The Talent Pool Landscape

If you ask any IT recruiter, consulting firm or IT department about how difficult it is to find good database, analytics, and business intelligence resources, you would get overwhelming agreement there is a shortage.

BI and Analytics are distinct and mature disciplines in today's IT and business landscape, so it is surprising that these resources are not more readily available. Employers and recruiters should be able to easily reach out through the multitude of internet resources and take their pick of qualified candidates, but that is not the reality of the situation.

BI and Analytics have many different facets and require different skills for proper execution. Technical professionals are needed with experience that includes database modeling, extract, transform and load (ETL) skills, OLAP, reporting user interfaces, and experience with the latest and in-demand analytic platforms such as Qlikview, Tableau, and Microstrategy. These disciplines require knowledge and understanding of all the project components. The skills needed are growing significantly—and it is increasingly difficult to find a candidate with all of these skills.

### Networking and Training

There are resources available, including organizations like The Data Warehousing Institute ([www.tdwi.org](http://www.tdwi.org)) and the BI Leadership Forum ([www.bileadership.com](http://www.bileadership.com)). These sites offer web-based information and inform of face-to-face events for learning and training. Other sites:

[www.dataversity.net](http://www.dataversity.net)

[www.b-eye-network.com](http://www.b-eye-network.com)

[www.information-management.com](http://www.information-management.com)

Also helpful are local user groups and chapters. Some of these are hosted by vendors and provide good opportunities to learn. Consider joining some of the BI and Analytics groups found on LinkedIn. Some of the groups out there include:

- Business Intelligence Professionals
- Business Intelligence
- Business Intelligence Group
- TDWI Business Intelligence and Data Warehousing Group
- Business Intelligence and Analytics Group
- Business Analytics
- Advanced Business Analytics

*...plus others that are presented by various technology vendors.*



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A contributing factor to the shortage of people with these needed skills is the fact that the quality and amount of BI and Analytics course work in many university MIS/CS departments is lacking.

### Unique Job Descriptions for BI and Analytics Professionals

There are unique but important job requirements that BI and Analytics professionals need. These requirements help explain why it is so hard to find employees with these skills and can clarify what needs to be done to help reduce the shortage.

#### *Communication Skills*

The ideal BI and Analytics person needs to be able to communicate with both the IT department staff and the line-of-business users and managers. Each managerial level within a corporation has different needs and visions of a BI and Analytics solution. An experienced BI expert has the ability to discuss technical and business related terms at each of these levels. This is a skill that is challenging to master and limits the talent pool.

#### *Multiple Environments*

BI and Analytics professionals architect the databases and frameworks so that data can be moved across multiple environments. Most enterprise organizations are not running on a single platform, so a broad exposure and understanding is needed. Of special concern is the proliferation of mobile environments that are in demand by BI and Analytics users. BI and Analytics professionals are now asked to develop on mobile platforms as new tools enter the market.

#### *User Interface Skills and Understanding*

The reporting and visualization interfaces built for business users must be usable, meaningful and capable of retrieving data quickly so the business managers can make decisions efficiently. The BI and Analytics expert will understand the business needs allowing them to design and build the user interface correctly. Not every BI and Analytics resource is proficient in business and technical competencies.

#### *Flexibility*

The employee must have the skills and experience to discover and implement best practices so that the finished solution is open and flexible. This means that the architect must spend as much time as necessary to research and discover best practices for similar projects. These individuals need to be open to attending existing training and networking opportunities to gain more knowledge (see *Networking and Training* sidebar).





## Why is There a Shortage?

The shortage of resources exists for several reasons.

- Lack of exposure to essential skills by college graduates entering the workforce
- Overall skills required are expanding due to new technologies and tools
- Finding talented professionals who communicate well with both technical and business units is difficult
- Salaries are too low for the quantity AND quality of skills needed to fulfill job requirements

### *University Curriculums*

College graduates from MIS/CS departments know very little about database modeling or real-world database environments. There are few majors in the IT sciences that have classes on databases, let alone business intelligence and analytics courses.

Most database classes in a MIS/CS department cover only the basics—what is a database? What is a table? How do you join tables? These classes do not cover real world problems like why a database is modeled and how to put data in the model from a source system. Some of these courses are showing up in advanced degree curriculums, but are definitely in short supply at the undergraduate level. Furthermore, there is a lack of exposure to technology and tools found in the workplace. These deficiencies are improving, but the lag will remain for a while (see *BI and Analytics in the Universities* sidebar).

Universities are not teaching BI and Analytics skills in depth because in many cases the academic knowledge might not exist and the marketplace is changing so rapidly that it is hard to keep up with the latest tools and software. Skilled BI professionals who decide to go into academics or assist in collegiate programs, will find it difficult to change the department curriculum immediately, but they can make an impact in the long term.

Many companies are recruiting from the same talent pool and it is not growing fast enough to keep up with demand. Companies are having to hire and train people which is expensive and most companies would like to avoid.



### **BI and Analytics in the Universities**

BI and Analytics are typically offered as content within related IT or business courses. There are some exceptions where it is taught as a stand-alone course. College curriculums are not easy to change and adding BI usually means something else is be dropped.

Based on recent research by AIS (Association for Information Systems), an academic think tank for information sciences curriculum, significant movement is underway. BI and Analytics are being offered more and more, including non-IT disciplines.

The University of Denver teaches a BI graduate program through three academic departments: IT, Marketing and Statistics. This type of program is especially valuable as it creates cross-departmental connections and sets up perhaps a more real world environment as IT and business users work together to solve challenges and create opportunities.

At the Erivan K. Haub School of Business at St. Joseph's, both undergraduate and graduate level degrees in BI are available. These two majors and a minor in BI are offered by the school's Decision and System Science Department. Their programs bring together academic disciplines that include IT, statistics, and quantitative methods to interpret analytics-based decision making in organizations.

Additional research is coming shortly on this topic through the BI Congress—a conference started jointly by AIS and the Teradata University Network (TUN). TUN is an academic-led university alliance that offers no-cost BI teaching software and materials to faculties and students worldwide ([www.TeradataUniversityNetwork.com](http://www.TeradataUniversityNetwork.com)).

### *Skill Sets are Very Broad*

As critical skills multiply, it becomes nearly impossible to find someone who knows and understands all the required skills for a project. The IT side requires ETL, OLAP, UI skills. ETL involves moving data into the data model and requires strong database skills and knowledge of the ETL tool. OLAP (Online Analytics Processing) is a very specialized skill that revolves around aggregating data from multiple sources and structuring the data for rapid analysis. The developer needs to understand data modeling, table joins and the OLAP toolset to produce an OLAP solution. UI (User Interface) is part science and part art—knowing how to get data from the model and then present that data in useful and user-friendly charts, graphs, reports, and images.

New software and hardware technologies are constantly created to make systems easier and faster and better, but it takes time and experience to get good at these tools. With new product releases, skills must be constantly upgraded.

### *Salaries Are Not Equal to the Skills Required*

In an attempt to create these highly skilled BI and Analytics “architects,” companies will use their business analysts and turn them into BI and Analytics experts. There is potential to become outstanding BI and Analytics professionals as long as the aptitude is there. Analysts started out taking requests for reports and really began to understand what the questions, answers and solutions might look like.

Over time they learned to be skilled in reporting tools, SQL queries, database design principles, data cleansing principles, and even data movement.



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They learned how to be the “go to person,” but did not have any kind of formalized training nor did they typically see best practices from other more experienced professionals both in and out of the company.

The company benefited by converting a lower salaried employee into someone in high demand and with highly sought after skills. This is often done without a comparable salary increase. Management often does not realize the compensation range for these skills. This can cause a talent drain as these analysts realize salaries for their skills are much lower than they could be with consulting firms or even with new employers. Budgets are always tight, especially in IT, but this can be a real problem for critical need employee retention.

### *Personality and Communication Skills*

Skilled BI and Analytics professionals need to converse with business staff in simple terms in order to understand project requirements and portray solutions without getting into technology specifics. The vast majority of line-of-business personnel do not understand databases or the technical details of the IT department. As a result, the best BI and Analytics people need to be able to change the way they talk and engage with business staff in order to create a solution according to specifications.

It is difficult to find a resource that can develop analytics solutions with multiple technologies—and then properly conduct business user meetings about challenges and solutions in a manner they clearly understand. These professionals are invaluable to both IT departments and the business sponsors.

### What to do about it?

These challenges are not solved overnight. However, there are some things to consider.

**Change the university curriculum.** This is gradually taking place. The current abilities of recent graduates are not at the level needed to make an impact for most organizations, but MIS/CS Departments are improving their curriculum. Corporate IT departments need to sponsor BI and Analytics programs to get students involved through internships and co-op programs. Technology vendors need to offer free or deeply discounted copies of their software so that college students can learn the latest tools (see *BI and Analytics in the Universities* sidebar).

**Reduce the required skillsets for a BI/Analytics employee.** The ideal BI and Analytics professional excels in data modeling, ETL, database, OLAP, UI, and a slew of software tools. In a large organization, break these skillsets up into individual resources which will allow individuals to be experts in a given tool or skill. Small companies or consulting firms might not have this luxury, but reducing the number of skills across several team members will help tremendously.





**Increase pay rates.** A CIO once asked if they could find a person that could do SQL Server BI, SharePoint, data modeling, UI design and Tableau (a popular dashboarding tool) for a \$70,000 per year salary. That person at that salary does not exist. A great talent with great skills is not inexpensive and needs to be valued properly in the corporate world.

Increased pay for BI and Analytics professionals would help raise the skill levels because employees realize there is a financial reward for any extra effort to increase their skills.

### **Find inexpensive or free formalized training.**

Motivated employees should search blogs and forums to gain insight and increase their knowledge, in both hard and soft skills. Free and inexpensive training tools exist online and in books. They should take advantage of these opportunities to broaden their understanding of BI and Analytics theories, concepts and implementation.

### **Consider outside help to validate critical concepts.**

Sometimes introducing an outside consultant is one of the best ways to put everything together when creating or expanding your BI and Analytics team. Good consultants help bring the IT and business units together and can teach how that bridge between the two can be overcome. Involvement between all parties will advance the skills of your staff, resulting in more meaningful projects in a shorter amount of time.

## Summary

There is a shortage of talent, but the good news is that the BI and Analytics market is growing and is one of the most exciting disciplines in IT.

### **So...What Can You Do to Help?**

Is there anything that can be done to enhance and expand BI and Analytics education and the training of young, new talent?

- Get involved in the MIS/CS departments of business schools. Be patient, but offer to help and try to influence what is going on with the curriculum. You can provide real business experience with their university education.
- Get involved in departmental advisory boards—this is where new curriculum ideas and plans start. Offer to be part of the faculty in some way.
- Hire college interns and use that as a way to impact their training and curriculum. Interns returning to the classroom can have an impact on what is taught.
- If you're hiring new BI professionals, write very descriptive and specific job descriptions that show the kinds of talents and training you are looking for—this can cause educators to review their curriculum to prepare students for future jobs.
- Encourage technology vendors to get their products into the hands of students at no cost. Let these students learn state-of-the-art platforms and tools.
- Speak in the classrooms—give them the real world challenges and solutions they will soon face. You could benefit by finding outstanding young interns in the class. Through your expertise, students and professors benefit by hearing examples of how it all works in the real world.



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Do your part by working with universities and encouraging the expansion of their curriculum to produce students with higher levels of analytics skills. Consider using outside talent to bring all the pieces together and create an atmosphere where capable professionals will do everything needed to get the training and exposure they need to be that high-demand, go to rock star.

### About StatSlice

StatSlice is a strategic data services consulting firm headquartered in Dallas, Texas, specializing in data warehousing, business intelligence and business analytics. Strategic data services include the skills, processes, technologies, applications, and practices used to support business intelligence and corporate decision-making. StatSlice has a highly dedicated consulting organization with a reputation for excellent customer service and measurable success in implementation. They promote an environment of resourcefulness, innovation, and creativity without sacrificing measurable results. They continually stay on the cutting edge of the latest business intelligence and analytics challenges and principles and as a result they are a “go-to” team for your most challenging projects.

### For More Information

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