Building a Business Intelligence Career

Business Intelligence (BI) is a field that is rich with career opportunity. More than any previous information systems endeavor, BI brings together business and technology in an inseparable way – the line becomes blurred and it becomes increasingly difficult to distinguish between the two fields. While adding complexity for both business and IT organizations, this evolution offers new career horizons for professionals in both domains. The challenge lies in reaching those horizons.

Meeting the Challenge

Building the BI career is an undertaking of vision and focus. BI is too broad a field to become a "BI generalist." Determine the disciplines in which you want to develop and specialize. Know the roles that you want to fulfill in a BI team and the value and contributions that those roles bring to a BI program. Then apply your time and energy to acquire the right combination of education, experience, and credentials to be among the best at fulfilling those roles.

Career development is a process of acquiring the right skills to effectively fulfill chosen roles. The key elements include:

- *Understanding the disciplines* needed to be successful with BI.
- *Choosing roles* for which you are well suited based on your knowledge, experience, aptitude and interests.
- *Acquiring skills* needed for the roles through education and experience.
- *Establishing credentials* that attest to your qualifications by resume of experience and certification in related disciplines.

Focus on BI Disciplines

The field of BI logically segments into five core disciplines. As a practical matter, only the most experienced are prepared to perform at the highest level in more than one or two of these disciplines. Objective self assessment of past experience, personal interests, innate aptitude, pace and ease of learning, and other personal variables is important to make your choices – both specific disciplines and the number of disciplines to pursue – among the following:

- *Business Analytics* focuses on effective use of data and information to drive positive business actions. The body of knowledge for this area includes both business and technical topics including concepts of performance management, definition and delivery of business metrics, data visualization, and deployment and use of technology solutions such as OLAP, dashboards, scorecards, analytic applications, and data mining.

- *Leadership and Management* is a key success factor for BI programs and projects, with strong focus on effectively integrating people, processes, and technology to deliver business value. The field requires depth of process knowledge including development methodology, program management, and project management as well as organizational and team-building skills. An understanding of business topics such as Business Performance Management (BPM), Customer Relationship Management (CRM), and Supply Chain Management (SCM) is also needed. High-level technical understanding of BI applications and data warehousing concepts is also part of the Leadership and Management body of knowledge.

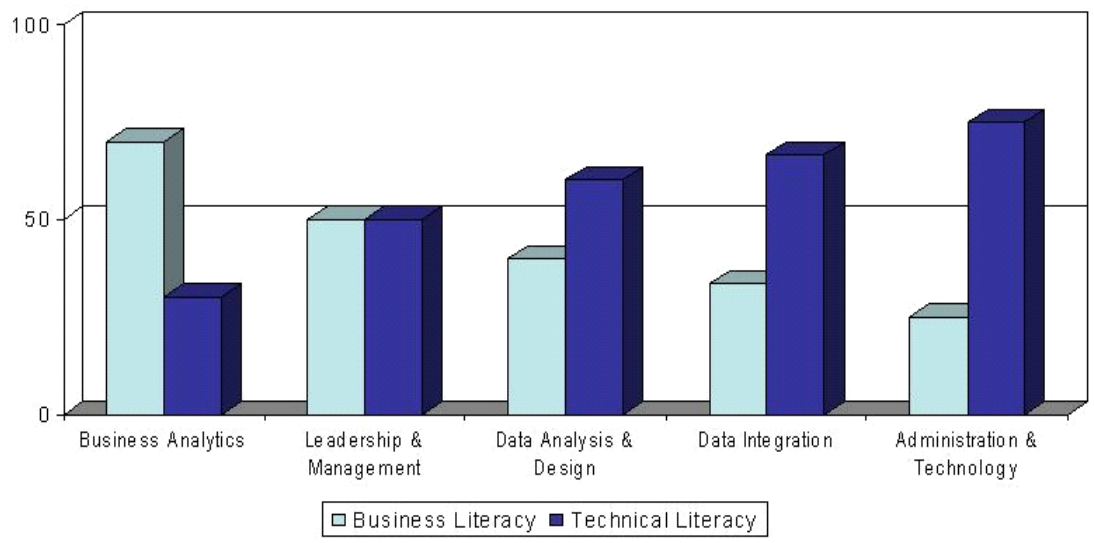
- *Data Analysis and Design* provides the foundation for delivery of BI applications. Analysis concentrates on understanding business needs for data and information. Design focuses on translating business information needs into data structures that are adaptable, extensible, and sustainable. Core skills include information needs analysis, specification of business metrics, and data modeling. Solid understanding of data warehousing concepts, architectures, and processes is also essential.

- *Data Integration* is fundamental to data warehousing and is a vital process for a rich and robust data resource to deliver BI solutions. Integration includes all of the activities necessary to acquire data from sources, and to transform and cleanse the data. The body of knowledge includes concepts and skills for source data analysis and source qualification, data profiling, source/target mapping, data cleansing and transformation, and ETL development.

- *Administration and Technology* covers those areas related to managing the infrastructure and ensuring continuous operation of data warehousing and BI solutions. Technology architecture, technology planning and configuration, system and network administration, capacity planning, growth management, database administration, system and network administration, and access and security administration are essential skills in this area.

Each discipline demands knowledge of both business and technology. The balance of business and technical literacy, however, is variable depending on the discipline. Figure 1 illustrates a practical balance between business and technical literacy for each of the five disciplines. An ideal business analyst, for example, attains a body of knowledge and skill that is approximately seventy percent business focused and thirty percent technically focused. An administration and technology professional, by contrast, has a strong bias to technological knowledge with sufficient business knowledge to apply and manage technology in a meaningful business context.

Figure 1: Balancing Business and Technical Literacy



Choosing BI Roles

Virtually every BI organization is uniquely configured and there is little standardization of job titles throughout the industry. Regardless of titles, however, many common roles have emerged as necessary to a complete and well-rounded BI program. Typical BI roles include:

Business Roles

Sponsors who establish the charter and high-level goals, acquire funding, provide political will, and secure resources for BI/DW programs and projects. Sponsors also have responsibility as the ultimate resolution place for issues and conflicts.

Business Subject Experts who are responsible to provide topic knowledge to a project within a specific domain.

Knowledge Workers are responsible to get value from information resources. This is an operational responsibility to understand BI/DW concepts and environment, to understand the kinds of information available, and to access information and apply it to achieve business impact.

Data Owners have responsibility and authority to make decisions about access, distribution and retention of data. They understand the business, the data, and the regulations, laws and policies governing data privacy.

Data Stewards are responsible to oversee continuous improvement of information quality at all three areas of BI/DW work – program, operation and support. Stewards foster consensus about data definitions, data quality, data usage, and data reusability.

Management Roles

Program Managers are responsible to oversee the DW/BI business information program – establishing program, operation and support priorities, overseeing day-to-day activities, ensuring activities are within scope, schedule and budget, and that deliverables meet user expectations. The program manager role encompasses working with everyone associated with and served by the program from sponsors to project teams, operations and support staff, and business users.

Project Managers are responsible for the success of DW/BI projects. They manage the processes that produce defined deliverables, using available resources within the estimated time frame. Key skills are leadership, communication, delegation, DW/BI knowledge, decision-making, problem solving, planning, estimating and flexibility.

Architecture Roles

Information and Data Architects establish the structure and standards for a data-to-information supply chain. Information architects establish a structure for business information, aligning business priorities with analytic applications.

Acquisition Architects define the standards and structures for data migration from original sources to information resources – defining standards, structures, and techniques to capture data from sources, cleanse and integrate data, and populate warehousing databases.

Technical Architects define the roles and relationships among BI technologies. They participate in the acquisition, evaluation, testing and optimizing of hardware and software products, and establish standards and provide guidance for use of those products.

Requirements Analysis Roles

Business Requirements Analysts are responsible to investigate, understand, describe, and document business requirements and practical solutions to those requirements. The business requirements analyst identifies and describes broad-scope requirements, examines alternative solutions, refines and clarifies information needs, and determines analytic application functions.

Source Data Analysts are responsible to investigate, understand, describe, and document data contents of source systems. This job is commonly referred to as something like “data archaeology.”

- Design and Construction Roles

  ETL Developers construct programs, scripts, or other components necessary to move data from sources to targets. In addition to knowing how to use data migration tools, ETL developers must understand data models, databases, source/target maps, data transformation rules, and the overall data flow architecture of the data warehouse.

  Database Developers specify, implement, and optimize databases. Database developers implement databases for all data stores for both relational and dimensional data structures.

  Front-End/OLAP Developers manage, deploy and maintain applications and OLAP tools that let end users access and analyze BI information in ways that satisfy business objectives. The range of skills here is as broad as the range of technologies and solutions. The key skills for these developers are knowledge of the technologies to be used, and ability to translate business requirements into designs and solutions that meet those requirements.

- Infrastructure Roles

  Database Administrators are responsible for the health, security and performance of the databases in the BI environment. DBAs are responsible for physical design, testing, implementation and performance tuning of the databases and access paths.

  Systems Administrators have responsibilities to install, configure, manage, and tune the hardware and operating platforms of the BI environment including servers, network communications capabilities, operating systems, security packages, middleware, and many other infrastructure technologies.

  Metadata Administration has responsibility to implement and evolve the metadata strategy, as well as project and operational responsibility to ensure that all needed metadata is captured, recorded, and kept up-to-date.

  Data Quality Administration has responsibilities to find and define data quality problems, redundancies, inconsistencies, etc. and to involve the right people in achieving solutions to data quality problems.

  Tool and technology Specialists have expertise in one or a few BI products. They may be responsible for product administration, tool user support, configuration support, monitoring and managing tool performance, and a variety of other highly technical activities within a particular set of products.

  Trainers develop and present training programs (one-on-one, classroom, web-based, etc.) for the business users of analytic tools. Training involves understanding the data, its structure and meaning, and the analytic tools used to obtain information. Training also demands some level of business understanding.

  Customer Service & Support Specialists fulfill what is perhaps the most overlooked of the critical roles in BI. The success of a BI program depends largely on the quality of the user experience – activity that begins with a recognized need for information and ends when the information is applied to achieve business impact. The customer role is instrumental to ensure quality user experiences.

Developing BI Skills

Each role depends on BI disciplines – understanding of and experience with a specific body of knowledge and skills – to be effective in that role. Mapping roles to disciplines helps to identify the specific skills needed to perform in each role. Certainly all BI knowledge and skill is valuable to the BI professional. For each individual role, however, expertise in some disciplines, offers greater worth than in other disciplines.

When career planning it is wise to choose roles in which you already have essential knowledge, and to develop expertise that is well matched to the roles in which you plan to work.

The table in Figure 2 maps roles to disciplines using the classifications:

- Understanding of the discipline is **essential** to fill the role.
- Understanding of the discipline provides **valuable** knowledge to be highly effective in the role.
- Knowledge of the discipline is **useful** and may aid performance in the role.
- Knowledge of the discipline will be **helpful** to teamwork when performing in the role.

Figure 2: Mapping Roles to Disciplines

	Business Analytics	Leadership & Management	Data Analysis & Design	Data Integration	Admin & Technology
sponsor	**essential**	**essential**	*valuable*	*valuable*	useful
business subject expert	**essential**	helpful	useful	useful	useful
knowledge worker	*valuable*	helpful	useful	useful	*valuable*
data owner	useful	useful	useful	valuable	helpful
data steward	useful	useful	**essential**	**essential**	helpful
program manager	**essential**	**essential**	*valuable*	*valuable*	*valuable*
project manager	useful	**essential**	*valuable*	*valuable*	*valuable*
information architect	**essential**	helpful	**essential**	*valuable*	*valuable*
acquisition architect	useful	helpful	*valuable*	**essential**	**essential**
technical architect	*valuable*	helpful	*valuable*	*valuable*	**essential**
business requirements analyst	**essential**	helpful	*valuable*	useful	useful
source data analyst	useful	helpful	**essential**	*valuable*	**essential**
ETL developer	useful	helpful	valuable	**essential**	*valuable*
database developer	useful	helpful	*valuable*	*valuable*	**essential**
front-end/OLAP developer	**essential**	helpful	*valuable*	*valuable*	valuable
technology specialist	useful	helpful	*valuable*	*valuable*	**essential**
systems administrator	useful	helpful	*valuable*	*valuable*	**essential**
database administrator	useful	helpful	**essential**	*valuable*	*valuable*
metadata administrator	*valuable*	useful	*valuable*	*valuable*	useful
quality administrator	*valuable*	useful	*valuable*	*valuable*	useful
customer service & support specialist	*valuable*	helpful	*valuable*	*valuable*	*valuable*
trainer	*valuable*	helpful	*valuable*	*valuable*	useful

Developing Skills through Education

A most obvious way to learn new skills is through education. Yet it is often difficult for the busy IT professional to find time for education when already balancing the demands of work and family. Carefully planned education is the key achieving maximum value for the time and cost that you invest to learn new skills. Develop a personal learning plan by:

1. Identifying the skills that you need to learn for the roles in which you plan to work.
2. Assessing your current level of expertise and preparedness for those roles.
3. Analyzing the gap between current expertise and needed knowledge and skills.
4. Selecting and sequencing courses to create a learning path. Figure 3 illustrates some sample learning paths for each of the five disciplines.

Figure 3: Sample Learning Paths

Leadership & Management

- TDWI Business Intelligence Fundamentals
- TDWI Data Warehousing Concepts and Principles
- TDWI Data Warehousing Architectures
- Program Management for Business Intelligence
- BI Manager Toolkit: Managing Change & Productivity
- Project Management for Data Warehousing
- Leading & Organizing Data Warehousing Teams
- ROI & Beyond: Maximizing Quantifiable Business Results
- TDWI Business Basics for IT Professionals
- Building a Data Governance Program
- TDWI Program Assessment Workshop

Business Analytics

- TDWI Business Intelligence Fundamentals
- Fundamentals of Business Analytics
- TDWI Dimensional Data Modeling Primer
- TDWI Designing Business Metrics for the Enterprise
- Data Presentation: Designing Charts to Enlighten
- HandsOn-OLAP
- HandsOn-Business Analytics
- HandsOn-Advanced Analytics
- Predictive Analytics
- Data Mining Techniques, Tools, and Tactics
- HandsOn-Data Mining
- TDWI Business Basics

Data Analysis & Design

- TDWI Business Intelligence Fundamentals
- TDWI Data Warehousing Concepts and Principles
- TDWI Data Warehousing Architectures
- TDWI Data Modeling
- TDWI Designing Business Metrics for the Enterprise
- TDWI Dimensional Data Modeling Primer
- Intermediate & Advanced Data Modeling Techniques
- An Evolutionary Approach to Metadata Management
- Data Profiling for Reengineering, Knowledge Discovery, and Information Quality Data
- Data Modeling In Practice

Data Integration

- TDWI Business Intelligence Fundamentals
- TDWI Data Warehousing Concepts and Principles
- TDWI Data Warehousing Architectures
- TDWI Data Integration Techniques
- Architecture & Design of the ODS
- TDWI Data Cleansing
- Data Profiling for Reengineering, Knowledge Discovery, and Information Quality Data
- Architectural Options for Data Integration
- HandsOn-ETL
- HandsOn-Data Integration

Administration and Technology

- TDWI Business Intelligence Fundamentals
- TDWI Data Warehousing Concepts and Principles
- TDWI Data Warehousing Architectures
- Real-Time Data Warehousing
- Designing a High-Performance Data Warehouse
- Optimizing the Data Warehouse Infrastructure
- Emerging Technologies Shaping the Future of DW and BI
- Enterprise Architecture for Technology Integration
- HandsOn-ETL
- HandsOn-Data Integration
- HandsOn-OLAP
- HandsOn-Business Analytics
- HandsOn-Advanced Analytics
- HandsOn-Data Mining

Developing Expertise through Experience

The value of classroom training is indisputable. It is the primary way that we share knowledge culturally and learn new concepts individually. Frequently, however, real expertise is achieved only through practice. Seek opportunities to practice what you've learned in the classroom by applying it in your current job, by doing volunteer work, and by finding occasions to work under the guidance of an experienced mentor. Learning by doing is the ultimate objective.

Documenting Expertise with Credentials

Finally, consider documenting your expertise with credentials. As the IT job market continues to become increasingly competitive, and certification of your expertise becomes ever more important. A substantial certification program provides employers with confidence that employees have the skills necessary to meet the challenges of their jobs. Less credible certifications – those that don't deliver meaningful, employer-trusted credentials – base the certificate on attendance and/or specific products. Such programs lower the bar for the entire industry and diminish the value of a credential. Don't confuse receiving a certificate with being certified. An attendance certificate says only that you sat in a classroom – not that you learned or that you can apply what you have learned.

Stronger certification programs document a measurable level of achievement in a specific technical area. Before investing in any certification program, understand the nature of the program and consider the cost-to-value proposition of the certification being offered.

Meaningful and credible knowledge and skills certification programs adhere to the following principles:

1. Based on a curriculum that aligns learning objectives with job roles and responsibilities.
Training that occurs in a helter-skelter way makes it difficult to learn the basics and then build advanced skills on that foundation. A curriculum with planned learning paths creates cohesion among concepts and across courses. A role-based approach puts you on a clearly defined path that provides focus and structure to meet defined learning objectives.

2. Knowledge and skills testing is an essential component.
In a continuously changing business and technical environment it is a challenge to distinguish yourself. To have the right combination of experience, knowledge, and skills at just the right time is not always enough. How to demonstrate the knowledge and skills? The missing link in the chain is knowledge and skills testing. An employer needs to have confidence that you will be valuable team member and team leader. To survive and prosper, whether within an organization or in a consulting practice, you have to demonstrate that you have what companies are seeking.

3. Exam developers and training providers are separate and independent organizations.
To be credible, examination development, maintenance, and scoring must remain independent of training providers. Content questions taken directly from course material compromise learning objectives and the exams become simple memory exercises. Effective exams test conceptual and technical knowledge, depth of understanding, and ability to apply that knowledge in real situations. Even the most conscientious of training providers would find it impossible to develop exams that are not biased to specific course contents.

*4. Exams are challenging and demand real study to pass them***.**
The challenging nature of examination is the foundation for value of certification. If exams are easy to pass will the credentials be respected and valued? If real risk of failure does not exist then certification becomes a commodity instead of a credential. The exam process provides evidence to you and your employers of your qualifications and the professional nature of your knowledge. Meaningful certification is achieved by passing examinations that adhere to national and international standards.

5. Exams are not be specific to any vendor and/or set of products
Except when the certification goal is specific product knowledge, examination should test generally applicable knowledge and skills without constraints of a specific set of technology. Business Intelligence is not about technology. Actionable knowledge drives business results, independently of the technology used. Certification of leadership, management, analysis, design, and administration skills should never be tool specific. Be assured that while technology continues to change leadership, business alignment, incremental deployment, managed operations, and customer service will continue to be key BI success factors.

6. Examination occurs in a controlled environment

Timed examinations in a controlled, proctored environment are essential to guarantee integrity of the examination process, ensure credibility of the certification, and offer credentials that are respected throughout the BI community.

7. Recertification is periodically required.
As job roles and responsibilities, business, technology, expectations, and best practices change, the field of business intelligence will continue to expand. Periodic recertification is necessary to ensure continued value of the credentials.

8. Skills gap analysis is provided when exams are failed.
A significant number of people will fail difficult exams. Real risk of failure is an important element of good certification programs (see item 4, above). A certification process that provides a detailed breakdown of skills, strengths and weaknesses is a powerful guide to planning a professional development program. Gap analysis – the gap between skills that you have and skills that you need – is an invaluable personal planning service.

In Conclusion

Business Intelligence is an exciting field that is radically changing the way that we do business. It will bring equally remarkable changes to the way the business view and apply technology. IT careers will change as business and technology continue to become intertwined and dependent. This is an exciting time that is rich with opportunity. Those who actively plan their careers will reap benefits both personally and professionally.