Business Intelligence, 4e **(Sharda/Delen/Turban)**
Chapter 1 An Overview of Business Intelligence, Analytics, and Data Science

1) Computerized support is only used for organizational decisions that are responses to external pressures, not for taking advantage of opportunities.
Answer: FALSE
Diff: 2 Page Ref: 3

2) During the early days of analytics, data was often obtained from the domain experts using manual processes to build mathematical or knowledge-based models.
Answer: TRUE
Diff: 2 Page Ref: 13

3) Computer applications have moved from transaction processing and monitoring activities to problem analysis and solution applications.
Answer: TRUE
Diff: 1 Page Ref: 11

4) Business intelligence (BI) is a specific term that describes architectures and tools only.
Answer: FALSE
Diff: 1 Page Ref: 16

5) The growth in hardware, software, and network capacities has had little impact on modern BI innovations.
Answer: FALSE
Diff: 1 Page Ref: 11

6) Managing data warehouses requires special methods, including parallel computing and/or Hadoop/Spark.
Answer: TRUE
Diff: 3 Page Ref: 11-12

7) Managing information on operations, customers, internal procedures and employee interactions is the domain of cognitive science.
Answer: FALSE
Diff: 3 Page Ref: 12

8) Decision support system (DSS) and management information system (MIS) have precise definitions agreed to by practitioners.
Answer: FALSE
Diff: 2 Page Ref: 13

9) In the 2000s, the DW-driven DSSs began to be called BI systems.
Answer: TRUE
Diff: 1 Page Ref: 14

10) Major commercial business intelligence (BI) products and services were well established in the early 1970s.
Answer: FALSE
Diff: 2 Page Ref: 15

11) Information systems that support such transactions as ATM withdrawals, bank deposits, and cash register scans at the grocery store represent transaction processing, a critical branch of BI.
Answer: FALSE
Diff: 2 Page Ref: 19

12) Many business users in the 1980s referred to their mainframes as "the black hole," because all the information went into it, but little ever came back and ad hoc real-time querying was virtually impossible.
Answer: TRUE
Diff: 2 Page Ref: 20

13) Successful BI is a tool for the information systems department, but is not exposed to the larger organization.
Answer: FALSE
Diff: 2 Page Ref: 20

14) BI represents a bold new paradigm in which the company's business strategy must be aligned to its business intelligence analysis initiatives.
Answer: FALSE
Diff: 2 Page Ref: 20-21

15) Traditional BI systems use a large volume of static data that has been extracted, cleansed, and loaded into a data warehouse to produce reports and analyses.
Answer: TRUE
Diff: 2 Page Ref: 21

16) Demands for instant, on-demand access to dispersed information decrease as firms successfully integrate BI into their operations.
Answer: FALSE
Diff: 3 Page Ref: 21

17) The use of dashboards and data visualizations is seldom effective in identifying issues in organizations, as demonstrated by the Silvaris Corporation Case Study.
Answer: FALSE
Diff: 2 Page Ref: 24

18) The use of statistics in baseball by the Oakland Athletics, as described in the *Moneyball* case study, is an example of the effectiveness of prescriptive analytics.
Answer: TRUE
Diff: 2 Page Ref: 5

19) Due to industry consolidation, the analytics ecosystem consists of only a handful of players across several functional areas.
Answer: FALSE
Diff: 2 Page Ref: 38-39

20) Data generation is a precursor, and is not included in the analytics ecosystem.
Answer: FALSE
Diff: 1 Page Ref: 39

21) In the Opening Vignette on Sports Analytics, what was adjusted to drive one-time ticket sales?
A) player selections
B) stadium location
C) fan tweets
D) ticket prices
Answer: D
Diff: 2 Page Ref: 6

22) In the Opening Vignette on Sports Analytics, what type of modeling was used to predict offensive tactics?
A) heuristics
B) heat maps
C) cascaded decision trees
D) sentiment analysis
Answer: B
Diff: 3 Page Ref: 7

23) Business applications have moved from transaction processing and monitoring to other activities. Which of the following is NOT one of those activities?
A) problem analysis
B) solution applications
C) data monitoring
D) mobile access
Answer: C
Diff: 2 Page Ref: 11

24) Which of the following developments is NOT contributing to facilitating growth of decision support and analytics?
A) collaboration technologies
B) Big Data
C) knowledge management systems
D) locally concentrated workforces
Answer: D
Diff: 3 Page Ref: 11-12

25) In what decade did disjointed information systems begin to be integrated?
A) 1970s
B) 1980s
C) 1990s
D) 2000s
Answer: B
Diff: 2 Page Ref: 14

26) Relational databases began to be used in the
A) 1960s.
B) 1970s.
C) 1980s.
D) 1990s.
Answer: C
Diff: 3 Page Ref: 13

27) The need for more versatile reporting than what was available in 1980s era ERP systems led to the development of what type of system?
A) management information systems
B) relational databases
C) executive information systems
D) data warehouses
Answer: C
Diff: 3 Page Ref: 14

28) Which of the following is an umbrella term that combines architectures, tools, databases, analytical tools, applications, and methodologies?
A) MIS
B) DSS
C) ERP
D) BI
Answer: D
Diff: 1 Page Ref: 16

29) The competitive imperatives for BI include all of the following EXCEPT
A) right information
B) right user
C) right time
D) right place
Answer: B
Diff: 2 Page Ref: 16

30) Which of the following is NOT an example of transaction processing?
A) ATM withdrawal
B) bank deposit
C) sales report
D) cash register scans
Answer: C
Diff: 2 Page Ref: 19

31) Online transaction processing (OLTP) systems handle a company's routine ongoing business. In contrast, a data warehouse is typically
A) the end result of BI processes and operations.
B) a repository of actionable intelligence obtained from a data mart.
C) a distinct system that provides storage for data that will be made use of in analysis.
D) an integral subsystem of an online analytical processing (OLAP) system.
Answer: C
Diff: 2 Page Ref: 19-20

32) The very design that makes an OLTP system efficient for transaction processing makes it inefficient for
A) end-user ad hoc reports, queries, and analysis.
B) transaction processing systems that constantly update operational databases.
C) the collection of reputable sources of intelligence.
D) transactions such as ATM withdrawals, where we need to reduce a bank balance accordingly.
Answer: A
Diff: 2 Page Ref: 20

33) How are enterprise resources planning (ERP) systems related to supply chain management (SCM) systems?
A) different terms for the same system
B) complementary systems
C) mutually exclusive systems
D) none of the above; these systems never interface
Answer: B
Diff: 2 Page Ref: 20

34) BI applications must be integrated with
A) databases.
B) legacy systems.
C) enterprise systems.
D) all of these
Answer: D
Diff: 2 Page Ref: 22

35) What has caused the growth of the demand for instant, on-demand access to dispersed information?
A) the increasing divide between users who focus on the strategic level and those who are more oriented to the tactical level
B) the need to create a database infrastructure that is always online and contains all the information from the OLTP systems
C) the more pressing need to close the gap between the operational data and strategic objectives
D) the fact that BI cannot simply be a technical exercise for the information systems department
Answer: C
Diff: 3 Page Ref: 21

36) Today, many vendors offer diversified tools, some of which are completely preprogrammed (called shells). How are these shells utilized?
A) They are used for customization of BI solutions.
B) All a user needs to do is insert the numbers.
C) The shell provides a secure environment for the organization's BI data.
D) They host an enterprise data warehouse that can assist in decision making.
Answer: B
Diff: 2 Page Ref: 21

37) What type of analytics seeks to recognize what is going on as well as the likely forecast and make decisions to achieve the best performance possible?
A) descriptive
B) prescriptive
C) predictive
D) domain
Answer: B
Diff: 2 Page Ref: 24-27

38) What type of analytics seeks to determine what is likely to happen in the future?
A) descriptive
B) prescriptive
C) predictive
D) domain
Answer: C
Diff: 2 Page Ref: 24-27

39) Which of the following statements about Big Data is true?
A) Data chunks are stored in different locations on one computer.
B) Hadoop is a type of processor used to process Big Data applications.
C) MapReduce is a storage filing system.
D) Pure Big Data systems do not involve fault tolerance.
Answer: D
Diff: 3 Page Ref: 36

40) Big Data often involves a form of distributed storage and processing using Hadoop and MapReduce. One reason for this is
A) centralized storage creates too many vulnerabilities.
B) the "Big" in Big Data necessitates over 10,000 processing nodes.
C) the processing power needed for the centralized model would overload a single computer.
D) Big Data systems have to match the geographical spread of social media.
Answer: C
Diff: 3 Page Ref: 36

41) Fundamental reasons for investing in BI must be _____ with the company's business strategy.
Answer: aligned
Diff: 2 Page Ref: 20

42) Software monitors referred to as _____ can be placed on a separate server in the network and use event- and process-based approaches to measure and monitor operational processes.
Answer: intelligent agents
Diff: 2 Page Ref: 21

43) Organizations using BI systems are typically seeking to _____ the gap between the operational data and strategic objectives has become more pressing.
Answer: close
Diff: 2 Page Ref: 21

44) _____ is an umbrella term that combines architectures, tools, databases, analytical tools, applications, and methodologies.
Answer: Business intelligence (BI)
Diff: 2 Page Ref: 16

45) A(n) _____ is a major component of a Business Intelligence (BI) system that holds source data.
Answer: data warehouse
Diff: 2 Page Ref: 11

46) A(n) _____ is a major component of a Business Intelligence (BI) system that is often browser based and often presents a portal or dashboard.
Answer: user interface
Diff: 2 Page Ref: 17

47) _____ cycle times are now extremely compressed, faster, and more informed across industries.
Answer: Business
Diff: 2 Page Ref: 16

48) Different types of players are identified and described in the analytics _____.
Answer: ecosystem
Diff: 2 Page Ref: 37

49) _____ providers focus on providing technology and services aimed toward integrating data from multiple sources.
Answer: Data Warehouse
Diff: 2 Page Ref: 40

50) _____ providers focus on bringing all the data stores into an enterprise-wide platform.
Answer: Middleware
Diff: 2 Page Ref: 40

51) The user interface of a BI system is often referred to as a(n) _____.
Answer: dashboard
Diff: 2 Page Ref: 16

52) Data warehouses are intended to work with informational data used for online _____ processing systems.
Answer: analytical
Diff: 2 Page Ref: 20

53) With _____, all the data from every corner of the enterprise is collected and integrated into a consistent schema so that every part of the organization has access to the single version of the truth when and where needed.
Answer: Enterprise Resource Planning (ERP)
Diff: 2 Page Ref: 14

54) As the number of potential BI applications increases, the need to justify and prioritize them arises. This is not an easy task due to the large number of _____ benefits.
Answer: intangible
Diff: 2 Page Ref: 22

55) _____ analytics help managers understand current events in the organization including causes, trends, and patterns.
Answer: Descriptive
Diff: 2 Page Ref: 24

56) _____ analytics help managers understand probable future outcomes.
Answer: Predictive
Diff: 2 Page Ref: 25

57) _____ analytics help managers make decisions to achieve the best performance in the future.
Answer: Prescriptive
Diff: 2 Page Ref: 26-27

58) The Google search engine is an example of Big Data in that it has to search and index billions of _____ in fractions of a second for each search.
Answer: Web pages
Diff: 2 Page Ref: 36

59) The filing system developed by Google to handle Big Data storage challenges is known as the _____ Distributed File System.
Answer: Hadoop
Diff: 2 Page Ref: 36

60) The programing algorithm developed by Google to handle Big Data computational challenges is known as _____.
Answer: MapReduce
Diff: 2 Page Ref: 36

61) List four possible analytics applications in the retail value chain.
Answer:
- Inventory Optimization
- Price Elasticity
- Market Basket Analysis
- Shopper Insight
- Customer Churn Analysis
- Channel Analysis
- New Store Analysis
- Store Layout
- Video Analytics

Diff: 2 Page Ref: 34

62) What are the four major components of a Business Intelligence (BI) system?
Answer:
1. A **data warehouse**, with its source data
2. **Business analytics**, a collection of tools for manipulating, mining, and analyzing the data in the data warehouse
3. **Business performance management** (**BPM**) for monitoring and analyzing performance
4. A **user interface** (e.g., a dashboard)

Diff: 3 Page Ref: 16

63) Why is data alone worthless?
Answer: Alone, data is worthless because it does not provide business value. To provide business value, it has to be analyzed.
Diff: 2 Page Ref: 36

64) What is the intent of the analysis of data that is stored in a data warehouse?
Answer: The intent of the analysis is to give management the ability to analyze data for insights into the business, and thus provide tactical or operational decision support whereby, for example, line personnel can make quicker and/or more informed decisions.
Diff: 2 Page Ref: 19-20

65) Describe the three major subsets of the Analytics Focused Software Developers portion of the Analytics Ecosystem.
Answer:
- Reporting/Descriptive Analytics — Includes tools is enabled by and available from the Middleware industry players and unique capabilities offered by focused providers.
- Predictive Analytics — a rapidly growing area that includes a variety of statistical packages.
- Prescriptive Analytics — Software providers in this category offer modeling tools and algorithms for optimization of operations usually called management science/operations research software.

Diff: 3 Page Ref: 41-42

66) Business applications can be programmed to act on what real-time BI systems discover. Describe two approaches to the implementation of real-time BI.
Answer:
- One approach to real-time BI uses the DW model of traditional BI systems. In this case, products from innovative BI platform providers provide a service-oriented, near–real-time solution that populates the DW much faster than the typical nightly extract/transfer/load (ETL) batch update does.
- A second approach, commonly called business activity management (BAM), is adopted by pure play BAM and or hybrid BAM-middleware providers (such as Savvion, Iteration Software, Vitria, webMethods, Quantive, Tibco, or Vineyard Software). It bypasses the DW entirely and uses Web services or other monitoring means to discover key business events. These software monitors (or intelligent agents) can be placed on a separate server in the network or on the transactional application databases themselves, and they can use event- and process-based approaches to proactively and intelligently measure and monitor operational processes.

Diff: 3 Page Ref: 21

67) List and describe three levels or categories of analytics that are most often viewed as sequential and independent, but also occasionally seen as overlapping.
Answer:
- **Descriptive or reporting analytics** refers to knowing what is happening in the organization and understanding some underlying trends and causes of such occurrences.
- **Predictive analytics** aims to determine what is likely to happen in the future. This analysis is based on statistical techniques as well as other more recently developed techniques that fall under the general category of data mining.
- **Prescriptive analytics** recognizes what is going on as well as the likely forecast and makes decisions to achieve the best performance possible.

Diff: 3 Page Ref: 24-27

68) How does Amazon.com use predictive analytics to respond to product searches by the customer?
Answer: Amazon uses clustering algorithms to segment customers into different clusters to be able to target specific promotions to them. The company also uses association mining techniques to estimate relationships between different purchasing behaviors. That is, if a customer buys one product, what else is the customer likely to purchase? That helps Amazon recommend or promote related products. For example, any product search on Amazon.com results in the retailer also suggesting other similar products that may interest a customer.
Diff: 3 Page Ref: 26

69) Describe and define Big Data. Why is a search engine a Big Data application?
Answer:
- Big Data is data that cannot be stored in a single storage unit. Big Data typically refers to data that is arriving in many different forms, be they structured, unstructured, or in a stream. Major sources of such data are clickstreams from Web sites, postings on social media sites such as Facebook, or data from traffic, sensors, or weather.
- A Web search engine such as Google needs to search and index billions of Web pages in order to give you relevant search results in a fraction of a second. Although this is not done in real time, generating an index of all the Web pages on the Internet is not an easy task.

Diff: 3 Page Ref: 35-36

70) What storage system and processing algorithm were developed by Google for Big Data?
Answer:
- Google developed and released as an Apache project the Hadoop Distributed File System (HDFS) for storing large amounts of data in a distributed way.
- Google developed and released as an Apache project the MapReduce algorithm for pushing computation to the data, instead of pushing data to a computing node.

Diff: 3 Page Ref: 36