

# **SOLUTIONS FOR CHAPTER 1**

## **REVIEW QUESTIONS**

### **1) Distinguish between information and knowledge.**

Information is a subset of data. It is data that possess context, relevance, and purpose. Information is raw data that has been manipulated to provide more meaningful trends or patterns. Managers can use such information to make decisions (ex. regarding pricing and purchases). Knowledge, on the other hand, is intrinsically different from information. Knowledge is justified beliefs about relationships among concepts relevant to a particular area. Understanding these relationships help the manager to better use the information.

### **2) Identify and illustrate any two important benefits of business intelligence.**

One benefit of business intelligence is improvement in operational performance. BI solutions provide improved abilities to access and analyze information across an organization in a timely fashion. For example, the Richmond, VA police were able to use the results of its analysis to mitigate developing problems and deploy its officers more accurately. Another benefit of business intelligence is improvement in customer service. BI solutions can help identify frequent problems with a product, identify the appropriate solution quickly and improve customer satisfaction with products. As an example taken from mobile phones, BI solutions can help improve customer retention by identifying customers likely to change providers by analyzing their usage patterns and other behavior.

### **3) Briefly explain, and illustrate using an example, what you understand by business intelligence.**

Business intelligence provides decision makers with valuable information and knowledge by leveraging quantitative and qualitative data from both within and outside of an organization. Information can be both structured and unstructured. The Michigan Department of Human Services (DHS) was able to effectively identify and dissuade fraud by integrating data from multiple repositories into a single data warehouse. Using business intelligence tools they now provide more complete claim information to investigators and staff.

### **4) Distinguish between business intelligence and knowledge management.**

The inputs of business intelligence are data and information. The output is information presented in a friendly fashion. Decisions are made based on information from structured transactional data and unstructured information available from other sources such as web-sites, e-mail messages, news media, internal documents, etc. It is technical in nature. In general, only explicit knowledge can result from business intelligence. Data is critical for business intelligence.

The inputs of knowledge management are information and knowledge. The output is the creation of new knowledge, conversion to another form of knowledge, or application of knowledge in making a decision. It involves using both social aspects as well as information

technology and produces both explicit and tacit knowledge. In general, knowledge management is not directly concerned with data, however, business intelligence and knowledge management overlap in knowledge discovery which focuses on discovering knowledge from data and information using techniques like data mining.

**5) Explain how business intelligence differs from each of the following: (a) data warehousing; (b) data mining; and (c) decision support systems.**

BI differs from other data centric technologies such as data warehousing, data mining and decision support systems. BI incorporates internal as well as external data while data warehousing, data mining and DSS focus on internal data. BI incorporates structured and unstructured data as inputs while data warehousing, data mining and DSS focus on structured data. This is particularly important because information about an organization's competition is often not available in internal systems and much important data exists in unstructured form. Finally, BI explicitly focuses on presenting information to individuals with little technical expertise.

**6) Identify and briefly explain any two factors that have led to the increasing importance of business intelligence.**

Exploding data volumes brought on by increased and cheaper storage capacity, electronic connections, accumulated data and regulatory changes requiring upper management to be more hands for information assets in publically traded companies has led to an increasing importance of business intelligence. Business intelligence solutions provide managers the ability to more effectively utilize these larger data volumes. Increasingly complicated decisions brought on by competition across industries and countries, global operations, round the clock operations, collaborator/competitor changeups, intricate internal and external processes, and more available information also contribute to an increasing importance of business intelligence. Business intelligence solutions provide managers the ability to make decisions that incorporate all the important factors and are based on integration across these structured and unstructured sources of information.

**7) Briefly explain the relationship between BI tools and BI solution.**

BI tools are developed by BI vendors and used in BI solutions. BI solutions are deployed within an organization to support the BI process through which information and knowledge is provided. BI solutions use BI acquired tools and draw upon a variety of sources of data to provide information and knowledge that facilitate decision-making.

**8) Discuss how BI could be viewed as a "product" or as a "process".**

Often BI is used to refer to the product of the process, or the collected information and knowledge that is useful to organizations for their business activities and decision making. However, BI is on other occasions used to refer to the process through which an organization obtains, analyzes and distributes such information and knowledge.

## CH 1 APPLICATION EXERCISES

- 1) Consider the four forces driving BI described in this chapter. Provide one example (other than the ones mentioned in the book) that illustrates each of these forces.**

We know that the four forces driving Business Intelligence described in this chapter were:

- Exploding Data Volumes
- Increasingly Complicated Decisions
- Need for Quick Reflexes
- Technological Progress

Acxiom Corporation in Conway, AK is a good example to illustrate the above four forces. Information, or the lack of it, can cause you to make a bad decision or not the right decision. Possessing the right information when it is needed is the key to being successful and competitive in Fortune 1000 companies. Acxiom builds and maintains data warehouses to make this possible for a wealth of customers who look to the company for customer relationship management help. They have approximately 185 data elements for every consumer in the United States. There are from 12 to 20 million businesses they have information about. They have customer databases that exceed 15 – 20 terabytes of data. A lot of their new technology is in the client-server arena using sophisticated database technology and network infrastructure. They plan for today's demands as well as those of tomorrow. Acxiom provides a constant stream of data to its customers. Acxiom believes in creating a 360° view of customers so that the company and its customers are as informed as they can be. This includes data points on every consumer in the United States as well as profiles of millions of businesses.

- 2) Select any one of the four “BI in Practice” examples presented in this chapter. Use the web to obtain additional information about the organization and its BI efforts. Then, explain the effects BI has had on this organization in terms of Figure 1.4.**

Figure 1.4 looks at the roles of data, information, and knowledge in knowledge management. The inputs of knowledge management are information and knowledge. The output is the creation of new knowledge, conversion to another form of knowledge, or application of knowledge in making decisions. Both explicit and tacit knowledge are produced. Although knowledge management is not directly concerned with data, business intelligence and knowledge management overlap in knowledge discover which focuses on discovering knowledge from data and information.

BI in Practice example 1.4 showed that Dunkin' Donuts was expanding globally using a new system to help it close franchising deals more quickly. This was a method effectively used to keep it competitive with Starbucks, a non franchiser. Dunkin' has

implemented a new co-branding structure since 2008 to enable accelerated global expansion of Dunkin' Donuts and Baskin-Robbins brands. They have realigned their organizational structure by combining the two organizations resulting in a flatter and more streamlined organizational structure, while enhancing their ability to share innovations and best practices worldwide. Dunkin' Donuts has gained competitive advantages arising from a shared asset base with potentially greater profitability and increasing brand equity. This is an application of knowledge being fed back into knowledge management using explicit and tacit knowledge to reinforce growth decisions.

- 3) Select any one of the three examples discussed at the start of this chapter. Use the web to obtain additional information about the organization and its BI efforts. Then, explain the effects BI has had on this organization in terms of Figure 1.4.**

We selected Example 1 at Northern Europe's largest hospital -- Sahlgrenska University Hospital in Gothenburg, Sweden -- for further inquiry. In Sahlgrenska Hospital, Associate Professor Daniel Stalhammar at the neurosurgery clinic works to find the optimal treatment for severe head injuries. Complications from brain inflammation cost the hospital approximately \$1,000,000 every year. More importantly, it costs lives. Prof. Stalhammar is using Qlik View to analyze a database of current patient status versus prior outcomes to predict when intervention is necessary. Through the use of this tool, the hospital has been able to reduce the complication rate to zero, eliminate unnecessary tests and costs, and save patient lives. The BI software is used to make the hospital more efficient, improve the treatment of critically ill patients, and to save lives. The results of BI are seen to be useful inputs to KM. BI deals with the whole aspect of knowledge discovery, discovering patterns, in this case patterns leading to brain inflammation, based on existing explicit data and information. We also see a case where KM involves using both social aspects as well as information technology. KM has produced both explicit and tacit knowledge incorporating knowledge capture, sharing, and application in addition to creation.

- 4) Construct a hypothetical example to show how BI can lead to improved operational performance of the organization. For the organizational context, use any one of the three organizations in the "BI in Practice" examples other than the Richmond police (i.e., BI in Practice 1.2), the three examples presented at the start of this chapter, or an organization that you work at or have worked at in the past.**

Example 1 at Sahlgrenska University Hospital also shows how BI can lead to improved operational performance of the organization. The primary mission of a hospital is improved patient care for the community it serves. The most important thing for the hospital is to make the right decision quickly. Quick decisions can mean the difference between life and death. When a doctor receives a patient, he can place himself in front of the computer screens and get the information he needs immediately. He now has

the total picture in front of him and no longer has to search in different databases and waste precious minutes before guessing something in the end.

Using the power of BI has not only saved doctors' time and patients' lives, it has indirectly improved the quality of care for all patients at the hospital by saving precious medical resources at a time when all medical budgets are stretched.

- 5) **Construct a hypothetical example to show how BI can lead to improved customer service in an organization. For the organizational context, use any one of the three organizations in the "BI in Practice" examples other than eCourier (i.e., BI in Practice 1.3), the three examples presented at the start of this chapter, or an organization that you work at or have worked at in the past.**

Improved customer service can occur when decision makers can make more responsive and anticipative decisions related to customer requests and needs using both real-time and historical data and information. Assume that in the case of the Michigan DHS example 3, using BI they are able to dissuade applicants from making \$2 billion in fraud claims. The DHS could apply "what-if" scenarios to decide upon the best way to use the savings. They could improve existing services or add additional services such as retraining and education programs to reduce public assistance. In addition, based on their findings, they could use the information provided to introduce, analyze and perhaps reengineer the claims process, from the submission of the claim to the payment to the beneficiary.

- 6) **Construct a hypothetical example to show how BI can lead to identification of new opportunities in an organization. For the organizational context, use any one of the three organizations in the "BI in Practice" examples other than Dunkin' Donuts (i.e., BI in Practice 1.4), the three examples presented at the start of this chapter, or an organization that you work at or have worked at in the past.**

BI can facilitate new insights and knowledge through the discovery of previously unknown patterns, correlations, and trends. It also enables better understanding of the market based on latest information, and the anticipation of future market trends. St. Joseph's Medical Center in BI in Practice 1.1 could be a good representative of this reality. St. Joseph's has already taken a step beyond improved care through identifying potential health problems before they escalate to analyzing nurse response time to bedside call buttons. They could go further to improve health care by using BI to monitor employee productivity. They could potentially improve care and lower costs if they could measure productivity more effectively. Using external data, the hospital could see how it was doing relative to national averages in all departments.

Performance improvement could be monitored and rewarded. An incentive program for managers based on the BI system could be implemented. The hospital would be

able to measure departments based on metrics that include dollars spent per patient per day, supplies used, expenses, staff hours and overtime. Managers from each department can log on to view their own group's data. They can take steps to improve their department's productivity by looking closely at their processes and inefficiencies. Ultimately, improved productivity enables better care and more investments in healthcare programs that benefit St. Joseph's patients.