**Chapter 1 – Accounting Information Systems and Firm Value**

**Multiple Choice Questions**

1. c
2. d
3. a
4. c
5. d
6. b
7. d
8. a
9. d
10. b
11. b
12. c
13. a
14. c
15. a

**Discussion Questions**

1. Brainstorm a list of discretionary information that might be an output of an accounting information system and be needed by Starbucks. Prioritize which items might be most important and provide support.

Answers will vary. Here are some potential answers:

The cost of a cup of coffee, by type: Breakfast blend, Cafe estima, caffe Verona, espresso roast, Ethiopia sidamo, french roast, Gold coast blend, Guatemala Antigua, house blend, Italian roast, Kenya coffee, komodo dragon blend, organic Serena blend, organic shade grown Mexico, sumatra, decaf caffe Verona, decaf espresso roast, decaf house blend, and decaf Sumatra!

Monthly Sales per square foot of retail space.

Employee cost for each operating hour.

Advertising expenditures per dollar of sales.

The cost of condiments per dollar sales of coffee. Condiments might include sweeteners, liquid creamers, cream canisters, sugar packets, sugar canisters, stir sticks!

The cost of electricity per operating hour each month of the year.

1. Explain the information value chain. How do business events turn into data then into information and then into knowledge? Give an example starting with the business event of the purchase of a DVD at Best Buy all the way to useful information for the CEO and other decision makers.

The information value chain represents the overall transformation from a business need and business event (like each individual sale of U.S. flag) to an ultimate decision. The information value chain might be represented considering the purchase of a DVD at Best Buy in the following way:

The DVD will be recorded as sales revenue and then after deducting its costs will add to or subtract from corporate income. The cash from the DVD sale will also add to the operating cash flows.

The specific DVD will be recorded in the information as a sale to monitor which DVDs are selling within Best Buy. This will help Best Buy and its suppliers know which DVDs are selling and which type of DVDs should be reordered. The type of DVD will also help the marketing department better understand its customers and their respective demographic profile to better market to them.

In addition, knowing the location of the DVD sale will also help decision makers know where its sales are occurring.

The CEO can look at the profitability of DVDs overall, the specific types of DVDs that are selling and the location of those sales all due to the information value chain.

1. Give three examples of types of discretionary information at your college or university and explain how the benefits of receiving that information outweigh the costs.

Answers will vary. This represents a potential answer.

Universities are often interested in their freshmen retention (the percentage of sophomores that return after their freshman year). They also quite interested in their four- or five-year graduation rates.

Universities are also interested in their production of research grants. This is often used to monitor the success of their research and their ability to get interested sponsors (such as the National Institute of Health or the National Science Foundation).

Information for each of these three examples can be gained by the information system at the university. However, a university generic information system does not usually offer this information as a standard report or standard output of the system. Therefore, work must be done to capture (and potentially digitize) this information, ensure its validity and then report it in an appropriate useful format. The cost of getting useful information will depend on the university and its technology. However, since these represent three keys metrics of a university and will likely be used as a key input to manage the university, the benefits will potentially outweigh those costs.

1. After a NBA basketball game a box score is produced detailing the number of points scored, assists made and rebounds retrieved (among other statistics). Using the characteristics of useful information discussed at the beginning of the chapter, please explain how this box score meets (or does not meet) the characteristics of useful information.

A box score of a NBA basketball game (or other sports) produces overall team statistics by half and quarter and details player performance including minutes played, shots taken, shots made, free throw shots taken and made, assists, rebounds, steals, blocks and fouls.

To be relevant, the information must potentially impact a decision that a decision maker must make. Relevant information is usually characterized by having predictive value, feedback value and receiving it on a timely basis. This information provides feedback value to explain how players performed in the game. The box score provides predictive value to the extent that prior performance (as reflected in the box score) is predictive of future performance. Since box scores are available immediately following the game, it is also received on a timely enough basis to make decisions for a subsequent game.

To be reliable, the information must be verifiable, be representationally faithful and be neutral. There are often some allegations that the statistics included in a box score is affected by the bias of the scorekeeper. While the actual points scored by the team is verified by the officials, more minute details are not verified and may be subject to bias, thus limiting their reliability.

The information is potentially relevant to the coach in helping to figure out which players are most efficient and productive. Which players play well against different teams and which players are good at particular aspects of offense and defense, among others.

1. Some would argue that the role of accounting is simply as an information provider. Will a computer ultimately completely take over the job of the accountant? As part of your explanation, explain how the role of accountants in information systems continues to evolve.

Accountants have a role as a business analyst. That is, they gather information to solve business problems or address business opportunities. They determine what information is relevant in solving business problems, then create or extract that information and finally analyze the information to solve the problem. An AIS provides a systematic means for accountants to get needed information and solve a problem.

While a computer is very good at reliably collecting, processing and producing information, the role of the accountant when serving as a business analyst will continue to be able to assess the problems the business is facing and work to provide information that will address it.

1. How do you become a Certified Information Technology Professional (CITP)? What do they do on a daily basis?

A CPA can earn a CITP designation with a combination of business experience, lifelong learning and an optional exam.

The CITP designation identifies accountants (CPAs) with a broad range of technology knowledge and experience. On a daily basis, CITPs may help devise a more efficient financial reporting system, help figure out how an information system can provide needed decision-relevant information, help the accounting function go paperless or consult on how an IT function may transform the business.

1. Explain the value chain for an appliance manufacturer, particularly the primary activities. Which activities are most crucial for value creation (or in other words, which activities would you want to make sure are the most effective)? Rank the five value-chain enhancing activities in importance for an appliance manufacturer.

The value chain goes all the way from product design, through sourcing to manufacturing to shipping the final product to the warranty and repair business. Many would consider the product design, which ensures that the appliance has the desired functionality at the right priced points, to be a critical activity for value creation. Sourcing the product components to low cost, yet high quality component providers is also key to creating value. Final assembly (or operations) of the product components is also key to ensuring high product quality at reasonable prices. Marketing the final product through appropriate distribution channels and supporting the final product through the warranty and repair process also are crucial parts of the value chain.

My opinion of the ranking of the five primary activities would be that product design would be the most important, then sourcing (inbound logistics), then marketing, then warranty and repair and finally final assembly (or operations).

1. Which value chain supporting activities would most be most important to support a health insurance provider’s primary activities? How about the most important primary activities for a university?

Of course, all of the supporting activities are important. Human Resources perhaps can be viewed as most important to make sure the right nurses and right doctors with the appropriate skills are available at the right time to service the sick and injured. Technology is increasingly becoming an important part of hospitals, especially with the digital medical records are becoming increasingly available and useful. Certainly, other arguments can be made for other supporting activities.

The primary activities of a university would be to attract students, educate them and then helping them find a good job once they have graduated. Educating students is probably the most important primary activities in the university as that is its primary mission.

1. List and explain three ways that an AIS can add value to the firm.

Accounting Information Systems add value by providing decision relevant information to management.

Three specific examples would include the following: Customer relationship management (CRM) techniques could attract new customers, generating additional sales revenue. Enterprise systems can significantly lower the cost of support processes included. Supply Chain Management Software allows firms to carry the right inventory and have it in the right place at the right time.

1. Where does new product development fit in the value chain for a pharmaceutical company? Where does new product development for a car manufacturer fit in the value chain?

The support activity of technology generally would include research and development for both a pharmaceutical company as well as a car manufacturer. In either case, this is a support activity that can drive the value for a company.

1. An enterprise system is a centralized database that collects and distributes information throughout the firm. What type of financial information would be useful for both the marketing and manufacturing operations might both need?

Both marketing and manufacturing operations might both need records of the past sales as well as projections of which products are selling best. For the marketing group, this information would be helpful to optimize marketing campaigns, understand the demographics of the customer, and make predictions of future products. Manufacturing operations might need product information to decide which products to produce as well as needed changes to be able to produce future products. The enterprise systems might be able to provide answers to questions like, what manufacturing equipment might be needed to produce new products or is the existing manufacturing capacity sufficient to fulfill future product needs.

1. Customer Relationship Management software is used to manage and nurture a firm’s interactions with its current and potential clients. What information would Boeing want about its current and potential airplane customers? Why is this so critical?

For Boeing, understanding its customers is of paramount importance. Boeing would want to know who their potential customers are, who the key contacts are, what the customer’s business models are (e.g., short flights, long flights, fuel efficiency, loads on each flight, cargo volume and capacity, etc., who their key supplier has been in the past (Boeing, Airbus, etc.) , what they value in a plane manufacturer (e.g., financing, customer service, after sale service, parts, etc.).

This information is critical as it helps Boeing tailor its offering and propose new offerings based on the needs of the customer.

**Problems**

**(Note – Problems with “Connect” in parentheses below are available for assignment within Connect.)**

1. **(Connect)** A recent article suggests:

A monumental change is emerging in accounting: the movement away from the decades-old method of periodic financial statement reporting and its lengthy closing process, and toward issuing financial statements on a real-time, updated basis . . . real-time financial reporting provides financial information on a daily basis. Current technology allows for financial events to be identified, measured, recorded, and reported electronically, with no paper documentation. (Source: “Real-Time Accounting,” *The CPA Journal*, April 2005).

Indeed, many corporations are pressing their finance and accounting departments for more timely financial information and ad hoc analysis. Would a shift toward real-time financial statements make the financial information more useful or less useful? More or less relevant? More or less reliable?

It may be useful to stakeholders if some accounts are reported on a daily basis, such as sales revenue or employee expenses, as long as that information is reliable. Other accounts are only needed periodically, such as estimates and allowance accounts, so real-time reporting would be less useful.

As information becomes more timely, it generally becomes more relevant. A stakeholder could make decisions based on current account balances versus the balances reported two-to-three months ago. Even periodic data that was reported daily would provide insight into when estimates are generated and adjusted.

However, there is a risk that real-time reporting will be less reliable. Periodic financial statements are reviewed for errors and audited. Real-time reports would be more likely to include material errors that could result in poor decisions by stakeholders. Managers would need to provide better controls or disclose the risks if others are to use the information.

1. Consider the bar chart below of how accounting professionals’ activities have changed over time. Comment on how information technology affects the role of accountants. In what respects is this a positive trend or a negative trend? What will this bar chart look like in 2020?



**Source: *The Agile CFO: A Study of 900 CFOs Worldwide*, IBM, 2006.**

By 2020, many expect the trend from transactional activities to decision support systems would continue. I view this as a positive trend, consistent with one of the themes for chapter 1, that accountants are business analysts, helping businesses to address business opportunities. As noted in the chapters, these opportunities might include a decision whether to outsource a business function, whether to produce one product or another based on which is most profitable, or whether to pursue an attempt to minimize taxes, etc. To address such a business opportunity, the accountants need to decide what information is needed, then build an information system to gather the necessary information and finally analyze that information to offer helpful advice to management. I would expect this trend will continue through 2020 and beyond.

1. **(Connect)** Match the value chain activity in the left column with the scenario in the right column.
   1. Service Activities matches best with B. Warranty Work
   2. Inbound Logistics matches best with F. Receiving dock for raw materials
   3. Marketing and sales activities matches best with A. Surveys for prospective customers
   4. Firm Infrastructure matches best with G. CEO and CFO
   5. Human Resource Management matches best with I. Worker recruitment
   6. Technology matches best with E. New-product development
   7. Procurement matches best with H. Buying (sourcing) raw materials
   8. Outbound Logistics matches best with D. Delivery to the firm’s customer
   9. Operations matches best with C. Assembly Line
2. **(Connect)** Match the value chain activity in the left column with the scenario in the right column.
   1. Customer Call Center matches best with G. Service Activities
   2. Supply Schedules matches best with B. Inbound Logistics
   3. Order Taking matches best with I. Marketing and sales activities
   4. Accounting Department matches best with D. Firm Infrastructure
   5. Staff Training matches best with E. Human Resource Management
   6. Research and Development matches best with F. Technology
   7. Verifying quality of raw materials matches best with C. Procurement
   8. Distribution Center matches best with H. Outbound Logistics
   9. Manufacturing matches best with A. Operations
3. In 2002, John Deere’s $4 billion commercial and consumer equipment division implemented supply chain management software and reduced its inventory by $500 million. As sales continued to grow, they have been able to keep their inventory growth flat. How did the supply chain management software implementation allow them to reduce inventory on hand? How did this allow them to save money? Which income statement accounts (e.g., revenue, cost of goods sold, SG&A expenses, interest expense, etc.) would this affect?

The use of supply chain software allowed the business to reduce its inventory and then as sales growth continued, keep its inventory growth flat. This is at least $500 million less that the company had to finance with either liabilities or equity. To the extent it reduced its debt, this would reduce its interest expense. The reduction in inventory also reduced the warehouses to store the inventory, potentially reducing SG&A expenses.

1. Dell Computer used Customer Relationship Management Software called IdeaStorm to collect customer feedback. This customer feedback led the company to build select consumer notebooks and desktops pre-installed with the Linux platform. Dell also decided to continue offering Windows 7 as a pre-installed operating system option in response to customer requests. Where does this fit in the value chain? How will this help Dell create value? By listening to the customer and meeting their needs, will this increase revenues or decreases expenses? SaaSy recommends

* [ADTRAN](http://www.salesforce.com/customers/hi-tech-hardware/adtran.jsp)
* [Alava Ingenieros](http://www.salesforce.com/customers/hi-tech-hardware/avid.jsp)
* [Analog Devices](http://www.salesforce.com/customers/hi-tech-hardware/analogdevices.jsp)
* [Avaya](http://www.salesforce.com/customers/hi-tech-hardware/ayaya.jsp)
* [Canon Marketing Japan](http://www.salesforce.com/customers/hi-tech-hardware/canon.jsp)
* [Captor](http://www.salesforce.com/customers/hi-tech-hardware/captor.jsp)
* [Cisco](http://www.salesforce.com/customers/hi-tech-hardware/cisco.jsp)
* [Electronics for Imaging](http://www.salesforce.com/customers/hi-tech-hardware/efi.jsp)
* [Enterasys Networks](http://www.salesforce.com/customers/hi-tech-hardware/enterasys.jsp)
* [Motorola](http://www.salesforce.com/customers/hi-tech-hardware/symboltechnologies.jsp)
* [Phoenix Technologies](http://www.salesforce.com/customers/hi-tech-hardware/phoenixtech.jsp)
* [Plantronics](http://www.salesforce.com/customers/hi-tech-hardware/plantronics.jsp)
* [Qualcomm](http://www.salesforce.com/customers/hi-tech-hardware/qualcomm.jsp)
* [Quantapoint](http://www.salesforce.com/customers/hi-tech-hardware/quantapoint.jsp)
* [Quantum](http://www.salesforce.com/customers/hi-tech-hardware/quantum.jsp)
* [RadiSys](http://www.salesforce.com/customers/hi-tech-hardware/radisys.jsp)
* [Ricoh Technosystems](http://www.salesforce.com/customers/hi-tech-hardware/ricoh.jsp)
* [Stratus Technologies](http://www.salesforce.com/customers/hi-tech-hardware/stratus.jsp)
* [Vicon](http://www.salesforce.com/customers/hi-tech-hardware/vicon.jsp)



The use of IdeaStorm at Dell helped Dell get to know its customers and their needs. The primary activity in the value chain that directly addresses the use of CRM is marketing and sales activities, which identifies the needs and wants of their customers to help attract them to the firm’s products and buy them.

Using customer feedback to get to know their customers helps Dell get the right product at the right price to the right customer. It will potentially increase revenues and potentially reduce obsolete inventory by having the products that the customers need.

1. **(Connect)** Ingersoll Rand operates as a manufacturer in four segments: Air Conditioning Systems and Services, Climate Control Technologies, Industrial Technologies, and Security Technologies. They installed an Oracle enterprise system, a supply chain system and a customer relationship management system. They boast the following results:
   * Decreased direct product costs by 11%
   * Increased labor productivity by 16%
   * Increased inventory turns by four times
   * Decreased order processing time by 90% and decreased implementation time by 40%
   * Ensured minimal business disruption
   * Streamlined three customer centers to one

Please take each of these results and explain which of these systems most directly affected those results.

* 1. Decreased direct product costs by 11% - this likely came about by efficiencies gained by the supply chain system.
  2. Increased labor productivity by 16% - this likely came about by efficiencies gained by the supply chain system.
  3. Increased inventory turns by four times - this likely came about by efficiencies gained by a combination of the supply chain system and customer relationship management (by having the right product to the right customer)
  4. Decreased order processing time by 90% and decreased implementation time by 40% (this was likely caused by a combination of the implementation of supply chain management, customer relationship management and enterprise systems).
  5. Ensured minimal business disruption - uncertain how this is tied to the implementation of supply chain management, customer relationship management and enterprise systems
  6. Streamlined three customer centers to one - uncertain how this is tied to the implementation of supply chain management, customer relationship management and enterprise systems

1. **(Connect)** Using the explanations of each IT strategic role below, suggest the appropriate IT strategic role (automate, informate or transform) for the following types of IT investments. Depending on your interpretation, it is possible that some of the IT investments could include two IT strategic roles.
   1. Digital Health Records - automate
   2. Google Maps that recommend hotel and restaurants along a trip path - transform
   3. Customer Relationship Management Software - informate
   4. Supply Chain Management Software - informate
   5. Enterprise Systems - automate
   6. Airlines Flight Reservations Systems - informate
   7. PayPal - transform
   8. Amazon.com Product Recommendation on your homepage - transform
   9. eBay – informate or transform
   10. Course and Teacher Evaluation conducted online for the first time (instead of on paper) – automate
   11. Payroll Produced by Computer - automate
2. **(Connect)** Information systems have impact on financial results. Using Figure 1-8 as a guide, which system is most likely to impact the following line items on an income statement. The systems to consider are enterprise systems, supply chain systems and customer relationship management systems.
   1. Revenues
   2. Cost of Goods Sold
   3. Sales, General and Administrative Expenses
   4. Interest Expense
   5. Net Income

|  |  |
| --- | --- |
| **Income Statement Item** | **System** |
| Revenues | Customer relationship management system |
| Cost of Goods Sold | Supply chain system |
| Sales, General and Administrative Expenses | Enterprise system |
| Interest Expense | Supply chain system |
| Net Income | All of these |

1. **(Connect)** Accountants have four potential roles in accounting information systems: user, manager, designer and evaluator. Match the specific accounting role to the activity performed.
   1. Controller meeting with the systems analyst to ensure accounting information system is able to accurately capture information to meet regulatory requirements -- Designer
   2. Cost accountant gathering data for factory overhead allocations from the accounting information system -- User
   3. IT auditor testing the system to assess the internal controls of the accounting information system -- Evaluator
   4. CFO plans staffing to effectively direct and lead accounting information system – Manager

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1. **(Connect)** In 2013, Frey and Osborne wrote a compelling article suggesting that up to 47 percent of total US employment is at risk due to computerization. The chart below suggests the probability that each occupation will lead to job losses in the next 20 years. | | | | |
|  | |  | | |
| Selected Occupation | | Probability of Job Loss | | |
| Physician and Surgeon | | 0.004 |
| Preschool Teachers | | 0.007 |
| Chemical Engineers | | 0.02 |
| Police | | 0.10 |
| Commercial Drivers | | 0.18 |
| Plumbers | | 0.35 |
| Economists | | 0.43 |
| Sheet Metal Workers | | 0.82 |
| Retail Salespersons | | 0.92 |
| Accountants and Auditors | | 0.94 |
| Tax Preparers | | 0.99 |
|  | |  | | |
| 1. Given these predictions, which jobs are most likely to be replaced by computerization? Those that primarily have tasks that automate, informate or transform? -- Automate 2. Noticing the high probability of predicted job loss in the accounting and auditing area, are those job losses expected to be due to automate, informate or transform? -- Automate 3. As accountants become business partners in giving critical information to management for decision making, are those tasks automate, informate or transform? -- Informate 4. Is the use of data analytics by accountants, an example of automate, informate or transform? -- Informate   Source: "The Future of Employment: How Susceptible Are Jobs to Computerisation" by. C. Frey and M. Osborne (September 2013) | | | | |